

RESEARCH-BASED GUIDE TO HBA 1C LEVELS & DOCUMENTED RISKS

(EVIDENCE FROM DIABETES CARE, DIABETOLOGIA, NEJM, UKPDS,
DCCT/EDIC, UK BIOBANK, NDR SWEDEN)

A1c < 6.5% — Lowest Risk Zone

- Lowest kidney disease risk
- Lowest nerve damage risk
- Lowest retinopathy risk
- Lowest cardiovascular risk

Evidence: Zhu 2020; DCCT/EDIC; UKPDS

A1c 6.5–6.9% — Early Damage Zone

Documented Risks:

- Early kidney damage (microalbuminuria ↑ 38%)
- Early neuropathy (risk ↑ 59%)
- Early retinopathy begins

Evidence: Yokoyama 2012; Young 2004; Zhu 2020

A1c 7.0–7.9% — Significant Damage Zone

Documented Risks:

- Kidney disease risk nearly doubles (↑ 84%)
- Neuropathy risk ~2× higher
- Retinopathy prevalence higher
- Cardiovascular disease risk increases

Evidence: Yokoyama 2012; Young 2004; ADVANCE; Wan 2023

A1c 8.0–8.9% — High-Risk Microvascular Zone

Documented Risks:

- Kidney disease risk triples (RR 2.54)
- Neuropathy risk triples
- Higher risk of peripheral vascular disease
- Higher risk of stroke/heart attack

Evidence: Yokoyama 2012; Currie 2009; Young 2004; ACCORD/ADVANCE

A1c \geq 9.0% — Very High-Risk Zone

Documented Risks:

- Marked rise in stroke risk
- Marked rise in heart attack risk
- Increased amputation risk (PVD HR 2.16)
- Retinopathy progression
- Increased mortality

Evidence: Wan 2023; UK Biobank; Currie 2009; UKPDS

A1c \geq 10-11% — Severe Uncontrolled Zone

(Studies group these levels together; risks apply across this range)

Documented Risks:

- Rapid progression of kidney disease
- Rapid retinopathy progression
- High neuropathy burden
- High risk of ulcers/infection
- High hospitalization & mortality risk

Evidence: NDR Sweden; Wan 2023; UK Biobank; Currie 2009

A1c \geq 12% — Extreme Risk Zone

(No study separates 12, 13, 14+, but all show steep risk escalation)

Documented Risks:

- Highest mortality category
- High risk of amputation
- High risk of kidney failure progression
- Very high cardiovascular risk
- High risk of foot ulcers & infections

Evidence: Wan 2023; NDR Sweden; Icks 2008; Currie 2009

KEY TAKEAWAY FOR PATIENTS

**The higher the A1c, the higher the risk —
but every reduction in A1c lowers your complication risk immediately.**

Even moving from 10% → 8% or 9% → 7% can cut risks dramatically.