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Evidence-Based Medicine and Pain

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From evidence to the bedside

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Why EBM matters in Pain

IASP revised the definition of pain in 2020 and emphasized its personal and biopsychosocial nature.

- Pain is a personal experience influenced by biological, psychological and social factors.
- Pain management requires more than choosing a drug or procedure.
- EBM helps balance efficacy, harms, uncertainty, patient preferences and context.

What is Evidence-Based Medicine?

1

Best available research evidence

Evidence

2

Clinical expertise

Expertise

3

Patient values and preferences

Patient

EBM is not simply following the latest paper or a guideline blindly.

The evidence hierarchy—and its limits

A meta-analysis is not automatically high-quality evidence. Assess bias, heterogeneity, precision and applicability.

- Systematic reviews/meta-analyses synthesize evidence, but quality depends on included studies.
- RCTs are strong for causal questions but may have limited external validity.
- Observational studies are important for harms, prognosis and real-world practice.
- Consensus is useful when evidence is sparse, but certainty should be explicit.

PICO: turning uncertainty into a question

Example: In opioid-naive adults after major abdominal surgery, does a multimodal/regional strategy improve pain, function and opioid-related outcomes compared with opioid-centered care?

Element	Key question
Population	Who is the patient?
Intervention	What are we considering?
Comparison	Compared with what?
Outcome	Which outcome matters?

Pain outcomes: beyond the NRS

We do not treat a number; we treat a person.

- Pain intensity remains important—but it is not the whole outcome.
- Function: mobilization, coughing, breathing and physiotherapy
- Sleep and quality of recovery
- Adverse effects and patient satisfaction
- Persistent pain and persistent opioid use

Perioperative pain: the paradigm shift

ASER/POQI and multisociety consensus work supports individualized, multimodal perioperative pain care and opioid stewardship.

From	To
Opioid-centered analgesia	multimodal, opioid-sparing analgesia
Procedure-centered care	patient-centered outcomes
Single interventions	integrated perioperative pathways

Enhanced Recovery pathways provide a practical framework.

Multimodal analgesia: what does it really mean?

multimodal is not polypharmacy. Every component should have a reason, target and safety assessment.

- Use interventions with complementary mechanisms.
- Components may include paracetamol, NSAIDs/COX-2 inhibitors when appropriate, regional techniques, local anesthetic strategies and selected adjuvants.
- More drugs is not the goal.
- Goal: maximize analgesic benefit while minimizing adverse effects.

Regional anesthesia: evidence, not enthusiasm

PROSPECT updates recommendations by procedure and continues to publish new evidence.

- Regional techniques can reduce acute postoperative pain and opioid exposure in selected procedures.
- A new block is not automatically a better block.
- Ask about function, recovery, adverse events and patient-important outcomes.
- Procedure-specific evidence is increasingly available through PROSPECT.

Clinical significance vs statistical significance

Avoid presenting a single universal MCID; it varies by outcome and context.

- $p < 0.05$ does not tell us whether the patient notices a meaningful benefit.
- Interpret effect size, confidence intervals and minimal clinically important difference when available.
- Consider harms and treatment burden.
- Ask: Would this change my patient's care?

Opioids: enemy or tool?

CDC 2022 emphasizes nonopioid approaches for many common acute conditions and prefers nonopioid therapy for subacute/chronic pain when appropriate.

- The correct question is not Are opioids good or bad?
- Ask: Which patient? Which pain? What dose? For how long? What monitoring?
- Opioids retain an important role in severe acute pain and selected chronic-pain situations.
- Opioid stewardship means targeted use, realistic goals, reassessment and an exit strategy.

Opioid stewardship after surgery

Clarify CDC guideline scope: outpatient adults; it does not replace perioperative clinical judgment.

- Use the lowest effective dose when opioids are indicated.
- Use immediate-release formulations when initiating outpatient opioid therapy.
- Prescribe only the amount needed for the expected duration of severe pain.
- Reassess benefits, harms and function rather than continuing automatically.

Chronic pain: a different evidence problem

- Chronic pain may involve persistent nociception, altered processing, comorbidities and psychosocial factors.
- Single-modality treatment often has limited effect.
- Treatment goals should include function and quality of life—not pain elimination alone.
- Multidisciplinary and nonpharmacologic approaches are often central.

The biopsychosocial model

Biopsychosocial does not mean the pain is psychological; it means pain is multidimensional and real.

1

Biological

Tissue, nerves, inflammation, sensitization and comorbidity

2

Psychological

Anxiety, depression, catastrophizing, fear-avoidance and expectations

3

Social

Work, family, access and social support

These factors modify pain experience and treatment response.

Interventional Pain: procedure or patient outcome?

Does the procedure change the patient's life—or only the pain score?

- Ask what the intervention is expected to change.
- Pain intensity is one endpoint; function, quality of life and durability may be more important.
- Consider placebo/context effects, natural history and regression to the mean.
- Choose interventions when expected benefit outweighs procedural and treatment burden.

Ketamine: where does evidence fit?

Use ASRA/AAPM/ASA acute and chronic ketamine consensus guidelines; do not overstate evidence.

- Evidence supports ketamine for acute pain in selected contexts, including as an adjunct to opioids.
- For chronic pain, evidence varies substantially by condition and regimen.
- Patient selection, monitoring and treatment goals matter.
- Consensus guidance highlights the need for larger and better-controlled studies.

Patient-centered EBM

Ask: If two options have similar efficacy, should the patient's preference decide? Often yes, when clinically reasonable.

- Evidence describes populations; decisions are made for individuals.
- Shared decision-making is essential when benefits and harms are closely balanced.
- Discuss expected benefit, uncertainty, alternatives and treatment burden.
- Patient preferences are part of evidence-based care—not an optional extra.

Personalized Pain Medicine

- Patients with the same diagnosis can have different pain mechanisms and treatment responses.
- Phenotyping may help identify who is more likely to benefit from a specific intervention.
- Prediction models and biomarkers are promising—but predictive accuracy alone is not clinical utility.
- Future evidence should connect phenotype → treatment → patient-important outcome.

AI and the future of EBM

- Potential roles: risk prediction, phenotyping, decision support and large-scale evidence synthesis.
- Prediction is not causation.
- An accurate algorithm is not automatically a beneficial intervention.
- Clinical utility, external validation, bias and safety remain essential.

How to read a Pain paper in 5 questions

1. What is the exact clinical question?
2. How credible is the study design and what is the risk of bias?
3. What is the magnitude and precision of benefit?
4. What are the harms and treatment burdens?
5. Does this evidence apply to my patient?

Guidelines: use, don't worship

Use current procedure-specific guidance where available.

- Guidelines translate evidence into recommendations for defined clinical contexts.
- They do not replace clinical judgment.
- Know the population, date, evidence certainty and recommendation strength.
- Deviation can be appropriate when the patient differs from the guideline population—if the rationale is sound.

A clinical case: 65-year-old after major abdominal surgery

- Older, opioid-naive patient; expected moderate–severe pain; obstructive sleep apnea.
- Questions: regional option? nonopioid foundation? opioid requirement? respiratory risk? functional goals?
- Plan analgesia around recovery, not around a single pain score.
- Reassess and de-escalate as the acute pain trajectory improves.

Five paradigm shifts

From	To
Pain intensity	pain + function
Opioid-centered	multimodal / opioid-sparing
Biomedical	biopsychosocial
Procedure-centered	patient-centered outcomes
One-size-fits-all	individualized, evidence-informed care

What EBM does NOT mean

- Not RCT or nothing.
- Not guideline or nothing.
- Not statistically significant = clinically important.
- Not opioid-free at any cost.
- Not one protocol for every patient.

Take-home messages

- Use the best available evidence—but interrogate its quality and applicability.
- Measure outcomes that matter: function, recovery, safety and quality of life.
- Use multimodal analgesia rationally, not reflexively.
- Practice opioid stewardship rather than opioid ideology.
- Combine evidence + expertise + patient preferences.

Key Message

The goal is not to treat pain more aggressively; it is to treat the right patient more intelligently.

Thank You

Evidence should change practice—but only when it changes outcomes that matter.

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