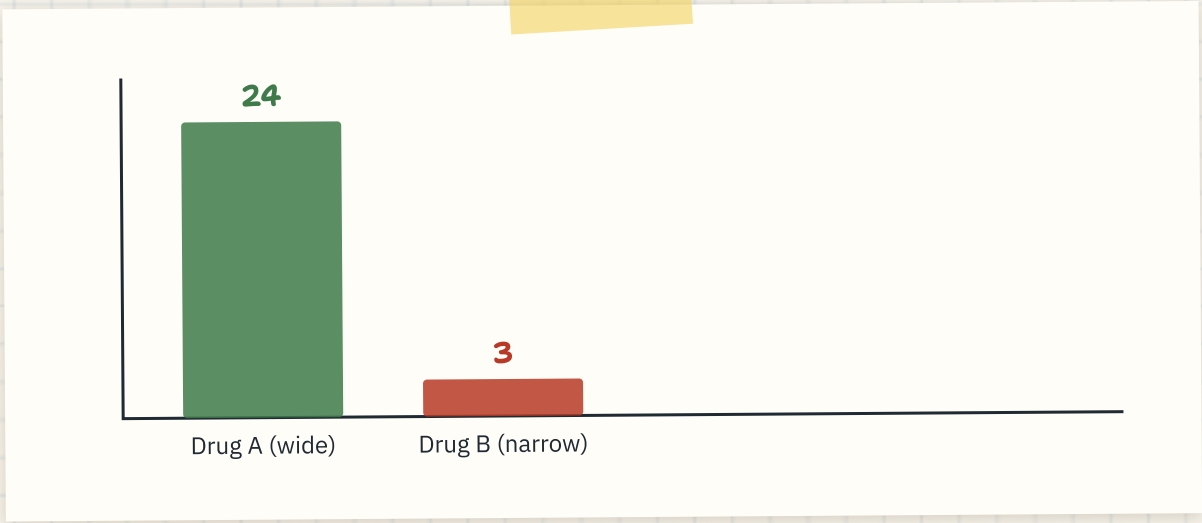
Therapeutic index

Toxic over effective: how wide is the margin?



Step by step

1. Read the ED50 and the TD50
2. Divide toxic by effective
3. Bigger index = wider margin
4. Narrow window = monitor

Drug	TD50	Index
A	120 mg	120 / 5 = 24 (wide)
B	15 mg	15 / 5 = 3 (narrow)

Same potency (ED50 5 mg), different safety

THERAPEUTIC INDEX

TD50 / ED50

toxic dose over effective dose; animal work also uses LD50 / ED50; bigger = wider margin

Rule of thumb

Toxic over effective, never the other way round

A ratio, not a difference

Potency and safety margin are independent

Exam traps

- Inverting the ratio gives the wrong number.
- Reading a bigger index as needing more monitoring: a bigger index means a wider margin, so less monitoring.
- The index is a population statistic; an individual can be harmed below the TD50.

Therapeutic index explained: TD50 / ED50

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/pharmacology-principles-autonomic/therapeutic-index-therapeutic-window

For exam study only, not medical advice. Follow local guidelines and your lab's ranges.
© 2026 Medservatory, a project of ADMR Solutions Ltd.
Free to print and share for personal study.