microba

Trimethylamine (TMA) producing microbes
Marker Guide

What this marker measures

The collective capacity of the microbial community to produce trimethylamine (TMA) from dietary precursors such as choline and carnitine. TMA is absorbed and converted in the liver to TMAO, which at higher circulating levels has been associated with inflammatory pathways and cardiovascular risk[1–6].

Clinical associations

Consider this marker when your patient presents with:

Cardiovascular risk

Atherosclerosis risk, cardiovascular disease, dyslipidaemia, or inflammatory markers where TMAO-related pathways may contribute

Dietary context

High red meat intake or use of free choline/carnitine supplements where microbial TMA production may be relevant.

Metabolic-inflammatory presentations

Insulin resistance, type 2 diabetes, obesity, NAFLD/MASLD, metabolic syndrome or chronic low-grade inflammation where gut-derived metabolites may be relevant

Renal concerns

Chronic kidney disease or reduced renal function, where circulating TMAO may be elevated due to reduced excretion capacity

Interpreting the result

All results are compared to Microba's healthy cohort to determine whether they fall within or outside the expected range.

LOW

TMA-producing potential is lower than expected

This suggests lower TMA-producing potential. No marker-specific intervention needed.

WITHIN RANGE

TMA-producing potential is within expected parameters

This does not suggest elevated microbial TMA-producing potential.

HIGH

TMA-producing potential is higher than expected

May indicate increased potential to produce TMA, which can be converted to TMAO in the liver. Interpret alongside diet, renal function, and cardiovascular risk.
Action: see patient management insights below.

Patient management insights

Reduce microbial TMA-producing potential and support cardiometabolic health.

DIETARY STRATEGIES

- Limiting dietary carnitine intake (from red meat) may reduce plasma trimethylamine N-oxide (TMAO)[7–10]. C
- Carnitine supplementation may increase plasma TMAO. When aiming to reduce plasma TMAO, limiting or avoiding carnitine supplementation may be effective[11–13]. C
- Limiting or avoiding free choline supplementation may reduce plasma trimethylamine N-oxide (TMAO)[14–16]. C
- Cruciferous vegetables may reduce urinary trimethylamine N-oxide (TMAO)[17] D

SUPPLEMENTATION

- Grape pomace extract may reduce plasma trimethylamine N-oxide (TMAO)[18,19]. D
- Reducing plasma homocysteine may reduce plasma trimethylamine N-oxide (TMAO)[20]. D

OTHER CLINICAL STRATEGIES

- Reducing plasma homocysteine may reduce plasma trimethylamine N-oxide (TMAO)[20]. D

Tips for patients discussion

Your report shows elevated microbial capacity to produce TMA, a compound your liver can convert to TMAO. Higher TMAO has been linked with cardiovascular risk. Red meat is the main dietary contributor, so reducing red meat and increasing fibre-rich plant foods may help.

The community

TMA is not produced by a single species, it's a community-level function. Below are some of the most common, though this list is not exhaustive.

Acetatifactor sp900066565	*Agathobacter faecis*	*Agathobacter rectale*
Agathobaculum butyriciproducens	*Anaerostipes hadrus*	*Clostridium_M sp000431375*
Clostridium_Q sp003024715	*Coprococcus_A catus*	*Coprococcus_B comes*
Eubacterium_E hallii	*Eubacterium_I ramulus*	*Faecalibacterium MIC7145*
Faecalibacterium prausnitzii_C	*Faecalibacterium prausnitzii_D*	*Faecalibacterium prausnitzii_G*
Faecalibacterium prausnitzii_I	*Gemmiger formicilis*	*Gemmiger MIC9530*
Gemmiger sp003476825	*Lawsonibacter asaccharolyticus*	*Odoribacter splanchnicus*
Oscillibacter sp900066435	*Roseburia hominis*	*Roseburia inulinivorans*

How results are calculated

All microbiome marker results are compared against the Microba Healthy Cohort — a purpose-built group of more than 450 healthy individuals, with samples collected and analysed using the same workflow as patient samples.

Each marker is scored by comparing the patient's relative abundance against the cohort average. The distance from this average is expressed as standard deviations, and determines whether a result is classified as Low, Borderline, or High.

How the result scale works

The patient's relative abundance is compared to the Healthy Cohort average. A **negative** distance from average means the microbial group is less abundant than the Healthy Cohort. A **positive** distance means it is more abundant. Results falling outside the expected range are classified as borderline or high/low (borderline high/low: +/-0.68, and high/low: +/-1.28).

GRADE	DESCRIPTION
A	Body of evidence can be trusted to guide practice
B	Body of evidence can be trusted to guide practice in most situations
C	Body of evidence provides some support for recommendation, but care should be taken in its application
D	Body of evidence is weak, and recommendation must be applied with caution
PP H	Body of evidence is observational only and must be applied with caution
PP IV	Body of evidence is in vitro and must be applied with a high degree of caution

Evidence grading for patient management insights

The letter grades shown next to each patient management insight show the quality of the research behind it. Every insight provided has been through a rigorous review of the scientific literature and graded using the NHMRC Levels of Evidence, so you can see exactly how strong the evidence is before applying it in practice.

Access references