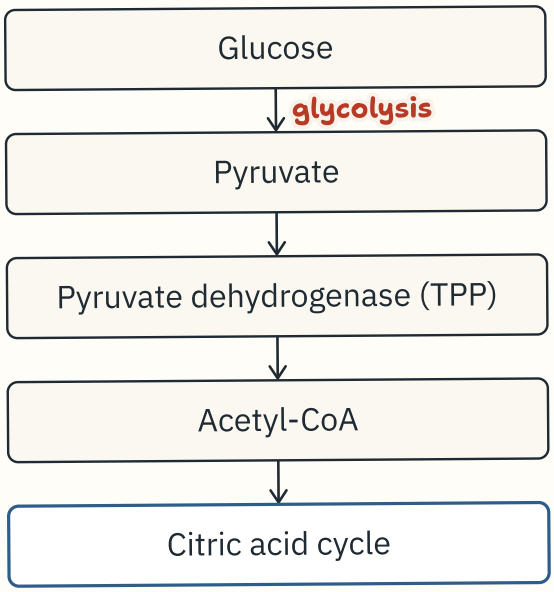
Thiamine (B1) deficiency

TPP enzymes, Wernicke–Korsakoff and beriberi



Step by step

1. No TPP: pyruvate cannot enter the cycle
2. Pyruvate becomes lactate; ATP falls
3. Brain, heart, nerves fail first
4. Dextrose uses up the remaining TPP
5. Give thiamine before or with dextrose

Enzyme	Role
Pyruvate dehydrogenase	Pyruvate → acetyl-CoA
α-Ketoglutarate DH	Citric acid cycle
Branched-chain keto acid DH	Leu, Ile, Val
Transketolase	Pentose phosphate pathway

Four TPP enzymes

Rule of thumb

Dry means nerves, wet means heart

Wernicke triad: eyes, gait, confusion

Exam traps

- ! Dextrose alone can worsen a thiamine-deficient patient.
- ! Shoshin beriberi can mimic sepsis.
- ! Transketolase is the TPP enzyme measured in red cells.

Thiamine deficiency: Wernicke–Korsakoff and beriberi
Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/vitamins-nutrition/thiamine-deficiency-wernicke-korsakoff-beriberi

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