Foundations of Medicine

Evidence Based Medicine: Definition and Principles

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Evidence-Based Medicine (EBM)

Is the use of the best available evidence in making decisions about the care of individual patients.

It integrates:

- **Best research evidence:** Systematic reviews, randomized controlled trials (RCTs), and other high-quality studies.
- **Clinical expertise:** The skills and judgment clinicians acquire through experience.
- **Patient values and preferences:** Individual preferences, concerns, and expectations of patients.

Principles of EBM

1-Ask a Clear Clinical Question:

Formulate a specific, answerable question using the PICO (متقن) framework:

- **P**: Patient/Population. مريض/ مجتمع
- **I**: Intervention تداخل
- **C**: Comparison قارن
- **O**: Outcome.   نتائج

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2-Acquire the Best Evidence:

Search for the most relevant, high-quality evidence using reliable sources.

3-Appraise the Evidence:

Critically evaluate the validity, reliability, and applicability of the evidence.

Consider:
- Study design (RCTs, observational studies, etc.)
- Sample size and power
- Risk of bias

Determining the Level of Evidence

Levels of evidence are hierarchies that rank the quality of evidence based on study design and reliability.
The higher the level, the more robust the evidence.

Determining the level of evidence:

- **Study Design:** RCTs are more reliable than observational studies.
- **Study Quality:** Consider randomization, blinding, and follow-up rates.
- **Relevance:** Does the evidence address the clinical question and the patient population in question?
- **Consistency:** Are results consistent across multiple studies?

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Hierarchy of Evidence:

Level 1:
- Randomized Controlled Trials (RCTs) with low risk of bias
- Systematic reviews and meta-analyses of RCTs

Level 2:
- Cohort studies (retrospective-prospective)
- Outcomes research

Level 3:
- Case-control studies
- Non-randomized controlled studies

Level 4:
- Case series and case reports

Level 5:
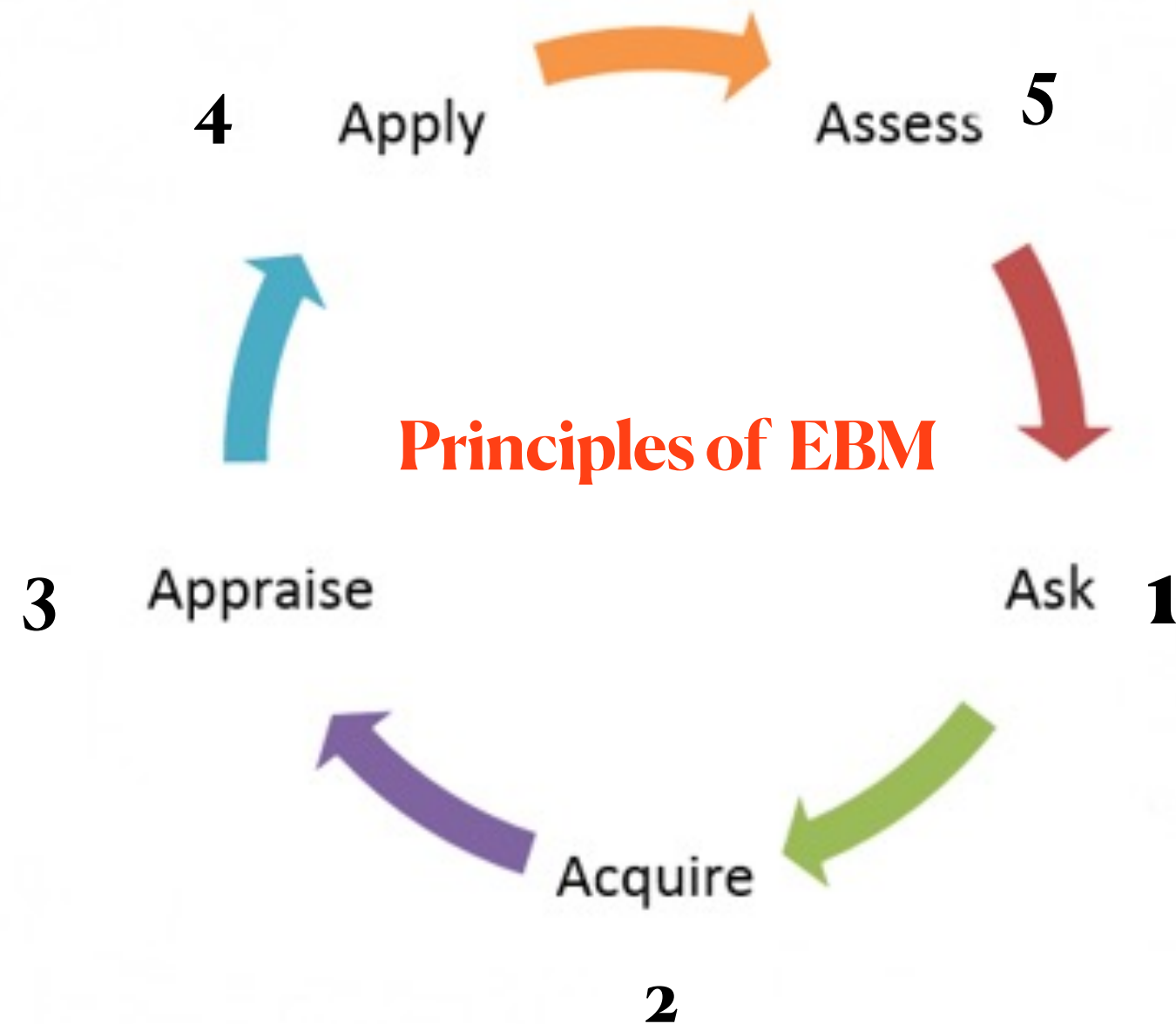- Expert opinion
- Bench research or theoretical analysis

4-Apply the Evidence:

Combine the evidence with clinical expertise and patient preferences to make informed decisions.

5-**Assess the Impact:**

Continuously monitor and evaluate the outcomes of the decision to ensure patient care improves.

4 Apply Assess **5**

Principles of EBM

3 Appraise Ask **1**

Acquire

2

Level 1:

- **Systematic reviews and meta-analyses of RCTs**
- **Randomized Controlled Trials (RCTs) with low risk of bias**

Level 2:

- **Cohort studies**
- **Outcomes research**

Level 3:

- **Case-control studies**
- **Non-randomized controlled studies**

Level 4:

- **Case series and case reports**

Level 5:

- **Expert opinion**
- **Bench research or theoretical analysis**