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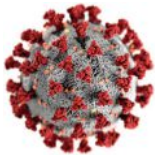
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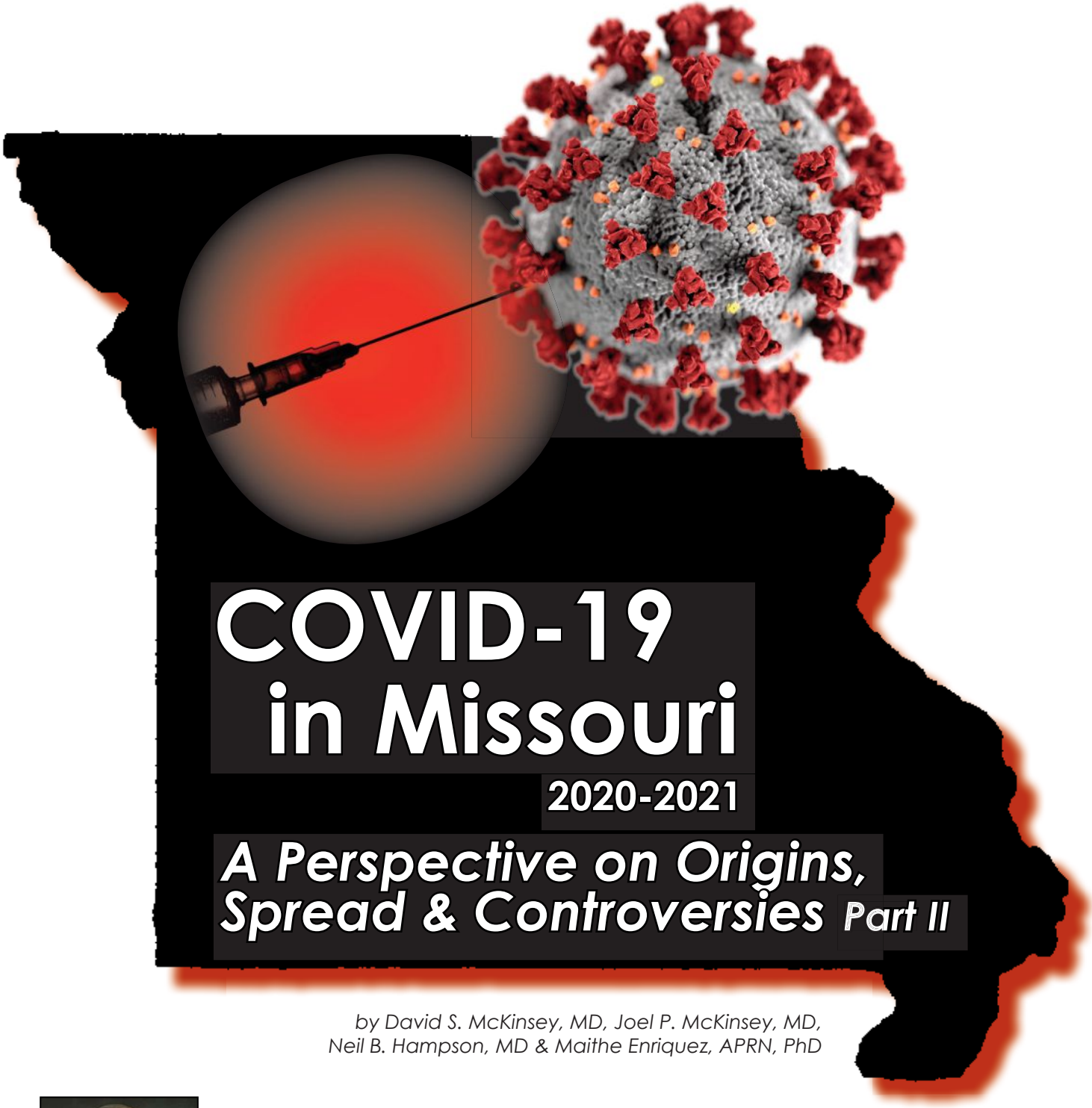


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COVID-19 in Missouri

2020-2021

A Perspective on Origins, Spread & Controversies Part II

by David S. McKinsey, MD, Joel P. McKinsey, MD, Neil B. Hampson, MD & Maithe Enriquez, APRN, PhD



David S. McKinsey, MD, (left), and **Joel P. McKinsey, MD**, are with Metro Infectious Disease Consultants, Kansas City, Missouri. Neil B. Hampson, MD, is at the Virginia Mason Medical Center in Seattle, Washington. Maithe Enriquez, APRN, PhD, is at the Research College of Nursing, Kansas City, Missouri, and University of Missouri - Columbia, Columbia, Missouri.

AS THE FIRST CASES OF COVID-19 streamed into Missouri's hospitals in March 2020, the state's health care professionals faced a host of critically important and yet unanswered questions:

What specific risk factors could be identified and how should this knowledge be used to protect the most vulnerable? Who would be struck hardest: persons aged 20-40, as was the case with 1918 influenza, or children, older adults, or the immunocompromised?[1] Which measures would prove most effective in mitigating disease spread in the community?

The medical profession's painstaking process of answering these questions by conducting research studies and then implementing evidence-based actions based on the findings was much more time-consuming than expected by the public.

Therein lay the seeds of another conundrum. Frighted and impatient citizens encountered a myriad of conflicting sources of incomplete information. Who could be trusted, and whose advice should be followed? Which fork in the road should be taken: acceptance of public health best practices known to be effective, or maximization of "personal freedoms" by shifting responsibility to individuals to do as they chose while the pandemic ran its unpredictable course? Missourians' decisions would prove both highly consequential, as evidenced by the state's performance metrics two years after the pandemic's onset, and bitterly divisive.

During the first two years that we navigated COVID-19's uncharted waters much was learned regarding risk factors and the effective mitigation strategies of mask use and vaccination, subjects that will be addressed in this manuscript.

However, extreme differences of opinion soon emerged regarding the optimum approach to pandemic control and major barriers arose to the implementation of best-practice prevention strategies.

The long-forgotten lesson from the deadly 1918 influenza pandemic, that politics and public health don't mix, would be retaught to Missourians.

Risk Factors

Defining specific risk factors for COVID-19 was an early priority. Analyses of outbreaks provided valuable information about the medical conditions and societal factors that were associated with severe illness and death.

In the Seattle metropolitan area, the first epicenter of COVID-19 in the U.S., skilled nursing facilities (SNF) were overwhelmed by COVID-19 outbreaks in February 2020. Multiple clusters in senior living facilities drew attention to the association between older age and worse prognosis. Subsequent analyses revealed a striking increase in risk of death per decade of advancing age beginning at age seventeen years.[2] Compared to a reference group of teenagers, death rate among persons

FOR MORE THAN 200 YEARS
health officials have been granted the authority under the Tenth Amendment to the U.S. Constitution to "control the spread of dangerous disease."

However, Missouri gained negative national attention when the Cole County Circuit Court ruled that the state's Department of Health and Senior Services and its local health departments' orders to help control the pandemic were "null and void."

aged forty years or older was 130-fold higher and octogenarians' mortality was increased by a remarkable 8,700-fold.[2] In 2020 and 2021 almost three fourths of COVID-19 deaths occurred in persons aged sixty-five years or older, a group that accounted for just 13% of the U. S. population; only 4.2% of fatal cases were in individuals under age 45 years.[3]

Early outbreaks in Missouri shed light on the association between crowded living or working conditions and increased disease incidence. Clusters were identified at SNFs, meatpacking plants, and prisons in the state. As of October 2021, more than 43,000 COVID-19 cases were reported at Missouri SNFs and long-term care facilities. Two centers reported >300 cases among residents and staff, 12 sites documented 200-300 COVID-19 infections, and 161 facilities identified between 100-200 illnesses.[4]

Employment in meatpacking plants in the first few months of the pandemic also was associated with high risk for infection. In Missouri, eighteen packinghouse outbreaks were identified by the end of 2021, the two largest of which were in Buchanan and McDonald Counties, with 622 and 371 confirmed cases, respectively.[5] Among the incarcerated population nationwide, case rates were more than five-fold higher than in the general population; disease incidence in the Missouri prison system was increased by 1.8-fold. COVID-19 outbreaks were reported at prisons in Howard, Greene, and Jackson counties.[6, 7]

Many other risk factors were identified. Although most chronic medical illnesses increase the risk of severe COVID-19, obesity, anxiety, diabetes mellitus with complications, and chronic kidney disease have been most strongly associated with mortality. Prognosis is negatively correlated with a rising count of chronic conditions.[8]

Targeting attention to members of the community with modifiable risk factors is a potential high-impact strategy. Of particular interest in Missouri is the intersection of the ongoing tobacco and obesity epidemics with COVID-19. A review of published papers suggested that smoking is an independent risk factor for COVID-19 disease progression and mortality.[9] Missouri ranks tenth in the U. S. for tobacco use; 17.8% of adults and 24.8% of high school students smoke or use chewing tobacco or snuff.[10, 11] Further, a linear correlation has been identified between increasing body mass index (BMI) and higher rates of COVID-19 related hospitalization.[12] Among Missouri's adult population, 34% have a BMI 30 or higher; the state is the eighteenth most obese in the U. S.[13] These data suggest that public health efforts to reduce tobacco use and obesity in Missouri may hold promise as strategies to mitigate severe COVID-19 in the state.

Public Health

Empowerment of public health authorities was one of the most notable historical inflection points in the United States' path to economic prosperity. Directives to reduce the incidence of infectious diseases, by improving sanitation and minimizing the spread of contagious infections, became highly effective components of the time-honored public

health armamentarium. Multiple tools have been shown to reduce disease spread including case identification and reporting; contact tracing; quarantine (requiring exposed persons to stay home during the potential incubation periods of their illnesses); isolation (following the same practice for individuals with known infections); stay at home orders; closures of public places during pandemics; travel limitations; and vaccination requirements.[14] Mask mandates, widespread but controversial during the 1918 influenza pandemic, were another potential strategy albeit one rarely utilized prior to COVID-19.[14] The effectiveness of these public health measures, in combination with other factors including availability of antimicrobials, has been stunning. Over the course of the 20th century the lifespan for U. S. men increased from 46 to 76 years; for women, life expectancy jumped from 48 to 81 years.

Given the long-known benefits of mask use, physical distancing, and closures of public places in controlling respiratory viral pandemics, persons in authority were faced with major and controversial decisions about which mitigation strategies to pursue when COVID-19 struck. Missouri implemented fewer pandemic control measures than most other states. In 2020 the governor ordered bars and restaurants to close from March 23 to May 4. By comparison, the nationwide average closure period was from March 18 to November 24. A stay-at-home order was issued from April 6 to May 4; this 28-day closure contrasted sharply with the national average of 155 days.[15] In total the Missouri governor issued seven public health orders and restrictions in 2020 and early 2021, leaving it to local governments to determine the best courses of action in their venues and to absorb more of the "heat" from their disgruntled constituents. In contrast St. Louis County issued thirty-four restrictions as of mid-2021, Boone County nineteen, and Kansas City eighteen.[15]

Masking Madates

Mask mandates emerged as an early and effective intervention for COVID-19 case reduction but soon became a lightning rod in the court of public opinion. The prevention benefit of masking is derived from the combination of uninfected wearer protection and, especially, source control in infected individuals. Asymptomatic or presymptomatic infected individuals are estimated to account for over half of SARS-CoV-2 transmissions.[16] Multiple laboratory, epidemiologic and population-level studies have demonstrated the benefit of community masking in preventing spread of COVID-19. One analysis determined that case rates were at least 50% lower in states with greater than 75% mask adherence.[17] In Kansas, counties that "opted in" for mask mandates had almost a three-fold case reduction compared to those that did not.[18] Missouri is one of only eleven states that never issued a state-wide mask mandate during 2020 and 2021. One analysis estimated that approximately 1,900 lives would have been saved in Missouri in the first year and a half of the pandemic had a mask mandate been implemented.[19]

An evaluation by the Missouri Department of Health and Senior Services revealed that disease incidence and mortality in the two cities (St. Louis and Kansas City) and the two counties (St. Louis and Jackson) that had mask mandates during the Delta variant surge in 2021 were lower than in the state's 112 counties that did not require mask use. Daily case rate per 100,000 population in St. Louis and Kansas City was 15.8 as compared to 21.1 in counties without mandates. [20] We utilized this publicly available data to compare differences in daily incidence and mortality in the two groups of counties and cities from July 7, 2021 to October 31, 2021 (Figures 1 and 2.) Both disease incidence and mortality were significantly lower in the locations with mask mandates when assesses by paired t-tests ($p<0.001$ for each analysis).

Despite ease of use and compelling supporting data for masking as a life-saving practice, anti-masking sentiment became a cause celebre in Missouri and nationwide and was characterized



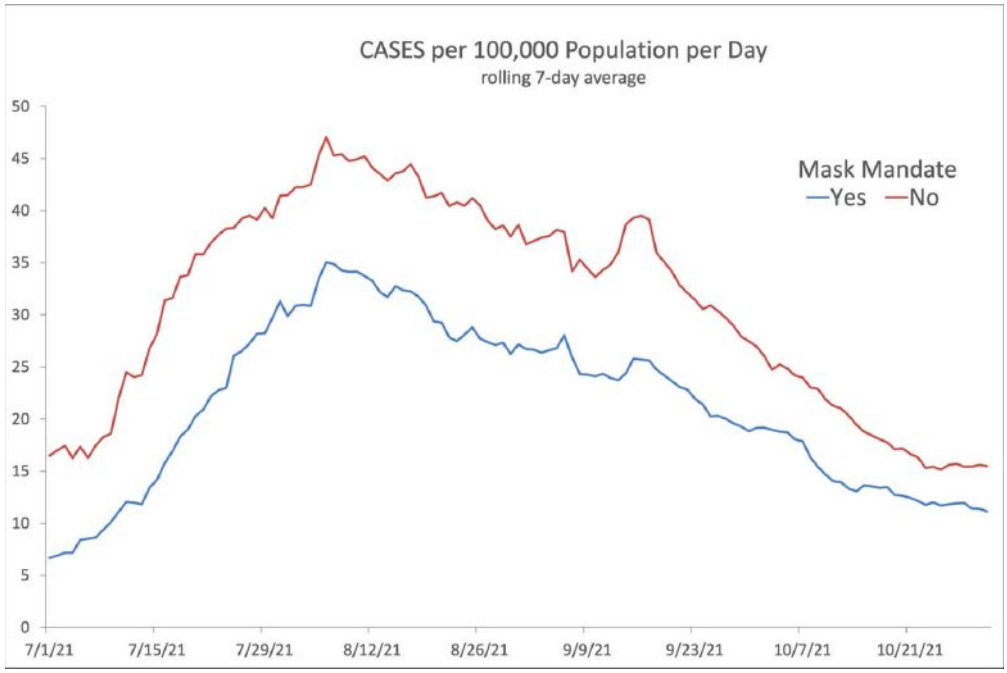


Figure 1. Cases of COVID-19 during Delta variant surge in Missouri cities and counties with mask mandates compared to counties without mandates, 2021.

Source: Documenting COVID-19 Project at the Brown Institute for Media Innovation

by many as an unacceptable violation of their personal liberty. As tensions mounted, increasing vitriol was directed at public health officials who found themselves in the exceedingly challenging, and nearly untenable, position of attempting to implement mitigation measures among an angry, unbelieving population who were being actively dissuaded from complying by prominent public figures. A dismaying, if unsurprising, finding during the pandemic was that 23.4% of all public health workers nationwide were "bullied, threatened, or harassed."[21]

For more than 200 years health officials have been granted the authority under the Tenth Amendment to the U. S. Constitution to "control the spread of dangerous disease." [22] However, Missouri gained negative national attention when the Cole County Circuit Court ruled that the state's Department of Health and Senior Services and its local health departments' orders to help control the pandemic were "null and void". After the judge's ruling, twelve county health departments, sensing that their legal authorities to implement pandemic control measures were in jeopardy, ceased contact tracing, issuing quarantines, and publicizing their counties' COVID statistics.[23] Further, the state's attorney general filed more than forty lawsuits against school districts, St. Louis County, and Kansas City to prohibit enforcement of mask mandates. Most of these lawsuits subsequently were dismissed.

Vaccination

Prompt and prescient action by Dr. Barney Graham, then Deputy Director of the Vaccine Research Center of the National Institutes of Health (NIH), was critical in spearheading the early efforts to develop a vaccine even before COVID-19 had been declared a pandemic. Collaboration among thousands of scientists around the globe contributed to the development and availability of safe and highly effective vaccines less than a year after SARS-CoV-2 was first identified, a remarkable achievement.

The rapid approval of COVID-19 vaccines raised concerns among some about their safety. However, the basic science groundwork enabling the production of these vaccines was decades in the making. Researchers established a framework for a speedy response to new viral threats, utilizing multiple technologies developed in the past two decades. The characterization of specific antigen targets and immunogenic antibody lineages at

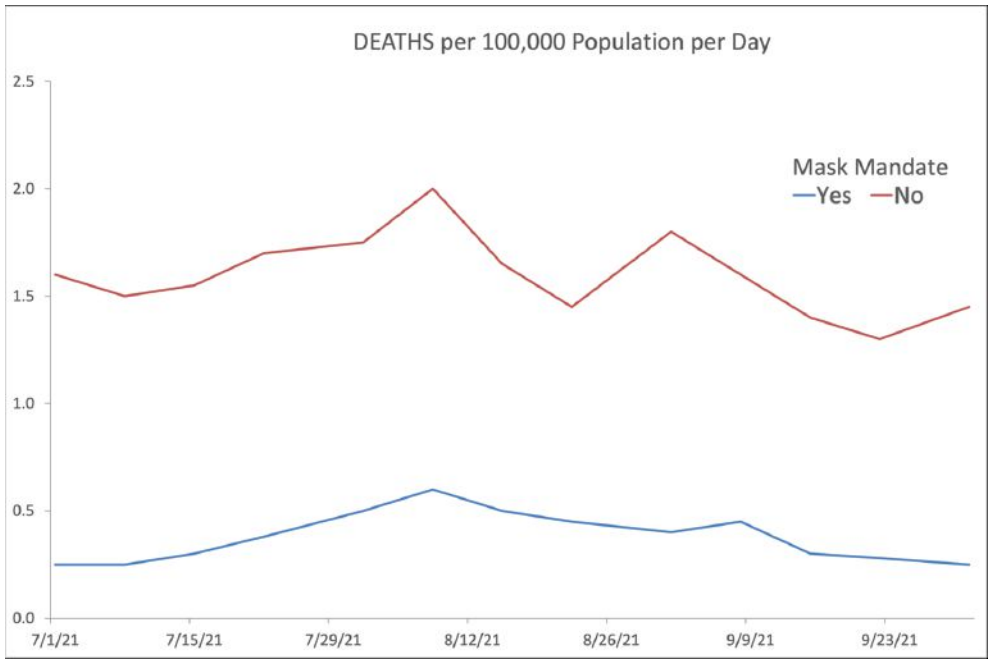


Figure 2. Mortality rates from COVID-19 during Delta variant surge in Missouri cities and counties with mask mandates compared to counties without mandates, 2021

Source: Documenting COVID-19 Project at the Brown Institute for Media Innovation

the molecular level enabled rapid development of vaccine candidates.[24, 25]

Three COVID-19 vaccines are available in the United States: mRNA vaccines manufactured by Moderna® and Pfizer® (mRNA-1273 and BNY162b2 respectively), and a replication-incompetent adenovirus vector vaccine made by Johnson & Johnson® (JNJ-78436735). The rapid and widespread vaccination of Missourians is an urgent priority, as mRNA vaccines are more than 90% effective in reducing both the need for mechanical ventilation and the risk for mortality.[26] However, as of April 2022 the state ranked 39th in the country in vaccine uptake; only 54% of eligible Missourians had been fully vaccinated and more than one million of the state's residents remained vaccine-hesitant.[27]

Many factors have been associated with refusal to receive a COVID-19 vaccine, perhaps the most striking of which is political affiliation.[28] Missourians historically have preferred limited government intervention in their lives. Past is prologue: a recent survey of vaccine-hesitant Missourians found that 34% cited lack of trust in the government as a leading influence in their thought processes.[29]

Once COVID-19 vaccines became available, there was marked variation in vaccine uptake among Missouri's counties, with full vaccination rates ranging from 20.4% to 65.2% by January 2022. Counties in Southeastern Missouri tended to demonstrate lower vaccination rates.[30] Individuals who chose not to be vaccinated arguably were engaging in risky behavior. To determine whether vaccine hesitancy correlated with increased acceptance of risk-taking behavior in general, we reviewed numbers of COVID cases, hospitalizations, deaths, and vaccination rates during the pandemic at the city, county, and state levels and assessed rates of adult cigarette smoking, another adverse health-related activity, in those counties (Figure 3).[31] The association was significant, with smokers more likely to forgo vaccination ($y = -1.716 x + 88.5$; $R^2 = 0.345$; $p<0.0001$).

To determine if this association was a nonspecific assumption of risk and not the influence of another factor, we compared vaccination rates to a different risk-taking behavior, failure to wear automotive seat belts. Data on seat belt use is collected in a representative selection of counties annually by the Highway Safety and Traffic Division of the Missouri Department of Transportation.[32] In contrast to smoking there was

MISSOURIANS SHOULD TAKE NOTE
of two important lessons learned from the 1918 influenza pandemic which held true in 2020 and 2021:

1. During pandemics, sound public health measures should trump political considerations.

2. Saving lives should be prioritized above maximizing perceived personal freedoms.

no significant correlation between seat belt use and vaccination status. Of note, smoking is an addictive behavior whereas seat belt use is not. These analyses suggest that the reasons for failure to receive vaccination are multi-factorial in nature and cannot be explained solely by willingness to accept risk to health.

Information sources and Messaging

Prior to the pandemic many Missourians had only a glancing familiarity, if any, with national and state public health agencies and experts. The National Institute of Allergy and Infectious Diseases (NIAID), a division of the NIH, is primarily a basic science research organization whose director has been thrust into the COVID-19 spotlight as the federal government's leading public health spokesman. The Food and Drug Administration (FDA) is charged with regulating vaccines, drugs, and other products; its Vaccine and Related Biological Products Advisory Panel (VRBPAC) is an independent group of experts which advises FDA regarding vaccine efficacy and safety. The Centers for Disease Control and Prevention (CDC) assesses disease trends and provides guidance to health care facilities and public health programs. The Advisory Committee on Immunization Practices (ACIP), a panel of authorities from universities nationwide, offers specific recommendations to CDC for vaccine use. At the state level, public health messaging is provided by the Missouri Department of Health and Senior Services (DHHS) and by county and city health departments.

Much has been learned much during the COVID-19 pandemic. First, the sheer number of federal and state agencies, with their complicated acronyms, is confusing to the public. Second, whereas these organizations and their consulting committees are comprised of some of the most brilliant and accomplished academic physicians, scientists, and public health experts in the world, to the general public their recommendations often are met with disdain as "government interference," and with scorn for "authority". Third, the public is caught in a maelstrom of conflicting opinions,

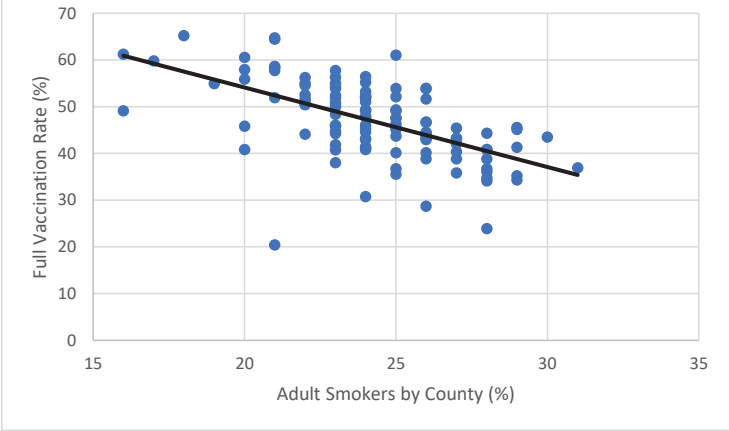


Figure 3. Rate of full coronavirus vaccination by Missouri county compared to rate of adult smoking in the same counties.

Metric	Missouri	United States	Rank
Mask mandate	No	39 other states had mandates	
Stay-at-home orders (mean duration)	28 days	155 days	
Closures of public places (mean duration)	42 days	215 days	
Fully vaccinated (%)	54	66.4	39th
Mortality rate/year/100,000	329	301.19	31st

Figure 4. Pandemic Mitigation Measures in Missouri, 2020-21.

many of which are based on widely prevalent and potentially harmful misinformation. Fourth, certain politicians, podcasters, and cable news personalities have deemed it advantageous to impugn the reputations of dedicated public officials whose knowledge bases and expertise vastly outpace their own. The net result is that during a once-in-a lifetime crisis in which unity would have saved many lives, a massive chasm developed in the public's opinions regarding the value of public health measures. This lack of widespread buy-in to effective but unpopular strategies for disease control had lethal consequences in many cases. With due respect to Abraham Lincoln, his aphorism that you can please all of the people some of the time has not held true during the COVID-19 pandemic.

It is notable that despite the pivotal role the CDC has played in the U. S. pandemic response, the previously fastidiously apolitical organization's occasionally uneven and confusing messaging has muddied the waters periodically. Although the authors agree with Dr. Tim Lahey that "we should cut the CDC some slack for not being clairvoyant", the agency's evolving mask guidance sometimes has been hard to follow.[33] Another potentially concerning development is that the directors of CDC and FDA have each chosen to break with tradition by not following the guidance of their expert advisory committees (ACIP and VRBPAC respectively) regarding COVID-19 vaccine booster recommendations. These actions could have the unintended consequence of further eroding trust in federal health agencies.

Future Directions

The ultimate measure of the effectiveness of the United States' response to COVID-19 has been the population's survival during the pandemic. By this metric the country's performance has been deeply concerning. In 2020, life expectancy declined by 1.9 years compared to the prior year, the most substantial reduction since the throes of World War II.[34] A further drop in lifespan of 0.4 years was documented in 2021. In comparison to 21 peer countries, the U.S. fared the worst in this regard, despite many of our citizens having access to state-of-the-art medical care.[35] As summarized in Figure 3, Missouri has been a laggard in the implementation of effective pandemic mitigation strategies. The state's mortality rate ranks in the bottom 40% in the nation.

The end of COVID-19 is not yet in sight. Much of the public has long since ceased masking and physical distancing. However, the emergence of new variants and their eventual spread to Missouri remains a real threat. To help put the pandemic in the rear-view mirror, the medical profession should focus on overcoming the daunting obstacle of vaccine hesitancy, as widespread vaccination is our country's most promising exit strategy. Physicians and nurses, who are in the unique position of being highly trusted advocates, have a golden opportunity to counsel our patients to make the potentially life-saving choice to receive COVID-19 vaccines and to allow their children to be vaccinated.

Missourians should take note of two important lessons learned from the 1918 influenza pandemic which held true in 2020 and 2021:

1. During pandemics, sound public health measures should trump political considerations.
2. Saving lives should be prioritized above maximizing perceived personal freedoms.

Restoration of the authorities of federal, state and local public health departments to take necessary steps during the pandemic without political interference is an urgent priority. Judicial actions and lawsuits filed by government officials to overturn mask mandates place our state and our nation on an anti-science slippery slope, at our peril. Missourians should trust the public health system and its dedicated and underappreciated personnel who are battling not only the many challenges of the evolving pandemic but also the headwinds of rampant misinformation which has driven a lethal wedge into our society.

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Disclosure

None reported.

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Empowering SARS-CoV-2 Genomics Surveillance in Missouri with Data Analytics and Integration Portals

by Zhen Lyu, BS,[1] Pallav Singh, BTech,[2] Christopher Bottoms, PhD,[3] Matthew Sinn, BS, BA,[5] Joshua Featherston, BS,[5] Kate Cleavinger, PhD, MPH,[6] John Bos, MPH,[6] Melissa Markham, BS,[5] Nathan Koffarnus, MPH,[6] George Turabelidze, MD, PhD,[6] & Trupti Joshi, MBBS, PhD[1,2,3,4]

Introduction and Background

The coronavirus disease 2019 (COVID-19) caused by SARS-CoV-2 that emerged in late 2019, has spread rapidly across the world and was declared as global pandemic by the Word Health Organization (WHO) on March 11, 2020. Since then, it has ravaged many countries worldwide resulting in an exponential increase in infection rate and mortality.

Like other RNA viruses, SARS-CoV-2 continues to develop genomic changes affecting its transmission capacity, COVID-19 clinical severity, and viral response to therapeutics. The ongoing surge of progressively more infectious SARS-CoV-2 variants seen worldwide continues to have a significant impact on population health.[1] The Centers for Disease Control's SARS-CoV-2 genomic surveillance program provides state level estimates of variant proportions, but reporting is delayed nearly one month and does not provide the level of granularity needed for local estimates. For those reasons, public health response to emerging new virus variants could be delayed and less efficient.



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To overcome this limitation, and to allow for targeted sampling and sequencing of cases of particular clinical or epidemiological significance, our team developed a new Genomics Surveillance Architecture to better understand prevalence of existing variants and to quickly identify emergence of new SARS-CoV-2 variants in Missouri. This architecture allows us to streamline acquisition, processing, analysis and evaluation of sequencing data from SARS-CoV-2 positive samples in a timely manner and enables local or regional estimates of infection prevalence. We implemented a bioinformatics end-to-end data analysis pipeline for SARS-CoV-2 variants and a COVID-19 Genomics Surveillance Data Portal for tracking information at the University of Missouri (MU), in close collaboration with Missouri Department of Health and Senior Services (MDHSS) and Missouri State Public Health Laboratory (MSPHL).

Genomics Surveillance Data Analytics

The SARS-CoV-2 positive samples collected through the MDHSS COVID-19 surveillance are sequenced by MSPHL using Illumina sequencing technology and the raw sequence reads shared via Illumina's BaseSpace platform. The data analysis pipeline at MU runs on high-performance computing (HPC) Linux clusters and starts the analysis with automated data downloads and quality checks. It further completes assembly of

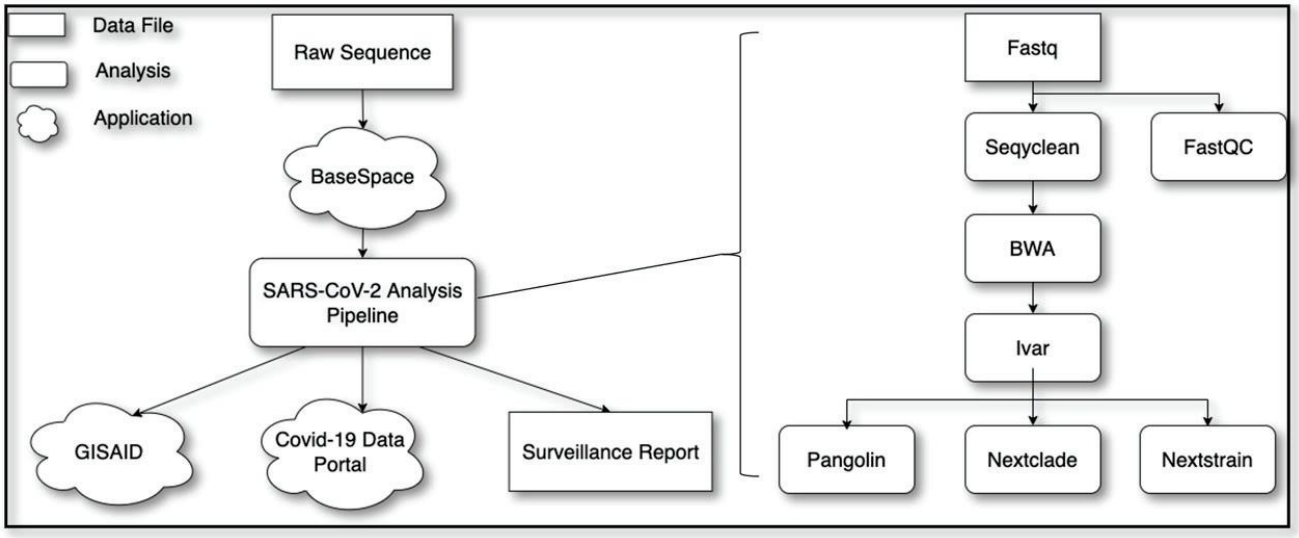


Figure 1. SARS-CoV-2 Genomics Surveillance Architecture and tools incorporated into the bioinformatics data analysis pipeline.

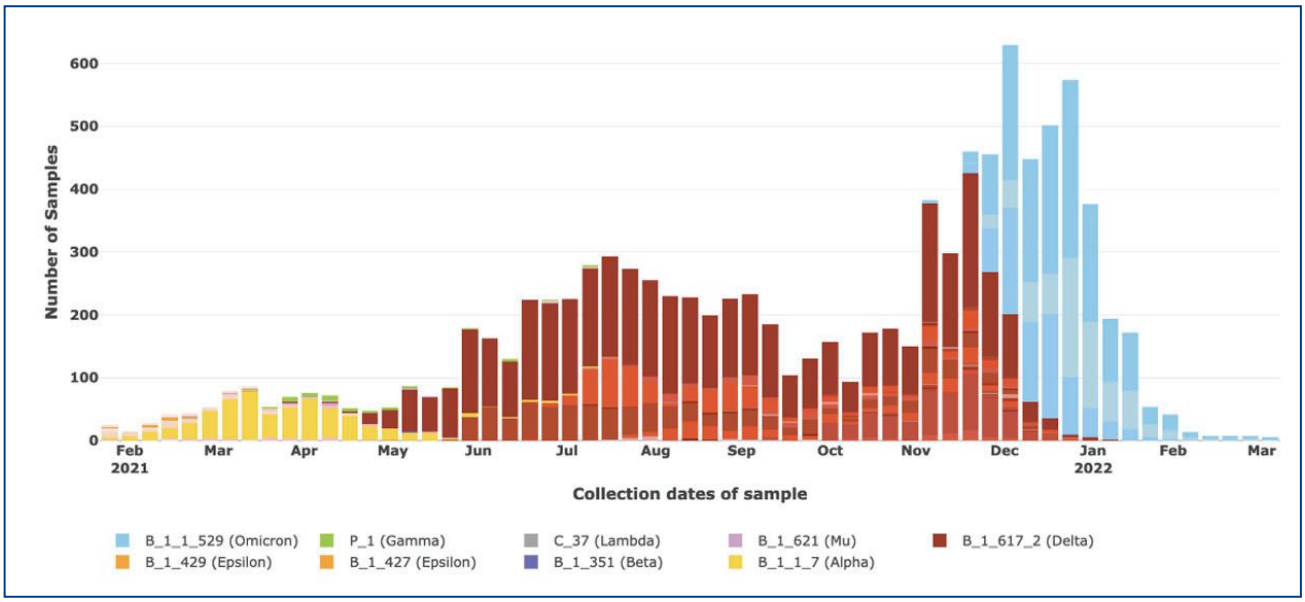


Figure 2. Weekly trends of variants of concern (VOCs) by sample collection date, February 2021- April 2022.

the consensus sequence, variant identification for every sample in the batch, generates a summary table and surveillance report after integrating all results, incorporates the data into the COVID-19 Genomics Surveillance Data Portal, and later submits sequences to GISAID database (Figure 1). We use several widely utilized open-source tools for the analysis, such as FastQC for the raw sequence reads quality checks, Seqclean for the reads filtering, BWA for reads alignments, Pangolin for lineage classification, Nextclade for mutation calling and clade classification, and Nextstrain for the phylogenetic tree and cluster analysis. All the analyzed SARS-CoV-2 sample sequences with greater than 90% genome coverage from all batches processed in a week are then submitted to the GISAID database.

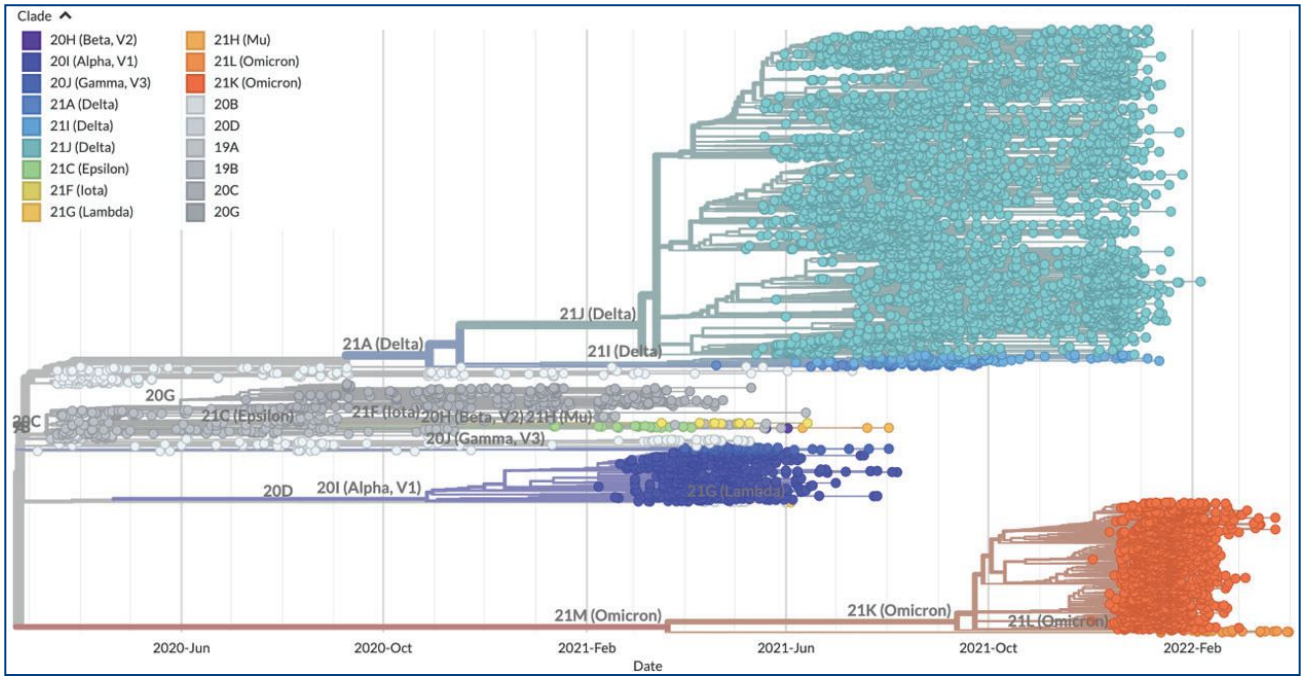


Figure 3. Phylogenetic tree of the SARS-CoV-2 variants (n=6,818), March 2020- March 2022.

Genomics Surveillance Data Portal

Variants of concern (VOCs) and variants of interest (VOIs), as defined by CDC, are actively monitored in our pipeline to estimate local prevalence in Missouri. Since the establishment of the Genomic Surveillance Architecture in January 2021, the Alpha variant (B.1.1.7) emerged as a dominant SARS-CoV-2 variant in Missouri through April 2021, followed by the Delta variant dominance (B.1.617.2) until December 2021, with its first detection in Missouri as early as March 2021. The Delta variant wave was followed by the emergence of the Omicron variant (B.1.1.529) with an estimated 10-fold increase in infectivity compared to the ancestral strain, and 2.8 times higher infectiousness than the Delta variant.[2] Omicron quickly became completely dominant in Missouri since its emergence in December 2021 and continues to the present date (Figure 2).

Evolutionary relationship between variants identified from 6,818 SARS-CoV-2 positive samples sequenced by MSPHL between March 2020 and March 2022 is demonstrated by the phylogenetic tree (Figure 3). The 20I (Alpha, V1), 21A (Delta), and 21M (Omicron) are three significant clusters which emerged during the sequencing period, with the Omicron variants being the most divergent with a high number of mutations compared to Alpha and Delta variants.

Summary

The SARS-CoV-2 Genomics Surveillance Architecture and COVID-19 Genomics Surveillance Data Portal is an exemplar of the interdisciplinary partnerships needed to establish a successful genomics surveillance program capable of providing timely identification of virus variants essential to informed decision-making and proper public health response.

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Protecting the Vulnerable

by Alexander R. Hover, MD

While traveling to Poland in 2019, I made a day trip to Germany to visit the Nuremberg Courtroom where the Allies conducted the European war crimes trials from 1946-1949. The Military Tribunal established legal definitions for war crimes and processes for their prosecution including medical war crimes which was a new concept. Having served as a chair of an Institutional Review Board (IRB), my interest was that the military judges for the medical war crimes trial established principles of international law for ethical principles of human subject research.

Creating a Charter for War Crime Tribunals

In the Moscow Declaration of November 1943, the United States, Great Britain, and Russia announced the intention to prosecute war crimes trials for atrocities, massacres, and executions in the Nazi-occupied areas.[2] The October 1943 London Agreement had established the United Nations War Crimes Commission to be tasked with creating the charter for the subsequent war crime tribunals.[2] In addition to the rules for prosecution and due process, there were established three broad categories of war crimes:

1. Crime against peace which involves planning, preparing for, initiating, or waging a war of aggression or war in violation of international treaties;

2. Conventional war crimes which involve violations of conventional criminal laws such as murder of non-combatants, deportation of the civilian population in occupied territory, murder or ill treatment of prisoners of war, killing of hostages, plunder of public or private property, wanton destruction of cities towns and villages, devastation not justified by military necessity; and

3. Crimes against humanity which include murder, extermination, enslavement, deportation, and other inhumane acts committed against any civilian populations either before or during the war or persecutions on political, racial, or religious grounds.[2]

Prior to World War II, medical experimentation had not previously been a designated war crime. The recognition that medical research might be war crimes began with the Allied Combined Intelligence Operations Service (CIOS) review of German military intelligence including medical experiments to evaluate for "strategically useful knowledge."[5] The military scientific reviewers noted the horrific nature of torture and death as a part of the Nazi medical experimentation on concentration camp prisoners and brought that to attention of the Allied command.

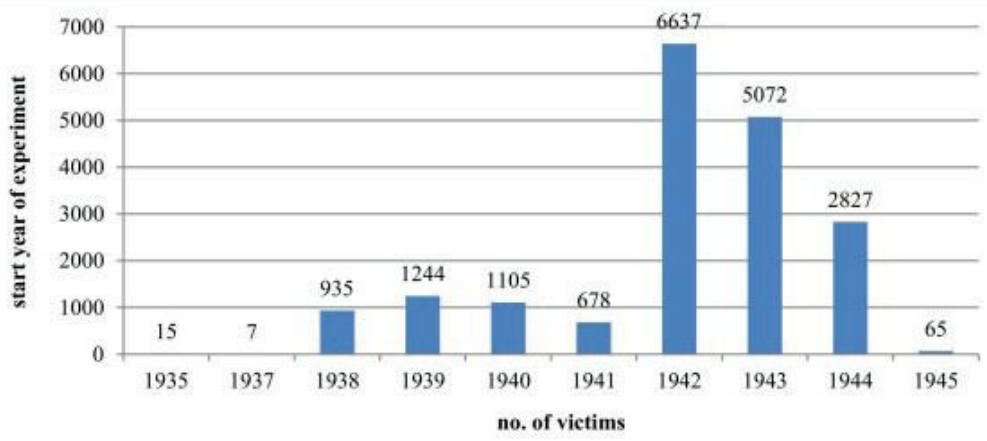
Nuremberg War Crimes Trials

The initial war crimes trials were a combined International Military Tribunal composed of Soviet Russia, Great Britain, France, and America that tried the high ranking German government and military leaders. The war crime trials were held in Nuremberg at the Palace of Justice courtroom 600 as a counterpoint since Nuremberg was the birthplace and focal point for Nazi regime. After the initial trials, the Allied command issued a general order for a second round of trials by each of the Allies within their respective occupied areas.[1,2] The "Doctors Trial" (Artzeprozess) was conducted during the second phase of trials from December 9,1946 to August 19,1947.[5] The Doctors Trial indicted 20 physicians and three administrators for medical war crimes. At the close of trial, four physicians and three administrators were executed by hanging, seven physicians were exonerated, and the remaining physicians imprisoned for periods of 10 years to life.



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Figure 1. The victims of unethical human experiments and coerced research under National Socialism[11]



A sad irony is that cruelty to vulnerable populations started with the Nazi's Nuremberg Laws of 1939 that forbade inter racial marriage, allowed compulsory sterilization, and sanctioned euthanasia to "purify the race." The terrible fact is that the Nazi racial purity laws bore some resemblance to eugenics laws already existing in multiple U.S. state laws, a fact that the Nazi physicians used as a defense.

Defense and Authorship of the Nuremberg Code

The defense for the Nazi physicians argued that no international law extant governed human subject research nor were there established ethical principles for human experimentation in medical literature. Defense lawyers pointed out that prior to the war American doctors had experimented on incarcerated individuals including experiments with risk for death. They were in fact arguing against *ex post facto* application of new ethical principles and new law to their "wartime requirements" (Figure 1).

The behavior of the German physicians was condemned by Dr. Werner Liebbrand, a German psychiatrist, as "biologic thinking according to which a patient is a series of biologic events, and nothing more than a mere object."[7] That view apparently precluded a human relationship with patients. The argument that the physicians were ordered to do the experiments by higher command was rejected by the Tribunal, finding it particularly repugnant to the Hippocratic Oath. Physician consultants for the Allied prosecution team were primarily responsible for the scientific rebuttal and ethical principles used to guide the convictions.

The primary authorship for the Nuremberg Code is unclear but undoubtedly was the compilation of multiple contributors and was an evolving set of principles beginning even prior to the start of the trials.[3,5,7] A primary contributor was Dr. Andrew C. Ivy, appointed by American Medical Association Board of Trustees as their recommendation as consultant to the Nuremberg Doctors Trial. Dr. Ivy was Professor of physiology and pharmacology at Northwestern University, and from 1942 through 1945 he was the director of the Naval Medical Research Institute. Dr. Ivy provided not only technical scientific advice and testimony for the prosecution, but also provided the basis of the ethical standards to the prosecution and judges.

In September 1946, Dr. Ivy provided a 22-page report to the AMA Judicial Committee and the prosecution team that included his draft principles:

1. Consent of the subject must be obtained. All subjects must have been in the absence of coercion. Before volunteering, the subjects have been informed of any hazards if any.

2. The experiment to be performed must be designed based on prior animal experimentation and a knowledge of the natural history of the disease under study such that the anticipated results justify the performance of experiment. That is, the experiment must be such as to provide results for the good of society unprocurable by other methods of study and must not be random and unnecessary in nature.



The Doctors Trial, Nuremberg Courtroom, circa 1946.

3. The experiment should be conducted:

a) only by scientifically qualified persons;

b) so as to avoid unnecessary physical and mental suffering or injury; and

c) so that on the basis of previous adequate animal experimentation, there is no a priori reason to believe that death or disabling injury will occur, except in such experiments as those on Yellow Fever where the experimenters serve as subjects along with non-scientific personnel.[1,5]

The Judicial committee recommended adoption of the rules but with less detail and less specificity.[4,5] Such were incorporated into AMA Policy for Ethical Human Experimentation on December 28, 1946.[4] The selection of Dr. Ivy and hurried adoption of enhanced ethical human research principles was partly due to a concern that the horror about to unfold in the Doctors Trial might engender U.S. law against the use of human subjects or even animals in medical research.[1] In addition to testifying for the prosecution in 1947, apparently whole sections of Dr. Ivy's 22-page report to the prosecution on the ethical standards for human subject research were read into the transcript. Detailed histories of authorship suggest that there was input from other investigators as well the prosecution team.[3,5,7] A physiologist John Thompson, investigating the studies for CIOS first used the term medical war crimes and spoke of the ethics of human research. Dr. Leo Alexander, a neurologist, also reviewed the German experiments, visited concentration camps, spoke to survivors, and served as a chief medical expert for the prosecution. Dr. Alexander proposed additional specific caveats safeguarding human research to the prosecution team extending those of Dr. Ivy.[3,5] Regardless of the authorship question, the principles were incorporated into the judicial final ruling by Presiding Judge Walter Beals in August 1947 and became known as the Nuremberg Code.[1,5] The principles of the Nuremberg Code were incorporated



Nuremberg Courtroom, circa 2019.

in the 1964 Declaration of Helsinki adopted by the World Medical Association for protection of human subject medical experimentation. The Code's principles delineated additional responsibilities beyond the physician-centric Hippocratic oath that governs relationship and treatment of patients. The Nuremberg code required safeguarding human autonomy and separated patient from research subject recognizing special duties of the research physician.

Still Violating the Code 40 Years Later

Despite the Nuremberg Code being publicized, accepted, and creating the AMA ethical principles guiding human research, these principles were not immediately adopted by American researchers nor physicians in teaching institutions. Among the evidence for this is the damning continuation of the Tuskegee syphilis research until 1972. A 1966 paper by Dr. Henry Beecher in the *New England Journal of Medicine* acknowledged shocking examples of abrogation of patient rights within the hallowed halls of major universities that should have known better.[6] In fact, of 50 examples including hundreds of patients in high risk procedures or studies withholding known effective treatment, informed consent was mentioned in only two of the 50 reports.[6] Even Dr. Ivy and Dr. Alexander, as major contributors to the Nuremberg Code, seemed not to accept that it applied to their research.[7] Dr. Ivy "made the mistake of equating research and treatment; for him both were meant to benefit the patient."[7] Dr. Alexander reportedly sent the NEJM editor a letter in 1973 that questioned the application of the Nuremberg principles to his own research.[7] If the two major contributors to the Nuremberg Code did not embrace the principles as applying to their research, it seems understandable that the hubris of physician investigators might be a more general than individual problem. Perhaps it is the inherent weakness of us all that we tend to think ethical lapses happened with Nazi war criminals, but certainly would not happen at our institution because we see ourselves as ethical "Hippocratic physicians."

U.S. National Research Act

It seems that the altruistic nature of medical care was woefully insufficient protection for patients even after such horrific revelations as the Nuremberg trials, the Tuskegee syphilis study, Dr. Beecher's exposé, and other such reports. These revelations engendered such a distrust of altruism in medicine, that federal legislation was proposed. Human research subject protection became codified as a civil right with federal

Nuremberg Code and Ethical Research

These principles in the Nuremberg Code still guide ethical research today.[10]

1. The voluntary consent of the human subject is absolutely essential. This means that the person involved should have legal capacity to give consent; should be so situated as to be able to exercise free power of choice, without the intervention of any element of force, fraud, deceit, duress, overreaching, or other ulterior form of constraint or coercion; and should have sufficient knowledge and comprehension of the elements of the subject matter involved as to enable him to make an understanding and enlightened decision. This latter element requires that before the acceptance of an affirmative decision by the experimental subject there should be made known to him the nature, duration, and purpose of the experiment; the method and means by which it is to be conducted; all inconveniences and hazards reasonably to be expected; and the effects upon his health or person which may possibly come from his participation in the experiment. The duty and responsibility for ascertaining the quality of the consent rests upon each individual who initiates, directs, or engages in the experiment. It is a personal duty and responsibility which may not be delegated to another with impunity

2. The experiment should be such as to yield fruitful results for the good of society, unprocurable by other methods or means of study, and not random and unnecessary in nature.

3. The experiment should be so designed and based on the results of animal experimentation and a knowledge of the natural history of the disease or other problem under study that the anticipated results will justify the performance of the experiment.

4. The experiment should be so conducted as to avoid all unnecessary physical and mental suffering and injury.

5. No experiment should be conducted where there is an a priori reason to believe that death or disabling injury will occur; except, perhaps, in those experiments where the experimental physicians also serve as subjects.

6. The degree of risk to be taken should never exceed that determined by the humanitarian importance of the problem to be solved by the experiment.

7. Proper preparations should be made, and adequate facilities provided to protect the experimental subject against even remote possibilities of injury, disability, or death.

8. The experiment should be conducted only by scientifically qualified persons. The highest degree of skill and care should be required through all stages of the experiment of those who conduct or engage in the experiment.

9. During the experiment, the human subject should be at liberty to bring the experiment to an end if he has reached the physical or mental state where continuation of the experiment seems to him to be impossible.

10. During the experiment, the scientist in charge must be prepared to terminate the experiment at any stage, if he has probable cause to believe, in the exercise of the good faith, superior skill and careful judgment required of him that a continuation of the experiment is likely to result in injury, disability, or death to the experimental subject.

regulatory protection in the National Research Act of 1974. That act produced the Belmont commission report that informed federal regulation regarding human subject experimentation. Part 46 of Title 45, Code of Federal Regulations, codified protection of human subjects requiring a structure and process for institutional review boards to approve all human subject research. Moreover, the enforcement is housed not in DHSS, NIH, or other institutions of medicine, but in the Office of Civil Rights (OCR).

Continued Barbaric Acts

The barbaric and murderous behavior of the Russian military during and after WWII through today is reminder that war crimes continue despite treaties and conventions. Post WWII, Russia repeatedly demonstrated complete disregard for crimes against peace with "wars of national liberation" justified as restoring or installing totalitarian communism. Hungary in 1956 revolted against totalitarian communism, announced a withdrawal from the Warsaw Pact and was then promptly "liberated" from multiparty self-rule by Russian tanks and troops.[8] Likewise, during the 1968 "Prague Spring," Warsaw Pact military led by the Soviets "liberated" Czechoslovakia from freely-elected representative government.[9] More recently, Russia has used false justification to aggressively invade Georgia, Ukrainian regions of Donbas and Crimea. Now Russia has initiated unjustified war against Ukraine as a nation. The horrific, murders of civilians, forced deportation and deliberate destruction of cities by Russia are no different than their WWII treatment of occupied countries. More likely than not, the Russian atrocities in Ukraine will be found to collectively amount to another Katyn Forest massacre.

The U.S. has adhered to the Geneva Conventions, but even we have had isolated but horrible failures. The massacre at My Lai, Viet Nam in 1968; Abu Ghraib prison abuses during the Iraq war shocked America. Importantly, the systemic nature of prisoner abuse and due process violations during the war on terrorism was addressed by the Supreme Court. The Supreme Court ruled against "enhanced interrogation" and trials by secret military commissions that violated the Uniform Code of Military Justice (UCMJ) and Geneva Convention. The Supreme court affirmed that the UCMJ and Geneva Convention did apply to prisoners in the war on terrorism in *Hamdan v. Rumsfeld*, (548 U.S. 557 2006).

Conclusion

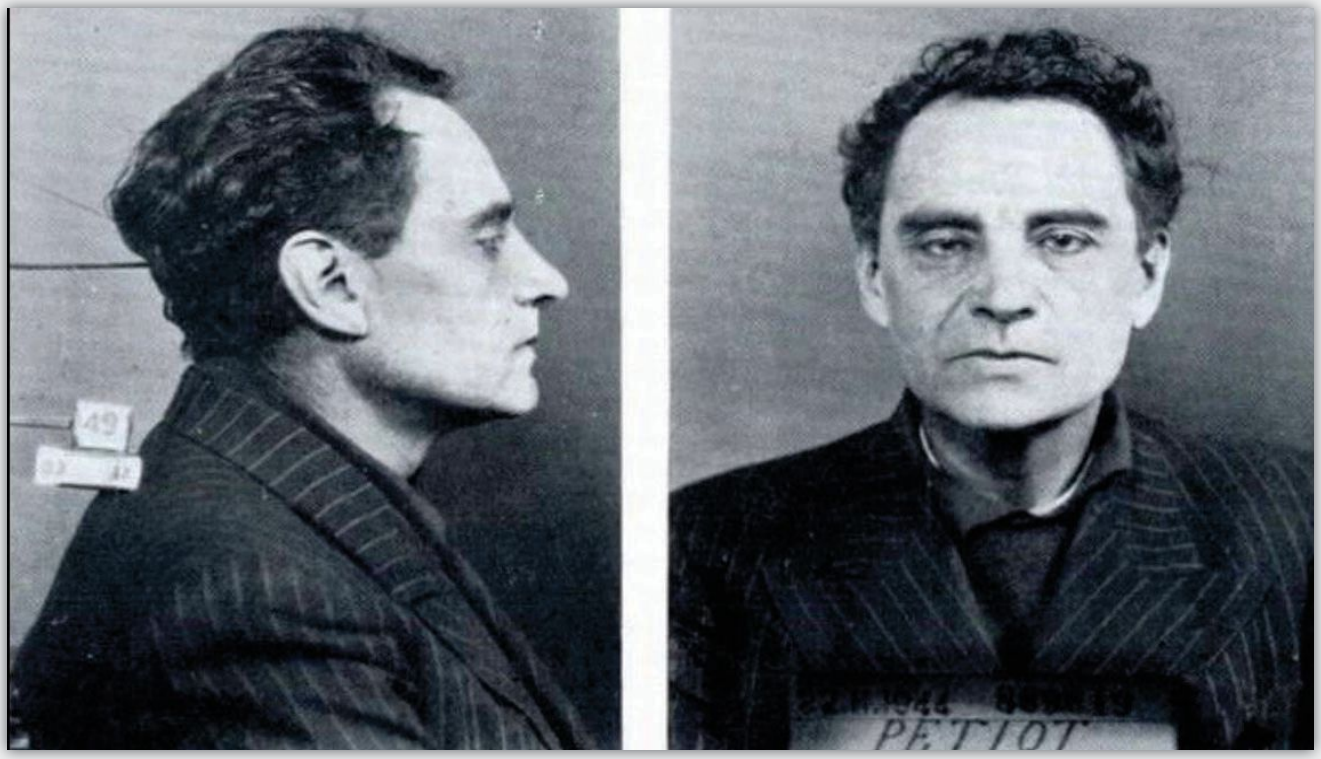
It is sad that it took four decades to recognize unethical human subject research in U.S. medicine and required federal legislation to safeguard the civil rights of experimental subjects. IRB structure and strict processes are now codified in the Common Rule to ensure ethical medical research. Having chaired an IRB, I feel that medical experimentation on human subjects in America is protected. Most reports of human subject experimentation violations reported by the OCR are individual researcher violations although a few university level programs have been investigated.

The terror of human evil to exploit people as research subjects, murder vulnerable populations, or deliberately advance war crimes against humanity will continue as long as some men have power over others. I take heart that America has safeguards in our constitution with truly elected representative government, separation of powers, independent judiciary, freedom of speech, and freedom of the press. I pray to God that we safeguard these rights for all people here at home and abroad.

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MM



Source: Wikipedia

"Doctor" Marcel Petiot: Serial Murderer

by Arthur Gale, MD

Physicians since time immemorial have tried to follow the precepts of the Hippocratic Oath. The first precept of the Hippocratic Oath demands that physicians work for the benefit of their patients and "do no harm or injustice to them." That is why it is shocking that of all occupations and professions physicians have been among the greatest serial murderers in history. (See sidebar.)

The existence of a split personality or the duality of human nature was illustrated in the well-known 1886 novella "The Strange Case of Dr. Jekyll and Mr. Hyde" by Robert Louis Stevenson. Stevenson had long been intrigued by the idea of how human personalities can reflect the interplay of both good and evil.

An extreme example of a physician serial murderer was Marcel Petiot born in a small town in France on January 17 1897. As a teenager he robbed a post box and was charged with damage to public property and theft. He was thought to have a mental illness. He was expelled from school many times and engaged in other antisocial behaviors.

Petiot volunteered for the French Army in World War 1. He was wounded and gassed and exhibited symptoms of a mental breakdown. He was sent to various rest homes where he was arrested and accused of stealing a number of items as well as morphine. He was returned to the front in 1918. After allegedly injuring his own foot with a grenade he was ultimately discharged with a disability pension.

Petiot Gets Medical Degree

After the war Petiot entered an accelerated education program intended for war veterans. He completed medical school in eight months. He served an internship in a mental hospital. He received his medical degree in 192l. He then moved to Villeneuve-sur-Yonne where he received payment from both patients and from government medical assistance funds. At this point, he developed a reputation for questionable medical practices which included supplying narcotics, performing illegal abortions and petty theft.

Petiot's first murder victim might have been an elderly patient's daughter with whom he had an affair



1946: The Seine Assize Court, Paris, during the trial of French mass murderer Dr. Marcel Petiot (between policemen, left). Petiot was convicted of 24 murders and guillotined in Paris in 1946. *Source: Keystone/Getty Images*

in 1926. She disappeared suddenly. Police investigated but eventually dismissed her case as a runaway. That same year Petiot ran for mayor. He won and while in office embezzled town funds. The following year he married the 23-year-old daughter of a wealthy land owner and butcher. They had a son. Because of many complaints of his thefts and shady financial dealings, he was eventually suspended as mayor in 1931 and resigned. Petiot still had many supporters and the village council also resigned in sympathy with him. He was a glib talker with an engaging personality. In 1932 he was accused of stealing electricity. By that time, he had already moved to Paris. In Paris Petiot attracted patients by using fake credentials and built an impressive reputation for his private practice. Here also were rumors of illegal abortions and excessive prescriptions of addictive medications. In 1936, he was given the authority to write death certificates. He persisted in tax evasion.

World War 2 Activities and Mass Murder

After the defeat of France in 1940 during World War 2 Petiot wrote false disability statements for French citizens who were drafted for forced labor in Germany. He was convicted for overprescribing narcotics. Two addicts who would have testified against him disappeared. He was fined 2400 francs.

Petiot's most lucrative activity during the German occupation was providing false escape routes out of France. He pretended to have a means of getting people wanted by the Germans or Vichy government to safety outside France for a price of 25,000 Francs. He had three accomplices who directed victims to him. The victims included Jews, Resistance fighters and others. Once victims were under his control, he told them that they required an inoculation for entry into the receiving country. He then injected them with cyanide. He took all their valuables and disposed of their bodies.

At first Petiot dumped the bodies in the Seine River but he later destroyed the bodies by submerging them in quicklime and or incinerating them. In March of 1944, neighbors complained about a foul stench in the area and large amounts of smoke billowing from the chimney of Petiot's house. Fearing a chimney fire, police summoned firemen who found a roaring fire in a coal stove in the basement. In the fire and in the basement were human remains. In addition, human remains were found in a quicklime pit in the backyard and in a canvas bag. Scattered throughout the property were suitcases, clothing and assorted property of his victims.

Although the case was widely known to the police and the media, Petiot was not prosecuted. After the liberation of Paris Petiot adopted various aliases. He became a captain in charge of counterespionage and prisoner interrogations. Finally, a newspaper published allegations about Petiot and his crimes. Under his new assumed name of Valeri, he was drafted to join the hunt to find himself. Petiot was recognized at a Paris Metro station. Among his possessions were a pistol, 31,700 francs and 50 sets of identity documents.

Not Getting Away with Murder

In 1946 'Doctor' Petiot went on trial. Prosecutors charged him with at least 27 murders for profit. Twelve civil lawyers were hired by relatives of Petiot's victims. Petiot taunted the prosecuting lawyers and claimed that various victims had been collaborators with the Nazis or double agents. He admitted to killing 19 of the 27 victims in his house and claimed they were Germans and collaborators. They were part of a total of 63 "enemies killed." The judges and juries were unimpressed. Petiot was found guilty and in May of 1946 Petiot was beheaded by guillotine. **MM**

When Physicians Go Bad: Doctors Who Killed Their Patients

by John C. Hagan, III, MD

Murder is always bad, but when done by a physician, sworn to help the patients and save their lives, murdering them is shocking and outrageously egregious. Below is a short list of Killer Doctors.

Dr. William Palmer

He was a 19th Century doctor in England. He was convicted of murder and is known as "The Prince of Poisoners". Charles Dickens called Palmer "the greatest villain that ever stood." Palmer murdered his landlord to pay for gambling debts. He is suspected of killing by poison his brother, mother-in-law and four of his own children to collect their life insurance of which he was trustee. 30,000 people are said to have witnessed Palmer's hanging on June 14, 1856.



Herman Mudget, alias Dr. H.H. Holmes

One of American's first serial killers. As a medical student at U of Michigan he stole corpses and used them to make fraudulent insurance claims. In 1885, he moved to Chicago, got a job at a pharmacy, took up the alias Dr. Henry H. Holmes and took over the pharmacy by murdering the owner and his wife. He built a house especially designed for murder. It had secret passages, soundproof rooms, locked doors, gas jets to suffocate victims and a kiln to incinerate their bodies. He seduced young women with promised of marriage, stole their savings and killed them in his horror house. He was caught and sentenced to death in 1984, confessing to 27 murders but suspected in as many as 200.



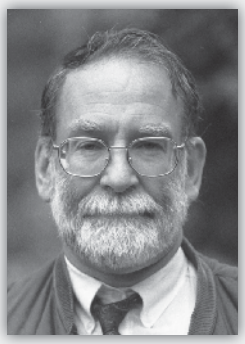
Joseph Michael Swango, MD

Dr. Swango was convicted of poisoning as many as 60 patients between 1981 and 1997. He is incarcerated in a supermax prison, serving three life terms with possibility of parole. Swango was valedictorian of his high school class, an honors student in college and got a MD from Southern Illinois University. Staff noted that patients seemed to die suddenly and unexpectedly on his shift. He was sentenced to 5 years in prison for non-fatally poisoning several co-workers. After his release, he was able to secure a job with a NY VA hospital where his patient also died. Rather than be arrested he fled to Zimbabwe, worked in healthcare and killed patients. During a trip to the United States, he was arrested by the FBI. In order to avoid a death sentence, he pleaded guilty and is serving life sentence without parole. Swango's journals, read at his trial, described the intense joy he took in killing people. Me may have killed as many as 60 patients.



Harold Shipman, MD

One of Britain's most infamous serial killers. Between 1975 and 1998, Shipman a General Practitioner murdered as least 215 patients, most older women. He used lethal injections of pain-fillers. His motive was to steal their property, money, and other valuable estate items which he had them sign over to him before killing them. Shipman was sentenced to life in prison; in 2004 he hanged himself in his prison cell.



Dr. Josef Mengele

Also known as "The Angel of Death", he is likely the most evil and corrupt physician of all time. He was an avid member of the Nazi Party and a fanatic officer in the German SS. During World War II, under the guise of 'medical experiments' he killed and tortured hundreds of mostly Jewish prisoners at Auschwitz concentration camp. Mengele's crimes are almost unspeakable: he starved people to see how long before they died of starvation, put people in icy lakes and time them before they could not move and drowned. He injected chemicals into eyes to try and change the color; he performed vivisections on conscious people, he killed with knife and gun for the evil pleasure he derived. In the opinion of many scholars, historians and physicians Josef Mengele was the most evil, corrupt physician of any era. **MM**





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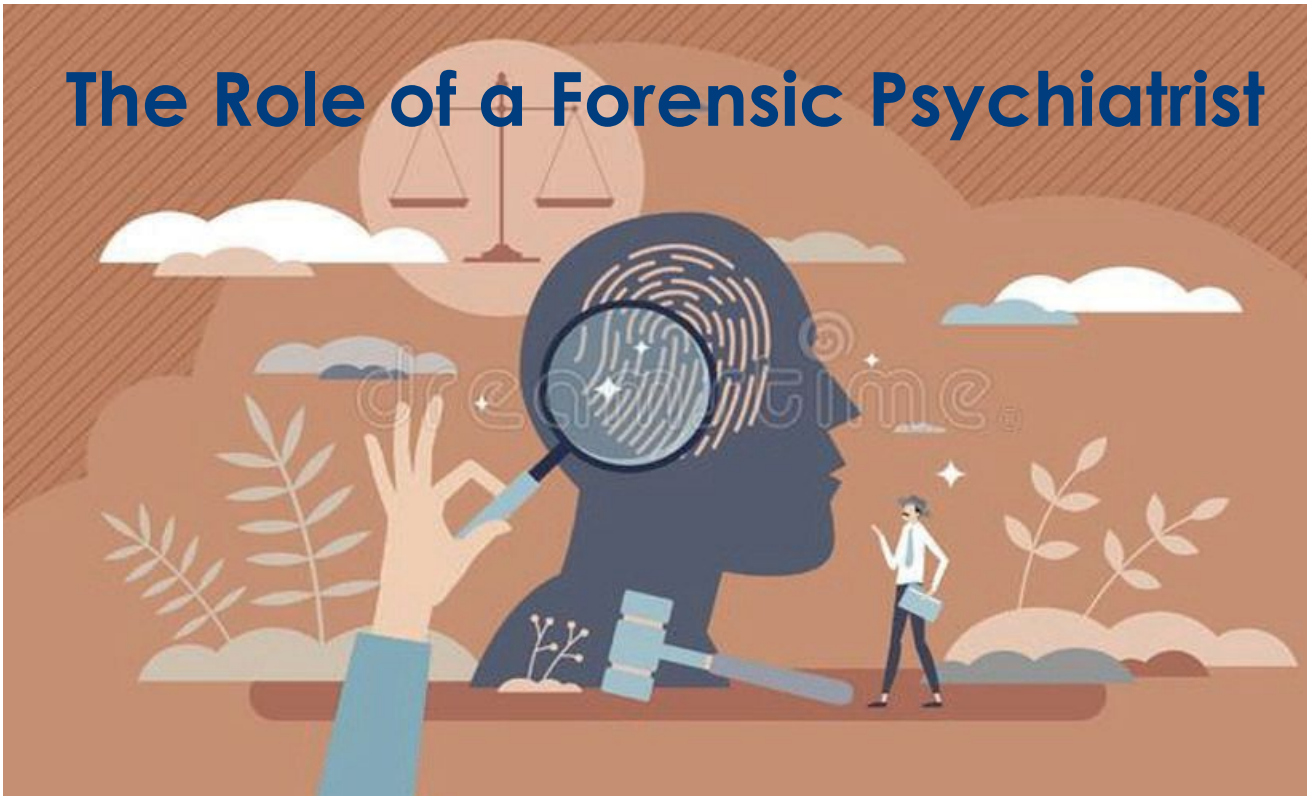
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- Orthopaedic Surgery - Adult Reconstructive Surgery
- Orthopaedic Surgery - Hand Surgery
- Orthopaedic Surgery - Trauma
- Otolaryngology
- Pain Medicine
- Palliative Care
- Pediatrics
- Pediatrics - Emergency Medicine
- Pediatrics - Hospitalist
- Pediatrics - Ophthalmology
- Pediatrics - Surgery
- Pediatrics - Urgent Care
- Physical Medicine and Rehab
- Plastic Surgery
- Psychiatry
- Psychiatry - Child
- Pulmonary Disease
- Pulmonary Disease - Critical Care
- Radiation Oncology
- Radiology
- Rheumatology
- Sleep Medicine
- Telemedicine
- Trauma Surgery
- Urgent Care
- Urology
- Vascular Surgery

The Role of a Forensic Psychiatrist



by Christine Martone, MD

The proliferation of headline grabbing cases, accompanied by extensive media coverage, has generated interest in the role of psychiatry in the courtroom. Additionally, with the recognition of damage to emotional and mental wellbeing, the psychiatrist has become a more frequent presence in civil court.

"My name is Dr. Martone. I am here to complete a psychiatric evaluation of you which has been ordered by the court. The report of this evaluation will go to the judge. Therefore, if there are things you do not want the court to know, you should not reveal them to me." I began interviews with these or similar words at least two days a week for 40 years.

What is Forensic Psychiatry?

I am a retired forensic psychiatrist. Forensic psychiatry is the subspecialty that encompasses the interface of psychiatry and the law. The requirements for practice include a yearlong fellowship following the successful completion of a psychiatric residency. Board certification is necessary given the scrutiny exercised by the court and legal community. A clinical practice must also be maintained.

The implications of the words quoted above illustrate the fundamental difference between the role of a psychiatrist/physician and the forensic psychiatrist. The doctor-patient relationship inherent in the usual treatment setting does not exist in the forensic setting. The individual being evaluated is not referenced as the patient. He/she is identified as the defendant, the claimant, or the evaluee. Payment for services is provided by the requesting party. These requests do

not originate with the evaluee, since receiving payment from the evaluee creates the potential for bias. Since the contracting party is not the individual being evaluated but a third party, all reports belong to someone other than the physician or the evaluee. Specifically, they belong to the requesting party, whether that be the court or an officer of the court such as an attorney, or to the requesting agency such as an insurance company or an employer. While the forensic psychiatrist serves as expert witness to the court, often, particularly in civil cases, the forensic report is sufficient for the needs of the requesting party; and appearance in court does not occur. While the requirements and parameters have been outlined, the actual practice of forensic psychiatry encompasses many issues and arenas.

Much of my career as a forensic psychiatrist was spent fulfilling the requests of the criminal division of Allegheny County Court of Common Pleas. The image created by the media and entertainment industry is far from the reality. The request for an evaluation for the insanity defense is not a frequent one. The insanity defense is raised in less than 1% of felony cases. Of these, fewer than 26% are successful, and most of these occur during a bench trial (a trial whose outcome is decided by a judge rather than by a jury).[1] Despite the infrequency, I, in my role, have evaluated individuals involved in such headline grabbing cases as a mass murderer and extreme school violence. Given that the insanity defense captures the interest of the American public and raises questions for the psychiatric field at large, a brief discussion of the two most common insanity defenses used in the United States follows.

The Insanity Defense

First, it must be understood that, while the forensic psychiatrist reports on her findings regarding very weighty matters in criminal court, she does not decide; she opines. It is for the judge and the jury to decide. These are known as the 'fact finders'. It must also be understood that a person is presumed to be 'whole' unless the court states otherwise. In other words, he/she is presumed to be competent and sane. This means that the burden of proof for a not guilty by reason of insanity defense rests with the defense. Therefore, most, but certainly not all, requests for insanity evaluations originate with the defense.

When responding to such a request, the evaluator must use the standards established by the court. The traditional definition used in most states is the M'Naghten definition which derives from the famous case of Daniel M'Naghten in the Victorian England of 1843. Briefly, it states: *if an individual, "because of disease of mind or defect of reason, did not know the nature and quality of his act; or, if he did know it, he did not know the wrongfulness of it," he is not guilty by reason of insanity.*[2] The exact wording varies from state to state but the elements of disease or defect, nature and quality, and wrongfulness are present in all. There are fine points such as legal wrongfulness and moral wrongfulness which vary from state to state. It should be stressed that the criminal codes are referring to legal insanity and not psychiatric insanity. Additional parameters of the definition and examples of its merits are beyond the scope of this discussion and should be left for a more detailed review.

The second most common definition of legal insanity is the American Law Institute Standard (ALI) which states: *"If an individual, as a result of mental disease or defect, lacks the substantial capacity either to appreciate the wrongfulness of his conduct or the substantial capacity to conform his conduct to the requirements of the law," he is not guilty by reason of insanity.*[3] It can readily be seen that this is an easier standard to meet due to the conduct clause and the words "appreciate" and "substantial". Before 1984, roughly half of the states and Federal Court used the ALI defense and the other half M'Naghten. Since 1984, and the successful insanity defense of John Hinkley, who shot President Reagan, only 18 states still use the ALI standard and the Federal Court has abandoned it for a rule that more closely resembles the M'Naghten definition.[4]

There are two other legal insanity definitions (Irresistible Impulse and the Durham Standard), but they are rarely used.[5] Additionally, a guilty but mentally ill plea is available in several states. Likewise, a discussion of this defense is beyond the scope of this discourse.

Competency To Stand Trial

While these definitions and their aftermath are of interest, the most common question put to the forensic psychiatrist by the criminal court is the question of competency to stand trial. The Dusky standard is used to evaluate an individual for competency. It derives from a 1960 case which holds that the defendant being evaluated must have the capacity to understand the nature of the proceedings against him and to assist in his own defense to be considered competent to stand trial.[6]

Clearly there are many factors that have to be considered to reach an opinion regarding this capacity. The defendant must demonstrate the capacity to appreciate the seriousness of the charges being brought against him, to understand the possible outcomes/penalties, to define

the role of the various courtroom personal, to assess legal strategies, to cooperate with his attorney in presenting his defense, and to conduct himself appropriately in a court of law. If the court finds an individual incompetent to stand trial, the court requires that, if possible, competency be restored. This usually results in a criminal commitment to a forensic unit for further assessment and treatment.

Since the individual before the court is assumed to be whole/competent, the burden of the proof rests with the defense. The court, in its effort to preserve the integrity of the trial and to avoid grounds for appeal, requests competency evaluations as often, if not more often, than the defense. In our court and in most major counties, a court clinic is maintained for these evaluations. It was this court clinic (the Behavior Assessment Unit of the Court of Common Pleas of Allegheny County, Criminal Division) where I served on staff and as medical director for 40 years.

Additional questions regarding criminal competence include competence to waive the Miranda Warnings, to provide testimony in court, and to be executed. The parameters of these evaluations are left to a more detailed discussion.

Aid in Sentencing Evaluation

The second most common request made by the criminal court is a request for "an aid in sentencing" evaluation. This usually is a request to provide requirements or safeguards necessary for success in the community should the defendant be sentenced to probation rather than incarceration. While these evaluations can involve risk assessments, the actual decision to incarcerate is the responsibility of the court.

Involuntary Hospitalization

In actual practice, appropriateness for involuntary commitment is the most common assessment performed by a psychiatrist that entails legal consequences. Most often this is completed by a treating or ER psychiatrist and does not require forensic training or experience. If testimony becomes necessary, it is usually before a hearing officer assigned to the hospital rather than a formal proceeding in court. The criteria varies from state to state; but the assessment for dangerous behavior to self (including inability to care for oneself) or others is the key issue in all states. The danger can arise from a decision to do harm or poor judgment which would result in harm. No longer is psychosis enough. Threat is the issue under consideration, and the least restrictive form of treatment is the standard. [7]

Civil Issues Evaluations

The criminal justice system is not the only arena of law where forensic psychiatric consultation is requested. Very often, civil competence is evaluated. The capacity to make medical decisions such as treatment or placement is the most frequent question encountered by almost all specialties. The parameters to be considered are the ability to receive information, the ability to manipulate information, the ability to make a rational decision, and the ability to communicate the decision. These assessments are often completed in hospital by the liaison psychiatrist. Legally, these can be performed by any physician, but, in practice, are usually deferred to the psychiatrist. When there are objections and ensuing conflict, the matter is frequently referred to court where the services of a forensic psychiatrist are often requested.

Competency to handle funds, make a will, and enter a contract are other sources of referrals. The criteria for these assessments are beyond the scope of this discussion. It is important to again note that the person is considered whole until proven otherwise; therefore, the burden of proof rests with the party questioning the individual's capacity. The court decides if the individual is competent or incompetent; the psychiatrist assesses the compacity to perform the criteria necessary for the competence in question and serves as an expert witness.

Most medical and surgical specialties are consulted regarding the civil issues of tort, disability and worker's compensation cases depending on the injury claimed. Rarely is the treating physician's opinion accepted as there is concern regarding bias. An independent medical evaluation (IME) is sought. In today's environment with the focus on mental health coupled with less objective testing available for psychiatric diagnosis and causation, the forensic psychiatrist is frequently consulted.

Like all physicians, forensic psychiatrists are consulted in tort cases; these cases can range from malpractice to psychic damages from injury secondary to negligence or injury. When providing an opinion on a malpractice case, the forensic psychiatrist is asked to consider the four Ds which are the essential elements in all tort cases. Simply stated the four Ds refer to four essential questions: Did a duty exist? Was there a dereliction in that duty? Did damage occur to the plaintiff? Were the damages the direct result of the dereliction?

In tort matters other than malpractice such as accident or work injury, the clinician does not opine on duty or dereliction but rather focuses on damage and causation. For the forensic psychiatrist the psychic damage often involves Post Traumatic Stress Disorder (PTSD) or exacerbation

of a previous condition. An example might clarify. A mother and her older daughter witness the death of her younger daughter when a hose dislodges from a fire truck while speeding to a call, striking the child which results in her death. Both witnesses claim PTSD. Both require forensic evaluations.

Workplace Evaluations

The most frequent noncriminal referrals for evaluation by a forensic psychiatrist are requests for disability and worker's compensation evaluations. The issue in disability evaluation is the evaluee's ability to return to fulfill the duties of his most current job description or other employment, depending on the insurance policy. The issue of malingering is a frequent concern. While malingering is a concern for all specialties, it presents a greater challenge when a psychiatric disability is claimed as there are no concrete lab and radiologic studies available. Most often, the specialized training of a forensic psychiatrist is sought for clarification. Recommendations regarding the conditions necessary that would enable the worker to maintain his/her current employment are frequently requested. The issues are very similar in worker's compensation cases, with the addition of an opinion on the causation regarding workplace conditions.

Finally, fitness for duty is another frequent source of referral. This can take the form of routine screening for certain dangerous and high stress careers such as police work. These are usually completed by psychologists who administer screening tools such as the MMPI. More often the forensic psychiatrist is consulted when a worker is asked to leave employment because of mental illness and now seeks a return to his former duties. The problem can be an illness such as depression that prevents the worker from completing his or her tasks such as a teacher who, because of reoccurring episodes of depression, frequently misses work or cannot maintain adequate classroom instruction or complete grading on schedule.

More often, the forensic psychiatrist is asked to provide an opinion on an employee who is perceived as a threat on the job site. Frequently recommendations are required for the employee's safe return. The evaluation must include risk assessment. An example will help to clarify: the case of a crane operator for a steel plant who is diagnosed with alcohol use disorder and bipolar illness type II has demonstrated angry outbursts on the work site. The concerns are his judgment and impulse control compounded by the circumstance that he operates heavy equipment in a hazardous environment. The employee is evaluated after treatment has been instituted and his symptoms are controlled with medication. He is no longer abusing alcohol. The recommendations would consist of the following: no swing shift assignment as such scheduling is known to be associated with exacerbation of manic behavior, compliance with treatment including therapy and medication demonstrated, if available, with therapeutic blood levels, alcohol treatment and abstinence as demonstrated by random blood alcohol testing. It should be specified that the treating psychiatrist need only provide verification of compliance and not the content of therapy sessions. Lastly, regarding fitness for duty is that the requesting source is entitled only to the answer to the question of whether the defendant can or cannot return to duty and the recommendations. Past history of treatment or diagnosis are not part of the report.

Conclusion

Like many clinicians, I, as a forensic psychiatrist, have witnessed tragedy and triumph, the worst of humanity and the best. There have been sad yet humorous cases such as a mentally ill bank robber whose get-away plan was public transportation. The tragic cases involve the death of another (usually a loved one) caused by actions of a mentally ill individual who was not actively engaged in treatment at the time of the offense. There have been glimmers of hope when treatment is followed by a mentally ill individual confiding the damage that they were planning during their psychosis demonstrating that treatment does have the potential for preventing tragedy. Sadly, these are too few.

My career has been enormously interesting and professionally satisfying. I hope physicians-in-training might consider forensic psychiatry as a career and in-practice physicians will understand the capabilities and appropriateness of a forensic psychiatry consultation.

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Christine Martone, MD, is the former medical director of the Behavior Assessment Unit, Allegheny County Court of Common Pleas Criminal Division; Director of the Forensic Psychiatric Fellowship at University of Pittsburg Medical Center/Western Psychiatric Institute and Clinic, and a past president of the Pittsburgh Psychiatry Society.

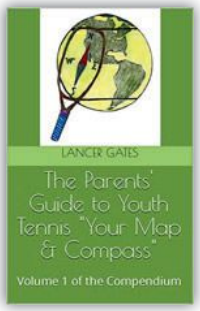
MSMA Members in the News

Did you make the news? Submit your success story and photo to lfleenor@msma.org.



Alex Garza, MD, SSM Health Chief Community Health Officer has been named among Modern Healthcare's Top 50 Most Influential Clinical Executives. Dr. Garza's dedication to tackling social disparities and his commitment to health equity are the basis for his receiving the award.

The Parents' Guide to Youth Tennis Volumes 1 and 2 provide you with the map and compass for your family's tennis journey. MSMA member **Lancer Gates, DO**, navigates, informs, and entertains as he masterfully weaves threads of humor from personal experiences into a tennis tapestry, according to the Amazon review.



Volume 1 describes your parenting roles and the process of selecting a tennis club and instructor(s). It also informs you how to sign up, prepare for, and succeed at tournaments. It educates you about the UTR and addresses parent and player sportsmanship. Volume 2 informs you about the high school tennis experience and the college tennis recruiting process. It also addresses injuries, footwork, strokes and strategy. Finally, it provides you with ways to make tennis more affordable.

Chakshu Gupta, MD, is the driving force behind a new scholarship program being offered by the Buchanan County Medical Society. The scholarships, being offered to two recipients per year, will encourage and support those pursuing a career as a laboratory professional or in laboratory science. Dr. Gupta also led the effort to obtain a proclamation by Governor Mike Parson recognizing April 24-30, 2022, as Medical Laboratory Professionals Week in Missouri. Dr. Gupta practices at MAWD Pathology in Lenexa, KS.



Albert Kim, MD, PhD, is the first researcher named the William H. Danforth Washington University Physician Scholar. Dr. Kim, a professor of neurological surgery at Washington University School of Medicine, received this honor as part of the School of Medicine's new Physician-Scientist Investigators Initiative. The initiative's goal is to recruit and retain physician-scientists who have done impactful work in their fields.



Peter Koopman, MD, has been appointed to a two-year term as the American Academy of Family Physicians' representative on the Academic Family Medicine Advocacy Council. The Council's goal is to address government advocacy issues related to medical education. Dr. Koopman practices Family Medicine at MU Health Care in Columbia.



Warren C. Lovinger, Jr., MD, MACP, (center, shown with his family), has been awarded the Ralph O. Claypoole Sr. memorial Award for Devotion of a Career in Internal Medicine to the Care of Patients by the American College of Physicians. Established in 1979, the award is given to an outstanding practitioner of internal medicine whose career has been devoted to the care of patients.



The Missouri College of Emergency Physicians (MOCEP) has recognized MSMA members as follows: **Mark Steele, MD**, (left), Kansas City, received the MOCEP 2022 Lifetime Achievement award. Also recognized was **Randall Jotte, MD**, (right), St. Louis, who received MOCEP's R.R. Hannas 2022 Physician of the Year award. These awards were presented at MOCEP's general membership meeting on April 22.





Jacob Thomas, MD, has been recognized as a 2022 Outstanding Young Physician by the University of Missouri Medical Alumni Organization. Dr. Thomas specializes in LASIK, corneal transplantation, and cataract surgery at Mattax Neu Prater Eye Center in Springfield.



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1 PICTURE = 1,000 WORDS

U.S. 2021 DRUG OVERDOSE DEATHS HIT RECORD 107,000 LAST YEAR UP 15% - ONE DEATH EVERY FIVE MINUTES

Editor's Note: Mostly illicit fentanyl manufactured by Mexican crime cartels using Chinese chemicals and transported over the U.S. southern border. Cheap and potent, often used to adulterate other controlled or illegal drugs.

Source: Centers for Disease Control & Prevention
May 11, 2022



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Highlighting the Integration of Health Behaviors and Social Factors in Medical Care

by Christine Jacobs, MD

From the moment we enter medical school, physicians know that their chosen career will force them to grapple with many tensions. Two of the most important are the tension between medicine as science and art and the tension between medicine and health. Science informs the right treatment for our patients and how to execute often extraordinarily difficult procedures. The art of medicine builds deep bonds with our patients so that they may take the steps they need to improve their health. In the second tension, medicine applies knowledge and science to the treatment of our patients. Health is the result of health behaviors, social, and economic factors and the physical environmental as well as access and quality of clinical care. American medical schools have focused their attention on science and medicine. Those foci are essential, they are also incomplete. The COVID-19 pandemic is a cruel reminder that we must be both scientists and artists and that medicine, while essential, is only part of health. My colleagues and I at Saint Louis University School of Medicine are committed to training physicians to be lifelong learners in the science and art of medicine, clinical care, and health.



Christine Jacobs, MD, FAAFP, is Dean and Vice President for Medical Affairs of Saint Louis University School of Medicine, St. Louis, Missouri.

The COVID-19 pandemic raised all these issues to forefront. The importance of science was never more apparent. The production of highly effective and safe vaccines in record time was one of the greatest scientific achievements of our time. I am particularly proud that the Saint Louis University Vaccine Center contributed to this effort. Thousands of physicians and staff in Missouri delivered remarkable care, often at great risk to themselves, to our patients. But despite these efforts, critical health inequities occurred. Death rates from COVID-19 in Missouri were far higher among communities of color (1.7x deaths in black and 1.8x deaths in Latinos)[1] and the elevated COVID-19 risk for patients with metabolic syndrome was a cruel reminder of the overlapping effects of poverty, environment, and race.

The County Health Rankings Model ascribes health outcomes to four key factors: 1. 40% social and economic factors (education, employment, income, family and social support, and safety); 2. 30% health behaviors (tobacco, diet and exercise, alcohol and drug use, and sexual activity); 3. 20% clinical care (access and quality); and 4. 10% physical environment (air and water quality and housing and transit). All these challenges are present in Missouri where in 2022, 35% of Missouri adults are obese, 30% are physically inactive, and 9% of Missouri adults have diabetes. Twenty percent of Missouri adults smoke cigarettes, 19% of adults are characterized with excessive drinking, and we have been severely impacted by the opiate epidemic. Sixteen percent of Missouri children live in poverty.[2]

Many of us, either individually or through the organizations we belong to, are engaged in work to address clinical care access and quality through major

national efforts including Medicaid expansion and quality metric linked payment systems. Where our profession needs to do more is in addressing health behaviors and social and economic inequities with the same rigor. This is not easy work. All of us who have worked with our patients to influence health behaviors know this well, but it is critical.

At Saint Louis University School of Medicine, as at many medical schools across the country, we are committed to equipping medical students with the best possible tools to influence patient health behaviors and to understand the social factors that contribute significantly with health. This content is integrated into each aspect of the preclinical curriculum. For example, Medical Interviewing scripts have been rewritten to incorporate Social Determinants of Health. The preclinical course "Brain and Behavior" intersperses neurobiology with topics such as racism in medicine, social determinants of health, education, trauma-informed care, global and refugee health, poverty and cultural humility. We have developed electives such as "History of Medical Trauma" and the Urban Community Health track in the School of Medicine which provides longitudinal experience in underserved settings, opportunities for reflection, and community engagement. It is my hope and expectation that we will continue to add content in these areas in the years ahead.

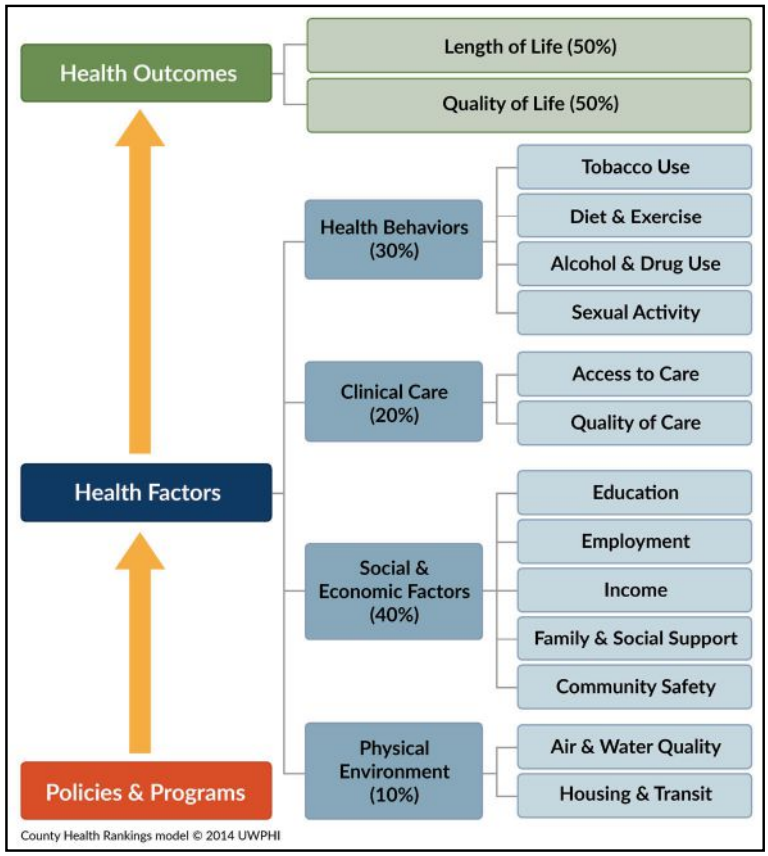


Figure 1. The University of Wisconsin Population Health Institute. County Health Rankings & Roadmaps, 2022. www.countyhealthrankings.org

The articles in this edition of *Missouri Medicine* from the Saint Louis University Department of Family and Community Medicine highlight the integration of health behaviors and social factors in medical care.

The articles address aspects of health behaviors. Only 24% of adults aged 18 years and over met the guidelines for aerobic physical activity and muscle-strengthening activity in 2018 (Figure 1).[3] The article "Balancing Act: Muscle Imbalance Effects on Musculoskeletal Injuries" highlights this. Substance use is addressed in "Perceived Impact of the COVID Pandemic on Pain and Prescription Opioid Use Among a Cohort of Patients with Non-Cancer Pain." A critical aspect of counseling about sexual behavior is highlighted in "Preventing HIV with Pre-Exposure Prophylaxis: A Primer for PCPs."

Behavioral health issues can no longer be easily separated from medical issues. "Diagnosis and Treatment of Bipolar Illness in Primary Care" and "Care of Recently Incarcerated patients" demystify the care of patients who are often sidelined in clinical care. "Behavioral Health in Primary Care: What It Can Help With and How to Find It" completes the picture with a discussion of behavioral approaches for cardiovascular disease, dementia, and diabetes.

Taken together, these articles help us to understand a more complete picture of our patients and their social context.

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What is a Primary Care Doctor's Work Worth?

by Kimberly Schiel, MD

The answer is difficult to quantify, because so much of our value is in things that didn't happen: heart attacks not experienced, cancers prevented, lung disease not suffered, premature deaths averted.

When trying to recruit or retain talented physicians in primary care, we cannot escape the economics of physicians' salaries. A vibrant primary care workforce depends on having a robust resident talent pool from which to recruit. The size of the talent pool is determined by how many graduating medical students choose to be trained in primary care residencies. There is a portion of graduating medical students who will continue to choose primary care careers regardless of low pay, because that is where their passion lies. There is a portion whose particular skills and interests lead them to specialty fields. There is also another portion: those who would more readily choose primary care if the pay wasn't about 40% lower that of our specialist colleagues.[1] We can increase the size of our primary care talent pool by narrowing the pay gap.

So, what determines what a primary care doctor is worth? The historic determinant of physicians' pay, the fee-for-service model, rewards interventions regardless of whether they improve patient outcomes, and discourages spending time on preventive care. A physician in one field might be handsomely rewarded for a series of tests and interventions to open a blocked artery. Meanwhile, her colleague in another field gets very little or no reward for the time-intensive counseling and medical management to prevent such an outcome from occurring in the first place. Which field will attract future physicians? Which field are we growing via our current payment model?

A better way to reward the value of primary care considers the benefits to individual patients and to our healthcare system. Enter the promise of value-based care. Value-based care is a group of payments which seeks to drive down cost and improve patient outcomes. This is achieved by incentivizing preventive medicine and evidence-based care which produce better outcomes.



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One such program is the annual Medicare Wellness visit, a visit entirely dedicated to encouraging preventive medicine and to avoiding expensive, morbidity-producing events such as falls. Medicare Wellness recipients are more likely to receive cancer screenings[2,3] and to have reduced acute hospital costs and total healthcare costs.[4]

This issue highlights many of the primary care tasks which might not be known to our specialist colleagues. We deliver minimally invasive, evidence-based musculoskeletal care. We are a fundamental part of the mental healthcare system in this country. Primary care delivers about one-third of all mental health related visits, and much more than that in small cities and rural areas. We help prevent HIV infection as well as COVID, influenza, and a host of other deadly infectious diseases. We efficiently deliver care to marginalized populations.

So, what is a primary care doctor's work worth? The answer is difficult to quantify, because so much of our value is in things that didn't happen: heart attacks not experienced, cancers prevented, lung disease not suffered, premature deaths averted. I suggest that we begin to truly value, and reward, those outcomes as our measure of success in medicine.

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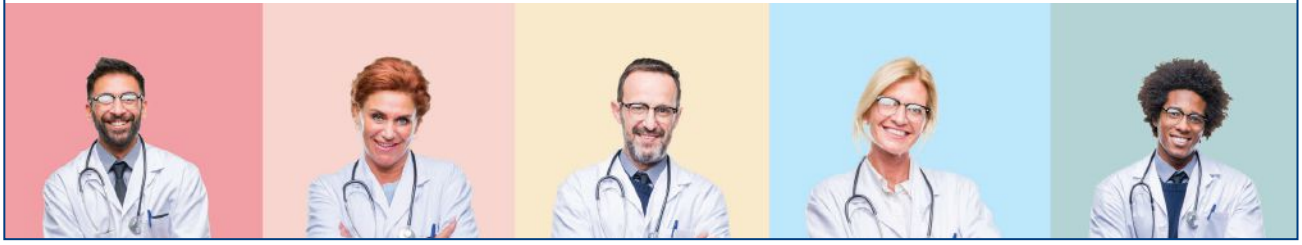
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Care of Justice-Involved Populations

by Dawn Davis, MD

Incarceration is both a correlate and a cause of poor health outcomes"[1]



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Terminology

Incarcerated is a nonspecific term which refers to a person confined to a jail, prison, or other institution. Inmate (preferred term: incarcerated person) refers to a person confined in a correctional facility (jail or prison). Individuals who are classified as being on probation, parole, or supervised release, remain under court supervision and are allowed to serve some or all of their sentence while residing in the community.[2] Jails are under municipal or county jurisdictions and house persons awaiting trial, sentencing, or transfer to another facility; those who have violated parole or probation; and some individuals who have been sentenced to less than a year in custody.[3] State and federal prisons generally house persons who have been sentenced to greater than one year in custody.[3]

Background

The United States has just 5% of the world's total population but houses 25% of the world's incarcerated persons. Approximately 830 of every 100,000 U.S. adult citizens are in jail or prison.[4] In 2019, the U.S. correctional population included nearly 2.1 million adults held in jails or prisons, and 4.3 million adults supervised on probation or parole.[5] The average daily jail population in 2019 was 734,500, but because of high turnover rates, there were 10.3 million admissions into local jails across the U.S.[5] Sixty-five percent of people in jails have not been convicted of a crime, and 23% of jail inmates are being held for misdemeanor offenses.[5] Incarcerated individuals in the U.S. are disproportionately young males, racial and ethnic minorities, and persons of low socioeconomic status.[3] Nationally, non-Hispanic black males represented 37% of inmates under state or federal jurisdiction.[6] Within the Missouri Department of Corrections (MO DOC), black males constitute 36.1% of the population.[7] Females and persons older than 55 account for a small but increasing percentage of the incarcerated population.[3] Approximately 10% of inmates are veterans.[8] Fifteen percent of incarcerated persons were unstably housed in the past or at the time of their incarceration.[9] Ninety-five percent of all incarcerated individuals will eventually be released back into their community of origin.

Missouri jails processed 128,000 admissions in 2018, and the MO DOC housed 28,246 individuals at the close of the 2019 fiscal year, with an additional 61,338 individuals

Table 1. Medical Conditions in Jail inmates, State and Federal Prisoners, and Missouri Department of Corrections

Condition	Jail Inmates (%)*	State and Federal Prisoners (%)*	Missouri Department of Corrections (%)[7]
Drug dependence or abuse[1]	63.3	58.5	89.1
Overweight or obesity[2]	62	74	
History of mental health disorder[3]	44.3	36.9	47.1
Hypertension[2]	26.3	30.2	
Asthmz[2]	20.1	14.9	
History of infectious disease[2]	14.3	21	
Arthritis or rheumatism[2]	12.9	15	
Heart conditions[2]	10.4	9.8	
Diabetes mellitus or high blood glucose levels[2]	7.2	9	

*National sample

Table adapted from: Davis DM, Bello JK, Rottnek F. Care of Incarcerated Patients. *Am Fam Physician*. Nov 15 2018;98(10):577-583

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under supervision on probation or parole.[7] Within the MO DOC program, 55.3% of female inmates were sentenced for drug-related offenses, and one-third of these were sentenced to 120-day or longer drug treatment programs, which are primarily educational in nature.[7]

Thirty-five percent of male inmates in the MO DOC system were sentenced for drug-related offenses, and one-fourth of these were sentenced to drug treatment programs.[7] Alcohol-related offenses (DWI) make a significantly smaller proportion of newly sentenced inmates: 2.2% and 3.9% for females and males respectively.[7] Per MO DOC 89% of newly sentenced inmates were found to have moderate to severe substance abuse issues on intake assessment.[7] This is an increase from the five-year average of 85% and significantly higher than the reported national averages for both jails and prisons.[7]

Incarcerated persons in the United States are the only persons guaranteed access to health care services in the United States, by the 1976 U.S. Supreme Court decision Estelle v. Gamble. The breadth and quality of health care services provided in Missouri's 21 state prisons and 117 local jails differs widely due to variations in policies, budgets, and staffing across state and local jurisdictions. Health care provided to incarcerated individuals benefits the individual, their institutional community, and their communities of origin.

Common Medical Comorbidities in Justice-Involved Populations and Care Recommendations

Incarcerated individuals and recently incarcerated individuals have a higher burden of communicable diseases, chronic diseases, mental health diagnoses, and substance use disorders than the general population[3] (Table 1).

The rate of HIV infection for individuals housed in state and federal facilities is approximately four times greater than the general population.[10] In 2006, correctional populations were thought to make up approximately 30% of Hepatitis C cases in the U.S.[11] Though declining in incidence, incarcerated populations experience TB infections at a substantially higher incidence than the general population.[12] Most TB infections which occur in jail and federal populations are in persons born outside of the U.S.[12] Most TB infections which occur in state prisons are in persons born in the U.S.[12]

Due to high rates of infection in incarcerated patient populations the USPSTF recommends

Table 2. Clinical Recommendations

• Screen all formerly incarcerated patients for substance use disorder. Provide prompt treatment or referrals for MAT for qualifying patients
• Screen all formerly incarcerated patients for psychiatric comorbidities. Provide treatment or referral as indicated
• Provide all patients with history of SUD with naloxone (see table 3)
• Address reproductive health needs of all formerly incarcerated females of reproductive age
• Screen for hepatitis B, C, HIV, and TB if patient's status is unknown, or patient has ongoing risk factors
• Offer STI screening
• Provide indicated preventative care, including indicated cancer screenings
• Refer for dental care or provide information on lower-cost dental care options
• Provide indicated vaccinations, including annual influenza vaccines and primary or booster dosing of covid vaccines.

screening inmates for Hepatitis C, Hepatitis B, HIV, syphilis, and latent tuberculosis.[13-17] If a patient cannot recall having this screening while incarcerated or has engaged in behaviors that would increase risk while incarcerated or since release, repeat screening is recommended, though optimal timing has not been determined. Evaluation for risk factors for STIs is also recommended.[18]

Chronic health conditions may be exacerbated or initiated by poor dietary quality, weight gain, lack of physical activity and psychological stress associated with incarceration.[19-21] Physicians should screen recently incarcerated patients for obesity, hypertension, and diabetes in accordance with the USPSTF recommendations for the general population.

Incarceration has been linked to decreased cancer screening rates, and increased risks of malignancy related hospitalization and death after release.[22] All patients should be evaluated for indicated cancer screenings as part of regular preventative care. Patients should be educated about chronic health conditions and provided with low-cost medications for disease management when appropriate.[23,24] Formerly incarcerated patients have higher rates of periodontal and dental disease than never-incarcerated cohorts – with modifiable risk factors including low socioeconomic status, lack of health insurance, and substance abuse making up much of the reasoning[25] (Table 2).

Justice-involved populations have significantly increased rates of diagnosed psychiatric illness when compared to the general population, and major psychiatric conditions increase the likelihood of recividism.[26] Careful screening of a previously incarcerated patients mental health history is recommended. Continuation of psychiatric medication prescriptions once verified is paramount. Substance use disorders, and substance use disorders combined with psychiatric diagnoses are most significantly related to recividism.[27] Individuals who have been treated via education-only substance abuse programs (as opposed to medication-assisted treatment (MAT) programs) are at increased risk of relapse of substance use disorders, overdose, and death. Former inmates have a significantly increased risk of death from a drug overdose for up to a year following release from correctional facilities when compared to the general public.[28,29] Treatment of patients with opioid use disorder (OUD) with extended release naltrexone decreases opioid use[30] and treatment with buprenorphine or methadone decreases all cause mortality[31] ADD additional reference[32] Any physician can prescribe extended-release naltrexone (Vivitrol) for OUD.[30] Any physician with a valid DEA registration and valid state license can prescribe Buprenorphine (Suboxone, Subutex) without specialized training for up to 30 patients by completing a notice of intent and applying for a DEA X-waiver.[32] Methadone can only be dispensed by a SAMHSA-certified opioid treatment program (OTP). Naloxone (Narcan) should be prescribed or provided to any patient with a known substance use disorder as a harm-reduction measure.

Difficulties in Obtaining Care Post-Release

Persons recently released from correctional facilities face high levels of poverty, unemployment, and homelessness.[28] Lack of insurance, loss of insurance due to loss of employment, or loss of Medicaid status coupled with often non-existent or inadequate discharge planning makes access to care for previously incarcerated persons difficult.[23] In states

Table 3. Recommendations for engagement of previously incarcerated patients

• Prioritize appointments for individuals who report recent incarceration
• Utilize a trauma-informed care framework
• Minimize barriers to care
• Use neutral, non-stigmatizing language
• Minimize prescribing of controlled/misused/diverted medications when possible
• Choose low cost, generic medications whenever appropriate
• Provide education and encourage self-management of chronic health conditions
• Engage in shared decision making
• Request medical records/contact facility physician for unclear or complicated medical histories

which have undergone Medicaid expansion, studies have demonstrated improvement in care access.[1] Formerly incarcerated individuals with psychiatric or substance use disorders face distinct challenges in obtaining housing, employment, reconnecting with family members, avoiding SUD relapse, and avoiding reoffending. [3] Discrimination by clinicians and medical office staff has been shown to be a barrier to accessing primary care for individuals recently released from prison[33] (Table 3).

Previously incarcerated/justice involved persons with chronic health conditions benefit from a medical home model of treatment that allows for complex care management, treatment of mental health comorbidities, and substance use disorder treatment.[34] Medical home programs are not available in all areas. Physicians should recognize that the complex care needs of many previously incarcerated individuals may require multiple visits to address and should discuss this with their patients (Table 4).

Conclusion

Justice-involved patients frequently have multiple medical comorbidities and social stressors which can be compounded by substance use disorders and psychiatric illness. Treatment of psychiatric disorders and SUD has been shown to decrease recidivism. Provision of MAT has been demonstrated to reduce the risk of death by opioid overdose. A consistent care approach that can address urgent, chronic, and infectious conditions, substance use disorders, and mental health conditions will provide the best outcomes for patients and the communities in which they reside.

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Table 4. Additional Resources

Resources for provision of MAT	Medications for Opioid Use Disorder (SAMHSA TIP 63) https://store.samhsa.gov/sites/default/files/SAMHSA_Digital_Download/PEP21-02-01-002.pdf UCSF National Clinician Consultation Center https://nccc.ucsf.edu/category/videos/ for educational trainings and webinars
Resources for no-cost Naloxone (Narcan)	https://www.anyonecanstl.org/naloxone Directrelief.org https://www.nomodeaths.org/where-to-get-naloxone
Finding MAT Providers	https://www.nomodeaths.org/get-treatment https://findtreatment.gov
Recovery Housing Resources	https://www.nomodeaths.org/recovery-housing Missouri Coalition of Recovery Support Providers (Mcrsp.org)
Trauma Informed Care Resources	https://www.traumainformedcare.chcs.org/what-is-trauma-informed-care/ https://dmh.mo.gov/trauma-informed-care Trauma Informed Care: a Strategy to Improve Primary Healthcare Engagement for Persons with Criminal Justice System Involvement https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6544694/
Obtain a Buprenorphine Waiver	https://www.samhsa.gov/medication-assisted-treatment/become-buprenorphine-waivered-practitioner
Advice for treating patients with SUD as part of comprehensive primary or psychiatric care	HRSA Warmline: (855) 300-3595 Consultants provide clinicians with evidence-based guidelines on assessing and treating SUD

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Disclosure

None reported. **MM**

Diagnosis and Treatment of Bipolar Illness in the Primary Care Office

by Jay A. Brieler, MD & Elizabeth Keegan-Garrett, MD

Knowledge of first line pharmacotherapies for Bipolar Affective Disorder during the phases of acute mania/hypomania, depression and maintenance will benefit primary care physicians treating patients with BPAD to ensure timely and effective treatment.



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Abstract

Bipolar Affective Disorder (BPAD) is frequently encountered in the primary care office and must be considered in the differential diagnosis of all patients with mood dysregulation. Appreciation for the range of bipolar illness has evolved in recent years, and the overlap of bipolar illness with trauma-based diagnosis such as Post-Traumatic Stress Disorder (PTSD) and Borderline Personality Disorder must be considered. Treatment of BPAD is divided into manic, depressive, and maintenance phases, each with different pharmacologic considerations. First line agents for the acute manic phase include lithium, valproic acid, and second generation antipsychotics (SGAs). First line agents for depressive phase include lamotrigine, lithium, and the SGAs lurasidone and quetiapine. For bipolar maintenance therapy, lamotrigine, valproic acid, and lithium are first line options. Finally, non-pharmacologic interventions including psychoeducation can be extremely helpful for patients and their families to successfully participate in the management of their disease.

Background

The treatment of depressive disorders is considered a core skill for outpatient primary care physicians (PCPs).[1] Fifty-nine percent of antidepressant medication are prescribed by PCPs.[2] However, the distinction between unipolar depression and other diagnoses, especially bipolar illness, can be challenging. As many as 25% of patients presenting with a depressive episode actually suffer from BPAD.[3] Patients with bipolar illness are more likely to seek care during the depressive phase compared to the manic phase,[4] contributing to misdiagnosis. Physicians therefore need to consider BPAD in the differential diagnosis of any patient they are treating for depression.[5]

The lifetime incidence of bipolar illness is as high as 2.4%, with mean age of diagnosis in the 20s or 30s.[6] First degree relatives of patients with bipolar have a 5-10% risk of the disease (seven times the baseline rate), as well as an increased risk for other psychiatric illnesses including unipolar depression.[7] Between 20-60% of patients with bipolar

Table 1. DSM-5 Diagnostic Criteria for Manic Episode

A distinct period of abnormally and persistent elevated, expansive, or irritable mood and abnormally and persistently increased goal-directed activity or energy, **lasting at least one week and present most of the day, nearly every day (or any duration if hospitalized)**.
During the period of mood disturbance and increased energy or activity, three (or more) of the following symptoms (four if the mood is only irritable) are present to a significant degree and represent a noticeable change from usual behavior:
1. Inflated self-esteem or grandiosity
2. Decreased need for sleep (e.g. feels rested after only three hours of sleep)
3. More talkative than usual or pressure to keep talking
4. Flight of ideas or subjective experience that thoughts are racing
5. Distractibility (i.e. attention too easily drawn to unimportant or irrelevant external stimuli), as reported or observed
6. Increase in goal-directed activity (either socially, at work or school, or sexually) or psychomotor agitation (i.e. purposeless non-goal-directed activity)
7. Excessive involvement in activities that have a high potential for painful consequences (e.g. engaging in unrestrained buying sprees, sexual indiscretions, or foolish business investments).
The mood disturbance is sufficiently severe to cause marked impairment in social or occupational functioning or to necessitate hospitalization to prevent harm to self or others, or there are psychotic features.
The episode is not attributable to the physiological effects of a substance (e.g. a drug of abuse, a medication, other treatment) Note: A full manic episode that emerges during antidepressant treatment but persists at a fully syndromal level beyond the physiologic effect of that treatment is sufficient evidence for a manic episode.

Manic Episode; DSM-5, Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, p. 124.

illness attempt suicide in their lifetime, with 4-19% ending their life.[8]

Misdiagnosis of BPAD can be problematic as traditional antidepressant medication can delay improvement of symptoms and possibly induce manic symptomatology.[9] Failure to recognize trauma spectrum disorders can also result in medical treatment failures and delay in the implementation of needed psychotherapeutic interventions.[10] Given the limited availability of specialty mental health care in some settings,[11] and the persistent stigma around a potentially lifelong and severe mental illness,[12] the ability for primary care physicians to accurately diagnose, initiate, and sustain treatment (with appropriate consultation) can be a significant service to a patient community.

Diagnosis

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V) identifies three major types of bipolar illness: Bipolar I Disorder, Bipolar II Disorder, and Cyclothymic Disorder.[13] Distinguishing between these three diagnoses (and Major Depressive Disorder) is based on the presence and severity of manic and depressive episodes. Hypomanic episodes mirror manic episodes but are shorter and less impairing. The criteria for manic and hypomanic episodes are given in Tables 1 and 2, respectively.

Diagnosis of Bipolar I requires the history of one manic episode during the lifetime. While depressive episodes are often common in Bipolar I, they are not required for diagnosis. Bipolar II illness requires at least one hypomanic episode and one major depressive episode, but never a full manic episode. Cyclothymic Disorder involves sub-syndromic hypomanic and depressive symptoms that have never met full criteria for a manic, hypomanic, or depressive episode. Symptoms attributable to a psychotic illness, drug of abuse, or medical condition should not be used to make the diagnosis of a bipolar illness, though the clinician must be aware of the possibility of comorbidity.

The classic pattern of Bipolar I involves a series of cycles involving an initial manic episode that may last several weeks to months, followed by a severe depressive episode that often lasts

Table 2. DSM-5 Diagnostic Criteria for Hypomanic Episode

A distinct period of abnormally and persistent elevated, expansive, or irritable mood and abnormally and persistently increased activity or energy, **lasting at least four consecutive days and present most of the day, nearly every day**.
During the period of mood disturbance and increased energy or activity, three (or more) of the following symptoms (four if the mood is only irritable) have persisted, represent a noticeable change from usual behavior, and have been present to a significant degree:
1. Inflated self-esteem or grandiosity
2. Decreased need for sleep (e.g. feels rested after only three hours of sleep)
3. More talkative than usual or pressure to keep talking
4. Flight of ideas or subjective experience that thoughts are racing
5. Distractibility (i.e. attention too easily drawn to unimportant or irrelevant external stimuli), as reported or observed
6. Increase in goal-directed activity (either socially, at work or school, or sexually) or psychomotor agitation (i.e. purposeless non-goal-directed activity)
7. Excessive involvement in activities that have a high potential for painful consequences (e.g. engaging in unrestrained buying sprees, sexual indiscretions, or foolish business investments).
The episode is associated with an unequivocal change in functioning that is uncharacteristic of the individual when not symptomatic.
The disturbance in mood and the change in functioning are observable by others.
The episode in <u>not</u> severe enough to cause marked impairment in social or occupational functioning or to necessitate hospitalization. If there are psychotic features, the episode is, by definition, manic.
The episode is not attributable to the physiological effects of a substance (e.g. a drug of abuse, a medication, other treatment) Note: A full hypomanic episode that emerges during antidepressant treatment but persists at a fully syndromal level beyond the physiologic effect of that treatment is sufficient evidence for a manic episode. However, caution is indicated so that one or two symptoms (particularly increased irritability, edginess, or agitation following antidepressant use) are not taken as sufficient for diagnosis of a hypomanic episode, nor necessarily indicative of a bipolar diathesis.

Manic Episode; DSM-5, Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, p. 124-5.

much longer than the manic phase.[14] These cases are less difficult to diagnose. In practical clinical care, it is not uncommon for a primary care physician to encounter a patient with both depression and maladaptive activation which might suggest a diagnosis of BPAD. It may initially be difficulty to distinguish between symptoms such as anxiety, poor impulse control, anger, and frank mania. In these cases, the use of tools such as the Mood Disorder Questionnaire (MDQ) in Table 3 can be a helpful adjunct to the clinical exam in establishing the history of manic episodes.[15] Specific questions into the nature of sleep disturbance (e.g. does the patient toss and turn fighting to attain sleep vs staying up all night cleaning the house) and family history of mood disorders can be especially important.[16]

Important differential diagnoses of BPAD include ADHD, anxiety, and unipolar depression. Careful attention to the lifetime, non-episodic impulsivity associated with ADHD is helpful. PTSD and especially Borderline Personality Disorder (both of which lie within a spectrum of trauma-related illness) are also common mimics. Borderline Personality Disorder is often underdiagnosed, due to the stigma associated with the condition and discomfort by providers in asking about past trauma. Many patients diagnosed with bipolar illness might more accurately be diagnosed with Borderline Personality Disorder, especially among patients whose moods shift rapidly.[17]

Patients diagnosed with BPAD are at a significantly higher risk for morbidity and mortality. Studies in Denmark show the life expectancy of individuals with BPAD being up to a decade less than that of the general population.[18] Estimates indicate that up to 50% of adults with BPAD have attempted suicide[19] and nearly 20% successfully end their life.[8] PCPs should be proficient in assessing patients for suicidal ideation and referring to emergency or

Table 3. Mood Disorder Questionnaire (MDQ)

	Yes	No
1. Has there ever been a period of time when you were not your usual self and..		
...you felt so good or so hyper that other people thought you were not your normal self or you were so hyper that you got into trouble?		
...you were so irritable that you shouted at people or started fights or arguments?		
...you felt much more self-confident than usual?		
...you got much less sleep than usual and found you didn't really miss it?		
...you were much more talkative or spoke faster than usual?		
...thoughts raced through your head or you couldn't slow your mind down?		
...you were so easily distracted by things around you that you had trouble concentrating or staying on track?		
...you had much more energy than usual?		
...you were much more active or did many more things than usual?		
...you were much more social or outgoing than usual, for example, you telephoned friends in the middle of the night?		
...you were much more interested in sex than usual?		
...spending money got you or your family in trouble?		
2. If you checked YES to more than one of the above, have several of these ever happened during the same period of time?		
3. How much of a problem did any of these episodes cause you — like being able to work; having family, money, or legal troubles; getting into arguments or fights? No problem Minor problem Moderate problem Serious problem		
4. Have any of your blood relatives (i.e., children, siblings, parents, grandparents, aunts, uncles) had manic-depressive illness or bipolar disorder?		
5. Has a health professional ever told you that you have manic-depressive illness or bipolar disorder?		

Adapted from Hirschfeld R, Williams J, Spitzer RL, et al. Development and validation of a screening instrument for bipolar spectrum disorder: the Mood Disorder Questionnaire. Am J Psychiatry. 2000;157:1873-1875.

inpatient psychiatric care when necessary. Bipolar illness is also associated with a two-fold risk of death from vascular causes, though the mechanism of the association has not been determined.[20]

Treatment

Pharmacologic treatment of BPAD is divided into three categories: manic phase, depressive phase, and maintenance. Some conflicting recommendations are found due to differences between evidence-based treatment recommendations across international bodies, FDA-approved medications, and the fact that the official APA guideline for Bipolar Illness has not been updated since 2002.[21,22]

Manic and hypomanic episodes are generally treated with the same medications. FDA approved medications for acute mania include: lithium, valproic acid, carbamazepine, and a number of second generation antipsychotics (SGAs).[23] APA guidelines push carbamazepine to a second line role. Some evidence suggests that SGAs (quetiapine and/or olanzapine) may work more quickly than lithium and valproic acid, and that using a mood stabilizer and SGA in combination may be more effective than monotherapy. [23-25]

For the treatment of the depressive phase of BPAD, clinicians should keep in mind that the treatment of bipolar depression and unipolar major depressive disorder is not the same. Selective serotonin reuptake inhibitors should be avoided in the treatment of the depressive phase of BPAD. FDA-approved agents for acute bipolar depression are quetiapine, lurasidone, cariprazine, and the combination of olanzapine and fluoxetine. APA guidelines list lamotrigine and lithium as first line agents, while other guidelines (Canadian Network for Mood and Anxiety Treatments and International Society for Bipolar Disorders) add lurasidone and quetiapine.[26,27] While lamotrigine is not FDA approved for use in acute bipolar depression, it is

Table 4. Treatment for phases of Bipolar Illness - Monotherapies

	Acute Mania	Acute Bipolar Depression	Maintenance
First Line	Lithium Valproic Acid Aripiprazole Risperidone Quetiapine Asenapine	Lithium* Lamotrigine* Quetiapine Lurasidone	Lithium Lamotrigine Aripiprazole
Second Line	Carbamazepine ER Olanzapine Ziprasidone	Cariprazine	Olanzapine Risperidone LAI Cariprazine
Other	Chlorpromazine	Lumateperone	

* = not FDA approved but guideline based
LAI = Long-acting injectable

widely used as a first line agent with a strong evidence base.[28] Due to a small risk of Stevens-Johnson Syndrome, lamotrigine must be titrated deliberately and slowly. This may limit its use in acute settings. Lithium is also recognized as an effective agent in bipolar depression, though it does not carry FDA approval for this specific indication.[29]

Both the APA and other guideline writers suggest using the medication that stabilized the patient for continued use as a maintenance agent.[13,30] However, side effects may make other agents more attractive for long-term use. Current FDA-approved medications include lamotrigine, lithium, and the SGAs aripiprazole, olanzapine, cariprazine, and the long-acting injectable form of risperidone (Table 4).

While the number of possible medications involved in the treatment of BPAD may seem overwhelming, the PCP can add considerable scope to their practice by a few specific medications. Lamotrigine is commonly used for Bipolar II patients as well as its indicated use as a maintenance treatment. Choosing two SGAs to cover the three phases of treatment can be made based on local cost and side effect profile. The addition of lithium to a clinician's skillset would likely then cover the majority of patients – referral to specialty psychiatric care after these medications had failed would almost certainly be indicated.

Evidence is limited regarding the efficacy of non-pharmacologic treatment for BPAD. Psychoeducation for both the patient and family in both individual and group settings have shown benefit in reducing mood relapses.[31] Data are lacking on the best specific psychological strategies to employ for patients with BPAD. Cognitive behavioral therapy, interpersonal and social rhythm therapy, and family focused therapy have all show low quality evidence of benefit as adjuvant treatments for BPAD.[31] Other therapies that may have utility in symptom reduction include: mindfulness based cognitive therapy, dialectical behavioral therapy, and cognitive remediation therapy. In addition, mood trackers (available online or by paper) are helpful for some patients to identify early signs of mania or depression.[32]

Conclusion

PCPs will encounter many patients dealing with bipolar illness and be called on to initiate and maintain treatment. As such, they need the knowledge to accurately diagnose BPAD and

distinguish it from other common psychiatric syndromes. In addition, knowledge of first line pharmacotherapies for BPAD during the phases of acute mania/hypomania, depression and maintenance will benefit PCPs treating patients with BPAD to ensure timely and effective treatment. Additionally, PCPs should be aware of sources of excess morbidity and mortality in BPAD. While severe cases of BPAD often require specialty mental health care, there are many cases where a PCP can treat BPAD, especially with consultative help at a distance. Telehealth technologies in various configurations have become more common, making team based care of BPAD possible, even in areas lacking proximate consultation with specialty mental health providers.[33] Although it is unclear which psychological strategies are most efficacious in BPAD, PCPs should partner with behavioral health consultants within their community to help support patients' psychosocial functioning.

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Disclosure

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Pre-Exposure Prophylaxis for HIV in Primary Care and Beyond

by Theresa Drallmeier, MD & Ashley Meyr, MD

Provider education and further expansion of PrEP provision within primary care and family planning clinics will greatly expand access to PrEP within Missouri and beyond.



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Abstract

HIV pre-exposure prophylaxis (PrEP) is antiretroviral medication used to prevent HIV in patients at increased risk of acquisition due to sexual practices or intravenous drug use. Despite strong evidence of efficacy and safety, PrEP is currently underutilized in the United States. Initial testing includes HIV, hepatitis B, and renal function. There are currently two oral medications approved for daily use within the U.S.; regular monitoring for HIV and renal dysfunction is required with both medications.

Introduction

According to statistics from the Centers for Disease Control and Prevention (CDC), in 2019 approximately 38 million people had HIV throughout the world, with 1.7 million new cases diagnosed worldwide that year. In the U.S., approximately 1.2 million people had HIV by the end of 2019, with almost 37,000 new cases diagnosed. HIV pre-exposure prophylaxis (PrEP) is antiretroviral medication that can be used to prevent acquisition of HIV in patients who are at increased risk. As of June 2019, offering PrEP to patients at high risk of acquiring HIV is a Grade A recommendation from the United States Preventive Services Task Force (USPSTF). A 2018 meta-analysis and systematic review including a cumulative 55,000 patients concluded that use of PrEP in those at high risk for HIV was associated with less than half the risk of HIV acquisition compared to placebo or no PrEP after four to fourteen years. Greater adherence to PrEP was associated with increased efficacy (≥70% risk reduction). Common adverse events included renal dysfunction and gastrointestinal disturbance, which were typically mild and reversible.[1, 2] This review served as the basis for the Grade A USPSTF recommendation for PrEP. Similarly, a 2018 systematic review including four randomized-controlled trials showed that daily use of PrEP was more than 90% effective at preventing acquisition of HIV through sexual contact in those at high risk.[3] Thus, PrEP is an incredibly important and effective tool in public health efforts to prevent transmission and acquisition of HIV.

Although PrEP is known to be effective in preventing HIV infection, it is underutilized in the U.S. Any licensed provider can prescribe PrEP; it is not necessary to have specific training in HIV or infectious disease. Primary care providers and those who discuss family planning, sexual health, and sexually transmitted infections with patients should be screening for HIV risk and initiating conversations about PrEP with their patients. However, a 2019 survey of outpatient primary care physicians considered to be part of a safety-net healthcare system in Tarrant

Table 1. Indication for PrEP Initiation

Risk of sexual acquisition
Any adult or adolescent: • Without acute or established HIV infection • With any sex with opposite sex partner OR any same sex partner (MSM persons) within the past 6 months AND one of the following: • Ongoing sexual relationship with HIV+ partner • Infrequent condom use with 1+ partners of unknown HIV status at substantial risk of infection (PWID, MSM, bisexual male, transfeminine persons etc) • Bacterial STI (syphilis, gonorrhea, or chlamydia in MSM, or syphilis or gonorrhea in non-MSM) in past 6 months
Risk of intravenous acquisition
Any adult or adolescent: • Without acute or established HIV infection • With any injection of drugs not prescribed by clinician in past 6 months AND one of the following: • Any sharing of injection or drug preparation equipment in past 6 months • Risk of sexual acquisition

County, Texas (an area with high prevalence of HIV) showed that only 35% had prescribed PrEP in the past year and that 55% had not had a conversation about PrEP with their patients in the past year; additionally, those with low knowledge of PrEP on self-report had 91% lower odds of prescribing PrEP.[4] Similarly, a 2016 national study of family planning providers found that fewer than 40% of respondents could correctly define PrEP, correctly state its efficacy, or choose the correct HIV test following recent exposure. Only 36% of respondents had seen any PrEP guidelines; 87% wanted PrEP education.[5]

There are also known racial and gender disparities in PrEP prescribing practices. From 2012-2014, the CDC identified 468,000 women eligible for PrEP, but less than 1,500 were prescribed PrEP.[6] In 2015, black and Hispanic men who have sex with men (MSM) had 10.5 and 4.9 times, respectively, increased incidence of HIV compared to white men; however, black and Hispanic MSM were significantly less likely than white MSM to know about PrEP, to discuss it with a health care provider, or to have used PrEP within the past year.[7] We hope to show that screening for PrEP need and prescribing PrEP are an integral and accessible part of primary and reproductive medical care.

Prescribing and Monitoring

Patient Selection

Adolescents and adults without HIV who are at increased risk of acquiring HIV should be offered HIV pre-exposure prophylaxis (PrEP). Per CDC guidelines, patients at increased risk of acquiring HIV through sex include all sexually active adolescents and adults who have a history of no or inconsistent barrier protection use, have been diagnosed with a bacterial sexually transmitted infection in the past six months, or have a partner with known HIV. Additionally, commercial sex workers and those who have a high number of sexual contacts are considered to be at increased risk. "Sexually active" adolescents and adults are defined as those who have had anal or vaginal intercourse in the past six months. These recommendations apply to sexually active heterosexual men and women, sexually active transgender patients, and MSM. Additionally, per CDC guidelines, PrEP should be offered to patients who inject intravenous drugs whose partner(s) are HIV positive and inject IV drugs, or those who share equipment for intravenous drug injection. PrEP should also be offered to those who have been prescribed HIV post-exposure prophylaxis (PEP) and have continued high-risk behaviors and to those who have been prescribed multiple courses of PEP. See Table 1 for more detailed information on PrEP indications.[8]

Prior to starting PrEP, patients must have a documented negative HIV test and no symptoms of acute HIV infection over the past month. Ideally, this should be a fourth-generation combined antigen and antibody test that is done within one week prior to starting PrEP. Since medications used for PrEP are also part of regimens used to treat HIV, patients would be at increased risk of developing resistant HIV if started on PrEP while they

Table 2. PrEP Medication Drug Interactions

Monitor for dose-related renal toxicity	Contraindicated with PrEP
Acyclovir	Adefovir
Valacyclovir	Carbamazepine
Cidofovir	Fosphenytoin-phenytoin
Ganciclovir	Oxcarbazepine
Valganciclovir	Phenobarbital
Aminoglycosides	Rifabutin
High-dose or multiple NSAIDs	Rifampin
	Rifapentine

have active infection. Renal function must also be assessed using serum creatinine and estimated creatinine clearance (by Cockcroft-Gault calculation), as creatinine clearance less than 60 mL/minute or less than 30 mL/minute is a contraindication to starting PrEP with emtricitabine/tenofovir disoproxil fumarate (TDF/FTC, or Truvada) and emtricitabine/tenofovir alafenamide (TAF/FTC, or Descovy), respectively. Medications used for PrEP can cause rarely decreased renal function or acute renal failure, including Fanconi's syndrome, so close monitoring is needed. Patients should also be screened for hepatitis B (HBV), since PrEP medications can be used to treat HBV. Although HBV is not a contraindication to starting PrEP, these patients need close monitoring of liver function after stopping PrEP due to potential risk for increased viral replication. If patients are found to be susceptible to HBV, they should receive the HBV vaccination series (although this should not delay initiation of PrEP). Providers should also consider testing for hepatitis C infection (HCV) as part of initial evaluation, since patients at increased risk of acquiring HIV are also at increased risk of becoming infected with HCV. Additionally, patients' current medications must be reviewed for potential interactions with approved PrEP medications. There are a number of medications, largely psychiatric medications and infectious disease agents, which are contraindicated with PrEP. Certain other medications may increase the serum concentration of TDF and/or the drug in question; these medications require increased monitoring for dose-related renal toxicity. See Table 2 for a complete medication list. Although not a contraindication, consider avoiding concurrent high dose NSAIDs with PrEP due to potential for increased nephrotoxicity.[8]

Medication Selection and Dosing for Oral PrEP

The two oral medications currently approved for PrEP are emtricitabine/tenofovir disoproxil fumarate (TDF/FTC, or Truvada) and emtricitabine/tenofovir alafenamide (TAF/FTC, or Descovy). Each medication is dosed as a single tablet once daily and can be used as PrEP for adolescents and adults weighing 35 kg or more. TDF/FTC is approved for PrEP for all patients at increased risk for HIV with creatinine clearance of at least 60 mL/minute. TAF/FTC can be used in patients with a creatinine clearance of at least 30 mL/minute. However, it should not be used for those whose increased risk is through receptive vaginal sex due to lack of data for prevention in these cases.[8] The 2016-2017 DISCOVER study found that at 48 weeks, daily TAF/FTC was non-inferior to daily TDF/FTC for HIV PrEP and both were well tolerated; however, TAF/FTC had a better renal safety profile and fewer negative effects on bone mineral density.[9] Longer-term data at 96 weeks again confirmed these findings, although those who had received TAF/FTC were found to have higher rates of triglyceride elevation and gained more weight.[8,10] Although TDF/FTC is known to cause osteopenia, it's not considered clinically significant in most cases. Several studies have shown no increase in bone fracture rates.[11,12] As such, routine monitoring of bone mineral density is not indicated.[13] Given similar outcomes and the release of TDF/FTC as generic in October 2020, utilization of TDF/FTC for patients without renal dysfunction or osteopenia is likely advantageous for cost purposes.

Efficacy of PrEP is dependent on adherence. The amount of time required to reach maximum intracellular concentration of TDF is tissue dependent: it takes up to 20 days for full penetration of cervicovaginal tissue, seven days for rectal tissue, and 20 days for serum penetration.[8] During the time before full concentration, it's important to emphasize alternative HIV prevention strategies, i.e., condoms. Based on pharmacokinetic studies, it appears that full efficacy of oral PrEP requires a minimum adherence of six doses per week (85% adherence) within the cervicovaginal tissue and two doses per week (28% adherence) within colorectal tissue.[13]

There is some evidence to suggest that on-demand PrEP dosing may be effective in the MSM population. A 2015 study investigated a dosing regimen driven by sex events, in which the individual takes two pills of TDF/FTC 2-24 hours prior to anal sex, a third pill 24 hours following the initial pill ingestion, and a fourth pill 24 hours later. The study authors reported an 86% relative risk reduction of HIV incidence compared to placebo. Because many of the participants in the study cohort had frequent sexual events, a post-hoc analysis investigated whether on-demand PrEP remained effective among men

Table 3. Clinical Follow-up and Monitoring on PrEP

Every 3 months: • Repeat HIV testing, and assess for signs and symptoms of acute HIV • Repeat pregnancy test for persons at risk of pregnancy • STI testing as needed based on symptoms and risk evaluation (particularly MSM)
Every 6 months: • Monitor creatinine clearance for those ≥ 50 years or with eCrCl < 90 mL/min at PrEP initiation (may require more frequent monitoring if medication interactions or other comorbidities affecting renal function, like diabetes mellitus or hypertension) • STI testing for all even if asymptomatic
Every 12 months: • Monitor creatinine clearance for those < 50 years or with eCrCL ≥ 90 mL/min at PrEP initiation • Evaluate continued need for PrEP for HIV prevention

Table 4. Schedule for "2-1-1" Dosing

MSM should be instructed to take F/TDF as follows: • 2 pills in the 2-24 hours before sex (closer to 24 hours preferred) • 1 pill 24 hours after the initial two-pill dose • 1 pill 48 hours after the initial two-pill dose
For subsequent sexual events, MSM should take additional doses as follows: • If sex occurs on the consecutive day after completing the 2-1-1 doses, take 1 pill per day until 48 hours after the last sexual event. • If a gap of < 7 days occurs between the last pill and the next sexual event, resume 1 pill daily. • If a gap of ≥7 days occurs between the last pill and next sexual event, start again with 2 pills.

with less frequent encounters (15 pills or fewer each month); this analysis reported continued efficacy with a relative reduction of HIV incidence of 100% (six infections in placebo vs none in TDF/FTC group).[14, 15] While event-driven dosing for MSM is not an FDA-approved regimen, the recommended "2-1-1" dosing schedule was outlined in the 2021 CDC guidelines and is available in Table 4.[8] Due to lack of evidence, event-driven PrEP is not recommended for other populations, including cisgender or transgender women, transgender men having vaginal/frontal sex, men having sex with women, or people who inject drugs.[16]

Monitoring of Oral PrEP

Once started on PrEP, patients need ongoing monitoring, with visits recommended every three months. At each follow-up, patients should be reassessed for adherence, counseled on HIV risk reduction, and retested for development of HIV. Renal function should be measured at least yearly, and every six months for individuals age ≥ 50 years or with eCrCl < 90 mL/min at PrEP initiation. Do not withhold treatment for a rise in serum creatinine if eCrCl remains stable above 60 mL/min for F/TDF or 30 mL/min for F/TAF. Additionally, all patients on PrEP should be screened for sexually transmitted infections every three to six months based on risk profile. Patients should be assessed for risk of HIV acquisition at least yearly to determine whether PrEP should be continued. In order to ensure adequate follow-up and monitoring, PrEP prescriptions should be written for no more than 90 days at a time. See Table 3 for a summary of monitoring considerations.[8]

Injectable PrEP

In December of 2021, the FDA approved cabotegravir (CAB-LA), an injectable PrEP medication with promising efficacy and tolerability data. Prescribing and monitoring recommendations vary from that of the oral PrEP formulations. CAB can be started once acute or chronic HIV infection is ruled out; due to extended drug exposure after injection, HIV infection must be ruled out by checking an HIV-1 RNA assay, the most sensitive test available. Ideally this occurs within 1 week prior to medication initiation. There is no need to check renal function, hepatitis B serology, lipid panels, or liver function tests. For administration, 3 mL of CAB 600 mg IM suspension is injected into the gluteal muscle. Injection site reactions (pain, tenderness, induration) were common but transient in clinical trials. Patients should be informed that such reactions typically last a few days and occur most commonly with the first several injections. Over-the-counter pain medications and/or the use of warm

compresses or heating pads at the injection site may provide relief. Patients should additionally be counseled about the "tail" caused by slowly declining drug levels when CAB injections are discontinued. There is a higher risk of drug-resistant HIV if HIV infection is acquired during this time.

Follow-up visits occur one month after the initial injection and bi-monthly thereafter. At each visit, an HIV-1 RNA test is performed, patients are assessed for signs or symptoms or acute infection, and CAB injection is administered. STI screening occurs per protocol as described in Table 3. Time to protection data is not yet available for CAB PrEP.[8]

Prescribing Considerations

Since the USPSTF has given a Grade A recommendation to offering PrEP to those at high risk for acquiring HIV, insurance plans must now cover PrEP. This includes both private plans and state Medicaid programs, although prior authorization may be required. Patient assistance programs are available for those who are uninsured. Additionally, Gilead and some states offer copay assistance programs.[8]

Special Populations

Adolescents

PrEP was approved for adolescents in 2018.[17] Use in young people is supported by three studies, two with young MSM in the U.S., and one in South Africa, which showed efficacy in HIV prevention.[18,19,20] Despite PrEP's efficacy, uptake has been poor compared to other age demographics. An analysis of 2017 prescription-level data on persons under age 24 demonstrated a wide gap between those who might benefit from PrEP and those who actually utilize it (also known as the PrEP-to-need-ratio, or PnR) in those under age 24.[21] Additionally, the studies additionally noted that PrEP adherence was a struggle for this younger cohort, dampening the efficacy of the intervention.[18, 19, 20] As such, the WHO suggests consideration of additional monitoring and adherence support for adolescents and young adults under age 24.[22]

Pregnant and Lactating Persons

While data remains limited on PrEP use during pregnancy and lactation, outcomes thus far have been reassuring. A 2017 systematic review of 26 articles in which women received TDF alone or in combination with other drugs showed no statistically significant differences in pregnancy outcomes including incidence of pregnancy, pregnancy loss, preterm delivery before 37 weeks, low birth weight, birth defects, or maternal or infant mortality.[23] In addition, a 2016 study examining TDF/FTC use for PrEP among 50 Kenyan and Ugandan mother-infant pairs found undetectable to very low levels of of TDF in infant blood, suggesting TDF/FTC use is likely safe in lactating individuals and their infants.[24] Given the above data, the WHO recommends TDF/FTC-based oral PrEP for pregnant or lactating individuals who are at high risk for HIV acquisition.[25]

People Who Use Drugs

People who use drugs (PWUD) have unique risk for HIV acquisition, with increased likelihood of both sexual and injection-related behaviors that may result in HIV transmission. Recent data from the US National Behavioral Surveillance Survey suggested that three quarters of people who inject drugs (PWID) report syringe sharing and/or condomless sex within the past year.[26] Data on PrEP adherence in the PWUD population is limited currently, but early data suggests that while sociodemographic and structural factors influence adherence, PWUD can access and adhere to PrEP if adequate support is provided.[27, 28] Further studies are needed to inform care in this population, incuding consideration of alternate PrEP modalities (like injectable PrEP), integration of PrEP services within substance use disorder services, and targeting multilevel barriers to PrEP dissemination in the PWUD population.[29]

Future Directions

Emerging modalities promise to alter the PrEP landscape and facilitate improved adherence within high-risk populations. The recent approval of injectable CAB promises a new option for those who struggle with adherence to a daily oral regimen.[30,31, 32] The dapivirine (DPV) intra-vaginal ring, also currently under FDA review, is utilized on a monthly basis and has shown moderate efficacy at decreasing HIV transmission in African women.[33, 34] Other possibilities are in pre-clinical and clinical development, including a once-monthly oral pill, alternative long-acting injections, and subcutaneous implants.[35]

Conclusion

The efficacy and important public health role of PrEP for the prevention of HIV is clear, but uptake of PrEP continues to lag within many populations. Barriers to PrEP utilization exist at the social, structural, individual,

and provider levels, and contribute to racial and gender disparities in PrEP use. These barriers include poor awareness of PrEP among providers and patients, misperception/miscalculation of HIV risk on the part of both patients and providers, concern about stigma and side effects, patient distrust of the healthcare system, poor access to medical care for at-risk populations, and cost. Needed interventions are diverse, and include increased education of both patients and providers, addressing systemic biases, support for patients navigating financial aid options, and expanding settings where PrEP can be accessed.[36] As a first step, these authors hope that provider education and further expansion of PrEP provision within primary care and family planning clinics will greatly expand access to PrEP within Missouri and beyond.

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Disclosure

None reported.

MM

Balancing Act: Muscle Imbalance Effects on Musculoskeletal Injuries

by Jamil R. Neme, MD

In the absence of an outright sprain, strain, or osseous abnormality, having the ability to detect flawed movements and muscle imbalance through functional assessment can be insightful for the patient and enable more detailed therapies.



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Abstract

Overuse injuries affect persons of all ages and physical participation levels. These injuries involve repetitive overload causing damage and pain to various joints, affecting performance and ability to continue participation. Even when an injury diagnosis is apparent, functional assessment is useful in discovering the underlying mechanism.

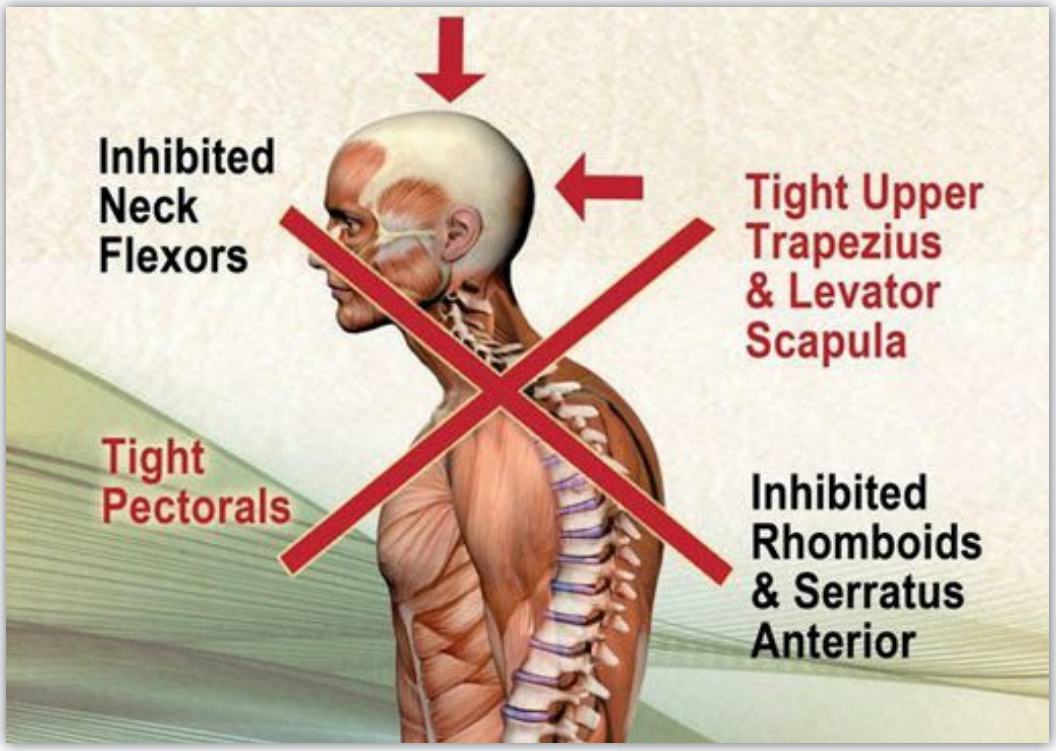
Introduction

Overuse injuries involve repetitive motion resulting in microtrauma to muscle, tendon, bone, or bursa. Excessive loading and insufficient recovery increase risk of gradual breakdown at the cellular level. Subsequently, this produces painful arc of motion, which can affect any joint of the body. Various tendinopathies, physis injuries, and stress reactions may also be a result of this "failed healing response," where a natural inflammatory response and injury resolution becomes disrupted.[1] While clinical presentation may elicit a particular diagnosis, such as patellar tendinopathy or rotator cuff tendinopathy, simply treating the downstream affect may not be wholly beneficial to our patients. Including functional assessment as part of the physical exam may uncover underlying biomechanics and imbalances that ultimately set the athlete up for their injury. The purpose of this review is to outline the importance of basic functional testing for common joint complaints and continued injuries, which can offer insight for a prescribed home exercise program or describe the benefit of physical therapy.

Shoulder

Shoulder impingement is an umbrella term malady that involves extrinsic or intrinsic forces on the multiple constructs that comprise shoulder motion, accounting for 44-65% of shoulder complaints.[2] Specifically, subacromial impingement refers to a narrowing of the subacromial space, a common issue with overhead athletes. Shoulder range of motion involves static stabilizers such as the glenoid labrum and joint capsule, but also dynamic stabilizers such as the rotator cuff tendons and periscapular muscles. A characteristic pattern of functional muscle imbalance, described as 'Upper Crossed' Syndrome' (Figure 1) includes weakness of lower and middle trapezius, serratus anterior, infraspinatus, and deltoid in

Figure 1. Upper Crossed Syndrome



contrast to tightness of upper trapezius, pectorals, and levator scapula.[2]

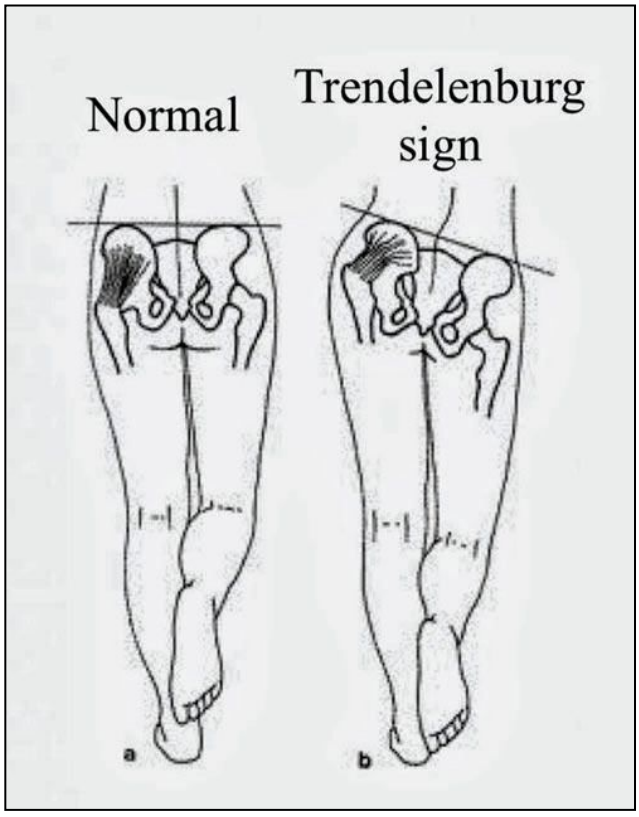
Subacromial impingement featuring this agonist and antagonist scapular function imbalance, has shown to cause compression of the subacromial space and alterations in shoulder kinematics and muscle activation.[3] Furthermore, postural patterns which create a scapula in protraction and anterior tilt is suggested to increase compression of the subacromial space.[4] Evaluation centers around commonly used impingement special testing with Neer's, Kennedy-Hawkins, and Empty Can. Addition of specific scapular tests can be helpful in function assessment. Scapular assistance test evaluates serratus anterior and inferior trapezius muscles. Scapular retraction test is useful to stabilize the scapula and determining effect of scapular movement on painful arc of motion.

Recent literature has questioned the importance of scapular motion, or an actual subacromial space impingement altogether. A systematic review concluded that there is insufficient evidence to support or refute scapular stabilizer strengthening in shoulder impingement syndrome.[6] However, using scapular motion assessment as part of the armamentarium in shoulder evaluation can prove to be helpful in guiding a treatment plan for your patient, as well as aid in explanation for patient. Specifically, aiming at scapular stabilizing.

Hip

Low back pain is the most common musculoskeletal complaint, accounting for about 65 million years lived with disability around the world, annually.[7] Etiologies for low back pain vary, but common treatment plan centers around physical therapy with exercise for lumbar, abdominal, and lower extremity strengthening. As part of the multi-plane movement of the pelvic girdle, the hip joint is the structural link between the lower extremities and the axial skeleton. The joint itself can disperse forces of 1.5 to 5.0 times body weight, depending on the movement.[8] With these large amounts of energy, variations in gait or stance can certainly create overuse injuries and pain. Various studies have highlighted the kinetic chain theory, which explains that injuries migrate from distal to proximal structures. For instance, Nader et al. has several supporting articles describing unilateral hip extensor weakness and hip flexor imbalance in association with development of low back pain, specifically

Figure 2. Trendelenburg Sign



in female athletes.[9] Similarly, gluteus medius weakness and tenderness has been a common association with patients with chronic low back pain, which was also evident in a higher prevalence of a positive Trendelenburg sign (Figure 2).[10]

Physical exam maneuvers for hip evaluation commonly consists of range of motion, strength, FABER and FADIR maneuvers. However, adding in functional assessment with gait, step-up, step-down, single-leg squat, and double-leg squat can be quite useful in evaluation. To this point, a recent study in hip biomechanics remarked on several differences during a single-leg squat in patients with femoroacetabular impingement syndrome (FAI). Those with FAI demonstrated more exaggerated differences on single-leg squat, exhibiting less peak hip adduction, lower peak hip joint abduction and extension moments, and a slower overall squat when compared to those without pain and compared to double-leg squat.[11] Functional assessments should occur regardless of age or physical activity level; this is particularly important when considering our elderly patients and the utility of a 'Get Up and Go' test. Avoidance of hip fracture and associated morbidity and mortality is also at the foundation for recommending an additional two days of balance training for physical activity guidelines, for patients over the age of 65.

Knee

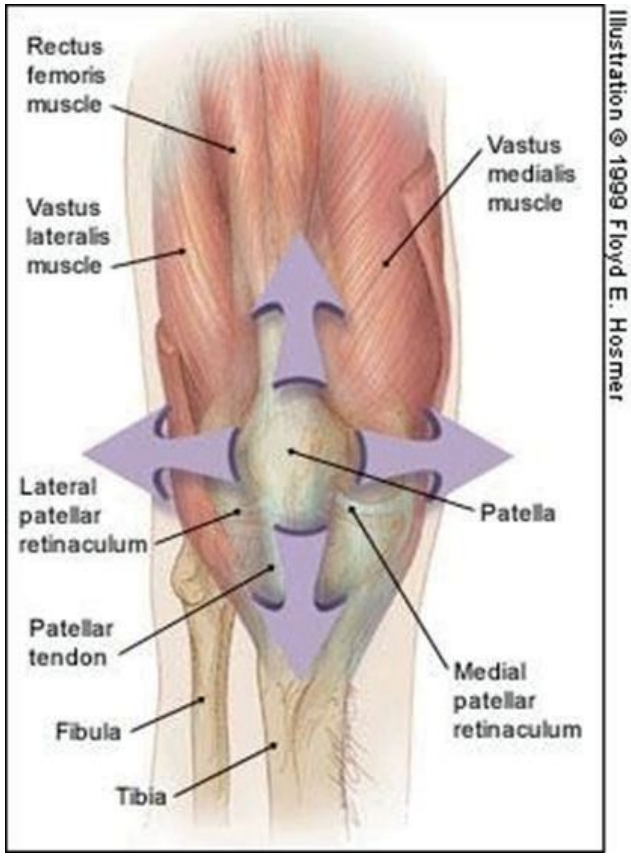
Knee pain is the second most common reason for chronic pain. One of the more common diagnoses of knee pain is patellofemoral pain syndrome (PFPS), with a general population prevalence of 22.7%. In the absence of specific tendinopathy, ligamentous injury, or arthroses, patellofemoral syndrome is an anterior knee syndrome that has historically been multifactorial. One suggested risk factor for development of PFPS is weakened quadriceps.[12] Previously held theories of height, weight, BMI, and Q-angle do not pan out as risk factors for PFPS.[13] The knee as a hinged joint, has nearly all its flexors and extensors as two-joint muscles (Figure 3).

Therefore, in the absence of outright injury, it is important to evaluate dynamic motion of the knee, with assessment of hip and ankle motion. Weak muscle activation in the hips have shown to be positively correlated with PFPS. Asymmetric gluteus medius activation was a clinically relevant factor in pain severity.[14] Similarly, delayed vastus medialis activation showed a positive relationship with patellar tracking disorder in patients diagnosed with PFPS.[15] Appreciation of improper form or weakness in the one of the other joints can be helpful in establishing causation and a treatment plan. Again, this is a good opportunity to move beyond typical special testing of the knee, and include similar functional assessments as described above, namely gait, single-leg squat, double-leg squat, step-up, and step-down.

Conclusion

Establishing comfort with proper physical exam and special testing of these joints is

Figure 3. Knee Forces



important in proper diagnosis of ailments. An understanding of biomechanical demands of the patient may help identify risk for overuse injury. However, in the absence of an outright sprain, strain, or osseous abnormality, having the ability to detect flawed movements and muscle imbalance through functional assessment can be insightful for the patient and enable more detailed therapies. Additionally, having specific direction for physical therapy can improve patient adherence, and thereby increase successful outcomes.

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Disclosure

None reported.

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Characteristics of Patients with Non-Cancer Pain and Perceived Severity of COVID-19 Related Stress

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Identifying specific stressful experiences that most impacted patients with non-cancer pain may inform public health and treatment interventions.

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Synopsis

Patients with non-cancer pain reported increased pain and pain interference during the first months of the COVID-19 pandemic. We determined if pain, prescription opioid use, and comorbidities were associated with perceived COVID-19-related stress as the pandemic peaked. Analysis of survey data revealed that depression/anxiety, pain severity, and pain interference were most strongly and consistently associated with greater stress due to COVID-19 related changes in lifestyle, worsening of emotional/mental health and worsening pain. Identifying specific stressful experiences that most impacted patients with non-cancer pain may help target public health and treatment interventions.

Abstract

Background

During the first months of the COVID-19 pandemic, patients with chronic pain reported increased pain severity and interference. This study measured the association between pain, prescription opioid use, and comorbidities with perceived COVID-19-related stress as the pandemic peaked in the United States.

Methods

From 9/2020 to 3/2021, the first 149 subjects from a prospective cohort study of non-cancer pain, completed a survey which contained the Complementary and Integrative Research (CAIR) Pandemic Impact Questionnaire (C-PIQ). Respondents also reported whether the pandemic has contributed to their pain or opioid use. Bivariate comparisons explored patient characteristics with each CAIR domain.

Results

Respondents mean age was 54.6 (±11.3) years, 69.8% were female, 64.6% were White. Respondent characteristics were not associated with reading/watching/thinking about the pandemic or with worry about health. Depression/anxiety (p=0.003), using any prescription opioid in the prior three months (p=0.009), higher morphine milligram equivalent used (p=0.005), higher pain severity (p=0.011), and higher pain interference (p=0.0004) were all positively and significantly associated with moderate to

severe stress due to COVID-19 related lifestyle changes. Depression/anxiety, pain severity, and pain interference were positively associated with COVID-19-related worsening emotional/mental health. Depression/anxiety were significantly (p<0.0001) associated with reporting that the pandemic made their pain worse.

Conclusion

Depression, anxiety, pain severity, and pain interference were most strongly and consistently associated with COVID-19 changes in way of life, worsening of emotional/mental health, and worsening pain. Identifying specific stressful experiences that most impacted patients with non-cancer pain may inform public health and treatment interventions.

Introduction

Social isolation, uncertainty about the future, fear of illness and death, and loss of loved ones during the COVID-19 pandemic have contributed to increases in psychosocial distress and substance misuse.[1-3] Coping during the pandemic may be especially difficult for non-cancer pain patients who experience higher levels of stress, anxiety and depression than those without pain.[4-6]

In the first months of the pandemic, a cross-sectional survey of patients with chronic pain revealed 29.7% of respondents had increased pain severity, 25.6% had more pain interference and 61.4% of respondents had worsened mood.[7] Within two months of social isolation mandates in Massachusetts, two-thirds of patients with chronic and post-surgical pain reported increased pain severity and pain interference. Approximately 70% of subjects reported worsening pain severity and interference related to restricted access to pain treatment and social isolation.[8] A similar proportion of participants in the Chronic Pain & COVID-19 Pan-Canadian Study reported worsened pain associated with higher perceived COVID-19 risk, stress, and change in pain therapies.[9]

COVID-19-related stress has been linked to increased opioid and other substance use and misuse. In a general population survey, respondents who initiated substance use after the onset of the pandemic had greater worry and fear related to COVID-19 compared to those who were users before the pandemic.[10] During the first four months of the pandemic, the number of nonfatal opioid overdoses doubled as compared to the same four-month period of time in 2019.[11] More pain specialists increased than decreased opioid prescribing during the first two months of the pandemic (28.8% increased, 65% stayed the same and 6.2% decreased).[12]

Many studies of pain experiences during COVID-19 were conducted during the first few months of the pandemic and did not include all forms of acute and chronic non-cancer pain. It is not known if patients with non-cancer pain who were prescription opioid users experienced more psychopathology and worse pain severity and interference and greater substance use over the first year of the pandemic when the number of new cases and fatalities per day peaked.

The current study is a preliminary investigation of the association between pain severity, pain interference, prescription opioid use, depression, anxiety, smoking, alcohol use, as well as demographics and multiple domains of perceived COVID-19 related stress, worry, and emotional well-being. The study also evaluated whether respondents endorsed COVID-19 as a cause for worsening pain and increased opioid use.

Methods

Patients were recruited to a prospective cohort study to determine the mental health outcomes of chronic prescription opioid use. Details on the study rationale, methods, and assessments employed in the Prescription Opioids and Depression Pathways Cohort Study have been reported.[13] In brief, subjects were eligible to enroll in the baseline assessment if they were starting a new period of prescription opioid use, defined as no opioid use in the prior three months, and were free of cancer pain per documentation in the electronic health record and confirmed in screening questions. Eligible subjects are recruited from two sites, Saint Louis University's academic medical practice in St. Louis, Missouri, and Henry Ford Health System in Detroit, Michigan.

The cohort study involves a baseline survey, six- and 12-month follow-ups. Baseline enrollment began in November 2019. The assessment of COVID-19 related stress, worry, pain, and opioid use was included in the six- and 12-month follow-up surveys and were added in September 2020. The present study uses data from the first 149 patients to complete the six-month follow-up from September 2020 to March 2021. We do not include assessments from baseline for this study

because a substantial portion of the sample completed the baseline survey prior to the pandemic.

At baseline, eligibility criteria were confirmed, and subjects provided informed consent and released protected health information prior to beginning the survey. All assessments were administered in REDCap and either completed by the subject on the internet or by a telephone interviewer entering answers into REDCap. Those who completed the baseline were eligible for the six-month follow-up assessment.

Demographic measures included age, gender, race, and employment status. Pain severity and interference were obtained from the Brief Pain Inventory.[14,15] Pain severity was the average of four-items on a scale from '0=no pain' to '10=pain as bad as you can imagine' measuring worst in last 30 days, least in last 30 days, pain on average, and current pain. Pain interference was the average of seven-items on a scale of '0=does not interfere' to '10=completely interferes' measuring how pain has interfered with general activity, mood, walking ability, normal work, relationships, sleep, and enjoyment of life in the last 30 days.

We asked participants to report whether they used any of 14 types of prescription opioids in the past 90 days. For each type of opioid endorsed, participants were asked the unit dose, number of pills usually taken per day and number of days per week the medication was taken. We created a variable indicating whether patients used any opioids in the three months prior to the six-month follow-up survey. Among those reporting current opioid use, we created a binary variable indicating use of an opioid every day of the week vs. less often. Based on patient reported opioid dose and frequency of opioid use, weekly morphine milligram equivalent (MME) dose was calculated as daily MME (pills per day*mg per pill*MME conversion factor) multiplied by days per week for all drugs taken in the past 90 days. Total weekly MME was the sum of all individual weekly MME's (if multiple were taken in last 90 days). The 75th percentile of the distribution of total weekly MME in the sample was used to categorize opioid use as low dose vs. high dose (<157.5 mg vs. ≥157.5 mg).

The Prescribed Opioids Difficulty scale (PODS) measured patients concerns about controlling their use of opioids and psychosocial difficulties related to opioid use such as opioids causing lost interest or interfering with work and ability to concentrate.[16] A summary score ≥ 16 indicates problems with prescription opioid use.

Depression was measured by the PHQ-9[17] and anxiety by the GAD-7.[18] We created binary depression and anxiety variables if the scores were ≥ 10 on either instrument, which indicates moderate or more severe current depression or generalized anxiety disorder. Due to the small sample size, we created a composite variable indicating any depression or anxiety vs. no depression or anxiety.

Smoking was measured by asking respondents if they smoked cigarettes every day, some days, or not at all. Current smoking was defined as smoking every day or some days. Alcohol Use Disorders Identification Test - Consumption (AUDIT-C) was used to measure hazardous drinking. The AUDIT-C has 3 questions with a total scale score of 0-12 with scores ≥ 4 in men and ≥3 in women indicate hazardous alcohol use/ alcohol abuse.[19,20]

Outcome Measures

We used five items from the Complementary and Integrative Research (CAIR) Pandemic Impact Questionnaire (C-PIQ).[21] Participants were asked: In the past two weeks: 1) How much are you reading, watching/listening, talking or thinking about coronavirus/COVID-19? 2) How much do you worry about your health or the health of your friends or family? 3) How stressful have changes in social (family and friends) contacts been for you? 4) How stressful have changes in your way of life (e.g. financial, education, living situation, childcare, etc.) been for you? 5) How much has your mental/emotional health been worsened by the COVID-19 pandemic?

We created two items following the C-PIQ format which were: 6) How much has your pain been worsened by the COVID-19 pandemic? 7) Have you needed to take more prescription opioids because of the COVID-19 pandemic?

Response options for questions 1 and 2 were: never, rarely, occasionally, often, most of the time. Response options for questions 3 through 7 were not at all, slightly, moderately, very, extremely. Response options were categorized into binary variables (never/ rarely vs. occasionally/often/most of the time and not at all/slightly vs. moderately/very/extremely).

All study procedures were reviewed and approved by the study sites' IRBs

Analytic Approach

Bivariate analyses estimated the association between patient characteristics and each COVID-19

Table 1. Patient characteristics (n=149) 9/2020 – 3/2021

	Valid n	Mean (±sd) or n(%)
Age	149	54.6 (±11.3)
Gender	149	
Male		45 (30.2%)
Female		104 (69.8%)
Race	147	
White		95 (64.6%)
Black		44 (29.9%)
Other		8 (5.4%)
Employment status	146	
Employed		44 (30.1%)
Unemployed or disabled		73 (50.0%)
Retired		29 (19.9%)
COVID-19 Items (percent positive)		
1) How much are you reading, watching, listening, talking or thinking about COVID-19?[a]	145	120 (82.8%)
2) How much do you worry about your health or the health of your friends or family?[a]	146	128 (87.7%)
3) How stressful have changes in social contacts, like family or friends, been for you?[b]	146	93 (63.7%)
4) How stressful have changes in your way of life been for you?[b]	145	89 (61.4%)
5) How much has your mental/emotional health been worsened by the COVID-19 pandemic?[b]	145	75 (51.7%)
6) How much has your pain been worsened by the COVID-19 pandemic?[b]	143	45 (31.5%)
7) Have you needed to take more prescription opioids because of the COVID-19 pandemic?[b]	142	<5[c]
Pain and mental health		
BPI severity	149	5.4 (±2.1)
BPI interference	149	5.3 (±2.7)
Any opioid use 3 months prior to survey	149	104 (69.8%)
Takes opioids every day of week (among current users)	99	55 (55.6%)
Weekly MME ≥ 157.5 mg (among current users)	80	22 (27.5%)
PODS positive (among current users)	100	14 (14.0)
Any depression or anxiety	144	55 (38.2%)
Current smoker	149	36 (24.2%)
Positive AUDIT-C	142	32 (22.5%)

[a] percent reporting "occasionally/often/most of time"
[b] percent reporting "moderately/very/extremely"
[c] To protect confidentiality, exact number not reported for cells containing < 5 patients

question. Statistical significance was determined using independent samples t-tests for continuous variables (e.g. age) and chi-square or Fisher's exact tests for categorical variables. Due to the preliminary nature of this study, we lacked adequate sample size to compute multivariate models. All analyses were performed with SAS v9.4 (SAS Institute, Cary, NC) at an alpha level of 0.05.

Results

As shown in Table 1, the average age of participants was 54.6 (±11.3) years. Most participants were female (69.8%) and most were White (64.6%). Half of the participants were unemployed or on disability. Reading, watching, listening, talking, or thinking about COVID-19 occasionally, often or most of the time was reported by 82.8% of respondents, and 87.7% of respondents reported worrying about their health or the health of friends or family occasionally, often or most of the time. The degree of stress related to changes in social contacts and the degree of stress related to changes in lifestyle were rated as moderately, very or extremely by 63.7% and 61.4% of respondents, respectively. Approximately half reported moderate to extreme worsening of mental or emotional health due to COVID-19. About one-third reported COVID-19 has moderately, very or extremely worsened their pain. Less than 4% reported a moderate to extreme need to take more prescription opioids due to COVID-19 which prohibited further descriptive analysis for this item.

The mean pain severity and pain interference scores were 5.4±2.1 and 5.3±2.7, respectively. Any prescription opioid use in the three months prior to

Table 2A. Association between pain patients (n=149)^ characteristics and perceived impact of COVID-19 on psychosocial well-being and functioning. 9/2020 – 3/2021

	Read/watch/ think about COVID-19			Worry about health self/friends/family			How stressful-social isolation		
	Never/rarely	Occasionally, often/most of the time	p-value	Never/rarely	Occasionally, often/most of the time	p-value	Not at all/slightly	Moderately/ever/ extremely	p-value
Age (mean, SD)	57.4 (±11.2)	51.1 (±11.4)	.194¤	59.3 (±11.2)	54.0 (±11.3)	.062¤	55.7 (±11.8)	54.1 (±11.1)	.417¤
Gender			.103			.752			.008
Male	44.0%	27.5%		33.3%	29.7%		43.4%	22.6%	
Female	56.0%	72.5%		66.7%	70.3%		56.6%	77.4%	
Race			.210			1.00			.914
White	75.0%	62.5%		66.7%	64.6%		62.3%	66.3%	
Black	16.7%	32.5%		27.8%	29.9%		32.1%	28.3%	
Other	8.3%	5.0%		5.6%	5.5%		5.7%	5.4%	
Employment status			.771			.207			.973
Employed	24.0%	31.6%		16.7%	32.0%		28.8%	30.8%	
Unemployed or disabled	56.0%	48.7%		50.0%	50.4%		51.9%	49.5%	
Retired	20.0%	19.7%		33.3%	17.6%		19.2%	19.8%	
Any depression or anxiety	37.5%	38.8%	.906	16.7%	51.5%	.067	28.8%	43.8%	.078
Current smoker	28.0%	23.3%	.620	11.1%	25.8%	.242	24.5%	23.7%	.906
Positive AUDIT-C	20.8%	23.5%	.780	5.9%	25.4%	.120	29.4%	19.3%	.173
Any opioid	64.0%	70.0%	.555	66.7%	69.5%	.805	62.3%	73.1%	.172
Takes opioid every day of week (among current users)	40.0%	59.3%	.257	58.3%	56.5%	.903	53.1%	58.5%	.618
Weekly MME ≥ 157.5 mg (among current users)	20.0%	28.6%	.719	33.3%	26.8%	.701	24.0%	29.1%	.789
PODS positive (among current users)	13.3%	14.6%	1.00	9.1%	14.9%	1.00	12.5%	15.2%	1.00
Pain severity	5.3 (±2.5)	5.4 (±2.1)	.910¤	4.9 (±2.5)	5.4 (±2.1)	.296¤	5.3 (±2.2)	5.4 (±2.1)	.744¤
Pain interference	5.5 (±2.9)	5.2 (±2.7)	.638¤	5.1 (±2.5)	5.3 (±2.8)	.763¤	4.8 (±2.9)	5.5 (±2.6)	.109¤

¤ Independent samples t-test
^Each bivariate comparison excludes subjects with missing data

survey was reported by 69.8%. Among opioid users, 55.6% were daily users and the top 25th percentile of weekly dose was ≥157.5 MME, which equals 22.5 MME a day. Among opioid users, 14% were positive on the PODS. Over 38% had depression or anxiety and about one-quarter were current smokers. About one out of five respondents met criteria for high-risk alcohol consumption.

As shown in Table 2A there were no statistically significant bivariate associations between patient characteristics and reading, watching, listening, talking or thinking about COVID-19 occasionally/often/most of time vs. never or rarely. There were no statistically significantly association between patient characteristics and frequency of time spent worrying about health of self/family/friends.

Although not statistically significant (p=0.257) due to small sample size, we observed that daily vs. non-daily opioid users were more prevalent among those who endorsed reading/watching/thinking about COVID-19 occasionally/often/most of the time vs. endorsing never or rarely reading/watching/thinking about COVID-19 (59.3% vs. 40.0%, respectively). We observed a similar trend for a positive association between depression/anxiety, current smoking and hazardous alcohol use with reporting worry about health or the health of family and friends occasionally/often/most of the time (Table 2A). Female gender was significantly (p=0.008) more prevalent among those who reported changes in social contacts as moderately, very or extremely stressful. There was a trend (p=.078) for a higher prevalence of depression/anxiety among those who reported changes in social contacts as moderately, very or extremely stressful as compared to reporting this change as not at all or slightly stressful (43.8% vs. 28.8%, respectively).

As shown in Table 2B, younger age (p=0.009), depression or anxiety (p=0.003), using any prescription opioid in the prior three months (p=0.009), higher MME (p=0.005), higher pain severity (p=0.011) and higher pain interference (p=0.0004) were all significantly more prevalent among those who reported moderate/very/extreme stress due to changes in way of life (financial, education, living situation, childcare etc.) as compared to reporting these changes as not at all or slightly stressful. Though not statistically significant (p=0.072), current smokers vs. past/never smokers were more prevalent among those who reported moderate/very/extreme vs. no or slight stress due to changes in way of life (29.2% vs. 16.1%, respectively).

Younger age (p<0.0001), female gender (p=0.015), depression/anxiety (p<0.0001), current smoking (p=0.022), higher pain severity (p=0.026) and higher pain interference (p=0.001) were positively associated with moderate/very/extreme worsening of mental/emotional health. Those who used any opioid in the past three months were 13.1% more prevalent among respondents reporting moderate/very/extremely worsened emotional/mental health (p=0.085) vs. none or slightly worsened emotional/mental health.

Table 2B. Association between pain patients (n=149)^ characteristics and perceived impact of COVID-19 on psychosocial well-being and functioning. 7/2020 – 3/2021

	How stressful life changes			Emotional/mental health worse			Pain worsened		
	Not at all/ slight	Moderate/ very/ extreme	p-value	Not at all/ slight	Moderate / very/ extreme	p-value	Not at all/ slight	Moderate /very/ extreme	p-value
Age (mean, SD)	57.8 (±10.7)	52.8 (±11.3)	.009¤	58.6 (±9.0)	51.0 (±12.2)	<.0001¤	55.7 (±10.9)	52.4 (±12.3)	.115¤
Male	35.7%	27.0%	.265	40.0%	21.3%	.015	37.8%	13.3%	.003
Female	64.3%	73.0%		60.0%	78.7%		62.2%	86.7%	
Race			1.00			.454			.162
White	65.5%	65.2%		60.9%	68.0%		69.8%	53.3%	
Black	29.1%	29.2%		34.8%	25.3%		25.0%	40.0%	
Other	5.5%	5.6%		4.4%	6.7%		5.2%	6.7%	
Employed	30.9%	29.9%	.327	32.9%	27.8%	.205	34.0%	23.3%	.430
Not-employed or disabled	43.6%	54.0%		42.9%	56.9%		46.4%	55.8%	
Retired	25.5%	16.1%		24.3%	15.3%		19.6%	20.9%	
Any depression or anxiety	23.2%	48.2%	.003	19.1%	56.9%	<.0001	26.3%	62.8%	<.0001
Current smoker	16.1%	29.2%	.072	15.7%	32.0%	.022	23.5%	28.9%	.488
Positive AUDIT-C	23.1%	23.3%	.981	25.8%	19.4%	.375	24.7%	18.2%	.392
Any opioid	57.1%	77.5%	.009	62.9%	76.0%	.085	65.3%	77.8%	.134
Takes opioid daily	53.1%	58.5%	.618	52.3%	60.4%	.423	48.4%	69.7%	.046
Weekly MME ≥ 157.5 mg	19.1%	30.5%	.401	25.8%	28.6%	.787	26.5%	32.1%	.600
PODS positive	9.7%	16.4%	.538	11.6%	16.4%	.572	8.1%	26.5%	.031
Pain severity	4.8 (±2.3)	5.7 (±1.9)	.011¤	5.0 (±2.2)	5.8 (±2.1)	.026¤	4.9 (±2.2)	6.5 (±1.8)	<.0001¤
Pain interference	4.3 (±2.8)	5.9 (±2.5)	.0004¤	4.4 (±2.7)	6.0 (±2.6)	.001¤	4.3 (±2.6)	7.1 (±1.9)	<.0001¤

¤ Independent samples t-test
^Each bivariate comparison excludes subjects with missing data

Female gender (p=0.003), depression/anxiety (p<0.0001), daily opioid use (p=0.046), positive PODS score (p=0.031) and high pain severity (p<0.0001) and high pain interference (p<0.0001) were positively associated with reporting pain has been moderately/ very/severely worsened by COVID-19.

Discussion

In a cohort of patients who were starting a new period of prescription opioid use for non-cancer pain at baseline and who completed a six-month follow-up survey between September 2020 and March 2021, the patient characteristics associated with the majority of COVID-19-related stressors were depression or anxiety and higher pain severity and pain interference. These patient characteristics were significantly associated with three of the six COVID-19-related stressors. Depression or anxiety and high pain interference were more common among respondents who reported that COVID-19 contributed to moderate to severe stress related to changes in way of life, worsening of emotional/mental health and worsening pain. No

patient characteristics were significantly associated with greater frequency of reading, watching or thinking about the pandemic or with worrying about health or health of family and loved ones. Only female gender was associated with the degree of stress related to social contacts. However, the small sample size reduced our ability to detect statistically significant differences for several observed trends for associations between patient characteristics and COVID-19 related stress.

Our findings are consistent with evidence that patients with chronic non-cancer pain experience worsening mood and increased pain interference in the early stage of the pandemic.[7-9] We did not find strong evidence for an association between greater levels of substance use and reporting more frequent or severe COVID-19-related stress. However, we did observe a trend for daily vs. non-daily opioid users to report more pre-occupation with the pandemic (i.e. frequent reading, watching, thinking about COVID-19) and higher opioid dose and current smoking was significantly associated with moderate to severe stress due to changes in way of life. The lack of an association between alcohol misuse and COVID-19 is likely due to the small sample size because there were non-significant differences in the distribution of positive AUDIT-C scores and worry about health of self or family and friends.

Respondents who used opioids daily and those with a positive PODS score were more likely to report that COVID-19 worsened their pain. While speculative, this may be related to greater pain sensitivity experienced in relationship to living with stress during the pandemic and subsequent requests for dose increases, early refills, or using more opioids than prescribed. Alternatively, patients who receive more opioids and develop problem opioid use are also more likely to have pre-existing emotional and psychiatric disorders[5] and thus be more vulnerable to the effects of stress on pain.[4-6] This would be consistent with our finding that respondents with depression or anxiety were markedly more likely to report COVID-19 moderately to extremely worsened their pain as compared to no worsening or slightly worsening pain (62.8% vs. 26.3%, respectively).

Only 4% of respondents reported taking more prescription opioids because of COVID-19. This is not consistent with evidence of increased use of non-prescribed fentanyl during the pandemic,[2] and increased odds of substance use to cope with stress and emotions related to COVID-19 observed in those with anxiety or depression.[3] In our sample, 36% had stopped using opioids at the time of data collection, 75% were on low doses (<22.5 MME/day) and only 55.6% were daily users. The large proportion of low dose, intermittent users may explain why there were so few patients who reported increasing opioid use because of the pandemic, or respondents did not perceive a connection between COVID-19 related stress and their opioid use.

It is somewhat unexpected that depression and anxiety were not associated with spending more time watching, listening or thinking about COVID-19, worrying about health or experiencing high stress related to changes in social contacts. Though speculative, avoidance behavior in the large proportion of respondents with depression or anxiety may explain the lack of association with seeking out information about COVID-19 or thinking about it. There may be less of an association between depression and anxiety with stress related to thinking about or listening to news about COVID-19 because both can be partly controlled by the individual. In addition, concerns about health are somewhat under individuals control by adopting social distancing and mask wearing.

As expected, depression/anxiety and pain severity and interference were significantly associated with a high degree of worsening emotional and mental health and worsening pain. Depression and anxiety are well established correlates of pain and a bi-directional association has been shown for severity of depression and severity of pain.[4,6] Life stress related to the COVID-19 pandemic may perpetuate and worsen the cycle of poor mental health and greater pain severity and interference. This is consistent with studies that revealed substantial increases in pain interference and worsening mood during the early phase of the pandemic.[7,9]

As compared to preoccupation with COVID-19, and worry about health and social distancing, which may wax and wane as persons hear news about the pandemic or learn of a family

member or friend who developed COVID-19, the imposed lifestyle changes likely generated more daily, constant stress. There may be less of an association between pain measures and opioid use with stress related to thinking about or listening to news about COVID-19 or with concern about one's health or that of family and friends for the same reasons we suspect depression and anxiety were not associated with these measures.

There are several limitations of this study. First, generalizability is a concern because the analytic sample contained only the first 149 respondents to our six-month follow-up survey. The cohort is from two large mid-western cities and results may not generalize to rural populations or geographic areas that experienced different rates of new COVID-19 infections and different opioid prescribing patterns. Less variation in prescription opioid duration and dose may reduce the chance of observing changes in opioid use during the pandemic. Self-report raises potential for recall bias. The six-month response rate at the time of this analysis was approximately 75%. Until the entire eligible sample completes six-month follow-up surveys, it is not possible to accurately assess non-response bias.

Conclusion

Although preliminary in nature, our results raise the possibility that the sources of stress most strongly associated with depression, anxiety, pain severity, and pain interference are related to changes in way of life, worsening of emotional/mental health and worsening pain. Some evidence suggests women with pain may be more vulnerable to COVID-19-related stress as compared to men. Patient-centered psychosocial support could be informed by identifying the types of COVID-19-related stressors experienced by non-cancer pain patients.

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Disclosure

None reported. **MM**

Behavioral Health in Primary Care: Expanding Applications in Practice

by Megan Ferber, PhD, Dixie Meyer, PhD, Katie Heiden-Rootes, PhD & Max Zubatsky, PhD

As more primary care patients continue to experience co-occurring mental health issues and chronic disease, physicians and other allied health providers will need to find effective ways to incorporate behavioral health providers in their plan of care.



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Abstract

Chronic diseases continue to contribute to the leading causes of death in Missouri, and behavioral health plays a key role in their management. Patients receive most of their healthcare in primary care, suggesting primary care providers may serve an important role in the patients' chronic disease management and the behavioral health sequalae. This paper overviews the behavioral health impact of three chronic diseases impacting Missourians and reviews evidence for behavioral health interventions for each disease.

Introduction

Chronic disease is a major driver of mortality in the state of Missouri, with seven of the top ten causes of death in the state being linked to a specific chronic disease diagnoses.[1] The complex nature of chronic disease means that treatment can become more difficult as time passes. Many chronic diseases impact multiple systems of the body, which can cause additional complications that need to be managed, and require several lifestyle modifications and new medical treatments, that may produce side-effects (e.g., physical discomfort, increased stress, changes in mobility, etc.). Additionally, the endurance of these diagnoses implies the need to take a long-term perspective on treatment, which will need to account for the natural aging process. Primary care is where most patients receive preliminary and sometimes long-term management of their chronic diseases, making it an ideal setting for behavioral health interventions and connecting patients with other important resources.

In addition to chronic disease management, primary care appointments are where many patients seek out behavioral health care. Of patients who have a mental health diagnosis, roughly 75% received the initial diagnosis in primary care[2] and 35% see only their primary care provider for mental health treatment.[3] Mental health concerns can add to the complexity of chronic disease management, as roughly 92% of individual with a mental health diagnosis have one or more comorbid physical health condition.[4] Taken together, when a patient presents for a visit to address their chronic disease, it is likely that behavioral or mental health concerns will be present as well. Understanding what to look for and how to intervene in terms of behavioral health can help facilitate effective treatment for patients' concerns.

In recent years, evidence-based research has tested behavioral health interventions for chronic conditions in real world settings. Even though physicians are the cornerstone provider in many of the integrated care models, the pressures and demands of the current healthcare system may inhibit physicians from providing behavioral health services. Thus, continued collaboration with behavioral health professionals is essential to facilitate efficient and effective care for patients with chronic diseases presenting in primary care. The purpose of this paper is to review common behavioral health concerns and evidence-based interventions in three chronic diseases (cardiovascular disease, Type 2 diabetes, and Alzheimer's disease.) This paper will also discuss how physicians can find and collaborate with behavior health providers to deliver said interventions.

The Biopsychosocial Model of Care

The Biopsychosocial Model[5] presumes patients' biological, psychological, and social systems are all impacted by chronic disease. Each factor is interconnected. Thus, changes in one's biological system, perhaps through symptom development or effects of treatment, will create change in one's psychological and social systems as well, perhaps through increased feelings of depression or developing larger social networks through support groups. With this presumption in mind, behavioral health interventions aim to create change within the psychosocial functioning of patients in the hopes of creating changes within the biological system as well. Further, this allows for the development of additional intervention pathways when treating chronic disease. The health conditions reviewed have been targeted in Biopsychosocial-informed investigations, leading to the development of interventions aimed at improving patients' overall health.

Cardiovascular Disease

Cardiovascular disease (CVD) is the leading cause of death within the state of Missouri, with almost 15,000 deaths associated with it in 2018.[1] Rates of Missourian deaths from CVD are highest among men (mortality rate 241.06/100,000) and those who identify as African-American or Black (220.30/100,000).[1] Psychologically, depression has been researched as a precursor and a sequalae of CVD and cardiac events.[6] Patients experiencing depression are at a greater evaluated risk for experiencing a first cardiac event as well as secondary cardiac event.[6] Following hospitalization for CVD, patients are at elevated risk for the development of new onset depression.[7] Similarly, lack of social relationships has been studied as a risk factor for CVD and also as a consequence of the diagnosis. Patients with few or poor quality social relationships have 29% increased chance of developing coronary cardiovascular disease.[8] Following a cardiac event, patients discuss feelings of "being apart from" those in their social circle.[9] If these feelings are left unaddressed and the social isolation becomes normalized, a cyclical pattern between social isolation, depression, and poor cardiac functioning may become established.

Aside from pharmacological intervention, many providers recommend implementing lifestyle changes, such as increasing physical activity and improving dietary quality. With multiple treatment recommendations, there has been concern raised about patients' ability to adhere to treatment plans, especially when multi-disciplinary approaches are implemented. When multiple treatment goals are established (e.g., taking a new medication, changing diet patterns, and increasing physical activity), patients can become overwhelmed and begin to shut down, leading to low levels of information retention. This lack of knowledge around the treatment plan has been cited as a major barrier to treatment adherence,[10] and thus a prime area for behavioral health intervention.

Self-efficacy, or one's thoughts and feelings about their ability to accomplish a task or behavior change, has been studied in patients with CVD. Self-efficacy has been linked with better CVD self-management among patients, and patients with higher self-efficacy experience improved health behaviors and clinical outcomes.[11] Several self-report measures have been developed to assess for patients' self-efficacy in regards to CVD management[12] and could be administered during primary care visits to assess patients' level of self-efficacy in terms of their CVD management and serve as a conversation starter during the encounter. Several interventions have been developed to target self-efficacy in the context of cardiovascular disease.[11] One that may be amenable to the primary care setting is the use of motivational interviewing.

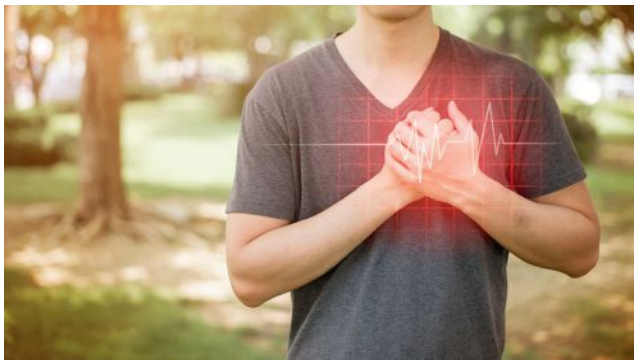
Motivational interviewing is a brief, patient-centered intervention aimed at increasing patient's internal motivation and resolving ambivalence around behavior change.[13] Through directive, emphatic conversations with patients, providers seek to assess patients' motivation for and against adopting specific behavior changes. Providers also seek to support self-efficacy around CVD self-management. Supporting self-efficacy is typically developed through increasing the patient's belief in the possibility of change, and encouraging a sense of personal responsibility for the change.[13] In terms of CVD management, it is best to target one area of behavior change at a time. By doing this, patients can direct all attention on one goal, which improves likelihood of accomplishing said goal and in turn will increase their self-efficacy toward other health behavior goals. When engaging in motivational interviewing with a patient, providers should start by having patients identify their top priority in their CVD self-management and exploring the barriers and benefits of addressing this priority area. The primary techniques to use in this conversation are: open ended questions to assess current level of treatment adherence and motivation to change, affirmations of positive behaviors patients are already doing, and focusing the conversation on what is currently working and how that could be expanded. For example, if a patient in the past year increased their time walking, exploring how they implemented that change can identify strategies that could be applied to incorporating resistance training into their lifestyle. Trainings in motivational interviewing can be completed in person and online through the Motivational Interviewing Network of Trainers (MINT; https://motivationalinterviewing.org/).

Alzheimer's Disease

Alzheimer's disease (AD) is the sixth leading cause of death within the state of Missouri, with around 2,500 deaths contributed to this disease the past year.[1] Common chronic health conditions such as diabetes and obesity have been seen as pathways to developing risk factors for AD. The presence of mood disorder symptoms and mild cognitive impairment have been shown to increase the likelihood of AD symptoms development[14] and accelerate AD advancement[15] and that dietary and lifestyle factors are predictors of onset of AD symptoms.[16]

Although AD is often diagnosed in primary care, early detection of symptom development and thorough diagnosis remains insufficient.[17] The inclusion of caregivers and other care partners can help aid in identifying specific cognitive and physical challenges in the diagnosed patient. Additionally, inclusion of family in early assessment sessions with older adults can help tailor specific interventions for patients found to have cognitive impairment.[18] Problems continue to exist not only in the mental health access for patients with AD, but also with barriers in communication that physicians have with outside referrals and resources.[19] Recently developed telehealth support options for care of patients and their families may improve communication between patients and their physicians.

Certain behavioral approaches have been developed to help patients improve their memory, recall, and overall activities of daily living. The most common types of treatments designed to help aid recall and cognitive improvements of AD patients are through Reminiscence Therapy and Reality-Orientation Therapy. Reminiscence Therapy consists of regular group sessions that use audio and visual cues to help improve recall and exploration of past events has shown effective results for patients.[20] A structured group intervention type of reminiscence therapy, called Cognitive Stimulation Therapy[21] has standardized specific themes and caregiver involvement to help improve those with mild cognitive impairment and newly diagnosed AD. An overview of Cognitive Stimulation Therapy sessions and training opportunities can be found online (http://www.cstdementia.com/). Reality orientation skills, provided by therapists and other allied professionals, have shown modest effects in improvements of AD symptoms.[22] Family psychoeducation, where behavioral health and other specialty areas in primary care can conduct team visits with patients, has also been an effective course of treatment for families with AD. Both online platforms[23] and in-person educational sessions[24] have shown improvements in patient functioning and mobility, as well as improving the well-being of caregivers of AD.[25]







Physicians can find and collaborate with behavior health providers to deliver behavioral health concerns and evidence-based interventions in three chronic diseases (cardiovascular disease, Type 2 diabetes, and Alzheimer's disease.)

Type 2 Diabetes

Diabetes is the seventh leading cause of death within the state of Missouri,[1] with a vast majority (90%-95%)[26] of cases being linked to Type 2 Diabetes. Of the roughly 1,600 deaths in 2018, males and those who identify as African-American or Black are disproportionately affected.[1] Having Type 2 Diabetes puts individuals at an increased risk for other chronic health conditions, including being twice as likely to have cardiovascular disease or stroke.[27] The three factors including that the diabetes diagnosis is a significant source of stress, the disparities present in diabetes diagnoses, and the increased likelihood for adverse events demonstrate the need to attend to the psychosocial stress.

A long history of research shows psychosocial stress is related to Type 2 Diabetes diagnosis and symptoms.[28] Chronic stress early in life[29] and across the life span may contribute to disease onset.[30] Research has begun to explain the mechanisms of this process and has identified areas of concern.[31] Variables moderating the relationship between stress and disease outcomes include: family and relationship support, physiological factors, coping skills, health habits, and environmental factors. The reciprocal process by which these factors mitigate or exacerbate symptoms speak to the need to attend to patients with diabetes using a holistic model.

Patients with diabetes are more likely to experience mental health conditions. Rates of depression are two to three times higher in those with diabetes,[32] and 40% of those with diabetes report anxiety.[33] Mental health conditions may lower the quality of life for patients with diabetes and increase severity of diabetic symptoms. Individuals with co-occurring mental health conditions may be particularly vulnerable to experiencing diabetes-related hospitalizations.[34] Targeting mental health treatment and ensuring patients with diabetes are receiving the care they need for their mental health should be considered a key factor in a comprehensive diabetes treatment plan.

Well-known treatment care models may provide an accessible framework for integrated care in primary care using a team-based approach. The Primary Care Behavioral Health model (PCBH)[35] uses a consultation approach to enhance patient treatment in primary care in a limited number of behavioral health sessions. An alternative model, the IMPACT model or collaborative care model[36] may work more efficiently for those needing more long-term care for mental health concerns. Both models use a behavioral health team to provide specialized

care and would include an integrated or co-located care option. Practitioners may choose to use empirically based screeners to assess level of patient self care behaviors (AADE7)[37] and/or mental health care needs (PHQ-9).[38] The PCBH model may be used for patients whose needs are more behaviorally oriented in nature and the IMPACT model may be used in patients who require more intensive mental health treatment.

If providers do not have access to behavioral health consultations, alternative models exist that may be implemented by a variety of healthcare professionals. Providers may want to use the Three Step Model[39] that uses a variety of evidence based techniques (e.g., cognitive behavioral, common-sense self-regulatory model, diabetes education, motivational interviewing) to engage patients in behavioral changes. Initially, evaluating the patient's mindset helps to empower patients by acknowledging areas of competence and patient autonomy in relation to health. At step one, the provider collaborates with the patient to enhance their motivation and personal resources (i.e., supportive relationships and health habits). In step 2, the provider learns more about what meaning the patients makes of their symptoms and what perceived changes are needed to improve health. The final stage, step 3, focuses on behavioral change tools (e.g., technology, mindfulness, diabetes education, cognitive behavioral therapy). Patients may be encouraged to participate in diabetes webinars, to use devices to monitor diet and exercise habits, or to help the patient learn skills to manage stress.

Collaborating Partnerships

Physicians will want to partner with local behavioral health professionals for assistance in treating the psychological and relational aspects of chronic disease. In a review of interprofessional research over the past 20 years, successful collaborative relationships in healthcare were built through deliberate efforts to bridge gaps in professional perspective, using language that is understandable across disciplines, and dividing tasks equitably and based on expertise.[39] In some cases, the medical setting does not have readily available systems or structures (e.g., shared workspaces) to support collaborative relationships. However, efforts can be made to support collaborative partnerships among healthcare professionals to improve patient care. For example, lunch seminars that offer continuing education credit around a shared topic (e.g., the psychosocial needs of patients after an Alzheimer's diagnosis) would provide an opportunity to gather socially and professionally. Considering how patients integrated into their community may provide unique opportunities for collaborations. For example, patients active in their faith may be more apt to participate in a group held at their church.

In addition, individual physicians and their practices can make efforts to build referral networks through informal outreach. This might consist of a referral list for patients based on local resources. Endorsement of behavioral health is far more likely when physicians have good, collaborative relationships with the behavioral health providers, and patients are more likely to follow through with referrals when their physician believes behavioral health intervention will work.[40] Thus, it is the physician-behavioral health provider relationship that becomes the conduit for care for the patient.

Conclusion

As more primary care patients continue to experience co-occurring mental health issues and chronic disease, physicians and other allied health providers will need to find effective ways to incorporate behavioral health providers in their plan of care. Whether or not organizations have behavioral health professionals on-site, recognizing the importance of early assessment of underlying psychological and relational issues remains essential for all providers. With the shortage of primary care physicians in Missouri, a greater emphasis on collaborative care strategies will be needed to provide optimal care for our shared patients.

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Disclosure

None reported.

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Eating Disorders & the Primary Care Physician

by Michaela M. Voss, MD

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Early detection through screening and high suspicion is needed by PCPs to prevent hospitalization and assist with establishing an appropriate treatment team.



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Abstract

Eating disorder is a term to describe a wide variety of maladaptive eating patterns and becoming more prominent in today's culture. The primary care provider (PCP) plays a key role in detection of eating disorders. Medical management by an informed provider is an essential part of the treatment team and focuses on preventing acute and chronic physical sequela of the disease. There are various levels of care offered, with family-based approaches showing the best outcomes.

Defining Eating Disorders

The Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-V), defines an eating disorder as having three components:[1]

1. A persistent disturbance in eating or eating-related behaviors;
2. Altered consumption or absorption of food;
3. Significant impairment in physical or psychosocial health.

There are two major groups of eating disorders: those that result from altered body image and those that result from other factors such as sensory disturbances, medical co-morbidities or nutrient deficiencies (Table 1).

The disorders that are not a result of body image disturbance typically present at younger ages and resolution tends to occur after defining and treating the underlying cause of abnormal eating behaviors. This article will focus on disorders with body image disturbances, which most commonly present in adolescents and young adults.[2] Body image focused eating disorders comprise of Restrictive Eating Disorders (REDOs) and Non-Restrictive Eating Disorders (NREDOs).

Restrictive Eating Disorders

For Restrictive Eating Disorders (Anorexia Nervosa and Atypical Anorexia Nervosa), there is an intentional deficit between energy intake and expenditure for the purpose of body alteration with resultant weight loss.[1] The focus may be on body size, shape, or weight. Typical disordered behaviors that should prompt suspicion include an increase in food rules, such as not eating after a certain time or only eating "clean foods," restriction of whole food groups or macronutrients (i.e., full elimination of dairy, meat, sugar or carbohydrates), eating separately from the family or making individual separate meals, keeping a food diary, counting calories, reading labels, or using a fitness app.

Although there are occasions when this type of weight management is appropriate in adults under medical supervision,

Table 1. Types of Eating Disorders

Body image disturbance	No body image disturbance
Anorexia Nervosa	Pica
Bulimia Nervosa	Rumination Disorder
Binge Eating Disorder	Avoidant/Restrictive Food Intake Disorder
Atypical Anorexia Nervosa	(ARFID)

Table 2. Common presenting problems in those with eating disorders

Restrictive Eating Disorders	Non-restrictive Eating Disorders
Dizziness or Syncope	Weight gain
Fatigue	Heartburn or indigestion
Early satiety	Difficulty sleeping
Constipation	Unintentional vomiting
Abnormal periods	Rumination
Decline in sports or academic performance	Extremity swelling

it is never appropriate for a child or adolescent to engage in these behaviors. Even when weight loss is indicated in someone who is still growing and maturing their body and brain, focus should remain on inducing positive changes to health behaviors rather than elimination or scrutinization of negative ones.[3]

Non-Restrictive Eating Disorders

Non-Restrictive Eating Disorders include bulimia nervosa (BN) and binge eating disorder (BED). These patients have negative body image disturbance and are fearful of weight gain.[1] Those with BN will try to prevent weight gain with purging behaviors.

Both BN and BED have a binging component, and behaviors noticed by the family may include excessive empty food wrappers, eating in secret or away from the family, night eating, large quantities of food missing, or multiple stops for food to avoid the embarrassment of buying large quantities of binge foods at once. Many patients will fast during the day either as an attempt to prevent weight gain from a previous binge or to "prepare" for a binge that evening. Purging behaviors are also typically hidden from family and friends. Common patterns seen with purging include frequent or prolonged bathroom use after eating, longer than typical showers and excessive water intake. The family may notice clogged drains, ruminants in the stool, or unusual items in the bathroom to induce vomiting. Sometimes, vomitus is hidden in trashcans or in jars in the bedroom.

Binging and purging both have a "numbing effect" during the episode but lead to feelings of shame and low self-esteem afterwards.[1] It is important not to accuse, blame, or punish someone for these episodes. Rather, acknowledgment, support, and structure should be offered to help reduce the behaviors and related thoughts. It is recommended families observe the patient for 30-60 minutes after eating if purging is suspected. This helps them refrain from using the restroom and provides distractions from purging urges that follow eating.

How Eating Disorders Present

Eating disorders are mental health illnesses that thrive from secrecy. Presenting concerns will focus on symptoms rather than eating habits or weight changes.

This makes it difficult for patients and families to openly discuss and primary care providers to independently identify. Therefore, it is pertinent to screen for eating disorder behaviors at routine physicals and any time there is a concern for changes in weight or related symptoms.[4]

There are two main screening tools for

Table 3. Eating Disorder Screening Tools

SCOFF[5,6]	ESP[7]
S – Do you make yourself **Sick** because you feel uncomfortably full?	Are you satisfied with your eating patterns? (No is an abnormal response).
C – Do you worry you have lost **Control** over how much you eat?	Do you ever eat in secret?
O – Have you recently lost more than **One stone** (~14 lbs) in a three-month period?	Does your weight affect the way you feel about yourself?
F – Do you believe yourself to be **Fat** when others say you are too thin?	Have any members of your family suffered with an eating disorder?
F – Would you say **Food** dominates your life?	Do you currently suffer with, or have you ever suffered in the past with an eating disorder?

primary care providers to use in clinic. Both are free, brief, and validated. Both can be given in written or oral form.

A score of two or more abnormal responses for either the SCOFF or ESP results in a positive screen and warrants further history, exam and work-up. Although these are self-administered tools, for children and adolescents it may prove useful to have a guardian review and comment on the answers if there is high suspicion of abnormal eating patterns. For practices with a higher prevalence of adults with obesity, the Screen for Disordered Eating (SDE) may be a more effective tool, as it has been validated for Binge Eating Disorders in adults.[8]

Diagnosing Eating Disorders[1]

If the person's weight is below expected (using BMI for adults and growth curve data for children), a REDO would be the diagnosis. REDOs may have compensatory behaviors (e.g., excessive exercise) or purging behaviors (e.g., intentional vomiting or laxative abuse). The DSM-V designates these conditions as anorexia nervosa – restrictive type (ANR) or anorexia nervosa – binge/purge type (ANBP).

If the person's weight is at or above where expected, further investigation is needed to properly diagnose the eating disorder.[1] Atypical anorexia nervosa (AAN) is a REDO that does not result in being underweight because the person started above their ideal weight (see section on obesity). Patients with BN and BED are NREDOs with focus on behaviors more than weight loss. Both BN and BED present with binging, on average, once a week for the past three months. Those with BN will attempt to prevent weight gain through compensatory behaviors such as self-induced vomiting, misuse of laxatives, diuretics, or other medications, fasting after a binge, or excessive exercise.

The Medical Role in Treatment

Although being able to correctly identify the type of eating disorder is ideal, it is not necessary to move forward in treatment recommendations. The most important job for a primary medical provider is to identify maladaptive eating behaviors, assess the immediate physical health risks, and assist in finding an appropriate treatment modality.[9]

Initial Assessment

The initial assessment is focused on safety. Determining the need for medical hospitalization or acute psychiatric hospitalization is first priority. Criteria for medical inpatient admission varies based on age, history, and admitting facility, but generally focuses on severe bradycardia, electrolyte, or EKG abnormalities, prolonged food refusal, or high risk of refeeding syndrome. If the patient is deemed stable, an initial outpatient work-up is initiated.[4] This includes orthostatic blood pressure and heart rate measurements and a post-void, gowned, blind weight. The physical exam and laboratory studies assess for signs of malnourishment and indicators

of purging or compensatory behaviors. The vital signs, physical exam and work-up are used symbiotically to assess the patient's physical health, as it is common for one or more parts of this work-up to remain normal, falsely assuring the provider of medical stability. Initial work-up includes Urinalysis, UCG, CMP, CBC, Mag, Phos, Amylase, TSH, Iron studies, Vitamin D3 level, and Resting 12-lead ECG.[4]

Supporting the Treatment Team

Depending on location and accessibility to specialists, the PCP may need to be an ongoing treatment team member. PCP's main roles are to establish a target weight range, monitor for improving physical health, determine exercise clearance, and manage symptoms associated with nutritional rehabilitation.[4] Regardless of the type of eating disorder, the most common symptoms are gastrointestinal (constipation, diarrhea, heart burn, gastroparesis), cardiovascular (fatigue, dizziness, hypovolemic shock), and endocrinologic (hypoglycemia, height stunting, amenorrhea). The American Academy of Pediatrics has released an updated set of guidelines outlining specific approaches to treatment.[4] Other useful medical treatment guidelines include those published by the American Psychological Association (APA), American Association of Family Physicians (AAFP), the Academy for Eating Disorders (AED) Purple Book,[10-12] and the AN specific German S3 Guideline.[13]

Treatment Modalities - Therapeutic Approaches

The earlier a patient engages in eating disorder treatment, the higher likelihood of recovery.[14] Other protective factors include early weight gain,[15] a desire for recovery, consistent and cohesive family support, and families' ability to demonstrate resilience.[16] Therefore, the gold standard treatment approach for children and adolescents is one that involves these key components and is known as Family Based Treatment (FBT) or The Maudsley Approach.[17-19] In FBT, the treatment team consists of a specially trained therapist and the medical provider (general or specialty trained). There is no nutritionist involved. The therapist acts as a parental coach, family educator, and incorporates components of traditional individual based therapies when appropriate.

Phase one focuses on physical and nutritional rehabilitation. In this phase, parents take over all responsibility for the child's intake. They decide what, when, how much, where, and how long the child will eat. They also dictate any consequences that occur if the child chooses not to comply with the established rules. The medical provider's role is greatest in phase one. This is when the most likelihood for physical complications will arise and when the therapist heavily relies on the medical data and assessment to help guide treatment recommendations. Typically, patients are seen by their medical providers every one to two weeks initially and spaced appropriately thereafter. The therapist will request that the medical provider establish an expected goal weight range for the patient by utilizing individual growth curves and medical history. In addition, it is the medical provider's responsibility to determine safety of all physical activity. Typically sports, physical education class and high energy activities are halted initially, with slow reintegration when progress in treatment is achieved and any physical symptoms that increase risk of injury resolve (such as dizziness or hypoglycemia).[20-21]

In phase two, the patient is weight restored and medically stable, but still may suffer from complications of malnutrition or the refeeding process. Patients are typically seen every one to three months by their medical provider in this phase, depending on progression and needed symptomatic management. Therapeutically, focus is shifted back to the patient, helping them overcome personal struggles with negative body image and disordered behaviors. Responsibility of food choices is slowly transferred back to the patient in a controlled, deliberate manner. Once the patient is fully responsible and making appropriate food choices, and all typical activity has been resumed, the therapist will enter the family

Table 4. Higher Levels of Care for Eating Disorder Patients	
Intensive Outpatient Program (IOP)	Typically held outside of school/work hours, 3-5 hour sessions, 3-5 days a week
Partial Hospitalization Program (PHP)	A day program, 6-10 hours a day, 5-7 days a week, usually used as a step down from residential
Residential Program (Res)	Admitted to a facility, 24/7 care, must be medically stable
Inpatient (IP)	Medical stabilization is needed prior to treatment; can be an independent hospital or connected with a residential program

into phase three. This final phase is typically short and focuses on reassurance, reflection, and prevention.

In FBT, the parents drive the decision making and treatment.[17] The therapist and medical provider act as a guide and support figure, utilizing family shared decision-making techniques throughout the treatment. Unlike traditional or individual based treatment, vital signs and assessments are discussed openly with the family and patient. This means the patient is aware of any changes in weight and exam throughout treatment. This information is vital to help the parents in next-step decision making and allows the therapist to work with the patient in destigmatizing any myths around food, body shape or size and normalize appropriate weight gain.

The alternate approach, and that typically used in adults, is often called the traditional model or individualized approach (TM/IA). In TM/IA, the team consists of an individual therapist to support the patient, a nutritionist that provides a meal plan, and a medical provider. The medical provider's role is like that in FBT, but treatment takes a more directive approach and relies heavier on the physician's expertise and planning, although components of FBT are usually incorporated as seen fit based on family dynamics.

In both approaches, consistent team communication is essential for progression towards recovery. In addition to the key treatment members, it is common to involve additional specialties such as traditional family therapist, psychiatry, and medical social work, as well as offer supplement group therapy modalities.[4]

Levels of Care

Outpatient care, as described above, lasts 12-24 months, on average. If the patient stalls in progress or the treatment demand is unreasonable or not feasible for the family to execute, there are higher levels of care (HLOC) that provide additional support (Table 4). All these programs incorporate individual, group and family therapy, nutrition education, and meal observation.

PHP, Res, and IP have medical providers and/or psychiatrists. IOP programs will vary on the level of medical oversight and may require ongoing medical management by the outpatient provider. If acute psychiatric hospitalization is warranted due to suicidal ideation or safety concerns, programs will work with local facilities to accommodate transfers as needed.

Additional Considerations for the 21st Century

Obesity

With recent government identification and prioritization of reducing obesity in Americans of all ages,[22] health care providers are well trained to identify obesity and provide obesity education. However, there is a paucity of education efforts to promote safe health behavior changes. This, combined with societal and implicit biases, has led to an increase in eating disorder behaviors in overweight and obese patients that are often deemed safe or even encouraged by health providers.[23,24] Atypical Anorexia Nervosa (AAN) is a diagnosis added to the DSM-V to provide clear delineation between healthy and unhealthy weight loss behaviors.[1] AAN is diagnosed when an individual uses unhealthy

restrictive behaviors just as seen in classic AN but their weight remains at or above the target range. Studies have shown that patients with AAN are diagnosed later and hospitalized less, although they have just as many complications and health risks as patients with classic AN.[25-27] Therefore, when working with an individual on weight management, it is prudent to assess not just the weight loss, but the behaviors that resulted in the weight loss.

Social Media

As social media continues to evolve and become integrated into daily lives of young Americans for social connections, news, and entertainment, it is natural for this medium to influence health behavior choices as well. One recent study of young adults 19-32 years-old showed a significant linear correlation between the amount of social media use (measured by frequency or volume) and concerning eating behaviors.[28] In addition, social media has provided an ever evolving and expanding platform for pro-eating disorder communities, making it difficult for families and community members to monitor the most recent fads, influencers and recommendations for surreptitious behaviors.[29] Using social media for thirty minutes a day has been linked to self-objectification and internal drive for thinness.[30,31] Evaluating patients' use of social media and intentions behind the use is an essential part of an eating disorder evaluation.

COVID-19

As with all mental health disorders, the recent pandemic caused by SARS-CoV-2, or COVID-19, has caused a surge in eating disorder presentations, severity, and treatment needs. Multiple studies conducted in the United States have shown an increase in referrals for treatment and admission rates.[32,33] A national study in Australia showed an increase in restriction and binging in the general population since April 2020, and worsening restriction, purging, exercising, and binging behaviors in those previously diagnosed with an eating disorder.[34]

Certain populations may be at greater risk of developing an eating disorder or worsening eating behaviors as a result of the COVID-19 pandemic. One study showed greater negative effect on recovery and relapse in those with bulimia or binge eating disorder.[35] The CDC examined changes in emergency department visits for mental health concerns in children and adolescents and found a greater than 50% increase in visits for eating related concerns since 2019 in adolescent girls aged 12-17 years.[36] For patients with known eating disorders, it is recommended to ask about the household environment before and after the start of the COVID-19 pandemic, as increased arguing and/or increased fear for the safety of loved ones was shown to be a predictor of worsening symptoms.[35]

Conclusion

Eating disorders are common, complex, and present in a variety of different ways. Their incidence and severity are increasing due to social media outlets and the recent COVID-19 pandemic. Eating disorders can be seen in all body types, races, ethnicities, and ages. Early detection through screening and high suspicion is needed by PCPs to prevent hospitalization and assist with establishing an appropriate treatment team. For children and adolescents, the family-based model is evidenced based and the preferred treatment but requires a specially trained therapist in FBT. Regardless of treatment type, the medical provider plays a key role in treatment, assessing and treating acute and chronic physical sequela of the disease.

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Disclosure

None reported. **MM**

First Report Of 50-Day Continuous Fasting in Symptomatic Multivessel Coronary Artery Disease and Heart Failure: Cardioprotection Through Natural Ketosis

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1FIRST LITERATURE REPORT

From our review, this is the longest fast in symptomatic severe CAD with cardiac dysfunction.



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Abstract

A 64-year-old man with angina and dyspnea due to severe two vessel coronary artery disease (CAD) was recommended for revascularization. The patient had recently learned Siddha fasting and self-inquiry meditative methods at Heartful Living, our eight-week physician-led cardiac wellness group clinic. He declined coronary artery bypass surgery and instead self-initiated a 50-day water-only fast and then switched to a vegan diet. During the fast, the patient experienced severe dehydration and electrolyte abnormalities, requiring IV fluids and electrolyte replacement. However, his hemodynamics remained stable and he had no angina, likely due to natural ketosis mediated cardioprotection. This is the first report of such a prolonged fast targeting cardiac resilience and clinical benefits in severe CAD.

Introduction

The prevalence of CAD continues to increase worldwide. The cost of heart disease is estimated to be $219 billion per year.[1] Treatment often involves numerous medications or invasive revascularization procedures. Lifestyle improvement is Class I indication that is both effective and low cost in CAD. One such lifestyle modification is intermittent fasting (IF), which has been shown to be beneficial in CAD.[2] Continuous 4-21 day fasting appears safe when undertaken in specialized centers for hypertension and metabolic/immunological disorders but has not been studied in symptomatic CAD.[3,4]

We present a case where a patient self-initiated a prolonged 50-day water-only fast in the setting of two vessel CAD. Literature review shows that this type of fluid-only fasting was used in the 1960s and 1970s for the treatment of obesity, with the longest reported fluid fast being 382 days.[5,6] This literature report is unique, however, in that it is the first report of continuous water-only fasting in the setting of multiple comorbid conditions, the most notable of which are type 2 diabetes mellitus, severe CAD, and heart failure. From our review, this is the longest fast in symptomatic severe CAD with cardiac dysfunction.

Case Presentation

A 64-year-old Caucasian male was referred to the cardiology clinic for evaluation of angina and exertional dyspnea. Physical examination revealed weight of 118 kg, BMI of 37 kg/m,^{2} and BP of 165/80 mmHg. The rest of his examination did not reveal any significant findings. His medical history includes hypertension, hyperlipidemia, type 2 diabetes mellitus on insulin, obesity, obstructive sleep apnea, depression, and asthma. Laboratory work was significant for an LDL of 107 mg/dL, total cholesterol of 164 mg/dL, triglyceride of 145 mg/dL, and an HbA1c of 10.1% on 320 units of U500 insulin daily and metformin 500mg twice daily. Regadenoson myocardial perfusion scan revealed no perfusion abnormalities (Figure 1A) but did show new onset cardiomyopathy, global hypokinesis, and an ejection fraction (EF) of 40% with left ventricular enlargement and an end diastolic volume of 196mL. His echocardiogram showed an EF of 50% by Simpson's biplane (Figures 2A and 2B). Cardiac catheterization showed 70% stenosis in the left anterior descending artery (Figure 2C) and 80% stenosis in the obtuse marginal with 70% lesions in the mid and distal circumflex artery (Figure 2D). The patient was started on metoprolol and chlorthalidone in addition to his existing regimen of lisinopril, atorvastatin, and aspirin and multivessel coronary artery bypass graft (CABG) surgery was recommended. The patient declined any form of revascularization and opted for substantial changes in lifestyle instead, understanding the risks of doing so.

Treatment

Earlier in the year, the patient had attended Heartful Living, our eight-week physician-led cardiac wellness group clinics (Figure 3) that encourages healthy lifestyles via meditation, self-awareness, and intuitive behavioural change.[7] The clinic uses novel mindfulness training and up to 24-hour gratitude-based fasting (HUGE, Hunger Gratitude Experience) in combination with Siddha self-inquiry tools to sustainably transform lifestyle. Based on his prior 45-day religious fasting experience decades earlier, our patient stopped all medications and initiated a 50-day water-only fast at home against the medical advice of his primary and specialty care providers. He only consumed about a gallon of water each day during this fast.

On day 37 of his fast, he presented to the ER due to excessive nausea and vomiting and required two liters of saline rehydration. On admission, patient confirmed

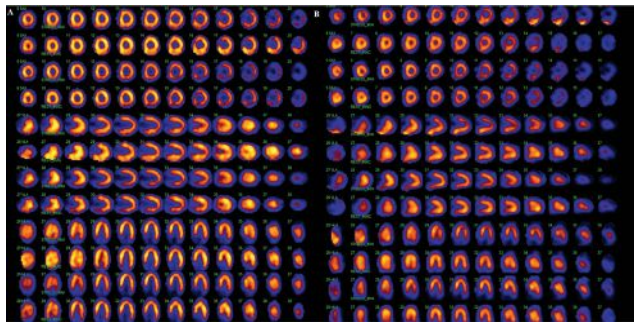


Figure 1. Regadenoson myocardial perfusion scan. (A) Baseline perfusion study showed a reduced EF of 40% and no perfusion defects. (B) Repeat scan 6 months following the implementation of IF and vegan diet showed both improved EF and EDV and no perfusion defects.

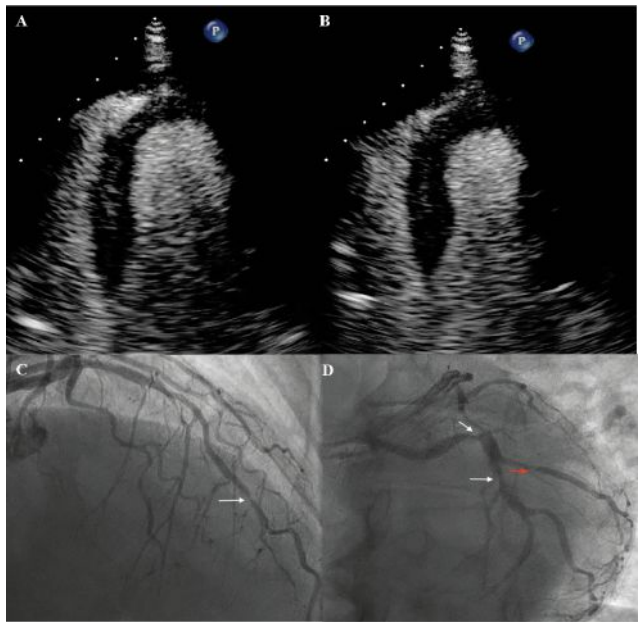


Figure 2. Baseline echocardiogram and coronary angiogram. (A) Apical 4 chamber with contrast showing end diastolic frame. (B) Apical 4 chamber with contrast showing end systolic frame. (C) Coronary angiogram with LAO cranial view showing 70% lesion in the LAD (arrow). (D) Coronary angiogram with LAO caudal view showing 80% stenosis in the obtuse marginal (red arrow) and 70% lesions in the mid and distal circumflex artery (white arrows).

he was only drinking water. He was counselled at this time to discontinue the fast due to electrolyte abnormalities and potential risks, but he refused and asked to be discharged after improvement in his acute episode of nausea and vomiting. When vomiting increased to four to five times per day, the patient felt dehydrated and recognized the need for hospitalization. He presented to the ER again on day 45 of his fast and was hospitalized for nausea, weakness, and difficulty walking. His weight was down to 84 kg (34 kg decrease)

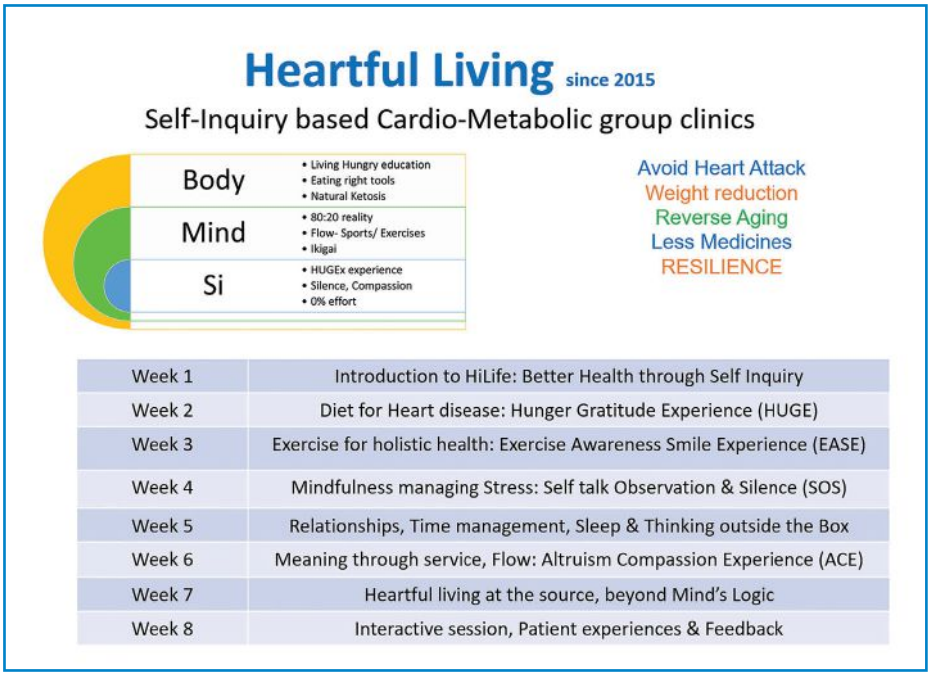


Figure 3. Outline of physician lead cardiology group clinic. Topics included during the eight-week sessions were gratitude therapy, mindfulness training, and discussions of intermittent fasting and how it can be implemented.

and his BMI was 27 kg/m.[2] His metabolic panel was significant for sodium of 129 mmol/L and potassium of 3.1 mmol/L. The patient was oriented, denied cardiac symptoms, and again refused food or oral medications. He consented to IV fluids and electrolyte replacement. Nausea and vomiting resolved within a day of adequate rehydration. He completed the 50-day fast and started re-feeding with a pureed vegan diet with close monitoring for arrhythmias. Hypokalemia required oral supplementation (Table 1). Upon discharge, he began a high protein whole food vegan diet along with an exercise regimen to regain strength. He resumed IF for up to 24 hours once a week with 14 hours of daily overnight fasting on most days.

Outcome & Follow-Up

At the patient's follow-up cardiology clinic visits at three, six, and 12-months, he reported marked improvement in his cardiac and general health. He continues a vegan diet consisting of vegetables, salads, and variety of beans and has no complaints of angina or shortness of breath. From a pre-fasting list of 23 medications, he has cut down to only 67 units of Lantus and Novolog insulin (only 1/5th of the 320 units of U500 insulin needed earlier) and metoprolol tartrate 25mg BID. Lisinopril and statin are indicated and recommended but patient refused during clinic visits. Systolic blood pressure ranged between 120 – 130mmHg and his weight had stabilized at 100kg (Trend in Figure 4). His recent labs showed an LDL of 53 mg /dL, HDL of 32 mg/dL, total cholesterol of 105 mg/dL, and HbA1c of 8.2%. Perfusion stress testing revealed no significant ischemia and EF improved to 50% with normalization of cardiac size, end diastolic volume to 120mL (Figure 1B).

Discussion

Patient with symptomatic CAD and several comorbidities initiated 50-day water-only fasting instead of undergoing revascularization. It should be emphasized that this is not safe nor recommended, and should not be undertaken without medical supervision. The focus of this report is to present this unique experience and discuss outcomes and dangers of such an action.

Due to the difficulty and ethical concerns with prolonged starvation, clinical research is limited. Much of the data is observational from case reports of individuals who undertook prolonged fasting for religious or personal reasons. These studies show that individuals can survive on water only fasts for an extended period of time, with the longest being 382 days.[6] Research suggests, however, that individuals can only survive for a few days without water,[8] with the longest reported case being that of a prisoner who went 18 days without food or water and that of Mahatma Gandhi who went 21 days while only consuming sips of water. The potential duration of these fasts is affected by multiple factors.[9]

Prolonged fasting under direct supervision is generally well tolerated with minor complications.[3,4] These complications most commonly include headache, light-headedness, weakness, nausea, and abdominal

Table 1. Timeline of symptoms, electrolyte levels and key interventions around the 50 day water only fasting period.

Timeline	Na, mmol/L	K, mmol/L	Symptoms and Interventions
Pre Fast	138	4.4	Exertional angina
Fasting # 38	129	4.0	Nausea, vomiting requiring 2L saline infusion
Fasting # 45	129	3.1	Vomiting & hospitalized for IV rehydration
Fasting # 50	134	3.4	Stable hemodynamics but weakness
Refeeding #1	134	2.9	Pureed vegan diet & oral K supplementation
Refeeding #5	137	3.9	Telemetry discontinued on stable oral diet

pain.[10] However, severe complications and death have also been reported. There have been six reported fatalities during or after prolonged water-only fasts.[10] During the fast, the cause of death included small bowel obstruction, renal failure, and ventricular failure. Notably, two fatalities occurred during refeeding from ventricular arrhythmias. Cardiac complications from electrolyte abnormalities and refeeding syndrome have been documented, suggesting the need for telemetry during water only fasting. In fact, research shows that abnormal EKGs can develop within nine days of a water-only fast.[11] As a result of these complications, it is not recommended to undertake prolonged fasting beyond 24-36 hours without direct physician supervision.

In this patient, the risk for complications was high due to his pre-existing diabetes and symptoms of heart failure in the setting of severe CAD and because he insisted on fasting in an outpatient setting. He tolerated 37 days of water-only fasting before requiring hospitalization for nausea, vomiting, and dehydration. The most notable of his lab abnormalities was his hyponatremia and hypokalemia. Although the patient did not endorse any cardiac symptoms and no arrhythmia were observed on continuous telemetry during his fast and during refeeding, he was at a high risk due to his severe hypokalemia. It is very likely that the patient was at a high risk for death had he not come in for IV fluids and electrolyte replacement. No complications were seen during refeeding in our patient but he developed severe muscle wasting during the fast that required prolonged rehabilitation afterwards to regain strength.

At one-year follow-up post water-only fasting, the patient continues to deny any symptoms of angina or shortness of breath. Functionally, he reports being able to tolerate higher levels of activity without symptoms. His weight is at 100kg, which is lower than his pre-fast weight of 118kg but higher than the 84kg he reached near the end of his fast. This suggests that weight is regained fairly quickly once refeeding begins. We believe that the patient was able to sustain cardiac benefits after his fast due to the IF schedule and anti-inflammatory plant-based diet he implemented. The mechanisms related to cardiac benefits of both have been well documented.[12-15] Our Siddha fasting engages deep relaxation and mind-body insight beyond IF. Fasting natural ketosis mediates immediate cardioprotection through anti anginal, diuretic, anti-arrhythmic, and hemodynamic benefits.[16] HUGE causes > 20% holistic weight loss within one to two years in obese cardiac patients with cardioenergetics and sustained remodelling benefits.[13] The significant weight loss trend confirms patient indeed fasted without calorie intake. Although betahydroxy butyrate levels were not measured, natural fasting ketosis contributed significantly to cardiac stability during the 50-day fasting.[16] Ketone supplementation may offer some of these benefits acutely in heart failure but this needs further evaluation.[17]

Conclusion

A 50-day water-only fast in a patient with CAD and multiple other comorbidities was associated with electrolyte abnormalities and severe dehydration. The patient was at a high risk for cardiac arrythmia and death due to hypokalemia. This report is intended to serve as a warning against such prolonged unsupervised fasting. On the other hand, obese heart failure patients can significantly improve with effective sustainable lifestyle interventions like intermittent fasting and plant-based anti-inflammatory diet. HUGE Siddha fasting with mindfulness, stress reduction, mental, and cardiac resilience components is designed to further optimize long-term compliance and cardiac outcomes.

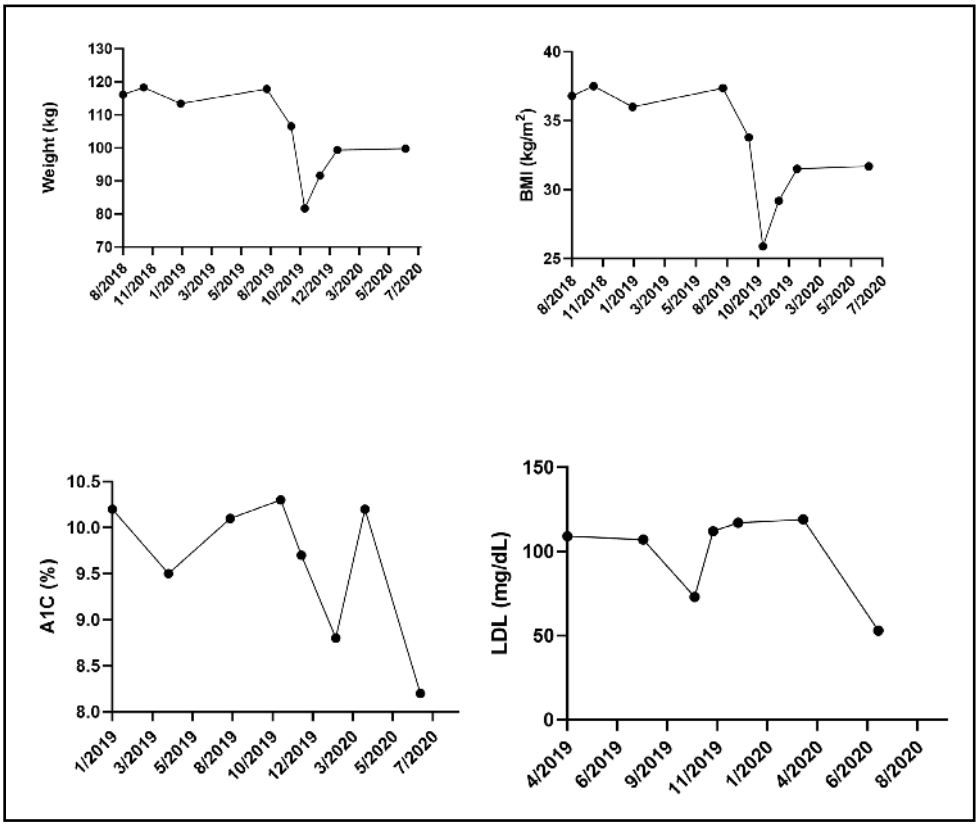


Figure 4. Changes in cardiovascular risk factors. Following the 50-day water-only fast in Fall 2019, patient implemented a vegan diet & IF. Graphs show weight, BMI, A1C, and LDL benefits within 2019 that have been further consolidated in 2020. Lifestyle & diet sustainably improves important CV risk factors.

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Disclosure

www.HiLifeJourney.org is a non-profit online self-help tool to improve cardiac health and Resilience through Self-Inquiry. Seeking HUNGER is a book encouraging self-inquiry for holistic health. Advisor, Cardiac Wellness Institute, Chennai, India for AC.

The Office of Rural Health and Whole Health Program supports novel Siddha Self-Inquiry group clinics for Heart Failure within Truman Veterans Hospital. **MM**

Falls in Senior Adults Part II: Management, Treatment, Prevention, and Therapy Plans

by Stephen Luebbert, MD & Claire Finkel, MD

Health Care

This Feature Review is Part II discussing falls in adults and reviewing management, treatment, prevention, and therapy plans.



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Abstract

In this follow up to our Falls in Senior Adults Part I article,[1] we address further management of falls after fall risk has been identified. This review will focus on the current literature on the treatment, therapy plans, and prevention of falls in senior adults.

Management: Identification of Intrinsic and Extrinsic Risk Factors

In Part I of our series on falls in senior adults, we established fall prevalence and cost to society, as well as risk identification and stratification. With falls being attributed to a multitude of factors, the management of falls is complex and thus should be tailored to the patient's unique combination of risk factor(s). We had previously discussed risk factors in two different categories: intrinsic and extrinsic.[1] These factors can be ascertained by a thorough history and physical. These factors are important to identify best next steps in management.

Intrinsic Factor Treatment and Management

For the purpose of this article, we will focus on the intrinsic factors that can be addressed by physicians in the clinic and acute settings. These intrinsic factors include deconditioning (especially musculoskeletal deconditioning), sensory deficits, neurological/neuromuscular conditions, cardiovascular disease, nutritional deficiencies, endocrine conditions (primarily diabetes), medication or substance use (including polypharmacy), as well as infections and incontinence.

Deconditioning Considerations with Falls

Deconditioning can lead to more significant comorbidities, such as hip fractures, which can in turn lead to further deconditioning and thus further fall risk. During the lockdowns of the COVID-19 pandemic, there was a higher incidence of hip fractures, especially in older adults who were living alone.[2] Deconditioning itself is complex, and can be attributed to restrictive or obstructive lung conditions, decreased cardiovascular capacity such as from coronary artery disease and/or chronic heart failure, or any other medical condition that results in a chronically sedentary lifestyle. Due to prolonged inactivity, the weakness in these patients is particularly pronounced in the proximal muscle groups, such as the hip flexors. As these muscles become weaker, there is a considerably increased fall risk, especially with climbing stairs. Knee flexor and extensor strength is also necessary to prevent "slipping out" of seated positions.[3] There is moderate quality evidence that hip flexor strengthening has been associated with decreased fall risk.[4] Physical therapy prescriptions can

be tailored to focus on these muscle groups, but if the clinician is unsure which muscles need strengthening, a plan can be formulated by or with a physical therapist or by consulting a physiatrist for further assistance. With regards to brain injury rehabilitation (which may be a sequela of a serious fall), one study found that earlier physiatry consultation in the acute hospital setting is associated with better functional outcomes.[5] After the initial interval of therapy, physical inactivity can be treated with regular exercise to improve aerobic capacity but also increase agility, which can also decrease fall occurrence.[6] Transitional movement training, such as sitting to standing, can be especially important for prevention of falls. This movement can be trained in physical therapy, focusing on core-strengthening exercises. These exercises can be especially important after a new onset weakness is acquired, such as in post-stroke patients.[7]

Sensory Deficit Fall Prevention Measures

Sensory deficits may also need to be addressed to optimize function and the benefit obtained from prescribed therapy. Visuospatial deficits, along with visual acuity and depth perception deficits, may be most easily addressed by ensuring the patient has their corrective lenses with them. Upon admission to a facility, or before commencing therapy, visual screening and/or testing may also aid in prevention of falls by determining appropriate visual aid prescription. Hearing aids are also useful not just for preventing disorientation, but essential for verbal comprehension and communication. Decreased orientation can result in a higher incidence of delirium.[8] Providing patients with their appropriate visual and hearing aids can optimize recovery and thus help prevent falls.

Parkinson's Disease Fall Management

The neurological and neuromuscular fall risk factors are numerous with Parkinson's disease. Changes in gait may take the form of a compensatory broad-based gait for stabilization, as well as a decreased step length which may then proceed to the festinating or shuffling gait often seen in Parkinson's disease. Parkinson's affects 1.6-1.8% of the population over the age of 65, with an expectation to double in prevalence by the year 2040.[9] Parkinson's disease and Parkinson disease-like conditions are characterized by bradykinesia, tremors (classically described as resting and "pill-rolling" in nature), and rigidity (often described as "cogwheel rigidity" on physical exam). Freezing of gait is the decreased forward progression that can occur with walking, often seen as a consequence of the affected motor planning, or apraxia, within individuals with Parkinson's.[10] As the reasons for overall gait stability are multifactorial, the approach to treatment should also be multimodal. The mainstays of pharmacological therapies are largely between the dopaminergic (especially levodopa but also amantadine, MAO-B inhibitors, COMT inhibitors) and nondopaminergic (primarily anticholinergic) drug classes. Physical therapy should focus on posture, gait, transfers, and balance training as well as increasing physical capacity. Physical therapists can assist with cueing during the gait cycle to help improve freezing episodes and help maintain functionality as long as possible, despite the progressive nature of Parkinson's. Various sensors can also be utilized, such as machine-learning based methods to analyze gait.[11] A study found that plantar foot stimulation had a positive effect on both step and stride length, but did not improve bradykinesia.[12] Boxing exercises and drills have been utilized, especially at the community level, for improvement of balance. One study found that community-based boxing improved balance, with modest improvements to movement velocity.[13]

Traumatic Brain Injury and Post-Stroke Fall Prevention

Traumatic brain injury is significantly related to falls. In 2018, there were 223,050 nonfatal TBI-related hospitalizations. Those who were over the age of 75 had triple the fall rates than those between 65-74 years of age. The most common injury mechanism for nonfatal TBI-related hospitalization was unintentional falls.[14] Post-stroke patients also have a two-fold higher risk of falling compared to age-matched patients who had not experienced a stroke.[15] Hemispatial neglect is relatively common following stroke, with an incidence reported at 40%, and is typically from insult to the right inferior parietal lobule.[16] Mirror therapy has shown on functional MRI to increase mirror neuron activity in the this inferior parietal region, which could provide a new treatment modality for hemispatial neglect.[17] Encouraging patients to look more to their neglected side, such as speaking and guiding them from their non-neglected side to the affected side, can also prevent painful muscle spasms and discomfort. Hemi-walkers may also be utilized with caution with therapies for strengthening, as the patient may have difficulty with distinguishing obstacles on their neglected side. Brain injuries and strokes can also result in weakened

muscles, especially the tibialis anterior, that may lead to foot drop and thus increase the likelihood of falls. Ankle foot orthoses may be useful in providing foot clearance to prevent tripping, and can be adapted to be donned with a single hand if an upper extremity is also affected. A study has shown that benzodiazepine use, especially new prescriptions provided to long-stay nursing home residents, have been found to increase fall frequency with a commensurate reduced fall risk with benzodiazepine discontinuation. This same study found less of a fall risk associated with antipsychotic use than benzodiazepine use.[18]

Delirium Guidance

Delirium management is also a critical component of fall prevention. A study examining hospitalized patients over the age of 80 found a higher risk of falls in those experiencing delirium than those who did not (3.7% vs. 0%).[19] Reorientation should be the primary management of delirium, providing visual and auditory aids if needed. Sleep dysregulation easily happens while acutely hospitalized, but also in subacute placements such as in nursing facilities and rehabilitation facilities. Limiting screen time to no sooner than two hours before bedtime, as well as limiting nighttime noises whenever possible, can greatly help with sleep regulation. Allowing patients uninterrupted sleep, such as by limiting early morning laboratory draws and consolidating physician rounding after 7:00 a.m., can also go a long way to help regulate sleep and thus prevent delirium and subsequent falls.

Cardiovascular Rehabilitation for Fall Prevention

Cardiovascular inpatient rehabilitation has special considerations as well for preventing falls. As patients may require oxygen therapy while undergoing the different therapeutic modalities, one must be mindful of oxygen tubing that may present a trip hazard. Keeping the tubing secured or careful handling of the tubing during therapies can prevent tripping. Endurance training should be carefully titrated to prevent drastic oxygen desaturations, which could precipitate further falls. Diuretic use may need to be adjusted while undergoing therapy, which can present with hypotensive blood pressure especially once the patient approaches their baseline weight.

Nutritional Supplementation Considerations

The recommendations for vitamin D supplementation with regards to falls have recently changed. The United States Preventative Services Task Force (USPSTF) initially recommended vitamin D supplementation for fall prevention. Currently, the USPSTF does not recommend vitamin D supplementation in those without vitamin D deficiency.[20] Interestingly, one study found that treatment of vitamin B12 deficiency and folate deficiency had no major effect on falls nor mortality, but both deficiencies were associated with a higher rate of hospitalizations. However, iron deficiency did show an increase in falls, and should be corrected if present.[21]

Anti-Hyperglycemic Considerations

The recent Atherosclerosis Risk in Communities (ARIC) Study examined the association between severe hypoglycemia and fall risk. The study identified a twofold increased risk of falls with severe hypoglycemia. The medications examined in this study were sulfonylureas and insulin.[22] When treating older adults with diabetes mellitus type 2, careful attention must be made to glycemic management, especially as therapies and new home exercise regimens may increase insulin sensitivity and lead to further hypoglycemia. Patients may in turn require lower doses of these anti-hyperglycemic agents, especially while undergoing therapy or home exercise programs.

Polypharmacy and Fall-Risk Increasing Drug Considerations

Polypharmacy has long been considered a significant contributor to morbidity and mortality, especially with regard to falls. The Health, Aging, and Body Composition Study examined the association between persistent polypharmacy (defined as greater than or equal to six concurrent medications) as well as fall-risk increasing drugs (FRID), defined as the following drug classes: sedatives, hypnotics, neuroleptics, antipsychotics, antidepressants, benzodiazepines, and opioids. The study identified a 48% increased fall injury risk with both persistent polypharmacy as well as concurrent FRID prescriptions.[23] The authors identified a synergistic relationship between polypharmacy and FRID use. Alcohol can also further precipitate falls, and thus should especially be avoided in other GABA agonist medications, namely benzodiazepines. Review of the systolic blood pressure intervention trial (SPRINT) suggested that treating patients over the age of 75 years with a goal of systolic blood pressure under 120 mmHg did not increase risk of syncope, falls, or hypotension compared to those between the ages of 50-74, but

the results were less clear for those over 85 years.[24] Infections can also further contribute to falls, especially with IV medications presenting as a potential trip hazard and hypotension from distributive shock.

Incontinence Management

Incontinence can contribute to further falls. Falls can result from loose indwelling and externally dwelling catheters, but also from incontinence itself as spills may cause slipping. Securing catheters can prevent tripping. Providing easy bathroom access or a bedside commode may also decrease fall risk. Incontinence, especially acute onset, may need to be further investigated with urinalysis, urine cultures, along with a complete blood count to monitor for infection and renal function testing to monitor renal health. Post void residuals should also be monitored to detect overflow incontinence.

Extrinsic Risk Factor Management with Fall Prevention Measures

Extrinsic risk factors can be divided into home conditions, hospital conditions, and the need for additional durable medical equipment.

Home Assessment and Home Fall Prevention Modifications

According to the National Safety Council in 2020, falls were the second leading cause of preventable deaths in the home (28,100 deaths). Missouri had 870 fall-related deaths reported in 2020.[25] These statistics underscore the importance of home conditions and layout. Patients may require a formal home assessment which can be performed by physical and occupational therapists. There are multiple domains of the patient's dwelling that can be optimized. For further guidance, the Centers for Disease Control (CDC) has released "Check for Safety," a free access resource that serves as a checklist for home safety assessments.[26]

A major determinant of safety is how many levels are within the home, as well as if the patient can fulfill all of their everyday needs on the most accessible floor. If not, ramps or lifts may need to be installed. However, lifts may be cost-prohibitive, and if neither a ramp or lift can be installed the home may be unsafe for the patient to live independently. Dim lighting can lead to falls over unseen obstacles, so optimal lighting should be prioritized. Loose area rugs and raised thresholds can present as trip hazards, and should be minimized in favor of even hardwood or seamless flooring with non-slip surfaces (such as non-slip rubber mats or self-sticking textured strips). Hardwood planks can expand in the more humid months, however, and can buckle and raise, which could become a potential trip hazard. Area carpets that are well secured to the floor can be utilized as well. Shoes without laces can be useful in fall prevention. Everyday items should be within easy reach without need for scaling furniture or shelves. Clutter should be minimized, with organization of cords and loose items on the floor to prevent trip hazards. Non-slip flooring is especially useful for preventing falls in the bathroom. Grab bars installed in and around the tub or shower as well as at the toilet can provide further stability in the bathroom. Higher-seated toilets are preferred, as lower-seated toilets can be harder to rise from, requiring more proximal muscle and core strength. Having a wearable alarm can be useful in getting emergent help if the patient is unable to lift themselves off the floor after an unwitnessed fall.

Durable Medical Equipment Optimization

Mobility aids, such as walkers, wheelchairs, and prosthetic devices can all further a patient's function and can augment a patient's ability to traverse the world around them. However, if improperly fitted or maintained, catastrophic failure of these devices can lead to further falls. An assessment of these devices at each clinical appointment can help prevent catastrophic failure of these devices and thus further injury. If a provider does not feel comfortable with assessment of certain devices, assistance can be readily obtained from physical therapists, occupational therapists, physiatrists, or the medical equipment company.

Hospital Environment Considerations

Despite the persistent professional care in the hospital setting, falls still occur. Identifying those who are at higher risk and further risk stratification has been found to be consistently helpful in the hospital setting. Medication reviews are strongly advised, as well as environmental modifications (such as grab bars at toilet/shower, bedside commodes if needed). Encouraging exercise interventions, as well as physical therapy, were both also consistently recommended across multiple published guidelines.[27]

Disposition and Therapy Plan Considerations

Upon the discussion of physical therapy, especially regarding overall debility and deconditioning, it is important to discuss disposition planning. The degree of deconditioning and other medical comorbidities

Table 1. Disposition Planning Considerations

I. Outpatient Therapy
- Medically stable
- Can safely discharge home
- Strong support system
- Close proximity to outpatient therapy clinics

II. Home Health Therapy
- Medically stable
- Can safely discharge home
- Strong support system
- Must be considered homebound (may leave home for physician appointments, church services)
- Challenging access to outpatient therapy clinics
- May need follow up for transition into outpatient therapy once home health therapy ends

II. Skilled Nursing Facility (SNF)
- Medically stable
- Not safe to discharge home
- May lack strong support system
- May not have close proximity to therapy clinics
- Able to tolerate moderate intensity therapy (1-2 hours a day, 6-7 days a week)
- Expected protracted therapy course

III. Inpatient Rehabilitation Facility (IRF)
- Increased medical complexity
- Not safe to discharge home
- Tolerance for intensive therapy (3 hours a day, 5 days a week)
- Need for at least 2 modalities of either physical, speech, or occupational therapy
- Reasonable likelihood of discharge to community/home

IV. Long-Term Acute Care Hospital (LTACH)
- Highest medical complexity
- Not safe to discharge home
- Lesser focus on therapy modalities, more focus on medical stabilization

will determine the setting for physical therapy, whether that be in the outpatient setting, skilled nursing facility (SNF), inpatient rehabilitation facility (IRF), or long-term acute care hospital (LTACH).[28] There are many nuanced variables to disposition planning regarding debility as seen in Table 1, but the primary focus is on the patient's medical stability and safety at home. Medical stability can be determined by the clinician's gestalt, but often can be defined by how often the patient requires laboratory draws, the frequency of medication titration, and vital stability. The patient's support network, resources, and location are also important to consider. The difference between these different care settings may be regional, but the table is written as how these disposition settings are situated in the state of Missouri. There are also exceptions to the considerations seen in Table 1, however, these are typically how patients are categorized.

Conclusion

Falls in senior adults rarely have a single, unifying cause. Rather, they are the result of a complex interplay of intrinsic and extrinsic risk factors. Intrinsic risk factors are quite varied. While some elements are non-modifiable (e.g. age, gender, and prior history of falls), others can be objectively modified (e.g. physical inactivity/debility, incontinence, and polypharmacy). Extrinsic risk factors that result in falls are much more amenable to modification and include elements such as environmental lighting, use of assistive devices, and

household rearrangements that can prevent falls in senior adults. Home assessment checklists can be utilized both in the clinic but also by physical and occupational therapists to prevent falls in the home. With these recommendations, and continued education, we can prevent falls in all settings.

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Disclosure

None reported.

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Survey of Orthopaedic Trauma Providers: Is MRI Superior to CT Scan for Evaluating and Preoperative Planning for Tibial Plateau Fractures?

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Health Care

The present study demonstrates potential advantages for MRI over CT in the setting of preoperative assessment of tibial plateau injuries.



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Abstract

A computerized tomography (CT) scan is the current advanced imaging standard of care for evaluation and preoperative planning for tibial plateau fractures, but magnetic resonance imaging (MRI) is emerging as a better method to identify soft tissue injuries. This study compares MRI and CT for fracture classification, associated soft tissue injuries, and pre-operative planning for tibial plateau fractures. MRI offers lack of radiation and enhanced soft tissue evaluation, and as a result improved preoperative planning. MRI was favored among survey respondents for preoperative planning, Schatzker classification, and surgical approach planning.

Introduction

Tibial plateau fractures have a significant risk for soft tissue injury. In Schatzker et al.'s original series using plain radiographs for the Schatzker fracture classification, they reported a 7.4% incidence of concomitant soft-tissue injuries based on initial assessment and intraoperative findings.[1] However, some studies have used magnetic resonance imaging (MRI) and have reported concomitant soft tissue injuries to be as high as 99%.[2–4] Stannard et al. reported 53% of patients had multiple ligaments damaged and noted even 46% of low-energy fractures patterns had associated soft tissue injury.[3] High rates of soft tissue injury were observed with all types of fractures.[3]

The long-term significance of knee soft tissue occult injuries in the setting of tibial plateau fracture is currently unknown.[5] However, under-recognition of ligamentous or meniscal damage may lead to poor functionality and hinder rehabilitation in the postoperative recovery period.[6–8] Concomitant injuries identified preoperatively can alter the surgical plan and dictate need for additional repairs. Furthermore, in cases otherwise considered as nonoperative tibial plateau fractures, identification of soft tissue injury may direct the need for surgical intervention.[9]

At many institutions, the current standard of care protocol for advanced imaging of tibial plateau fractures and other surgical procedures is computed tomography (CT) scans for preoperative evaluation.[10–14] Previous studies have shown that in fractures undergoing open reduction and internal fixation (ORIF), CT scans changed the operative plan



Figure 1. Representative image of a computerized tomography (CT) scan provided to survey participants. The actual case files were distributed as videos.



Figure 2. Representative image of a magnetic resonance image (MRI) provided to survey participants. The actual case files were distributed as videos.

26% of the time when compared to plain radiographs alone.[15] However, MRI is used by some for improved soft tissue evaluation, lack of radiation exposure, and better preoperative planning.[16,17] Yacoubian et al. reported that the addition of MRI changed the treatment plan in 23% of cases compared to CT scans alone.[16] The purpose of this study was to compare MRI to CT scans in pre-operative planning, classification of tibial plateau fractures, and identification of associated soft tissue injuries. Our institution uses MRI instead of CT for the reasons listed above and our belief is that MRI is superior for preoperative planning by identifying the associated soft tissue injuries that may need to be addressed and to determine the surgical approach(es) needed to address all of the injured structures.

Participants and Methods

With our university's Institutional Review Board approval, a retrospective chart review was performed using current procedural terminology (CPT) for ORIF unicondylar and bicondylar tibial plateau fractures from 2009 to 2016. Inclusion criteria were patients undergoing ORIF uni- or bicondylar tibial plateau fractures with a high-quality CT and MRI available. We employed a general MRI protocol for tibial plateau scans, similar to those in both academic and non-academic institutions. All plateau fractures included in the study were done after external fixation, so those fractures that had an MRI done before external fixator placement were excluded. Representative fractures that did not have adequate imaging including both MRI and CT were excluded.

SnagIt software (TechSmith, Okemos, MI, USA) was used to create the case file videos. Representative images are shown in Figure 1 and Figure 2. There were five Schatzker type 2, 4, 5, and 6 fractures in the image sets, but types 1 and 3 fractures were not included in this study due to lack of complete imaging sets. A questionnaire was created to identify the primary outcomes—Schatzker classification, optimal surgical approach (most likely anterolateral and posteromedial, based on historical preferences), and did the advanced imaging sequence provide enough information for preoperative planning. Images for both CT and MRI were randomized to avoid grouping of similar fracture patterns or surgical approaches. The survey displayed alternating CT and MRI images in sets of five. Length of practice was also recorded for each survey participant (0-4, 5-9, or 10+ years or practice). Incomplete surveys were not used. YouTube (San Mateo, CA, USA) was used as the distribution platform to administer the

Table 1. Fracture miscalculation rates of the Schatzker Classification types using CT vs. MRI

CT	
Schatzker Classification	**Misclassification Percentage**
Type 2	45.8 %
Type 4	45.8 %
Type 5	34.2 %
Type 6	41.7 %
Total	**41.9 %**

MRI	
Schatzker Classification	**Misclassification Percentage**
Type 2	25.8 %
Type 4	31.7 %
Type 5	33.3 %
Type 6	15.0 %
Total	**26.5 %**

CT = computerized tomography; MRI = magnetic resonance imaging

Table 2. Interobserver agreement rates of the Schatzker Classification types using CT vs. MRI

CT	
Schatzker Classification	**Interobserver Agreement**
Type 2	68.8 %
Type 4	61.5 %
Type 5	56.3 %
Type 6	65.6 %
Total	**63.5 %**

MRI	
Schatzker Classification	**Interobserver Agreement**
Type 2	74.2 %
Type 4	68.3 %
Type 5	61.1 %
Type 6	82.1 %
Total	**73.5 %**

CT = computerized tomography; MRI = magnetic resonance imaging

survey to participants via a link. The survey was distributed to Orthopaedic Trauma Association (OTA) members using the online survey portal, and to AO Trauma North America members via e-mail with the association's approval.

Statistical Methods

Fracture miscalculation rates were determined by proportions of CT- and MRI-based categorization compared to definitive categorization determined at time of definitive surgery. Interobserver agreements were determined using the kappa statistic. Cohen's D values to address clinical significance by reporting an effect size. Values of 0.2, 0.5, and 0.8 were used to classify effect sizes as small, medium, and large, respectively.

Results

A total of 424 patients were identified, and 20 illustrative tibial plateau fractures that met the inclusion criteria were also identified. Of the current approximately 700 active OTA and 700 AO Trauma North America members, 24 questionnaires were fully completed. Thirteen respondents had been in practice for 10 or more years, five had been in practice for 5 to 9 years, and the remaining six had been in practice for 0 to 4 years.

Fracture Classification

Survey respondents identified the correct Schatzker fracture type with MRI 73.5% of the time compared to 58.1% of the time using CT. The Cohen's D value for correct classification type was found to be 0.906, which is classified as a large effect size. Fracture misclassification varied based on Schatzker type, but misclassification rates were less likely with MRI for all fracture types (Table 1). Furthermore, interobserver agreement occurred for 73.5% of responses based on MRI compared to 63.5% of responses based on CT. The Cohen's D value for interobserver agreement was found to be 0.779, which is classified as a medium effect size. Interobserver agreement also varied based on Schatzker type, but interobserver agreement was higher with MRI for all fracture types (Table 2). There was no statistically significant difference in interobserver agreement for CT vs MRI (p=0.54).

Surgical Approach for ORIF

Using MRI, an average of 83.3% of respondents agreed on the optimal surgical approach. When using preoperative CT images, an average of 77.3% of respondents agreed on surgical approach. The Cohen's D value for surgical approach was 0.327, which is classified as a small effect size.

Preoperative Planning

Overall, 89% (21.35) of survey respondents felt MRI imaging was sufficient for developing a preoperative plan, whereas only 62.9% (15.1) of survey respondents felt CT imaging was sufficient for preoperative planning. The Cohen's D value for adequacy of imaging was 3.35, which is classified as a large effect size.

Some respondents felt that the imaging modality was insufficient for preoperative planning. However, the number of "insufficient imaging" responses did not correlate with severity of injury. With CT imaging, an average of 9, 9.25, 8, and 9.125 responses were categorized as "insufficient" for Schatzker types 2, 4, 5, and 6, respectively. Surprisingly, the "insufficient" number was lower with MRI—3, 2.8, 2, and 2.57 for Schatzker types 2, 4, 5 and 6 respectively.

Discussion

The results of our study show some strengths towards MRI being considered as the advanced imaging of choice when evaluating tibial plateau fractures. MRI demonstrates greater accuracy of observer fracture classification, higher interobserver agreement on preferred surgical approach, and increased number of participants who felt there was sufficient information for preoperative planning when compared to CT for the same fractures. Acute intervention may be required for ACL avulsions, PCL injury, posterolateral or posteromedial corner injuries, and meniscal injury to reduce instability and optimize patient function. With the addition of MRI compared to CT scans alone, Yacoubian et al. noted that surgical plans were altered to include soft tissue procedures including arthroscopic medial and lateral meniscus repair, lateral collateral ligament and posterolateral corner repair, lateral meniscus repair through an arthrotomy during fixation, and fixation of the PCL and ACL spines.[16] In the absence of soft tissue repair, instability has been identified as a major contributor to poor results in tibial plateau fractures.[7]

Our results are consistent with the published literature that uses MRI for plateau fractures.[3,8,16–18] Yacoubian et al. recommend MRI for all patients with high-energy tibial plateau fractures due to findings that interobserver agreement was significantly higher for MRI compared with CT following plain radiographs or plain radiographs alone. MRI use led to fracture reclassification in 21% of patients and it changed the operative plans in 23%, with 100% interobserver agreement between radiological and intraoperative fracture classification.[16] Holt et al. reported MRI was more accurate fracture classification, identifying occult fracture lines, and measuring displaced or depressed bony fragments.[17] Stannard et al. and Gardner et al. suggest concomitant soft tissue injury is higher than previously recognized and therefore, prefer MRI over CT to identify or rule out soft tissue injury.[3,4] Mui et al. recommend MRI evaluation to rule out meniscal injury.[8] Finally, Kode et al. believe MRI is superior to CT for fracture visualization and soft tissue evaluation.[18]

Our study is unique from those previously reported based on methodology of survey questionnaires, number of respondents, and participant determination of imaging adequacy as an outcome measure. However, our study is not without limitations. Although we have a relatively larger number of respondents compared to previous studies, we had a poor responder rate (less 2%) despite several attempts to gather additional responses. This poor diagnosis percentage can most likely be explained by observer inexperience with classifying tibial plateaus on MRI. In addition, the manner in which the questionnaire was structured allowed those taking the test to review the images, but limited them to the sections of the scan we as a research team felt best represented the pattern. We also did not employ a control in this study, as this would have made it, in our opinion, far too cumbersome and deter any engagement from the OTA faculty.

It is also important to note that the inconsistent and limited interobserver reliability that has been historically reported by some authors with the Schatzker classification may very well explain the decreased classification rates seen in our series. Although there are new classification models, we chose the Schatzker classification as we felt it has the most familiarity to the broadest audience. A newer or different classification with documented improved interobserver reliability would have the same improved rates in our study, if applied, as anticipated by the research team.

Finally, from our review of the technician notes, only two patients had truncated scans secondary to discomfort. This is an aspect of the treatment protocol that merits

additional consideration and review as our research into this area evolves.

Conclusion

The findings of the present study lead us to corroborate recent reports that advocate for the use of MRI in tibial plateau fractures. We believe that improved identification and repair of concomitant injuries with MRI may improve outcomes for tibial plateau fractures by reducing instability, enhancing rehabilitation, and decreasing risks for secondary degenerative arthritis. Future studies should evaluate the functional and radiographic outcomes of patients with tibial plateau fractures with these soft tissue injuries identified preoperatively to validate the use of MRI instead of CT.

The present study demonstrates potential advantages for MRI over CT in the setting of preoperative assessment of tibial plateau injuries. In accordance with the published literature, we found MRI superior to CT for evaluation of tibial plateau fractures in terms of accuracy of fracture classification, agreement of surgical approach, and ability to develop a comprehensive preoperative plan. We also believe this study helps expand the confidence that orthopaedic providers may have in regard to ordering MRIs in patients with external fixators in place.

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Disclosure

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Cannabinoid Hyperemesis Syndrome: Lighting Up an Emergency Department Near You

by Melanie Camcejo, MD, Emily Hillman, MD & Heather Isom, MD

With the legalization of recreational cannabis in Missouri on the ballot for 2022, it is important that physicians practicing in the state be up to date on the diagnosis and management of Cannabinoid Hyperemesis Syndrome.



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Abstract

Cannabis legalization may increase the rates of emergency department presentations and hospitalizations from Cannabinoid Hyperemesis Syndrome (CHS). This syndrome was first described nearly 20 years ago and has become increasingly common. Yet, for a variety of reasons, CHS is still an underrecognized cause of recurrent abdominal pain, nausea, and vomiting. All physicians must be prepared to diagnose, manage, and counsel patients on this condition, regardless of their state's current or future cannabis legislation.

Introduction

Amongst young adults in high-income countries such as the United States (U.S.), Australia, and Europe, cannabis, or marijuana, is the most widely used illicit drug.[1] Cannabinoid hyperemesis syndrome (CHS) was first described in a published case series in 2004.[2] Despite this, over the past decade and half, physician understanding of how to diagnose and treat CHS, is disproportionately low. Delayed diagnosis of CHS often leads to multiple Emergency Department (ED) evaluations including laboratory and radiologic evaluations resulting in high costs to patients and health care systems.[3] The emergence of synthetic cannabinoids (SCs) makes physician awareness of the potential harmful effects and how to diagnose and treat such patients even more prudent. SCs have been found to be an important cause of CHS.[4]

Pathophysiology of CHS

In order to understand the pathophysiology and diagnosis of CHS, it is important to first understand the mechanism of action of cannabis. The primary psychoactive component of organic cannabis, delta-9-tetrahydrocannabinol (THC), produces the well known effects of cannabis via the two-types of cannabinoid (CB) receptors, CB1 and CB2 receptors.[4,5] CB1 receptors are located in the central nervous system (CNS) and enteric nervous system, while CB2 receptors are in immune/lymphoid tissues such as the spleen.[5]

The concentration of THC and other cannabinoids such as cannabidiol (CBD) used in cannabis products varies both in product and method of use. CBD moderates the psychoactive effects of THC and over time THC concentrations have risen and the ratio of THC to CBD has increased.[1,6] The potency of actual cannabis can be determined by the ratio of THC to other

cannabinoidal agents, which then can influence its toxicity/effects on the body.[5]

Synthetic cannabinoids (SC) are an important consideration and contributor to cannabis-related health problems. SCs can produce the same (or greater) effects as organic cannabis ("THC-like" effects), however untoward effects are known to be more severe and relate to both THC concentration and greater affinity of the SC for the cannabinoid receptors.[4] SCs have additional ingredients meant to enhance drug effects and make identification difficult.[4] Use of SCs is increasing given lower cost, higher availability, and because most are not detectable on urine drug screens.[4,7] In these cases, diagnosis of CHS requires a high index of suspicion and/or disclosure of SC use by patients.

The mechanism of CHS is not entirely clear and there are a number of hypotheses published in the literature.[1,5,8] One hypothesis is metabolic enzyme variations that predispose users to accumulate cannabinoid substances. Another is that THC in high concentrations serves as an antagonist on CB1 receptors. Further, long-term THC use may cause downregulation of CB1 receptors. In recent years, it has been proposed that transient receptor potential vanilloid subtype 1 (TRPV1) receptors, which are involved in gastric motility, may be centrally involved in the pathogenesis of CHS.[9] THC activates both CB1 and TRPV1 and over time chronic exposure to cannabis could lead to desensitization of TRPV1 signaling which leads to altered gastric motility and emesis.[9] Some cannabinoid structures are highly lipid soluble with long half lives which mean they are more likely to accumulate with long term use and lead to negative effects.[8] Therefore, it is hypothesized that those who are more chronic users are at increased risk of developing CHS.[10]

Presentation of CHS

CHS was described by Allen et al. as having a prodromal phase (not always present), hyperemetic phase, and compulsive bathing phase.[2] The prodromal phase can include morning nausea and/or vomiting, with or without weight loss, but with a normal appetite and eating pattern. The hyperemetic phase is often when patients present to the ED as they can suffer from intractable nausea, vomiting, sweating, coliky abdominal pain, with or without diarrhea.[1,2] The compulsive bathing phase evolves as a learned behavior over time as patients find this can relieve their symptoms temporarily. Patients often take hot baths or showers to relieve the symptoms and can present with elevated temperatures, mild leukocytosis, and even thermal burns.[1] Such episodes occur cyclically, for as long as patients are using cannabis and are often associated with weight loss. Hyperemesis episodes usually resolve upon cessation of cannabis, but the duration of sobriety from cannabis has not been found to be related to how quickly CHS will stop.[5] CHS should not be mistaken for cyclic vomiting syndrome (CVS) although some consider it a chronic functional GI disorder and new criteria to aid in the diagnosis have been recently published, such as the Rome IV criteria.[5]

Pediatric, pregnant, diabetic ketoacidosis, and palliative care patients should be evaluated for CHS as well when presenting with intractable nausea and vomiting.[11,12] Pediatric patients should have a drug history obtained in the absence of parents or caregivers when possible.[12] Palliative care patients may not present with a classic history of taking warm baths due to physical limitations related to their disease.[11] Pregnant patients are another population that should be screened for CHS when presenting to the ED or clinic with hyperemesis.[13,14] Diagnosing and managing such patients proves challenging due to overlapping symptoms common in pregnancy (nausea, vomiting, abdominal cramping, etc). Further, the risks and benefits of typical therapies such as benzodiazepines and haloperidol must be considered before treating pregnant patients for CHS.[13]

Making the diagnosis of CHS is challenging, especially in its initial presentation, due to the myriad of alternative causes of nausea, vomiting, and abdominal pain. A detailed history that also includes drug use history is imperative, especially because the work up is often unremarkable. Patients often present multiple times for the same symptoms before CHS is diagnosed. In a retrospective observational study published in 2019, the average cost for the combined ED visits for 17 patients diagnosed with CHS was $76,920.92 with an average of 17.9 ED visits before the diagnosis of CHS was made.[15] Although this is a small study, as cannabis use becomes more ubiquitous, the average costs of medical care may exponentially rise.

Management and Treatment

The ED management of CHS primarily consists of conservative management such as aggressive fluid repletion, antiemetics, and pain control. There is no



Pediatric, pregnant, diabetic ketoacidosis, and palliative care patients should be evaluated for CHS as well when presenting with intractable nausea and vomiting.

identified antiemetic and/or regimen that has been proven to be highly effective for patients. Antiemetics that have been the most helpful act on dopaminergic, serotonergic, substance P and TRPV1 signaling.[4] In the current literature, benzodiazepines (lorazepam mostly) have been found to be the most effective, followed by haloperidol and capsaicin cream.[10] Benzodiazepines are thought to decrease activation of the CB1 receptors in the frontal cortex.[16] The exact mechanism of action of haloperidol is not completely known, but it is thought that the complex interaction between dopamine receptor (D2) in the chemoreceptor trigger zone and CB1 signaling pathways may contribute to its effects on symptoms associated with CHS.[17] Droperidol is starting to be used but studies are rare as droperidol use was restricted in the U.S. from 2011-2019.[5] Capsaicin (and hot water/heat) are thought to alleviate symptoms by normalizing TRPV1 activity.[9]

Patients should be counseled and referred for substance abuse treatment. It is important to specifically address the paradox of cannabis causing cyclical vomiting despite its medically known benefits of the treatment of vomiting. Further, patients who chronically use cannabis may benefit from the physician's explanation regarding how and why chronic use may result in "new" vomiting. Patients may be reluctant to accept the diagnosis when they have used cannabis in the past without the side effect. For palliative care patients, their symptoms may improve with decreased use of cannabis rather than complete cessation.[11] Lastly, patients should be counseled on the safe storage of cannabis, an important public health intervention to reduce pediatric exposures.

Legalization and its potential impact on CHS

Cannabis legalization (medical and/or recreational) and decriminalization varies by country and in the U.S., varies by state. At the time of writing, 18 states, two territories, and the District of Columbia have legalized recreational cannabis use, although federal law still technically prohibits recreational use.[18] In the 2018 election, Missouri voted yes (65.5%) to legalize

the use of medical marijuana.[19] These individuals need physician approval, must meet one or more of the conditions that have been approved for medical cannabis use, and must have a registered and paid ($25.00) medical cannabis card in order to purchase from a Missouri licensed dispensary.[19,20] An additional $100.00 fee is required for a home cultivation card; both cards must be renewed yearly, but a physician does not need to re-approve the patient after the initial exam.[19,20] For the upcoming 2022 election, an amendment is on the ballet proposing to legalize cannabis for recreational adult use as well as expunge criminal records of Missourians who have been convicted of nonviolent cannabis offenses.[19]

The significance of legalization and decriminalization on public health is an area of emerging literature and study. Legalization has increased the potency, diversification, and availability of cannabis and reduced its cost.[21] Most states with legalized recreational cannabis also legalized commercialization, meaning that in some states, the cannabis industry is free to advertise to the public with no limitations and they can sell products with little to no buyer restrictions.[22] Stores have diversified their cannabis products which include beverages, edibles (gummies, candies, and other foods) extracts/tinctures etc., which has the potential to broaden the appeal. Changes to related state taxation laws and federal laws (legalization, inter-state commerce, etc.) will influence profit-seeking behavior of commercial sellers and are anticipated to affect public health impacts of cannabis use.

Published data from the U.S. suggests a possible association between cannabis legalization and rates of ED presentations for CHS. Thus far, cannabis legalization has increased regular cannabis use among existing users.[21,23] It has also increased cannabis-related ED visits for adults (psychological distress, CHS) and children (poisonings).[21,24-25] A recent study published in the *American Journal of Gastroenterology* compared inpatient admissions for CHS in legalized versus non-legalized states between 2011 and 2015 and found that the odds of hospitalization was higher after cannabis legalization, but they could not conclude it was the sole cause.[23] Beyond this study, there are very limited studies that have been done in the U.S. about cannabis-related ED visits following legalization outside of the state of Colorado. In a recent study published in *JAMA*, recreational cannabis legalization in Colorado was associated with a 29% increase in vomiting-related ED encounters.[26] A different study on hospitalizations in the state of Colorado in relation to cannabis legalization found a 46% increase in the incidence of CVS-related hospitalizations over a five-year period.[27]

High quality published studies on cannabis-related ED visits, specifically for CHS, is limited for a number of reasons: a correct diagnosis must be made then documented. An appropriate International Classification of Diseases (ICD) Clinical Modification code for cannabis-induced illness should be used. Hospitals and physicians apply the ICD-10-CM (10th ICD-CM revision) codes differently. While there are numerous ICD-10-CM codes, physicians or those responsible for entering them, may be hesitant to use them. This potentially limits retrospective studies that rely on billing codes.[28] There is also the possibility that the symptoms such as nausea, vomiting, abdominal cramping, are documented and/or coded but that the CHS diagnosis or associated cannabis use is not. ICD-10-CM codes F12.19, F12.29 or F12.99 may be the most appropriate to use to indicate cannabis abuse, dependence, or use, respectively, associated with an "unspecified cannabis-induced disorder," such as CHS.[29] Alternatively the code for nausea and/or vomiting as well as a code indicating cannabis abuse (F12.1), dependence (F12.29), or use (F12.9), or may be appropriate.[29]

Other Considerations

At present, there is a gap between state and federal laws regarding cannabis use, which has implications for insurance coverage. The FDA is responsible for approving cannabinoid medications, however Medicare may not cover such medications.[30] Those who use medical cannabis face uncertainty with worker's compensation claims and implications for employment drug screens and their consequences.[30] Whether or not cannabis-related ED visits, such as those due to CHS, are covered by different commercial health insurance companies, Medicaid, and Medicare is dependent on what the company deems as an emergency and the arrangement the company has with the hospital as a "fixed" rate for payment.[31] Missouri is one of 25 states that permits licensed health insurers to exclude both diagnostic and treatment services for conditions related to use of drugs or alcohol and because of this, it is difficult to make a general assertion.[31]

Conclusion

CHS is a condition that can impact those who use cannabis. Nausea associated with abdominal pain, multiple episodes of emesis, and dehydration/starvation are some of the reasons people present to the ED for care. Pain medications, antiemetics are often needed. Patients with severe dehydration or electrolyte derangement may require hospitalization. CHS is often misdiagnosed and/or missed leading to unnecessary tests and health care costs. ED visits due to CHS are thought to increase following recreational cannabis legalization. More research needs to be done within the U.S. on whether the legalization of cannabis is impacting ED visits and costs, taking into account known limitations of such research. With the legalization of recreational cannabis in Missouri on the ballot for 2022, it is important that physicians practicing in the state be up to date on the diagnosis and management of CHS. In order to improve patient outcomes related to CHS, accurate diagnosis and documentation of CHS is critical and facilitates the study of public health consequences of cannabis use. Clinicians should document cannabis use in relation to vomiting and abdominal pain-related encounters and use appropriate billing practices.

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Disclosure

None reported.

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Medications for Opioid Use Disorder Do Help Patients

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Decreasing barriers to prescribing MOUDs and keeping patients on these medications is essential to improving the care that patients that use drugs receive.



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Abstract

Much of the focus on the current opioid crisis remains on how we arrived here and who is to blame. Despite having effective treatments for the management of patients with opioid use disorder (OUD), rates of overdose deaths continue to increase. As such, the focus needs to shift to increasing access to medications for OUD and better incorporation of harm reduction strategies to decrease not just the mortality but also the morbidity associated with OUD and other substance use disorders. Unfortunately, significant barriers rooted in misunderstanding and bias still limit access and prevent patients with OUD from seeking and staying in treatment. Until these are overcome and medical practice changes, both physicians and patients will continue to struggle to overcome this problem.

We Need More and Better Treatment

With more than three million people with opioid use disorder (OUD) in the United States, the opioid crisis is associated with an immense societal cost as the majority of these individuals go untreated. In 2020, drug overdose deaths in the United States surpassed 100,000 for the year, representing an almost 30% increase in overdose associated deaths from 2019.[1,2] The sharp rise in both fatal and nonfatal opioid overdoses is associated with the increasing popularity and availability of higher potency synthetic opioids such as fentanyl, although the crisis is a complex, multifactorial issue with strong ties to prescription opioids as well.[2,3]

Medications for Opioid Use Disorder (MOUD) is a long-term, gold standard treatment strategy for OUD. MOUD replaced the more broadly known term Medication Assisted Treatment (MAT), as that minimized the importance of medication in the treatment of OUD. While not advocating for a medication-only model, MOUD emphasizes the importance of using medications to treat patients with OUD. Buprenorphine and methadone are both demonstrated to decrease morbidity and mortality in this patient population.[4] Naltrexone, a mu-opioid receptor antagonist, is another form of MOUD. Methadone is a long-acting full agonist at the mu-opioid receptor. In the U.S., methadone used as a MOUD may only be dispensed at a federally licensed outpatient opioid treatment programs. It is allowed to be ordered for patients with OUD in the emergency department (ED) or once admitted to the hospital, although patients cannot receive a prescription at discharge. Naltrexone is less commonly used, as its effectiveness requires consistent patient adherence to

the dosing regimen. It does not initially help with withdrawal or cravings, and initiation demands a preceding period of abstinence and opioid withdrawal. When used, the injection formulation is preferred due to noncompliance with the oral formulation.

Buprenorphine is a partial mu-opioid agonist. It has a ceiling effect on respiratory depression and is generally protective against overdose in the event that a full agonist is introduced in the context of a relapse. There is also a ceiling effect minimizing any euphoria caused by it. Buprenorphine may be prescribed in combination with naloxone to discourage diversion and misuse, as naloxone's opioid antagonist effects become active if naloxone is administered intravenously or intranasally but not if taken sublingually. Buprenorphine may be prescribed from any physician's office or ED, making it an attractive option to many patients and physicians.

In 1995, France allowed any physician to prescribe buprenorphine as a MOUD without additional requirements. Following changes in prescribing regulations, France found a 79% reduction in overdose deaths with minimal increases in adverse events or rates of diversion.[5] In a study examining the introduction and expansion of buprenorphine in Maryland, there was a significant inverse relationship between patients on buprenorphine and rates of heroin overdose deaths.[6] Another study demonstrated that patients with OUD treated with buprenorphine during hospitalization were approximately 50% less likely to be readmitted at 30 days, although only one in five received MOUD.[7]

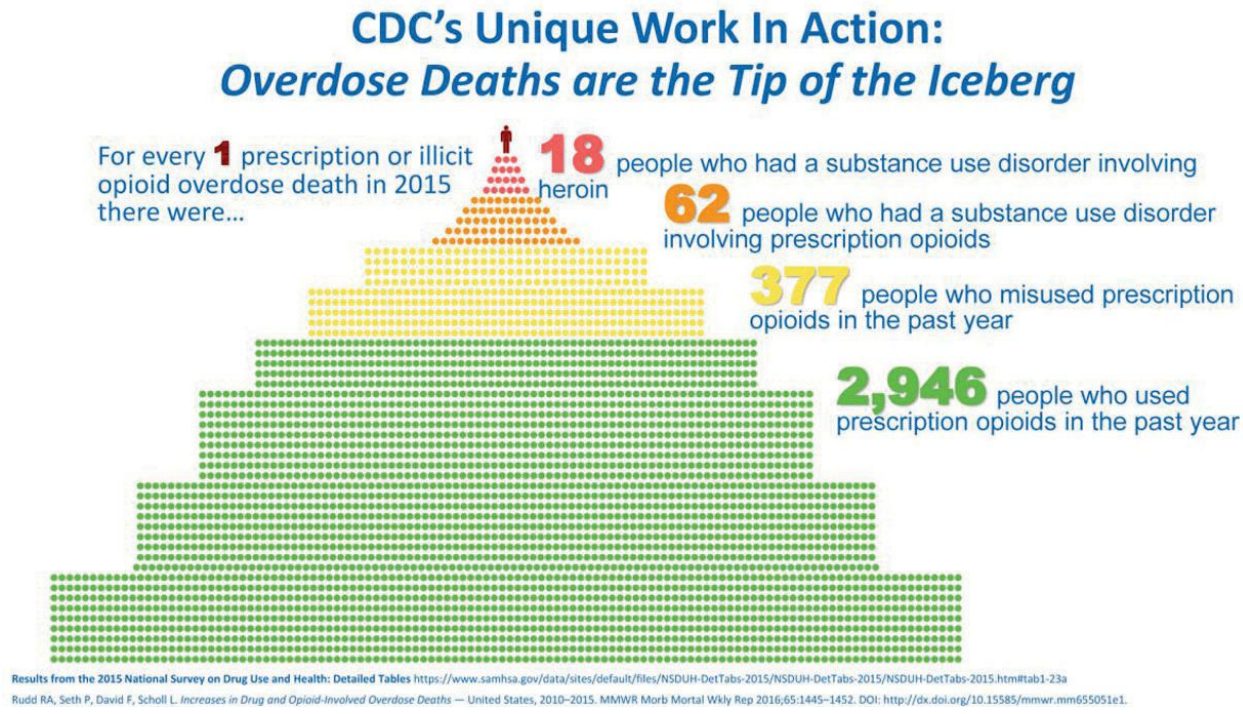
The Drug Treatment Act of 2000 allows any schedule 3-5 medication with a Food and Drug Administration (FDA) indication for the treatment of OUD to be prescribed by any physician with an X-waiver. This legislation required that physicians obtain an additional eight hours of education and obtain an X-waiver prior to prescribing buprenorphine as a MOUD—a considerable barrier to increasing treatment access. In 2021, the U.S. Department of Health and Human Services announced changes for physicians prescribing buprenorphine for MOUD for fewer than 30 patients.[8] Physicians may now receive an X-waiver without receiving any formal education. Importantly, the cap applies to all active prescriptions. As such, physicians in the hospital and ED should not worry about exceeding these limits given the relatively short duration of their prescriptions. Worsening of the crisis and continued lack of access to treatment options in the United States motivated this change. In recent years despite escalating opioid overdose deaths, particularly during the COVID-19 pandemic, rates of buprenorphine prescribing have not proportionally increased. Presently, nearly 80% of patients with OUD still remain completely untreated, with some demographic groups being disproportionately affected.[9,10]

While lifting prescribing restrictions are a step in the right direction, further interventions are required. Physicians face numerous additional barriers that complicate prescribing, such as logistical issues related to insurance and reimbursement, perception of inadequate time to devote to MOUD in a primary care setting, and self-reported knowledge gaps.[11] There is also concern about having a place to refer patients to if they are not doing well in office-based management, if they need a higher level of care, or if the provider has further questions or requires assistance with their management. More medical schools and residency programs are incorporating MOUD training, but it remains to be seen how this influences future prescribing.[11] There are also state and national programs that provide assistance to physicians prescribing MOUDs. While the literature is clear that patients do better with buprenorphine and methadone the longer they take them, there is still stigma regarding long-term use.[11,12] Even with patients doing well, some providers still recommend discontinuing the medication after an arbitrary period of time, and some involved with addiction treatment do not consider patients to be sober if they are on methadone or buprenorphine. Further steps need to be taken to remedy the above issues to facilitate widespread adoption of MOUD.

What has been Done to Distribute MOUD and Treat OUD?

Treatment for OUD dates back as far as the early 20th century in the U.S., but the 1914 Harrison Narcotic Act banned outpatient administration and prescription of opioids by physicians for the purpose of treating OUD. From 1924 to 1935, therefore, physicians focused on developing hospital-based opioid withdrawal management protocols. These protocols were trialed and delivered to affluent middle-aged patients in private hospitals.

The Towns-Lambert Treatment was a rapid withdrawal method from the early 20th century that consisted of inducing an anticholinergic toxidrome from consuming belladonna and hyoscyamus by



Source: https://www.cdc.gov/media/releases/2017/a1203-hargan-fitzgerald-infographic-508.html. Accessed 5/17/2022

mouth.[13] The Pettey Method utilized strychnine and scopolamine to allow for detoxification and symptom control.[13] Over time, physicians recognized that hospital-based withdrawal management (detox) was ineffective for long-term OUD recovery, and hospitals began denying hospital admission for OUD patients.

Today, there has been a resurgence and push for increased resources for the treatment of OUD. Addiction medicine consulting services are more common in large healthcare institutions, offering MOUD for hospitalized patients. Some counseling services have the capability to establish follow up appointments for patients being discharged, which has reduced mortality and readmission rates.[14]

As EDs are often the most likely point of healthcare contact for patients with OUD, many have started inducing patients on buprenorphine and referring them to treatment.[15] Studies indicate that prescribing buprenorphine is associated with significant increases in engagement in addiction treatment.[15] EDs connect patients to local social services that empower them to engage in treatment. East and Southeast Missouri have organizations such as EPICC (Engaging Patients in Care Coordination), where people in recovery meet patients while they are in the ED to arrange follow up appointments at clinics offering MOUD.[16]

In 2016, a correctional facility in Rhode Island instituted a comprehensive program to screen all individuals for OUD and offer treatment with MOUD. Previously, only methadone was offered, but an expansion to the Rhode Island Department of Corrections (RIDOC) allowed for buprenorphine and naltrexone. Additionally, RIDOC covered the costs to the patient and established programs for counseling and discharge planning.[17] Following implementation, statewide overdose deaths decreased 12%, with a 61% drop in post-incarceration overdose deaths in the following year.[18]

Should Patients with OUD Remain on MOUD for the Long Term?

To understand the importance of long-term maintenance therapy, we must understand the neurobiology of addiction. Opioids, like all other addictive substances, activate the reward system and result in dopamine release. This release promotes the euphoria that patients with substance use disorders (SUD) experience and leads to alterations in the synaptic signaling between neurons, which is known as neuroplasticity. Repeated exposure to drugs results in associated experiences being linked, leading to dopamine firing not only in response to the drug itself

but also to associated environmental cues – this is the "people, places, and things" phrase you may hear from people in treatment for their SUD. A common example of this as it pertains to people who inject drugs (PWID) is the euphoria that they may feel with associated rituals surrounding injection such as cooking the drugs in a spoon or the physical act of injecting irrespective of the actual dose or potency of the drug itself. This is one reason why PWID may be sensitive to blood draws, as the placement of an IV may cause cravings. Over time, the reward circuit will adapt to respond only to the sharp rises in dopamine produced by the drug and its cues—and not to natural rewards such as food and sex. Repeated exposures lead to an attenuated release of dopamine, resulting in less euphoria associated with drug and non-drug related rewards. These alterations in the reward system do not simply go away upon detoxification and can last years or perhaps the rest of the life of an individual who suffers from OUD.[19] Additionally, genetic and socioeconomic factors contribute to addiction. Therefore, it is paramount that we treat addiction as we would any chronic disease, providing daily medical maintenance as long as the patient needs it to prevent decompensation and overdose.

Multiple studies demonstrate that the use of buprenorphine or methadone reduces the risk of HIV, relapse, health care costs, and mortality.[20] Studies comparing methadone to buprenorphine demonstrate mixed results, and there is no quality evidence to suggest one method is superior to the other.[21] The optimal length of medical treatment is not yet known; however, earlier or forced tapering of buprenorphine is demonstrated to increase rates of relapse. Adding behavioral treatments to medical management is a bit more controversial. Four major studies cite no benefit from adding behavioral management to MOUD and medical treatment.[22-25] This has led some in the medical community to shut the door on behavioral therapy and focus solely on MOUD. However, there are several flaws with this conclusion, including the lack of treatment standardization and the large effect size seen with buprenorphine alone. In addition, all of these studies included regular medical management as a part of treatment in both groups. Medical management included regular office visits with monitoring of adverse effects, as well as regular urine toxicology screens. These are much more intense follow ups than we typically see in most outpatient settings. Currently, there is a lack of high-quality studies to suggest that there is no benefit from the addition of psychosocial therapies. While many would advocate for a medication first strategy, it should not be confused with a medication only strategy.[26]

Critics of MOUD often claim that it is just substituting one drug for another and ignores the root causes of addiction. Unfortunately, this ideology fails to understand the intent of these medications and is inconsistent with the DSM-5 criteria for a SUD. MOUD does not require patients to remain on medications forever but rather emphasizes that patients should be given the option to continue taking medications if they are benefitting from them. Studies demonstrate that the longer patients remain on buprenorphine or methadone, the less likely they are to relapse.[20]

Controversy around buprenorphine's role in treating OUD is not limited to the medical community. Many of those who are attempting to maintain sobriety through MOUD face ridicule from within the recovery community. Narcotics Anonymous created a pamphlet intended for professionals who prescribe MOUDs, in which they give a formal statement regarding their stance on any form of MOUD. They consider anyone receiving MOUD not to be sober and provide little distinction between MOUD and active use. This statement effectively relegates those who take MOUD to a lesser class and discourages this life-saving therapy. Often already shunned by their families, friends, and coworkers, those who take MOUD are now ostracized by one the largest peer support groups in the world.

Residential treatment centers and sober living houses have been around for decades. These centers remove the patient from their environment and provide intense therapy in a group or individual setting. Intensive outpatient programs take a similar approach but allow patients to live at home and travel to sessions. The problem with these approaches is that they are costly and often cause disruption to the already stressful life of someone in early recovery; however, some will argue that the removal from daily life is what a person needs to reset. These methods also lack standardization, which can reduce success in therapy. This doesn't mean that residential treatment may not be the right program for some patients, but the treatment plan should be patient-centric and allow the patient to remain on MOUD if they choose. Additionally, there are multiple documented cases of sober living facilities promising and billing for treatment they don't perform or designing treatment programs based on reimbursement

rather than the best available evidence, taking advantage of patients and their families at their most vulnerable time.[27]

Twelve-step groups like Narcotics Anonymous (NA) have been around since the 1930s. In fact, it was the founders of Alcoholics Anonymous (AA), along with psychologists of the time, who initially promoted the disease theory of alcoholism (alcohol use disorder). There are thousands of twelve-step groups worldwide, and their methods are applied to other conditions such as eating disorders and sex addiction. Proponents claim that millions of people have recovered using this method, and with its popularity combined with its longevity, it's hard to argue with that assessment. Unfortunately, the success (or failure) rate of people who enroll in these programs is unclear.[28] Twelve-step programs have inherent principles that prohibit them from formally tracking their success. Autonomy, which greatly limits the ability to track individual members, and their neutral stance on outside issues, which prevents the organizations from participating in any research or data collection performed by an outside institution. As a result, critics will point toward lack of any real evidence that it works any better than a placebo. Another barrier is the religious connotations within the twelve steps. Trusting in a higher power is one of the steps that many newcomers find challenging. Deep-seated spiritual bias often prevents some from attending because of their fear or hatred of religion. It should be noted that there are secular programs, and some feel that a belief in a higher power does not have to be a religious one.

What Else Should We Be Doing?

Harm reduction is not condoning drug use—it's understanding that drug use may happen, and we need to keep patients safe if they relapse or choose to use drugs. Harm reduction programs encompass a wide variety of interventions that focus on saving lives and decreasing the unintended negative consequences of drug use, such as HIV, hepatitis C, and death following an overdose. Strategies are diverse and community-based—some examples include distributing take-home naloxone to prevent overdoses, needle exchange programs designed to reduce infection, and supervised usage facilities.[29,30] While many of these programs may make individuals feel uncomfortable, the literature demonstrates that they decrease overdoses and other addiction-related complications, as well as increase the number of patients who seek formal treatment. Serving as many individuals' only routine contact with the healthcare system, these programs often particularly benefit those with OUD who are not yet ready to quit or refuse to enter the medical system in the more traditional ways. Harm reduction programs can thus act as an initial access point that facilitates eventual engagement in treatment while keeping patients safe. In fact, harm reduction is so essential that the Substance Abuse and Mental Health Services Administration (SAMHSA) expects to issue $30 million dollars as part of their first ever harm reduction grant.[31]

In 2021, the CDC cited expansion of harm reduction services as an area of importance in mitigating the opioid epidemic.[32] Patients provided with take-home naloxone, for example, are likely to use their naloxone to reverse an overdose in their peers, and take-home naloxone programs decrease overdose-related mortality.[33] Additionally, needle exchange programs were legalized in Missouri in 2021. These programs must be registered to provide needle exchange, but any provider can provide alcohol swabs and discuss safe injection practices. Needle exchange has existed in the United States since the early 1990s, and studies conducted in people who inject drugs who have access to needle exchange programs demonstrate decreased rates of HIV and hepatitis C infections.[34] Supervised usage facilities are locations where individuals can use recreational drugs in the presence of staff who are trained to respond to an overdose. Currently, these facilities are illegal on the federal level in the U.S., although they are more common in Europe, Australia, and Canada. The literature thus far demonstrates that supervised usage facilities reverse overdoses and improve mortality while avoiding any associations with increased local crime.[35]

The Battle Continues…

MOUDs are effective treatments for patients with OUD. While the literature clearly demonstrates this, the number of patients that overdose on opioids continues to increase. Decreasing barriers to prescribing MOUDs and keeping patients on these medications is essential to improving the care that patients that use drugs receive. In addition to medications and counseling, harm reduction must be included as part of a holistic approach to treating patients with OUD. While this crisis is unlikely to end soon, we do have answers if we're willing to change.

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Disclosures

None reported.

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164th ANNUAL CONVENTION



OFFICIAL MINUTES & REPORTS

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Renaissance St. Louis Airport Hotel
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Meet MSMA's 2022-2023 President

George P. Hubbell, MS, MD, FACOG
Lake Ozark, Missouri

Contact: ghubbell@gmail.com

George P. Hubbell, MS, MD, FACOG, was born and raised in Columbia, Missouri. He earned a degree in Biology from Westminster College in Fulton, Missouri. Subsequently, he was a research specialist in horticulture working in herbicide and plant physiology, ultimately earning a Master of Science degree from the University of Missouri-Columbia. He matriculated medical school at the University of Missouri-Columbia, obtaining a medical degree in 1987, then completing residency training in Obstetrics and Gynecology at the University of Michigan-Ann Arbor. He is currently a member of Alpha Omega Alpha.

Dr. Hubbell began private practice in the rural community of Osage Beach, Missouri, in 1991, starting Women's Health Consultants of the Ozarks. There he practiced for nearly three decades with a nurse practitioner. His practice emphasized office procedures and minimally invasive pelvic surgery but included all aspects of women's health. Formerly, he was associated with Conceptus, Ethicon Women's Health and Urology, and Hologic in the capacity of preceptor, consultant, and nationwide speaker. Dr. Hubbell participated in two FDA studies for office procedures. Currently, he clinically maintains an active locum tenens coverage.

In his community, Dr. Hubbell served as President of the Lake of the Ozarks Medical Society and was chairman of the department of Maternal and Child Health at Lake Regional Hospital, also serving in leadership positions. In 2006, he helped found a Free Community Health Clinic in Camdenton; he currently serves on the board and regularly volunteers his medical services there. Additionally, he has served on six international medical mission teams.

In 2006, Dr. Hubbell helped develop a satellite residency program at his local institution, Lake Regional Hospital. Third-year OB/GYN residents rotated through the hospital during their residency training at the University of Missouri-Columbia. Dr. Hubbell was appointed Clinical Assistant Professor to coordinate this site with the department of OB/GYN. In the past two decades, he has served as a preceptor for medical students rotating from the Kansas City University of Medical and Biosciences, the Kirksville College of Osteopathic Medicine, and the University of Missouri-Columbia for their rotation in obstetrics and gynecology.

Dr. Hubbell has long been active in the Missouri Section of the American College of Obstetrics and Gynecology. He served on the Missouri section advisory council and later as chair, presently serving in the capacity of a past chair. Other statewide advocacy duties include serving as Councilor for the Missouri State Medical Association and President for the Board of Governors at the University of Missouri Medical Alumni Association. He has served on the Pregnancy Associate Maternal Mortality Review Committee, affiliated with the Department of Health and Senior Services for the state of Missouri since 2009. In 2015, he began an appointment with the Pediatric Environmental Health Specialty Unit as the reproductive health consultant on a team advising a four-state poison control helpline.

He has been married for over four decades to Victoria, a professor and author, and is an empty nester with two adult children, a granddaughter and grandson, two large and demanding dogs and two cats. In his free time, he enjoys horticulture on his farm, bicycling, golf, and wing shooting.

Dr. Hubbell's goals for his year as President of the MSMA are to work on electronic medical record ease of use to reduce the burden, risk, and burnout associated with such; to engage more younger and older physicians to our organization, increasing the diversity by age; and to demonstrate the value of being a MSMA member with all the inherent benefits. **MM**

Alliance Installs 2022-2023 President

Sana Saleh
Kansas City, Missouri

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Sana Saleh has been a Kansas Citian since September 1992. She has been an active county, state and national Alliance member since 1996. Sana brings an array of skills and experiences from the work that she had done both overseas and as a volunteer in her community.

She was born in Amman, Jordan, and at the age of three her family moved to Beirut, Lebanon, where she attended a girls' private school established by missionaries learning both English and French secondary to her native Arabic language.

In 1975, upon the civil war breaking out, Sana's family moved back to Amman where she finished high school. She traveled to the U.S. and earned a bachelor's degree in Biology at Mills College, in Oakland, California 1983.

Back in Jordan, in the years that followed, she worked for the City of Amman's Urban Development Department (UDD) involved in the poor neighborhoods and conducting surveys to assess the health status of the population following the provision of clean water supply.

This kindled her interest in public health, so she returned to the U.S. where she earned her Master's degree in Public Health/International Health at Johns Hopkins University in 1987 and she began working for the United Nations Children's Fund (UNICEF) Regional Office in monitoring and evaluation. Her work entailed assisting many countries in conducting national surveys to establish baselines of health indicators such as immunization levels, infant, child, and maternal mortality.

During her UNICEF years, she travelled to Algeria, Djibouti, Egypt, Iran, Iraq, Jordan, Morocco, Sudan, Syria, Tunisia, and Yemen. Her stays in some of these countries required prolonged periods to ensure the successful completion of conducting a national survey. As a published author, Sana co-authored scientific papers with UNICEF and the London School of Tropical Medicine on methods of measuring childhood and maternal mortality in the field.

She planned to pursue a PhD in Public/International Health on a full scholarship at Johns Hopkins when she met George Saleh, DO, an OB-GYN, which changed her plans. They married in Amman in 1992 and moved to Kansas City, which they have called home ever since.

Sana has been active in her children's schools throughout their upbringing, chairing many positions through PTA and events as well as her community. She has been involved with her church and served on the Vestry. She currently is a member of the Kansas City Ballet Guild and the International Relations Council of Kansas City.

Sana is a part-time substitute teacher, and enjoys knitting, gardening, entertaining, travelling, and above all being involved with the Alliance. Her goals this year are to focus on expanding "Stop the Bleed" program in the Kansas City Metro Area and around the state, and promote and encourage Alliances throughout Missouri in forming new partnerships and strengthening the existing ones.

George and Sana have three children and two grandchildren.

MM

State of the Association: Presidential Address

by Alexander Hover, MD, MSMA President

A few months ago, a Council member asked me a simple but clarifying question that really ought to always be top of mind. He asked, "Are we really accomplishing our mission?" Yes, we are faithful to our mission, but that has not been readily visible to the public or even all MSMA members. In this address, I hope to remind us all how we work to our mission and what we have accomplished.

Someone who is not familiar with MSMA might think we are a professional lobbying organization for physician specific issues. Who we are, however, is defined by our actions and our purpose. I believe, that MSMA actions constitute advocacy in the best sense of the word. Our mission has three fundamental pillar—to wit: The mission of the MSMA is to serve its members through promotion of the science and art of medicine, protection of the health of the public and betterment of the medical profession in Missouri.

Science, public health, and improving the practice of medicine—those are our fundamentals. Promotion of medical science is part of MSMA structure. Our journal, *Missouri Medicine,* is one of the few peer-reviewed, indexed, and archived medical society-sponsored journals in the United States. We are all proud that the journal highlights research and educational articles from Missouri physicians, and Missouri educational institutions. In addition, MSMA members participate faithfully in providing scholarships for medical students, and teaching opportunities to mentor the next generation of Missouri physicians.

Protection of public health is certainly at the core of who we are and what we do as MSMA. Whether it is our work to reduce tobacco related disease, helping to control the pandemic, or advocating for childhood vaccine requirements, MSMA is a strong advocate for public health. MSMA supports expansion of Medicaid eligibility and improving access for those become eligible. During the 2021 legislative session we supported mental health coverage parity which finally passed. In 2022, we advocate for extension of Medicaid coverage for mothers for the entire postpartum year and I believe Senate bill 639/698 will likely pass. We have also testified against House Bill 2009 that would further reduce existing routine childhood vaccinations and are still working to modify that bill.

In addition to scientific articles on COVID in *Missouri Medicine*, MSMA created a "common COVID-19 vaccine concerns and misconceptions" FAQ publication along with the Missouri Pharmacy Association. Our FAQ publication helped the public in assessing the safety and effectiveness of vaccines. The September presidential forum in *Missouri Medicine* recognized the intensive community work done by local societies to combat COVID. That message just scratched the surface of what MSMA physicians did across the state in Missouri.

MSMA published multiple COVID-related position statements that were either sent as mainstream news releases or on social media. The position statements supported the CDC position on masking and the safety and effectiveness of vaccine. In addition, MSMA published support for the CDC and AAP recommendations that local government officials, community public health and local school boards carefully assess the existing community conditions and decide how best to mitigate COVID risk to keep the schools open safely. During the 2021 session, our lobbyists were able to blunt the language of HB 271 that would have stripped local control for COVID mitigation.

Protection of the practice of medicine is an important part of MSMA mission. Physicians' daily work involves ever increasing amounts of time consuming and expensive administrative burden. That serves health payers…but not the needs of patients and physicians. Our fight to mitigate the patient care harm of required step therapy, prior authorization, revolving formularies, and surprise billing are among just a few of the battles we fight each year.

MSMA fights for your ability to independently treat patients based on the best science available and sufficient time to see patients. I emphasize the word "independently" as you know the pressures to modify treatment plans or see more patients in less time too often are dictated by the healthcare systems and health insurers. This session we testified against a health system request to use an adaptive questionnaire to establish a patient physician relationship for prescribing. I wish I had sufficient time to review our extensive activity on behalf of the practice of medicine. You can certainly follow that work from the *Legislative Report* that comes out each week and reading the editorials and President's Forum in *Missouri Medicine*.

Absolutely, yes, MSMA does need to protect physicians at times. MSMA work on tort reform dates to the 1980s with legislation changes that are promptly appealed by trial attorneys. MSMA helped defend a trial

attorney's appeal of the legislative cap on noneconomic damages. The July 2021 Missouri Supreme Court decision in *Velasquez vs. University Physician Associates* upheld the constitutionality of the 2015 law. Additionally, Senate bill 591 in 2020 legislation strengthened standards of proof for trial attorneys to try to assert punitive damages. My point is that this is one never-ending battle that MSMA wages on our behalf.

The experience that we have had testifying at the Capitol this year was remarkably different than past years. Previously, a deference was given to physicians regarding to the practice of medicine and especially with respect to science. That deference has diminished and at times seems almost confrontational from some legislators. Our advocacy team needs the help of physicians to reinforce testimony. To that end, we will have an advocacy training session at the October 15 Council meeting. Before I leave the subject I want to thank all of you who attended this year's White Coat Day at the Capitol. In addition to being a visible presence, members visited legislators giving opinions on many bills. That personal contact by physicians is invaluable in supporting our advocacy team.



Dr. Alex and Mrs. Barbara Hover, 2021-2022 MSMA and MSMA Alliance Presidents.

We certainly do have challenges going forward, but I am confident that we can meet those and continue to strengthen our advocacy.

Our primary challenge is that of membership. If you will pardon the play on words, I can summarize the challenge as "no members, no mission." Financially we have reserves that make us organizationally strong for a long time, but we need to represent all Missouri physicians. We are currently 1,672 active members strong and have just under two thousand students, residents and fellows. Year to date we have gained two hundred new active members. Unfortunately, we lost about 350 physicians who did not renew. Students and residents continue to join and our MSMA total is now approaching 4,200 members. Challenges include convincing employed physicians that MSMA is relevant to them and even more important in the age of corporatization of healthcare. Predictions suggest a coming surge of retiring physicians and we need to find ways to maintain our relevance for them.

A vital issue is looking to the future of the organization. MSMA must represent physicians practicing throughout the rest of the 21st century. Frankly, we need diversity in age, gender, religion, and societal life experience to deal with healthcare of an increasingly diverse Missouri and physician population. I believe we must make a conscious effort to achieve that diversity. To the young physicians attending today, I thank you for your commitment to the mission of MSMA. You are the physicians who will shepherd public health and the practice of medicine for much of the 21st century. You will be the leaders of medicine. Begin to be leaders now by keeping MSMA membership strong into the future. Help your colleagues understand the MSMA mission for public health and protecting the practice of medicine.

We have a challenge with visibility for our activities and work. Yesterday evening the executive committee heard the initial proposal by MSMA EVP Jeff Howell to increase our visibility. Besides the new and more functional website and new member database, there are relatively low cost ways that we can enhance our social media visibility and personal contacts with local societies and potential members across the state. More will come on this important initiative after review and actions from the MSMA Council.

We must continually challenge ourselves be faithful to our mission on behalf of our patients, public health, and the practice of medicine. We have the core strengths for our mission, and we can address the challenges that we face. We must address diversity while increasing our membership. We must increase visibility, and stay more strongly connected to local societies, members and public. MSMA is a strong advocate for the right reasons on the right issues. We have a strong advocacy team, and meaningful legislative impact. MSMA has public health as a chief pillar and will continue to champion issues such as childhood vaccination, maternal mortality reduction, and post-partum coverage. We must be the force to unlock the grip of health insurers on the practice of medicine. I am proud that MSMA is working to put doctors back in charge of what our patients want and need from us.

I thank all of you for the work done on behalf of our patients, public health and the practice of medicine. **MM**

Sam Page, MD, Receives AMA Award for Local Government Leadership





Sam Page, MD, County Executive for St. Louis County, received the AMA's Award for Outstanding Government Service. Dr. Hover presented the award during the House of Delegates.

Good morning.

I am very grateful, not a little relieved, and very proud to be in this room with you this today.

I am grateful to you for nominating me for this award.

I am grateful to my teachers for giving me the training I have in organized medicine. Much of what they told me then makes more and more sense each passing year.

I am grateful to all those who encouraged me as a medical student, as a resident, and as a young physician to be a vocal advocate for medical issues. Those teachers and physician mentors gave me the skills and the vocabulary to speak up for patients.

And, in a pandemic, it turns out that everyone is our patient. And my skills and words have been urgently needed in St. Louis County.

COVID put a burden on hospitals and clinics that none of us had ever seen and few of us had even imagined. It presented challenges that doctors and other health care professionals met with courage, stamina, and sacrifice.

But it did more.

COVID has required physician leaders to speak up at local government meetings, at school boards, and in the media. I have seen so many of our colleagues, usually the quietest ones in most rooms, find their voices.

This is the friendliest room I have been in… in two years. Our politics have become toxic in ways that should worry both Democrats and Republicans. Ideology has replaced science. Shouting has replaced discussion. Threats have replaced thoughtfulness.

I am relieved to be here. No one is this room has, as least yet, accused me stealing their freedom. Or of denying them a remedy that I would be reluctant to give a horse.

Two years of this has given me a thicker skin. But it has also hardened my resolve to stand up for my patients and to stand proudly with you and other physician leaders. If the currency of our new politics is volume, then the chorus our combined voices must be the ones that people hear.

I am standing for reelection this year. I will be judged by many of the usual metrics: the jobs created, the potholes filled, the businesses supported, the trash collected. But, I believe—no, I know—that the campaign will also be a referendum on my performance as a physician leader.

And that is why I am so very proud to accept this award from you today. **MM**

Alliance Address to MSMA House of Delegates

by Barbara Hover, MD, MSMA Alliance President

I bring you greetings on behalf of the MSMA Alliance and a belated recognition of Doctors' Day which was March 30. Doctors' Day was established by the Southern Medical Association Alliance and adopted nationally as a day to recognize the incredible work of physicians and their contributions to their communities. MSMA Alliance thanks all the physicians here for your dedication and sacrifices. As you leave the House of Delegates this morning Alliance members will be at the doors to give you a small token of our appreciaition.



Sana Saleh, Alliance incoming President, presents Barbara Hover, outgoing President, with a plaque of appreciation.

The AMA Alliance was established 100 years ago in St. Louis. Our Alliance was honored to host the North Central Region Alliance meeting last fall. There we recreated the birth of the AMA Alliance at the Missouri Botanical Garden and honored those Alliance volunteers who have gone before us. We had attendees from all over the country. The AMA Alliance is the largest organization representing the physician family. We are honored to have Heather Rifkin the current AMA Alliance president with us this morning. Heather please stand.

Missouri Alliance continues to lead with fresh ideas and tireless energy. We advocate for healthier communities in partnership with the MSMA and the AMA. COVID did not stop us. We just changed the way we did things.

St. Louis Metropolitan Alliance developed the Hungry Heroes Program to thank front line workers in the hospitals for their service.

Greene County Medical Alliance placed a billboard on the main thoroughfare between the major hospitals thanking their healthcare workers and encouraging safe practices and masking. Now that restrictions have been eased, they have resumed their programs directed at physician wellness with great success. All of these programs have won national recognition.

Kansas City Alliance continues with their program to clothe the needy children in port cities around the world and Buchanan County Alliance provides SAVE books to their local schools teaching of the dangers of bullying.

Our Missouri Alliance raised more than $4,700 this year for the MSMA Foundation with the holiday sharing card. This money provided scholarships for medical students. We are also accepting contributions during the annual meeting to be used for this purpose.

We have continued our Match Day participation for 28 years. This is an excellent way to get the name of MSMA and the Alliance before the new graduating physicians.

Each year we also participate in the MSMA White Coat Rally in Jefferson City. It was held March 1. These are but a few of our activities around the state.

I wish to thank all of the Alliance leaders I have had the privilege of working with this past year and to the MSMA for allowing us to support your endeavors.

It has been an honor to serve as Alliance president and to work closely with the MSMA president. My theme this year was Better Together. Better Together was really intended to encompass the spectrum of local Alliances to the state and national Alliance, but it also applied to both the MSMA and MSMAA presidencies as well. Alex and I traveled together to the in person meetings that were held. We were able to speak about both MSMA and MSMA Alliance programs. The combination did work well when we had the opportunity.

When local medical societies and Alliances work together with the state and national organizations so much more can be accomplished. Indeed, We Truly Are Better Together! Thank you, **MM**

Sue Ann Greco Receives Honorary Resolution as AMA Alliance President

Thank you Dr. Hover, and also thank you to Dr. Page, our esteemed Speaker, Mr. Jeffrey Howell, and to all the MSMA officers, counselors, vice counselors and delegates here today. I am happy to have this opportunity to thank the Missouri State Medical Association, and the Missouri State Medical Association Alliance for all the support you gave to me during my tenure as AMA Alliance president. It was wonderful knowing I had my own cheering squad behind me.

As everyone who served in the position of leadership of a membership organization during the pandemic understands, it was a challenging time, and it continues to be.

We had two very important goals during my year: keep our membership engaged and keep them informed about COVID. Being the spouses of physicians put us in a unique position because there was no guarantee they would be safe from getting COVID.

While many of our millennial children worked from home behind a computer, our spouses were on the front line every day. Let me say that I found a new appreciation for physicians and everyone who works in the healthcare field last year. You are all my heroes.

We kept our members engaged and informed by offering monthly All Member ZOOM calls. We offered topics that were current such as "How to Cope with Homeschooling Your Children" and the "Emotional Aftermath of COVID."

The AMA was wonderful in collaborating with us by allowing both staff and leaders be our guest speakers. One of the ways we tried to keep our members engaged at the local level was by offering ideas for small projects that could be done while social distancing.

A huge shout out to my local Alliance, the St. Louis Metropolitan Medical Society Alliance, who fed our Hungry Heroes at three local hospitals by filling 250 treat bags for each hospital and giving them to front line workers.



Sue Ann Greco, receives an MSMA Honorary Resolution from Dr. Hover for her service as the AMA Alliance President in 2020-2021. The MSMA Alliance has had six national Alliance presidents in the history of the AMA Alliance.

I want to give another shout out to the members of the Missouri State Medical Association Alliance who served with me at the national level: especially Barbara Hover who served on the board of Directors, and Jana Wolfe who served as our Social Media coordinator. Jana helped promote many of our campaigns, especially carrying through the "MaskUp" initiative and the "How Right Now" campaign sponsored by the CDC foundation.

How wonderful it was yesterday to walk into this building and see so many familiar faces. This is truly my family of medicine, right here with all of you. Thank you again. **MM**



Albert Hsu, MD, testified during the Reference Committee report at the second House of Delegates.



The American Medical Association Alliance President Heather Rifkin (left), installed the MSMA Alliance President Sana Saleh (right). Center is George Saleh, DO.



Drs. Rachel Kyllo, (left), St. Louis, and Dorothy Munch, (right), Poplar Bluff, network during the House of Delegates.



Drs. George Hruza (left), and Inderjt Singh, (right), represent the St. Louis area. Dr. Hruza is running for the 24th district seat in the Missouri State Senate in St. Louis County. If elected, he would be the only physician in the Senate. The 24th Senate district includes several of St. Louis' western suburbs, including Maryland Heights, Kirkwood, Creve Coeur, Des Peres, Fenton, Sunset Hills, and Valley Park.

Miss an Annual Convention General Session? Presentations for MSMA's General Sessions can be found at www.msma.org/convention-wrap

Congratulations to the winners of the $100 drawing for answering our post-convention survey! Both medical students, they are Jessica Wunsch, Kirksville, and Shelbie Fishman, St. Louis.

Presidential Inauguration Address

by George Hubbell, MD, 2022-2023 MSMA President

Good evening. As I reflect on the last two and a half years, I must pause to express my extreme gratitude to all those involved in our profession. Pat yourself on the back. You have provided your patients, community, and physician colleagues with invaluable support while continuing to persevere through the COVID-19 pandemic. You have stayed informed, offered guidance on misinformation, and continued to deliver essential care. As doctors have been the army, MSMA continues to evolve to offer guidance and support in a time that produced major challenges but offered significant opportunities. We are filled with hope for the coming year, beginning with an in-person meeting here at our 164th Annual Convention. Incidentally, our MSMA organization was founded in St. Louis 172 years ago and for the first 120 years, the organization was based here, beginning in 1850.

I have had an observation of our profession, as an analogue person adjusting to a further digital world. Humans aren't simply binary, and artificial intelligence can't fully replicate the human brain. As physicians in this big piece of information technology linking us to our patients and profession, the electronic health record, the EHR, simply doesn't function as we want or need. It is time to raise our voices for meaningful change.

Care that we give is a large jigsaw puzzle with several key pieces still missing. As a result of the pandemic, hospital systems have exerted a much stronger influence on the organization and delivery of health care. Big business and bureaucracy are capturing medicine, but still don't quite know how to run it. Governance in medical policy is becoming more corporate with increasing consolidation of medical systems, replacing the hospital board and physician medical staff governance of the past, taking physicians further from the practical approach to solving problems in our own arena.

Finding a better, complete, easy to integrate, interoperable IT solution isn't going to be easy,



Dr. Hubbell, with his wife Victoria, at the Presidential Reception.

but I think achievable. We need to ensure patient data is at our point of care, where we use it, and information sharing is fully available between all sources of the electronic health record (EHR).

The current state of U.S. healthcare spending is 4.1 trillion dollars yearly, resulting in $12,530 spent per person and 19.7% of our GDP, and frankly this is unsustainable. If you breakdown the current healthcare dollar: 23.2 cents for Rx;2.2 cents for Dr;25 cents for administration;16.1 cents for hospital stays; and 4.7 cents for federal/state/local taxes (AMA 2021).

Administrative expenses account for 25% spending of total health care, resulting in nearly one trillion dollars of yearly expenditures (Chernew JAMA 2021:326(17):1679-1680). While administration is part and parcel to any system, typical U.S. industries of legal services, education, and finance have approximately 0.85 administrative workers for each person in a specialized role (attorneys, teachers, and financial agents); the U.S. health system has more than two times the administrative staff as doctors and nurses. A recent report evaluated administrative spending in healthcare and concluded 28% or $265 billion could be saved yearly in the U.S. without harming care. (Sahni JAMA 2021:326(17):1667-8).

Administrative expenses saved could be used to reduce the burden of EHR, providing increases in staff support to reduce physician time spent on menial tasks. According to the AMA this could increase professional satisfaction and overall, reductions in physician burnout (Robenznieks, JAMA June 8,2021). Health data and information is now trapped without the easy exchange of information not always possible. Our fragmented and inefficient system makes it harder to care for patients. We are faced with IT-centered care, not our desired patient-centered care. Let's let doctors be doctors, not scribes, not coders, and not billers in an environment that is more supportive to physicians. Unfortunately, physicians now spend twice as much time with their EHR as with their patients.

How did we get to the EHR? Medical quality programs such as the federal P4P, PQRI, PQRS all encouraged and began reporting quality measures, offering practice incentives. Evaluation of these programs is limited and evidence weak at best that quality or cost are being controlled, or most importantly patient outcomes are being improved. Currently cost of MIPS, the merit-based incentive payment program, is $12,811.00 per physician to a practice, and 200-plus hours are spent per physician administratively to collect and tabulate data with remuneration now averaging $2000 in a surgery practice.

Secondly, as the Affordable Care Act or ACA was implemented in 2010, meaningful use programs offered subsidies to convert practices to the computer. The ACA spent $36.5 billion to create a multitude of EHR networks with incentives for Medicaid providers at $63,500 and those qualifying as a Medicare provider a subsidy of $44,000. As well, EHRs were originally marketed by software vendors to produce conformity, billing purposes, and to enhance reimbursement through increased documentation, thus increasing a practice bottom line. These aggressive investments were extravagant and caused rapid conversion to the EHR, but to this day are still not fully integrated. The Missouri Health Connection in Missouri, the Health Information Exchange currently includes 7,000 providers, less than half, and 75 hospitals.

Negligence, the most fearsome 10-letter word in medical language, has multiple EHR associations. Case law has established that a physician can be held liable for harm that could have been averted if records were studied in greater detail, almost all of which now are electronic. Medical errors are the third leading cause of death in the U.S., behind heart disease and cancer, yet the international classifications of disease, doesn't have a diagnosis code and therefore not on the list for funding or review. A landmark study two decades ago by the Institute of Medicine found medical error responsible for 49,000 to 98,000 U.S. deaths yearly. Most recently, a Johns Hopkins study estimated four times more or 250,000 patients a year are now dying from medical errors, not from the disease for which they are seeking care, but from error in the care they receive (BMJ 2016). EHR software vendors can defer all blame and aren't liable for they don't practice medicine.

Making health data readily available is now a requirement for patients to review their own records due to the CMS interoperability and patient access rule in effect January 1, 2021. But clinical data needs to flow freely across networks for physician burden and risk reduction not just patient portals. Lack of interoperability has a direct cost estimate of $30 billion per year (Sharing data, saving lives AHA 2019). Ninety-six percent of hospitals use certified EHR and new requirements need to be instituted; the Department of Health and Human services has a campaign to bring data interoperability to U.S. health care by 2024. Patient portals and electronic prescribing all currently interface and it's time the remainder of our daily tasks be fully usable or interoperable.

It is time for us, as physicians, to demand a product that is useful and actionable with easy workflow to all data. Cloud-based solutions exists in many other industries such as banking, retail and hospitality. Hopefully, organized medicine can bring the next version of the EHR to offer less redundancy, less burden, and less risky care for us and our patients. Physicians need collective voice and partners in this pursuit. Organizations such as our 172-year-old MSMA is the only reasonable first approach. **MM**

164th House of Delegates Resolutions & Actions

Resolution 1 – Bylaws Amendments
Resolution Adopted

Please visit MSMA's website at www.msma.org/governance to view the complete updated Bylaws.

Resolution 2 – International Medical Graduate Employment
Referred to MSMA Council

RESOLVED, that the Missouri State Medical Association submit a resolution to the American Medical Association to support federal legislation that reduces the paperwork burden on hiring of International Medical Graduates in rural Missouri communities.

Resolution 3 – Human Rights/Non-Discrimination Statement
Amended Resolution Adopted

RESOLVED, that the Missouri State Medical Association replace its current policy statement on human rights with the following statement: "All human beings are equal in dignity and rights and therefore entitled to the same freedoms, without discrimination based on distinctions of any kind."

Resolution 4 – Climate Change Recognition
Referred to MSMA Council

RESOLVED, that the MSMA recognize and agree with the scientific consensus on climate change, that the Earth is warming, and that human actions are a main cause; and be it further

RESOLVED, that the MSMA Council direct the MSMA Commission on Public Affairs to make specific recommendations to the Council concerning this proposed resolution.

Resolution 5 – Assessing the Missouri Assistant Physician Program
Resolution Adopted

RESOLVED, that the Missouri State Medical Association ask the Missouri Board of Healing Arts to provide data on Missouri's Assistant Physician AP program with the aim of better understanding the impact of the AP program on patient access, expansion of primary care in underserved areas, and outcomes of those holding an AP license in the state of Missouri; and be it further,

RESOLVED, that the Missouri State Medical Association use data available from the Missouri Board of Healing Arts to study the impact of Missouri's Assistant Physician program both on health care access in Missouri and on those who have held AP licensure. This study may be limited by the extent of data provided by the Board of Healing Arts, but would ideally include at least the number of licenses granted, practice types, location of practice, collaborating physicians, salary, residency match rates among licensees, and time spent as an AP prior to matching.



MSMA thanks the members of the Reference Committee who served and provided the final report to the House of Delegates, from left: Warren Lovinger, MD; Milamari Cunningham, MD; Marc Mendelsohn, MD; Ngozi Wilkins, MD; and Marc Taormina, MD, Chair.

Resolution 6 – Qualifications of DHSS Director
Resolution Adopted

RESOLVED, that the MSMA support legislation that requires the Director of the DHSS to possess a doctoral degree in medicine or osteopathy, as well as formal public health training; and be it further

RESOLVED, that until such legislation is enacted, the MSMA periodically inform the Governor and the members of the Missouri Senate of this policy.

MSMA House of Delegates Vote on New Policies

The policies below were developed out of resolutions submitted by MSMA members to the House of Delegates. For the complete list of polices and the year adopted, please visit the MSMA-member only area at www.msma.org/governance. Log-in required.

Director of Missouri Department of Health

MSMA supports a requirement that the Director of the Missouri Department of Health and Human Services be a physician, as well as possess formal public health training, and will inform the Governor and State Senate of this position when appropriate.

Due Process Waivers in Employment Contracts

MSMA opposes the use of Waiver of Due Process provisions in physician employment contracts.

Feminine Hygiene Products

The MSMA supports the provision of resources, education, and funding for menstrual hygiene products to all Missouri communities.

Human Rights/Discrimination

All human beings are equal in dignity and rights and are therefore entitled to the same freedoms, without discrimination based on distinctions of any kind.

Resolution Actions, continued

Resolution 7 – Waiver of Due Process Clauses

Amended Resolution Adopted

RESOLVED, that the Missouri State Medical Association MSMA support legislation that bans the use of "Waiver of Due Process" provisions within employment contracts and declares such current provisions to be declared void; and be it further

RESOLVED, that MSMA bring a resolution to the AMA patterned after the MSMA resolution.

Resolution 8 – Patient Safety Reporting

Referred to MSMA Council

RESOLVED, that the MSMA support legislation to prohibit retaliatory actions against healthcare workers for reporting safety concerns to regulatory authorities or accrediting bodies, or for notifying the public of such safety issues through the press or social media.

Resolution 9 – Insurance Coverage for Colonoscopies After Positive Test

Referred to MSMA Council

RESOLVED, that Missouri State Medical Association develop and support the passage of state legislation to mandate insurance coverage, as screening, for colonoscopies of positive colorectal screening FOBT or FIT or sDNA tests.

Resolution 10 – Improving Prior Authorization Process

Referred to MSMA Council

RESOLVED, that the MSMA support legislation to improve the prior authorization process to benefit patients and physicians.

Resolution 11 – Feminine Hygiene Products

Substitute Resolution Adopted

RESOLVED, that our MSMA support policies that provide resources, education, and funding for menstrual hygiene products to all Missouri communities.

Resolution 12 – Access to Out-of-State Healthcare

Referred to MSMA Council

RESOLVED, that our MSMA oppose policies that restrict Missourians' ability to access care in other states, including but not limited to policies that penalize, criminalize, or otherwise deter Missourians from accessing health care in other states. **MM**



MSMA House of Delegates Leadership, from left: Jo-Ellyn Ryall, MD, Parliamentarian; Sam Page, MD, Speaker; and Tim Swearengin, DO, Vice Speaker.



Members of the Women Physicians Section networked at the MSMA Convention, including Joanne Loethen, MD, (left), Amy Cabbabe, MD, (center), and Jennifer Page, MD,(right).

Credentials & Appointments

The 164th Annual Convention of the Missouri State Medical Association was held April 1-3, 2022, at the Renaissance St. Louis Airport Hotel, St. Louis, Missouri. Sam Page, MD, St. Louis, Missouri, presided as Speaker of the House of Delegates. Parliamentarian was Jo-Ellyn Ryall, MD, St. Louis.

The Committee on Credentials announced that there were 7 Officers, 15 Councilors, and 53 Delegates in attendance for the Opening Session of the House of Delegates.

This report and the minutes of the 163rd Annual Convention as published in the May/June 2021 issue of Missouri Medicine were approved.



Members of the MSMA Medical Student Section met and elected officers during the Convention and were also represented in the House of Delegates.

At the Second Session of the MSMA House of Delegates, the Committee on Credentials reported that there were 9 Officers, 23 Councilors, and 65 Delegates in attendance.

Reference Committee members were: Marc Taormina, MD, 7th District – Chair; Milamari Cunningham, MD, 5th District; Warren Lovinger, Jr., MD, 6th District; Marc Mendelsohn, MD, 3rd District; and Ngozi Wilkins, MD, 4th District.

The MSMA Nominating Committee members were: Rachel Kyllo, MD, 10th District – Chair; Samuel Caughron, MD, 1st District; Barbara White, DO, 2nd District; Edmond Cabbabe, MD, 3rd District; Keith Ratcliff, MD, 4th District; Kara Braudis, MD, 5th District; Warren Lovinger, Jr., MD, 6th District; Thomas Allen, MD, 7th District; James Wolfe, MD, 8th District; Nathaniel Barbe, DO, 9th District; Lent Johnson, MD, Organized Medical Staff Section; Tammara Goldschmidt, MD, Young Physician Section; Chakshu Gupta, MD, International Medical Graduate Section; Carlin Ridpath, MD, Women Physicians Section; Christina Kratschmer, MD, Resident and Fellow Section; and Charlie Adams, Medical Student Section. **MM**

MSMA Elects Leadership: 2022-2023

OFFICERS
President
George Hubbell, MD, Lake Ozark

President Elect
Lancer Gates, DO, Kansas City

Secretary
Ellen Nichols, MD, Joplin

Treasurer
Elie Azrak, MD, St. Louis

Immediate Past President
Alexander Hover, MD, Ozark

1st Vice President
Keith Frederick, DO, Rolla

Honorary Vice President
Stuart Braverman, MD, Sedalia

Honorary Vice President
Karen Edison, MD, Columbia

Speaker
Timothy Swearengin, DO, Springfield

Vice Speaker
M. Laurin Council, MD, St. Louis

COUNCILORS
Chair, MSMA Council
David Pohl, MD, St. Louis (3rd District)

Vice Chair, MSMA Council
Brian Biggers, MD, Springfield (8th District)

1st District
Robert Corder, MD, St. Joseph

2nd District
Hossein Behniaye, MD, Hannibal

3rd District
Robert Brennan, MD, St. Louis
Inderjit Singh, MD, St. Louis
Christopher Swingle, DO, St. Louis

4th District
Kevin Weikart, MD, Lake St. Louis

5th District
Lisa Thomas, MD, Lake Ozark
Amy Zguta, MD, Columbia

6th District
David Kuhlmann, MD, Sedalia

7th District
Betty Drees, MD, Kansas City
Joanne Loethen, MD, Kansas City
Fariha Shafi, MD, Overland Park, KS

8th District
Matthew Stinson, MD, Springfield

9th District
Lirong Zhu, MD, Clayton

10th District
Dorothy Munch, DO, Poplar Bluff

Organized Medical Staff Section
Amy Patel, MD, Kansas City

International Medical Graduate Section
Louis DelCampo, MD, Springfield

Young Physician Section
Sara Hawatmeh, MD, Ballwin

Women Physicians Section
Tammara Goldschmidt, MD, Ballwin

Resident & Fellow Section
Christina Kratschmer, MD, St. Louis

Medical Student Section
Alex Shimony, WU

VICE COUNCILORS
1st District
Chakshu Gupta, MD, St. Joseph

2nd District
Barbara White, DO, Hannibal

3rd District
Ramona Behshad, MD, St. Louis

4th District
Keith Ratcliff, MD, Washington

5th District
Jennifer Powell, MD, Osage Beach

6th District
Jennifer Conley, MD, Nevada

7th District
Sarah Florio, MD, Lee's Summit

8th District
Tim Swearengin, DO, Springfield

9th District
Nathaniel Barbe, DO, Mountain Grove

10th District
Rachel Kyllo, MD, Arnold

Organized Medical Staff Section
Albert Hsu, MD, Columbia

International Medical Graduate Section
Raghuveer Kura, MD, Poplar Bluff

Young Physician Section
Marc Mendelsohn, MD, St. Louis

Women Physicians Section
Carlin Ridpath, MD, Springfield

Resident & Fellow Section
Anup Bhattacharya, MD, St. Louis

Medical Student Section
Maddie Sauer, UMC

AMA DELEGATES & *ALTERNATE DELEGATES
Elie Azrak, MD, St. Louis
Peggy Barjenbruch, MD, Mexico
Edmond Cabbabe, MD, St. Louis
Joseph Corrado, MD, Mexico
Betty Drees, MD, Kansas City
Charles Van Way, III, MD, Kansas City

*Lancer Gates, DO, Kansas City
*George Hruza, MD, Chesterfield
*Ravi Johar, MD, Chesterfield
*Joanne Loethen, MD, Kansas City
*Kayce Morton, DO, Springfield
*Nikita Sood, Washington University

AMA & WMA PAST PRESIDENT
David Barbe, MD, Mountain Grove

ALLIANCE
President
Sana Saleh, Kansas City

President Elect
Donna Corrado, Mexico **MM**

Recipients of the 50-Year Physician Pin

Twenty-nine physicians were recognized with their 50-Year Physician pin award during MSMA's Presidential Inauguration. Those who received the pins in person from Dr. Hover (far left) were (second from left): Martin Willman, MD; Jerry Allen, MD; Wayne Morton, MD; David Rosenberg, MD; and Edmond Cabbabe, MD. Present at the ceremony, but not in photo were Joe Sudekum, MD, and Austin Tinsley, MD. Corrugations to all our 50-Year Pin recipients!



- Robert M. Al Aly, MD – Chesterfield
- Jerry H. Allen, MD – Washington
- Jon E. Browne, MD – Leawood, KS
- Adam G. Buchanan, MD – Des Peres
- Nathan D. Burroughs, MD – Kansas City
- Edmond B. Cabbabe, MD – St. Louis
- John A. Crouch, MD – Jefferson City
- Terrence Curran, MD – Kansas City
- Patricia M. Dix, MD – Springfield
- Sol H. Dubin, MD – Leawood, KS
- J. Wendall Goodwin, MD – Fair Grove
- T. Keith Grebe, MD – Memphis, TN
- John C. Hall, MD – Prairie Village, KS
- Donald L. James, DO – Rolla
- John J. Krautmann, MD – Jefferson City
- Nandini S. Kulkarni, MD – Creve Coeur
- Wayne L. Morton, MD – Osceola
- Helen T. Nguyen, MD – St. Joseph
- Phillip W. Pitney, MD – Louisiana
- David S. Rosenberg, MD – Ballwin
- John F. Sanfelippo, MD – Jefferson City
- Kenneth F. Scott, MD – Clinton
- Gregorio A. Sicard, MD – St. Louis
- Norman P. Steele, MD – Kirkwood
- Joseph M. Sudekum, MD – St. Louis
- Jean A. Thomas, MD – St. Louis
- Austin R. Tinsley, MD – Poplar Bluff
- Albert L. VanAmburg, MD – Chesterfield
- Martin L. Willman, MD – St. Louis



MSMA Presidents, from left: Alex Hover, MD; George Hubbell, MD; James DiRenna, DO; Norman Knowlton, MD; Joe Corrado, MD; James Wolfe, MD; Jeff Thomasson, MD; John Stanley, MD; Edmond Cabbabe, MD; Warren Lovinger, MD; Ravi Johar, MD; George Hruza, MD; Charles Van Way, III, MD; and Stephen Slocum, MD.

Summary of Council Actions: 2021-2022

Meeting of April 17, 2021 – Via Videoconference

Your MSMA Council met virtually April 17, 2021, due to the pandemic. Lancer Gates, DO, Kansas City, was elected Chair of Council; David Pohl, MD, was elected Vice Chair of Council; Brian Biggers, MD, Springfield, was elected Secretary; Elie Azrak, MD, St. Louis, was elected Treasurer.

Meeting of July 17, 2022 – Via Videoconference

Your MSMA Council met virtually for its July Council Meeting and approved the following actions:

- Approved the recommendation of the Budget and Finance Committee regarding the 2022 dues structure.
- Elected Barbara White, DO, Hannibal, to serve as District 2 Vice-Councilor.
- Elected Amy Patel, MD, Kansas City, to serve as Organized Medical Staff Section Vice-Councilor.
- Approved the Report of the Committee on Constitution and Bylaws, which included changing the Honor member category to Retired member: Members must have attained the age of 68, be re-tired from the practice of medicine and other healthcare-related employment, and members must request Retired status. MSMA officers, councilors, and other leaders may not hold Retired membership status.
- Approved the recommendation of the Committee on Legislative Affairs, that MSMA oppose the title change from Physician Assistant to Physician Associate.
- Approved the recommendation of the Committee on Legislative Affairs, that MSMA not adopt Resolution 16 – Medical Malpractice Cases Involving Cerebral Palsy, and Resolution 9 – Support for No-Excuse Vote by Mail.
- Referred Resolution 6 – Insurance Coverage Regarding Fertility back to the Legislative Committee for further consideration.

The MSMA Council has approved a dues reduction in some membership categories for the 2022 dues year.

- Retired members' dues will be reduced to $75.
- Members who are in their first four years of practice will also see a reduction. Physicians in their first year out of training will see their dues reduced to $50, and won't pay full active dues until their fifth year of practice.
- Affiliate (non-physician) dues will increase to $175.
- Student and resident membership will continue to be free
- Active dues will remain unchanged at $395.
- MSMA dues are still one of the lowest state medical association dues in the nation.

The MSMA Council has approved a bylaw change regarding the Honor membership category that was referred to them by the 2021 House of Delegates.

This category of membership will now be referred to as Retired membership. To qualify for this category – which will be charged $75 for membership next year – a physician must be 68 years of age and be fully retired from healthcare-related employment. This bylaw had not been amended since 1918 and was in need of some clarification. Current MSMA Honor members will be grandfathered into the new Retired category.

Meeting of October 17, 2021 – Jefferson City

The MSMA Council met in-person for the first time in two years on October 17, 2021, at the DoubleTree Hotel in Jefferson City. Several participants opted to join the meeting virtually via ZOOM.

- MSMA President Alexander Hover, MD, offered an overview of current issues, including MSMA's public messaging regarding COVID mitigation, the organization's new website and database, and preparations being made for the upcoming legislative session. He also updated the group on his recent travels and activities.
- Dr. Hover reported that MSMA's Executive Committee approved a public statement regarding lawsuits being brought against school boards over the safe re-opening of schools. MSMA's posi-tion was that local governance, public health officials, and members of the school board should look at their individual data and make decisions within their communities as to what would be appropriate to reduce the risk of COVID.
- Dr. Hover reported that MSMA filed an amicus brief in the Velasquez case, which sought to over-turn noneconomic damage caps. The brief was reviewed by the Missouri Supreme Court, who sided with MSMA and ruled that the damage caps were

legal. The Court has also upheld the ref-erendum on Medicaid expansion.

- Ravi Johar, MD, offered the report of the Committee on Legislative Affairs, and presented the recommendations on three resolutions:

Resolution 14 – Assistant Physicians: this was placed back on the table for discussion ahead of the 2022 legislative session.

- The Council approved the proposed substitute language for Resolution 6 – Insurance Coverage Regarding Fertility:

RESOLVED, that our Missouri State Medical Association support state legislation to re-quire payment for standard fertility preservation by all payers when infertility may be caused, directly or indirectly, by necessary medical treatments as determined by a li-censed physician; and be it further,

RESOLVED, that our Missouri State Medical Association encourage health insurers to pro-vide insurance coverage for fertility treatments.

- The Council approved the proposed Substitute Resolution 7 – Elimination of Seasonal Time Change:

RESOLVED, that our Missouri State Medical Association support a resolution to remain in a consistent standardized time zone year-round, contingent upon the adoption of a simi-lar resolution by the 48 contiguous states in the United States; and be it further,

RESOLVED, that our Missouri State Medical Association bring this issue to the American Medical Association House of Delegates both to get other state medical associations to work with their states' legislatures to enact similar legislation, and to get the American Medical Association to urge Congress to repeal the federal law establishing the annual advancement of time known as "Daylight Saving Time" and leave the U.S. in a consistent standardized time zone year-round.

- MSMA Immediate Past President, George Hruza, MD, reviewed current membership numbers, and cited the advantages of MSMA's new website and database as related to dues billing, com-munications, and other member benefits.
- William Woods, MD, Chair of the MPH Foundation Board, reported to the Council information on MPHP finances and client participation, and updated the group on efforts to work with the Board of Healing Arts to establish a safe haven law in Missouri by modifying the verbiage on ini-tial/renewal license applications. Proposed changes would allow a physician to check "no" on the box that indicates whether they have had a substance use or mental health disorder since last re-newal or another time frame, provided they are currently participating in the MPHP.
- Edmond Cabbabe, MD, Chair of the AMA Delegation, announced that the 2021 AMA Interim meeting will be held virtually. Watch for the review of the meeting in the November/December Missouri Medicine.
- Barbara Hover, MSMA Alliance President, reported that in concert with the new two-day format for MSMA's Annual Convention, the Alliance will include a Friday program on "Stop the Bleed," presented by Washington University. Saturday's events will include the general assembly meet-ing, presentations, and the installation of officers. She also encouraged everyone to participate in the Alliance's Holiday Sharing Card campaign, which raises funds to help provide medical student scholarships via the Missouri State Medical Foundation. Donors will be recognized in Missouri Medicine, on the website, and in the Alliance newsletter.
- The Council heard and approved reports from the Budget and Finance Committee, the Commis-sion on Continuing Education, and the MSMA Insurance Agency, as well as an update on Actions and Recommendations on Resolutions from the 2021 Annual Meeting (see above).
- Warren Lovinger, Jr., MD, will finish his ten-year term on the AMA Delegation during the upcom-ing AMA meeting. His service on the MSMA Council spanned twelve years, including his term as MSMA President from 2017-2018.
- District 7 Councilor Michael O'Dell, MD, is retiring from practice; the Council accepted the nomi-nation of Fariha Shafi, MD, to move into the District 7 Councilor position. Dr. Shafi previously served as District 7 Vice Councilor.

Meeting January 22, 2022 – Via Videoconference

- Early advocacy efforts for this legislative session include following nearly 750 bills related to the House of Medicine. We encourage you to check your email on Monday mornings for 5 Things You Need to Know and Thursdays for MSMA's Legislative Report.
- After a lengthy discussion of the Assistant Physician Resolution #14 introduced at the 2021 An-nual Convention, the Council recommended the following amended resolution be adopted:



MSMA Alliance Past Presidents: standing, from left: Sandra Murdock, Kathy Weigand, Donna Corrado, Diana Corzine, Allene Wright, Mary Shuman, Gill Waltman, Jana Wolfe, and Anne Turnbaugh. Seated, from left: Sue Ann Greco, Heather Rifkin, Barbara Hover, and Sana Saleh.

Council Actions, continued



Many enjoyed the Presidential Reception, from left: Betty Drees, MD, Joanne Loethan, MD, Rania Atra, Bill Drees, and Fariha Shafi, MD.

RESOLVED, that MSMA oppose an alternative pathway to a medical license without post graduate training; and be it further

RESOLVED, that MSMA support legislation to limit the term of an assistant physician li-cense to seven years; and be it further

RESOLVED, that MSMA support efforts to increase the number of primary care physicians in the state.

- In other organizational matters, the Constitution and Bylaws Committee has spent a number of months evaluating and updating the MSMA bylaws to align with current practices. The MSMA Council reviewed the changes proposed by the Committee and approved a resolution to be pre-sented to the House of Delegates, which, if adopted, would finalize the changes. Also, an MSMA Council ad hoc committee was formed to discuss Councilor representation by district. The cur-rent bylaws tie Council representatives to the number of physicians in MSMA districts. The changing MSMA membership numbers will require a bylaws change to bring everything into alignment.

- Barbara Hover, MSMA Alliance President, reported that more than $4,700 had been raised through the Alliance's Holiday Sharing Card campaign. The Alliance directs these funds to the Missouri State Medical Foundation to provide medical student scholarships.

- The Council heard and approved reports from the MSMA Executive Committee, Legislative Af-fairs, Membership, the Constitution and Bylaws Committee, and the Missouri Physicians Health Program.

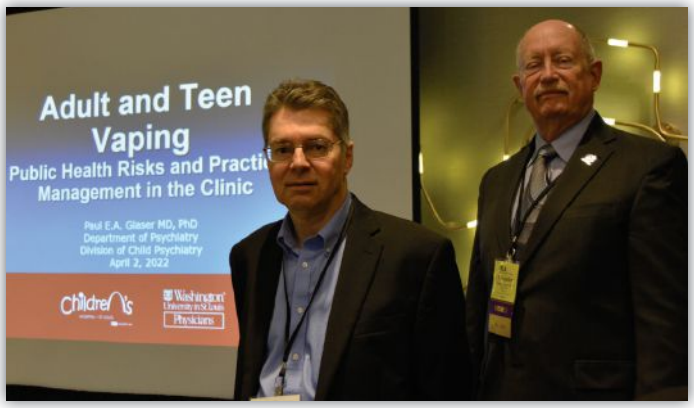
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General Session: COVID-19 in Missouri - Show Me Pandemic, presented by George Turabelidze, MD, Epidemiologist for State of Missouri Department of Health and Senior Services (left). Standing with Dr. Truabelidze is Alex Garza, MD, Chief Community Health Officer, SSM Health, St. Louis, Missouri.



Lisa Thomas, MD, Lake of the Ozarks, and a state Representative for that area, provides testimony during the Reference Committee discussion on the Assistant Physician (AP) program in Missouri. The Committee recommended MSMA ask the Board of Healing Arts to provide data on the AP program with the aim of better understanding the impact on patient access, expansion of primary care in underserved areas, and outcomes of those holding an AP license in the state of Missouri.



General Session: Adult and Teen Vaping - Public Health Risks and Practical Management in the Clinic, presented by Paul E. A. Glaser, MD, (left), Professor of Psychiatry, Washington University School of Medicine, St. Louis, Missouri. Moderator is Dr. Hover (right).



General Session: No Surprises Act - What Physicians Need to Know, presented by Dan Clark, (right), BKD National Health Care Group, Akron, Ohio and Noreen Vergara, JD, (center), Husch Blackwell, Kansas City, Missouri. Moderator is Lancer Gates, MD, (left).



General Session: Advances in the Treatment of the Diabetic Patient with Obesity, presented by Peminda Cabandugama, MD (left). Moderator is David Pohl, MD (right).

Reports of the Delegate Handbook: 2021-2022

Report of the Secretary

The Missouri State Medical Association had 4,318 members at the end of the 2021 dues year (August 31, 2021). This was a net loss of 303 members from our membership of 4,318 as of August 31, 2020. Following is a breakdown according to classification.

Year	Students	Residents	Active	Honor	Total
2020	1,547	322	2,091	358	4,318
2021	1, 457	382	1,882	294	4,015

The number of member deaths reported during 2021 totaled 15.

The Committee on Nominations, which is appointed by the President, from the House of Delegates, must submit nominations for the following offices:

Three Vice Presidents to fill the expired terms of James Blaine, MD, Springfield; Betty Drees, MD, Kansas City; and Karen Goodhope, MD, St. Louis.

Speaker and Vice Speaker to fill the expired terms of Sam Page, MD, Creve Coeur, and Tim Swearengin, DO, Springfield.

Three Delegates and Six Alternate Delegates to the AMA to fill the vacancies created by the expiration at the conclusion of the 2022 Annual Convention of the terms of Delegates: Edmond Cabbabe, MD, St. Louis; Joseph Corrado, MD, Mexico; Warren Lovinger, Jr., MD, Nevada; and Alternate Delegates: Peggy Barjenbruch, MD, Mexico; George Hruza, MD, Chesterfield; George Hubbell, MD, Lake Ozark; Ravi Johar, MD, Chesterfield; Joanne Loethen, MD, Kansas City; and Nikita Sood, Washington University (one-year term). The new two-year terms will begin at the conclusion of the 2022 MSMA Annual Convention and end at the conclusion of the 2024 MSMA Annual Convention.

The terms of the following Councilors will expire in 2022: 3rd District – Inderjit Singh, MD, St. Louis; Christopher Swingle, DO, St. Louis; 5th District – Lisa Thomas, MD, Lake Ozark; Amy Zguta, MD, Columbia; 7th District – Fariha Shafi, MD, Overland Park, KS; Lancer Gates, DO, Kansas City; 8th District – Matthew Stinson, MD, Springfield; 9th District – Lirong Zhu, MD, Rolla; Organized Medical Staff Section – Peggy Barjenbruch, MD, Mexico; Young Physician Section – Sarah Florio, MD, Lee's Summit; International Medical Graduate Section – Louis DelCampo, MD, Springfield; Resident and Fellow Section – Brette Harding, MD, Columbia; Medical Student Section – Alex Shimony, Washington University.

The terms of the following Vice Councilors will expire in 2022: 3rd District – Ramona Behshad, MD, St. Louis; 5th District – Jennifer Powell, MD, Osage Beach; 9th District – Nathaniel Barbe, DO, Mountain Grove; Organized Medical Staff Section – Amy Patel, MD, Kansas City; International Medical Graduate Section – Chakshu Gupta, MD, Lenexa, KS; Resident and Fellow Section – Christina Kratschmer, MD, St. Louis; Medical Student Section – Satya Sivasankar, University of Missouri-Kansas City.

Members shall meet virtually or by email prior to the Annual Convention to elect the Councilors and Vice-Councilors for their respective districts and sections. The election shall be certified to the House of Delegates on the prescribed form which will be furnished.

The House of Delegates will hold its first session on Saturday, April 2, at 7:30 a.m., and its second session on Sunday, April 3, at 8:15 a.m.

Registration will take place online at www.msma.org/convention-registration.html , and in-person at the convention from 4:00-6:00 p.m. on Friday, April 1, and 6:00 a.m.-5:00 p.m. on Saturday, April 2.

Report of the Treasurer

The report of the Treasurer which includes the Financial Statements will be publishesd in future edition of *Missouri Medicine*.

Report of the Executive Vice President

You should be proud that your Missouri State Medical Association is widely recognized as the voice of medicine in Missouri. Be it the Missouri General Assembly, the countless governmental bureaus and agencies, the business community, the insurance industry, hospitals, advocacy groups, or the media, MSMA is considered the leading advocate for your

profession and your patients. Following is just a sample of the many things your MSMA did for you in 2021.

State Legislative Activities

Your MSMA lobbyist team enjoyed a very good year in the state Capitol in 2021. They are quick to credit you and your MSMA colleagues with much of that success, not only for your active involvement in the political process, but also for the respect you command in your community. MSMA is involved in more legislative healthcare issues than any other organization in the state; everything from scope of practice to tobacco, and tort reform to Medicaid expansion. Your lobbyists, Heidi Geisbuhler Sutherland and Shantel Dooling, are among the first to arrive at the Capitol every morning, and among the last to leave at night. Their diligence and effectiveness are unsurpassed. Rather than overwhelm you with details on the myriad bills and issues they work on, I'll refer you to our weekly Legislative Report and 5 Things MSMA Members Need to Know This Week About the State Legislature, which members receive during the legislative session. If you are not reading these e-publications, you're missing out.

Other Notable Activities

Despite only having the resources and numbers of a smaller-sized state medical association, your MSMA is one of the most diverse and active state organizations in the nation. Here are just a few of the activities undertaken on your behalf over the last year.

The pandemic limited the travel of your President and MSMA staff, but they were still able to virtually attend a number of local society meetings across the state. From Nevada to Washington, and from St. Joseph to Joplin, your leadership and staff continue to make themselves available to every local society, no matter how large or small.

MSMA boasts an outstanding group of member physicians who give the better part of a week twice a year to represent you and your patients in the AMA House of Delegates. It is thankless work at times, but there is not a better AMA delegation than yours. Please thank them. In 2021, both national AMA meetings were held virtually. We're planning on in-person meetings in 2022.

In AMA-related news, we are excited and extremely proud that one of our very own, David Barbe, MD, a past MSMA President, wrapped up his term as President of the World Medical Association in 2021. This is an extraordinary accomplishment and a blessing, knowing that we have been well represented at the upper tier of the AMA's, and now the WMA's, leadership.

MSMA was vocal in its support for local public health authorities during the pandemic in 2021. Staff also worked tirelessly participating in COVID data, testing, and vaccine distribution meetings.

In addition to its regular duties, your MSMA staff also provides top-rate administrative services for other medical societies, and serves on or maintains liaison with a large number of external governmental and private-sector committees, task forces, boards and commissions.

Membership Services and Benefits

Your MSMA staff and leadership are constantly striving to bring even more value to your membership. One constant priority is to improve communications with our members and respond more quickly to answer questions and resolve issues. We encourage you to visit the MSMA website often. More content is constantly being added, with more timely information to help you and your office staff. In 2021, MSMA migrated to a new and improved website, and a new user-friendly membership database. Also, you can now pay membership dues online and access our membership database to search for your physician colleagues.

Missouri Medicine, MSMA's outstanding award-winning scientific journal, is free to you with your membership. It now is published in digital format as well as the traditional paper copy. The journal's scientific content is accessible in the renowned PubMed database. You can find current and archived electronic editions on our website.

Progress Notes, our monthly newsletter (free to members), is chock-full of timely news items, tips, and information. An electronic version, e-Progress Notes, is also distributed monthly by email.

MSMA also offers you free CME credits at the Annual Convention every year, and numerous other opportunities to earn CME through our statewide CME recognition program. MSMA accredits 22 entities to offer CME, many of which participate in joint providership across the state. Yet another membership benefit.

I would ask you to also be mindful of the more direct benefits your MSMA membership offers. For example, we are partners with Moneta, an outstanding financial services firm that provides MSMA members with expert financial planning and investment services. SHINE is a health information exchange (HIE) which facilitates electronic medical records software sharing clinical information with other EMRs in addition to providing assistance with MIPS compliance. We also have a relationship with the Resolve Physician Agency, which offers a wide range of career services, including job placement, contract review and negotiation, practice evaluation, benefits analysis, debt management, and a lot more, all at a discount to MSMA members.

MSMA's Affiliate Organizations

Your Missouri State Medical Foundation has loaned more than $11.8 million to Missouri medical students since its inception more than fifty years ago. The Foundation board made the decision in 2017 to cease its loan program due to the number of private lenders in the market. The focus is now on scholarships for Missouri medical students. In 2021, MSMF awarded $300,000 in scholarships to 60 medical students at all six of the allopathic and osteopathic medical schools in the state. And the Foundation offers $5,000 matching funds to local medical societies to create scholarships for medical students. Physicians are now able to donate to the Foundation on the MSMA website.

Your Missouri Physicians Health Program is widely considered one of the most successful of its kind in the nation. Last year the program served 90 physicians who are dealing with chemical, emotional, or behavioral issues. You can assist your colleagues by asking your hospital medical staff and administration to contribute funds to this exceptional and vitally important program.

Your Missouri Medical Political Action Committee is one of the most respected and effective association PACs in the state. In the last election cycle MMPAC contributed close to $130,000 to support physician-friendly candidates across the state. Membership begins at the $100 Sustaining Member level, but you can demonstrate your political savvy by upgrading to one of the Super levels: Silver ($250), Gold ($500), or Diamond ($1,000). Of course, any amount is appreciated. You can know donate to MMPAC through PayPal or the MSMA website. Your participation is essential to our political effectiveness.

Your MSMA Insurance Agency was formed by MSMA and is directed by physicians to serve you and your practice. This independent insurance agency is a trusted source for all lines of insurance, and provides some financial support for MSMA. Please visit with the Agency's website for more information.

The MSMA Alliance has dedicated and enthusiastic physician spouses who work tirelessly to promote health education and support health-related charitable activities, all toward improving the health and welfare of all Missourians. And they are a force to be reckoned with when they march on the Capitol every year to advance medicine's legislative causes. They are also a great group of fundraisers for the MSMF.

Your Organization

It is nearly impossible to list all of the duties and services MSMA provides for the physicians of Missouri. The advocacy and representation, the publications, the CME, the Foundation, the Physicians Health Program, the Alliance, and your AMA Delegation all cumulate in an organization deeply rooted in service to its members and the patients they serve. The MSMA is YOUR organization, and your officers and staff welcome your thoughts on how best to serve you and your fellow members. Feel free to seek them out – at this convention or at any time – and share your ideas.

Heartfelt Thanks

On behalf of the staff and the entire MSMA membership, I want to express undying gratitude for your officers, councilors, committee members, and other leaders who give so much of their time and resources for the betterment of the Association and patient care in Missouri. They are nothing short of extraordinary.

I also want to express my appreciation for allowing me to work with talented and dedicated MSMA employees whose creativity and diligence are unmatched anywhere. Lizabeth Fleenor, the Director of Communications, is the managing editor of your award-winning *Missouri Medicine* and *Progress Notes*, designs all the MSMA pamphlets and logos you see, and oversees MSMA's website. Benita Stennis, the Director of Operations and Education, does all of our meeting planning – including the Herculean task of organizing the Annual Convention – and

also directs all of the impressive CME programming. Heidi Geisbuhler Sutherland is the Director of Government Relations. She heads your extremely effective lobbying team and writes the renowned *Legislative Report.* She is the liaison to the Women Physician Section. Shantel Dooling is the Director of Legislative Affairs and the invaluable tandem in our lobbying effort. She is also the liaison to the Resident and Fellow Section, and Medical Student Section. She also assists the Missouri State Orthopaedic Association as their Executive Director. Our Executive Services Specialist, Cheri Martin, keeps the office running like a well-oiled machine, day in and day out. She also manages MMPAC's day-to-day activities, as well as MSMF, and she serves as liaison to the IMG and YPS sections. Cassie Williams, the Membership Data & IT Specialist, tends to our complicated member database and coordinates all the membership billing and mailing for MSMA. She's the one you want if you need to know if someone has paid their dues. Carol Meyer, the Administrative Assistant, is that invaluable team member who can play any position. She spends a lot of time helping with the meeting planning and CME activities, but she's the go-to person when anybody on staff needs a little extra help.

And finally, please allow me to thank you, the physicians of Missouri, for the opportunity to serve you in this outstanding organization.

Report of the Alliance

It has been a privilege and pleasure to serve as your President for 2021-2022. The pandemic continued during my term to affect how we met. Due to COVID, the MSMA Alliance met by Zoom on April 24, 2021, for their Annual Meeting and installation of officers by Sue Ann Greco, President of the AMA Alliance.

A grateful thank you to the following officers who served in 2021-2022: President-Elect: Sana Saleh; VP Foundation: Gill Waltman/Kathy Weigand; VP Health: Angela Zylka; VP Legislation: Kirk Doan; VP Membership: Jennifer Gast/Donna Corrado; Recording Sec: Mary Catherine Heimburger; Treasurer: Debora Snyder; and Immediate Past President: Diana Corzine.

The theme I selected for this year was Better Together. We all have a unique opportunity to make a positive difference in our communities, but we create a greater impact by enlisting the help of those around us. We truly can accomplish so much more when we collaborate and have county Alliances working together at the state and national level.

We began the year with an organizational board meeting by Zoom on May 19. Plans for the year were discussed and finalized.

I had the honor to install Kansas City Metro Med Alliance officers at the home of Dr. Herbert and Lissa Young on May 20. A High Tea was enjoyed by all who attended.

I attended the virtual AMA Alliance Annual Meeting June 12-13. Missouri's Sue Ann Greco was honored for her year of service as AMA Alliance President 2020-2021. In June, I also attended the Tri County Medical Society Meeting.

A board retreat was scheduled for July 8-9 in Osage Beach at the lake home of Dr. Joe and Donna Corrado. There I installed the St. Louis Metropolitan Medical Alliance officers for 2021-2022. The MSMAA's Strategic Plan and Mission Statement were updated and adopted. Preliminary plans were made for Missouri to host the North Central Regional Meeting (NCRM) in St. Louis Oct. 9-10 at the Union Station Hilton. It was decided that MSMAA's Fall Conference would be combined with the NCRM, comprised of 12 states.

I attended and gave the Alliance report at the July 17 virtual MSMA Council Meeting. On Sept. 16-17, I attended the Nebraska State Medical Society Annual Meeting. On Sept. 30, I visited with members of the Alliance in Nevada, Missouri.

The MSMAA Fall Conference Board Meeting was held on Oct. 8 at which plans for the Annual Meeting were discussed. Because of a shortened format for the Annual Meeting, it was decided that the Board business portion be held the Saturday before on March 27. This was to allow time for speakers on April 2 in the hope of increasing membership attendance.

The NCRM immediately followed MSMAA'S Fall Conference Board Meeting, beginning with a reception that evening. Saturday was filled with engaging speakers. The AMA Alliance was founded in St. Louis in 1822 and this marked the beginning of the Centennial Celebration. Alliance leaders from all over the country attended our conference at Union station. We had seven members of the AMA Alliance Board of Directors in attendance including Heather Rifkin, current AMA Alliance President. A visit was made to the Missouri Botanical Garden where the formation of the AMA Women's Auxiliary was announced in 1922.

Dr. David Barbe, World Medical Association President and past AMA President, gave the keynote address at the Saturday evening dinner. Dr. Alexander Hover, MSMA President, brought greetings from MSMA and introduced Dr. Barbe. The NCRM concluded on Sunday. Sue Ann Greco and Barbara Hover were co-chairs and had great assistance from Liz Fleenor, MSMAA Liaison, Allene Wright, and Jana Wolfe. St. Louis Alliance was also of great assistance.

I attended the MSMA Council Meeting held in Jefferson City on Oct. 16-17. I presented the Alliance report and asked for their participation with the upcoming Holiday Sharing Card.

In November my husband, who is the MSMA president, and I attended the Friendsgiving Celebration for Kansas City Metro Med held at the home of Dr. George and Sana Saleh. We then went to Buchanan County Dec. 1 where Alex installed officers and I visited with their Alliance.

January 22, 2022, I attended the MSMA virtual Council Meeting and presented the Alliance report. I announced that the Holiday Sharing Card brought in a record number of contributions. We received $4,720 for the MSMA Foundation to be used for medical student scholarships. Holiday Greetings and the names of the donors were printed in Missouri Medicine, the Show Me Alliance News, and online. I thanked all of the physicians and their spouses who contributed and Gill Waltman for chairing the project.

The MSMAA Winter Board Meeting was held Feb. 17 by Zoom call. The new slate of officers was presented, and final plans were made for the Annual Meeting.

As this report goes to print, I will be attending the March 1, 2022, White Coat Rally in Jefferson City with physicians and Alliance members from around the state. I will preside over the MSMA Alliance Annual Meeting April 1-2. I will also attend the AMA Alliance Annual Meeting and Centennial Celebration in Chicago June 12-14 and represent Missouri as a past MSMA Alliance President.

I wish to thank my Board of Directors, Liz Fleenor, and all the Alliance members who served in appointed positions this year. You have gone above and beyond in your efforts to advance the mission of the MSMA Alliance and I thank you for your help. You have made my job an easy one.

Submitted by Barbara A. Hover, President

Commission on Continuing Eduction

The Commission on Continuing Education reaccredited Children's Mercy Hospital-Kansas City, MO; Center for Behavioral Medicine-Kansas City, MO; Mosaic Life Care-St. Joseph, MO; Kansas City Southwest Clinical Society-Kansas City, MO; CoxHealth-Springfield, MO; and St. Francis Medical Center-Cape Girardeau, MO.

The Commission approved the 2021 Annual Convention for 4.0 AMA PRA Category 1 Credits and 4.0 ABIM MOC Points.

MSMA staff applied for reaccreditation with the ACCME in July of 2021. Staff and Commission members participated in a ZOOM accreditation interview in November. The ACCME will render an accreditation decision in the spring of 2022.

The Missouri State Medical Association currently accredits 22 entities statewide.

MSMA staff attended the ACCME's Virtual Spring Meeting April 25-27, 2021. MSMA staff also attended the 2021 ACCME SMS Virtual Meeting December 8-9, 2021. Participants participated in case studies, discussed the new Standards for Integrity and Independence of Continuing Education, viewed a demonstration of the newly released update of PARS, and discussed transitioning live activities to virtual educational opportunities during the pandemic.

Additionally, staff and Commission members complete education sessions at their leisure via the online courses hosted on the ACCME Academy.

Comission on Medical Economics, Third Party Medicine and Governmental Relations

The Medical Economics Commission met via conference call on June 22, 2021, to discuss the 2021 MSMA Resolutions referred to the Commission. The commission made the following recommendations to the MSMA Council, which were approved:

- Resolution 4 – Independent Review of Medicare Advantage Plans – Commission members discussed the input provided by MSMA staff and recommend that an amended resolution be adopted, eliminating the first Resolved statement.
- Resolution 5 – Unambiguous Language by Insurers – MSMA passed a very similar resolution in 1986. The Commission recommends that this resolution not be adopted, but that the 1986 policy action be reaffirmed.

- Resolution 8 – Cardiac Disease Terminology – Citing the complexity of changing terminology and having it align with ICD-10 coding, the Commission recommends that this resolution not be adopted. The Commission encourages physicians to use gentler terms when discussing cardiac conditions with patients, while retaining the medical language for records and coding purposes.
- Resolution 17 – Interprofessional Education – The Commission recommends that this resolution be adopted. They also recommend the development of a graphic that details the extent of education and training of various levels of healthcare providers, to be published in Missouri Medicine and shared with hospitals, medical schools and legislators.

Committee on Membership

The 2021 MSMA membership year closed with 1,882 active members (a 10% decrease from 2020), 382 residents, 1,457 students, and 294 retired members. Membership has decreased 40% since the end of the 2016 dues year (August 2016).

Approximately 200 physicians have joined as new members so far in the 2022 dues year. In addition to traditional recruiting methods, peer-to-peer outreach is the most beneficial way to maintain and grow membership.

Last year, MSMA adopted a new membership database system which includes a new website. It also allows for recurring credit card payments, paywall for members-only content, and other membership-friendly characteristics.

With the pandemic, travel was limited for the MSMA staff in 2020 and 2021. However, MSMA still initiated a number of virtual meetings for members in 2021. We also attended a number of local society meetings.

All physicians, including non-members, have been encouraged to sign up for MSMA's Capitol Canary, which connects physicians with their elected officials in the state capitol, and allows members to send messages regarding important issues.

In addition to our social media presence, MSMA hopes to attract more members through additional advocacy publications and events. We encourage all members to follow us on social media and share our posts.

Missouri Physicians Health Program

This has been a busy year as indicated by the number of referrals and the numerous Missouri physicians that were assisted. The MPHP provides a variety of services. This includes consultation, intervention, referral for treatment, monitoring and advocacy. The consultive service is especially active. Hospital administrators, physicians, colleagues and family members call the Program Coordinator or Clinical Coordinator to make a referral, discuss a potential referral or brainstorm about the necessity of making a referral. Information is often requested about how to identify problems, what services are available and how to handle issues of impairment should they occur. Many hours are required to meet their needs.

In this cycle, MPHP saw a total of 90 clients, covering 90 medical specialties, released 20 participants with the main contracts being recovery and mental health. The MPHP provides a safe and knowledgeable venue for any question or concern about physician health.

MSMA Insurance Agency

Your MSMA Insurance Agency is an independent insurance agency owned and directed by MSMA. The Agency offers policies for professional liability, individual and group health, workers compensation, business office coverage and individual disability and life.

The Agency has been in operation for over 19 years. In that time the Agency has been able to contribute back to the MSMA to help offset cost to the members, while also finding the best coverage and cost for our policyholders.

The board is supportive of the Agency and encourages all MSMA members to contact the Agency for a no obligation quote for any of their insurance needs.

Missouri State Medical Foundation

The Foundation has made more than 3,000 medical school student loans over the past 52 years, totaling nearly $12 million. The loan program has been closed and the Foundation funds the MSMA scholarships that have been awarded over the past 17 years.

In 2021, the Foundation awarded $5,000 MSMA scholarships to ten Missouri medical students at each of the six medical schools.

Last year, 60 Missouri medical school students received $300,000 in MSMA scholarships. This gives the Foundation a cumulative scholarship total of $1.57 million awarded to Missouri natives who are attending a medical school in Missouri.

The Foundation has also matched funding up to $5,000 for local medical society scholarships. The MSMA Alliance has been an important partner to the Foundation through generous fund-raising activities.

Committee on Publication

Volume 118 of *Missouri Medicine* published original research, up to date reviews, and analysis of important individual and public health topics. This volume published four issues featuring "theme" articles and two issues featuring a variety of scientific topics and micro-series. It contained 564 pages and a record number of 57 scientific articles.

In Volume 118, we published four First Literature Reports, two Feature Reviews, and four articles on COVID-19, including original research of the pandemic's impact on physicians, patients, and healthcare outcomes. We featured an acclaimed mini-series on the science of food and diet, and published a PRO/CON series on fish oil and the risk of cardiovascular disease.

The Journal received its highest number of unsolicited articles; acceptance rate is about 50%. We continue to have an outstanding publication queue of high-quality papers, coming from as far away as Turkey, Australia, Morocco, and South Africa. Our theme issues are fully subscribed through July/August 2023. Theme issues represent all four allopathic and two osteopathic medical schools in Missouri. Papers published this past year were reprinted in four state medical Journals and one used for orthopedic resident education in a New England medical center. Missouri Medicine successfully completed reapplication to Elsevier Scopus and is now indexed or archived by all the major indexing services. We thank Cathy C. Sarli of Becker Medical Library of WU School of Medicine for her assistance with Scopus.

Our thanks to the Contributing Editors and Publications Committee for their outstanding work: Justin M. Albani, MD, Jessica D. Bauerle, MD, (who finished her three-year term as Early Career Contributing Editor), Jeffrey G. Copeland, MD, (who is stepping down after over a decade of service) Betty M. Drees, MD, David A. Fleming, MD, Arthur H. Gale, MD, William R. Reynolds, DDS, MD, and Charles W. Van Way, III, MD.

Missouri Medicine announced the retirement or relocation out of state of the following esteemed Editorial Board Members: John S. Daniels, MD, Internal Medicine; John H. Niemeyer, MD, Radiology; Mark T. Steele, MD, Emergency Medicine; Gregory Worsowicz, MD, Physical Medicine and Rehabilitation; Michael O'Dell, MD, Family Medicine; Stephanie Graff, MD; Hematology and Oncology; Michael C. Murphy, MD, Cardiac Surgery; Jeffrey G. Copeland, MD, Contributing Editor and Jessica D. Bauerle, MD, Young Physician Contributing Editor.

Missouri Medicine welcomed the following eminent physicians to the Editorial Board: Fariha Shafi, MD, Internal Medicine; Andrew Bierhals, MD, Radiology; Randall S. Jotte, MD, Emergency Medicine; David J. Haustein, MD, Physical Medicine and Rehabilitation; Beth Rosemergey, DO, Family Medicine; Leonid Shunyakov, MD, Hematology and Oncology; Scott W. Kujath, MD, Vascular Surgery, John G. Markley, MD, Cardiac Surgery and Anne T. Christopher, MD, Pain Medicine, which is a new medical specialty added to the board. Emily Hillman, MD, is the new Young Physician Contributing Editor for a three-year term beginning in 2022.

Missouri Medicine would like to publicly thank the following invited non-Editorial Board experts who have done peer-review of submitted manuscripts in 2021: Lawrence M. Lewis, MD, Eden M. Esguerra, MD, Satish Kalanjeri, MD, Richard Hellman, MD, Fahd A. Ahmad, MD, Javed Sayed, MD, Andrew Lee, MD, Joel Eissenberg, PhD, Anand Chockalingam, MD, John S. Daniels, MD, Sarah Dubin, MD, Clayton Nuelle, MD, Sumit Gupta, MD, Anthony R. Lupo, PhD.

The Publication Committee and its Editor/Chair commends Lizabeth R. S. Fleenor, BJ, MA, for two stellar decades as Managing Editor. Her commitment and expertise have been a major factor in the rise of Missouri Medicine to national prominence.

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2022 Annual Convention Attendance

Delegates	*66*
Members	*51*
Staff	*13*
Guests	*36*
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Councilors/Vice	*27*
Alliance	*18*
Total	*184*

(Actual numbers will not balance due to overlaps in positions served.)

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