Foundations of Medicine

Evidence Based Medicine: Practical Applications

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Example of Evidence Grading Systems:

- **GRADE (Grading of Recommendations Assessment, Development, and Evaluation): Categorizes evidence as high, moderate, low, or very low quality based on these factors.**

Why EBM is Important in Healthcare ?

- **Promotes better patient outcomes by ensuring decisions are informed by the best evidence.**
- **Encourages the efficient use of healthcare resources.**
- **Reduces variation in clinical practice.**
- **Bridges the gap between research and clinical practice.**

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Challenges in EBM Implementation

- **Limited time and resources** for clinicians to search and appraise evidence.
- **Limited access** to high-quality studies in certain regions.
- **Balancing** evidence with individual patient circumstances and preferences.
- **Keeping up** with rapidly evolving research.

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Conclusion

Evidence-Based Medicine is the cornerstone of modern clinical decision-making.
By integrating high-quality research, clinical expertise, and patient values, EBM provides a structured approach to improve patient care and ensure the best outcomes.

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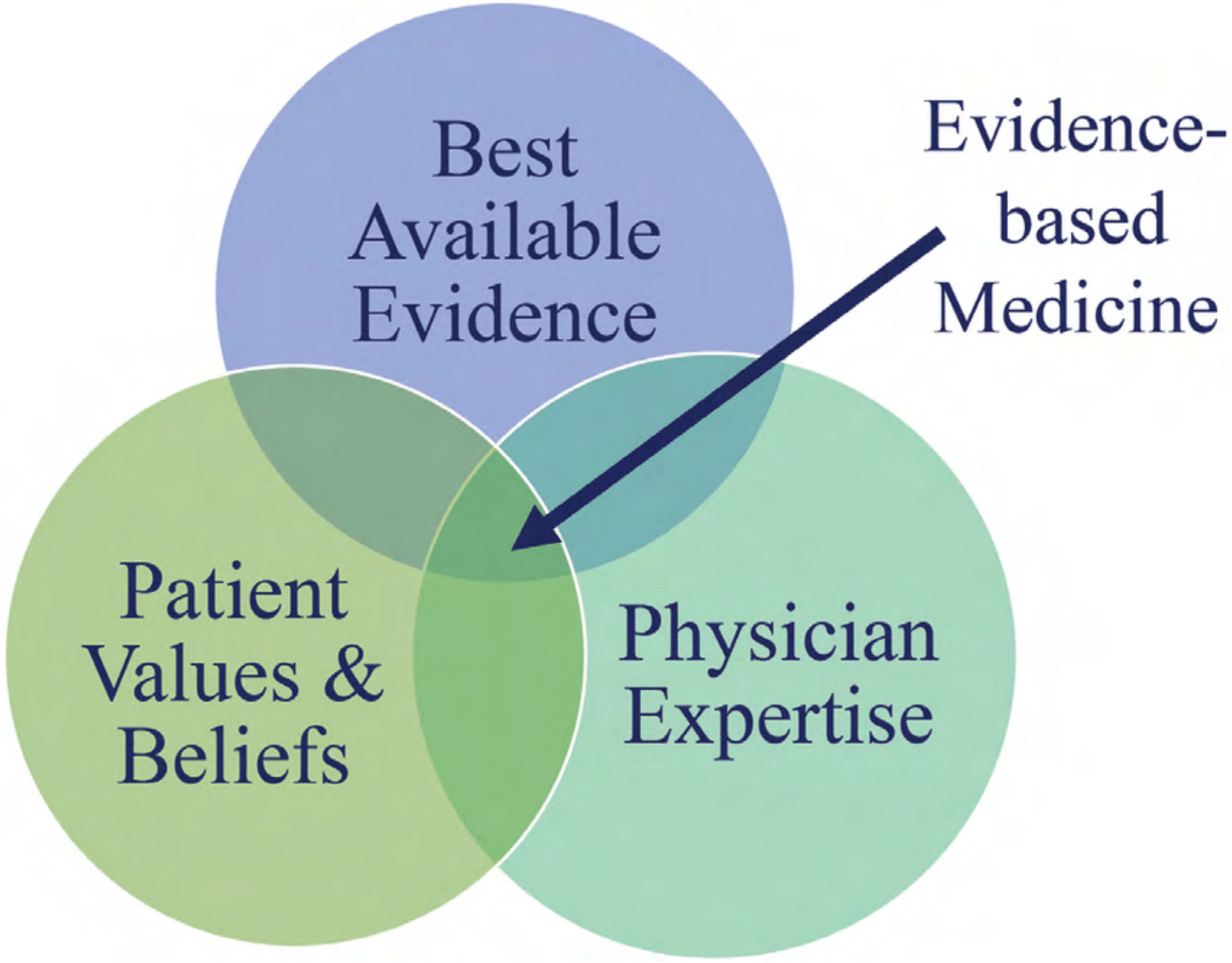
Best
Available
Evidence
Evidence-
based
Medicine
Patient
Values &
Beliefs
Physician
Expertise

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Practical application of EBM principles:

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- **Asking the right clinical questions.**
- **Using the best available evidence to guide decisions.**
- **Tailoring recommendations to patient preferences and clinical context.**

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EBM is not just about finding the best evidence; it is about applying it in a way that respects the context and needs of individual patients.

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Practical application of EBM principles:

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- **Asking the right clinical questions.**
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- **Tailoring recommendations to patient preferences and clinical context.**

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Clinical Scenario:
A 40-year-old office worker presents with acute low back pain after lifting a heavy box. He has no history of trauma, fever, weight loss, or neurological deficits.

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Steps in EBM Application:

1. **Ask a Clinical Question:**

Using the PICO framework:

- **P: Adults with acute low back pain**
- **I: Nonsteroidal anti-inflammatory drugs (NSAIDs)**
- **C: Muscle relaxants or no treatment**
- **O: Pain relief and return to function**

Question: "In adults with acute low back pain, are NSAIDs more effective than muscle relaxants or no treatment in reducing pain and improving function?"

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2. **Acquire the Evidence:**

- **A quick search in PubMed finds a systematic review comparing NSAIDs, muscle relaxants, and other interventions for acute low back pain.**

3. **Appraise the Evidence:**

- **The review includes several high-quality RCTs showing NSAIDs are more effective than placebo and as effective as muscle relaxants for short-term pain relief.**
- **The review mentions potential gastrointestinal side effects of NSAIDs.**

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4. **Apply the Evidence:**

- **You recommend NSAIDs as the first-line treatment, considering the patient's lack of contraindications to NSAIDs and his preference to avoid sedating medications like muscle relaxants.**
- **You also discuss non-pharmacological options like physical activity and reassure the patient about the generally self-limiting nature of acute low back pain.**

5. **Assess the Outcome:**

- **The patient reports significant improvement in pain and function within a week and avoids unnecessary imaging or prolonged bed rest.**

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Clinical Scenario:
A 68-year-old woman with atrial fibrillation (AF) is at high risk of stroke. The guidelines strongly recommend anticoagulation therapy, but the patient expresses concern about the risk of bleeding and refuses to take warfarin.

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Steps in EBM Application:

1. **Ask a Clinical Question:**

"In elderly patients with AF, how does warfarin compare to direct oral anticoagulants (DOACs) in reducing stroke risk with fewer bleeding complications?"

2. **Acquire the Evidence:**

- **A recent meta-analysis shows that DOACs (e.g., apixaban, rivaroxaban) are as effective as warfarin in reducing stroke risk but have a lower risk of major bleeding.**

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3. **Appraise the Evidence:**

- **The meta-analysis includes high-quality RCTs with elderly populations similar to your patient.**

4. **Apply the Evidence:**

- **After discussing the evidence, you explain the advantages of DOACs over warfarin (e.g., no need for regular blood monitoring, lower bleeding risk).**
- **The patient agrees to start apixaban after understanding the benefits and risks.**

5. **Assess the Outcome:**

- **At follow-up, the patient tolerates apixaban well and appreciates the convenience, adhering to the treatment plan.**

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Clinical Scenario:
A 50-year-old man with newly diagnosed type 2 diabetes (T2DM) and an elevated cardiovascular risk asks about the best medication to reduce both blood sugar and cardiovascular risk.

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Steps in EBM Application:

1. **Ask a Clinical Question:**
   - **"In adults with T2DM and high cardiovascular risk, do GLP-1 receptor agonists reduce cardiovascular events compared to standard diabetes medications?"**
2. **Acquire the Evidence:**
   - **A large, multicenter RCT shows GLP-1 receptor agonists (e.g., liraglutide) significantly reduce major adverse cardiovascular events compared to placebo.**

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3. **Appraise the Evidence:**

- **The RCT is high-quality (Level 1 evidence), with low risk of bias, and the study population includes patients similar to your patient.**

4. **Apply the Evidence:**

- **You recommend starting a GLP-1 receptor agonist in addition to lifestyle modifications and metformin, explaining the dual benefit of glucose control and cardiovascular risk reduction.**

5. **Assess the Outcome:**

- **The patient achieves improved glycemic control and adheres to therapy, motivated by the potential for reducing his cardiovascular risk.**