Post-Dural Puncture Headache

What Should the Anesthesiologist Do?

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Al Zahra Hospital Dubai • Tehran • November 2026

Why Does PDPH Still Matter?

50–85%

Reported PDPH after accidental Tuohy dural puncture

MATERNAL RECOVERY

Pain can disrupt mobility, infant care and daily function.

DIAGNOSTIC SAFETY

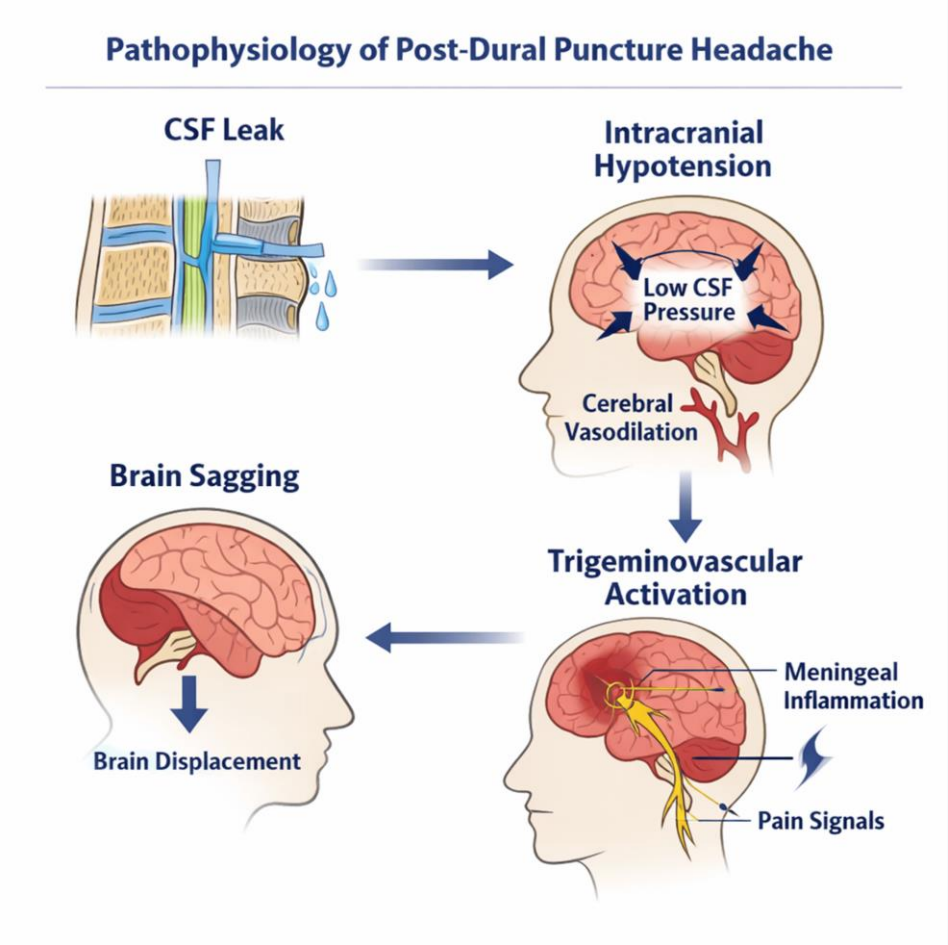
Post-neuraxial headache is not always PDPH.

THE QUESTION

What should the anesthesiologist do next?

Incidence is setting-dependent; not a universal patient-level estimate.

How Does CSF Leakage Produce Headache?



01 CSF LEAK

Reduced CSF volume and buoyancy.

02 COMPENSATION

Venous dilation and brain sagging.

03 PAIN SIGNALING

Traction and trigeminovascular activation.

Emerging glymphatic / inflammatory mechanisms remain investigational.

Recognize the Pattern

WITHIN 5 DAYS

UPRIGHT		SUPINE
WORSE	—	BETTER

Ask about nausea, neck stiffness, auditory symptoms — and functional disability.

Red Flags: Do Not Anchor on PDPH

NEUROLOGICAL

Focal deficit • seizure • altered consciousness

HEADACHE

Thunderclap • progressive • atypical / non-postural

SYSTEMIC

Fever • meningism • hypertension / preeclampsia

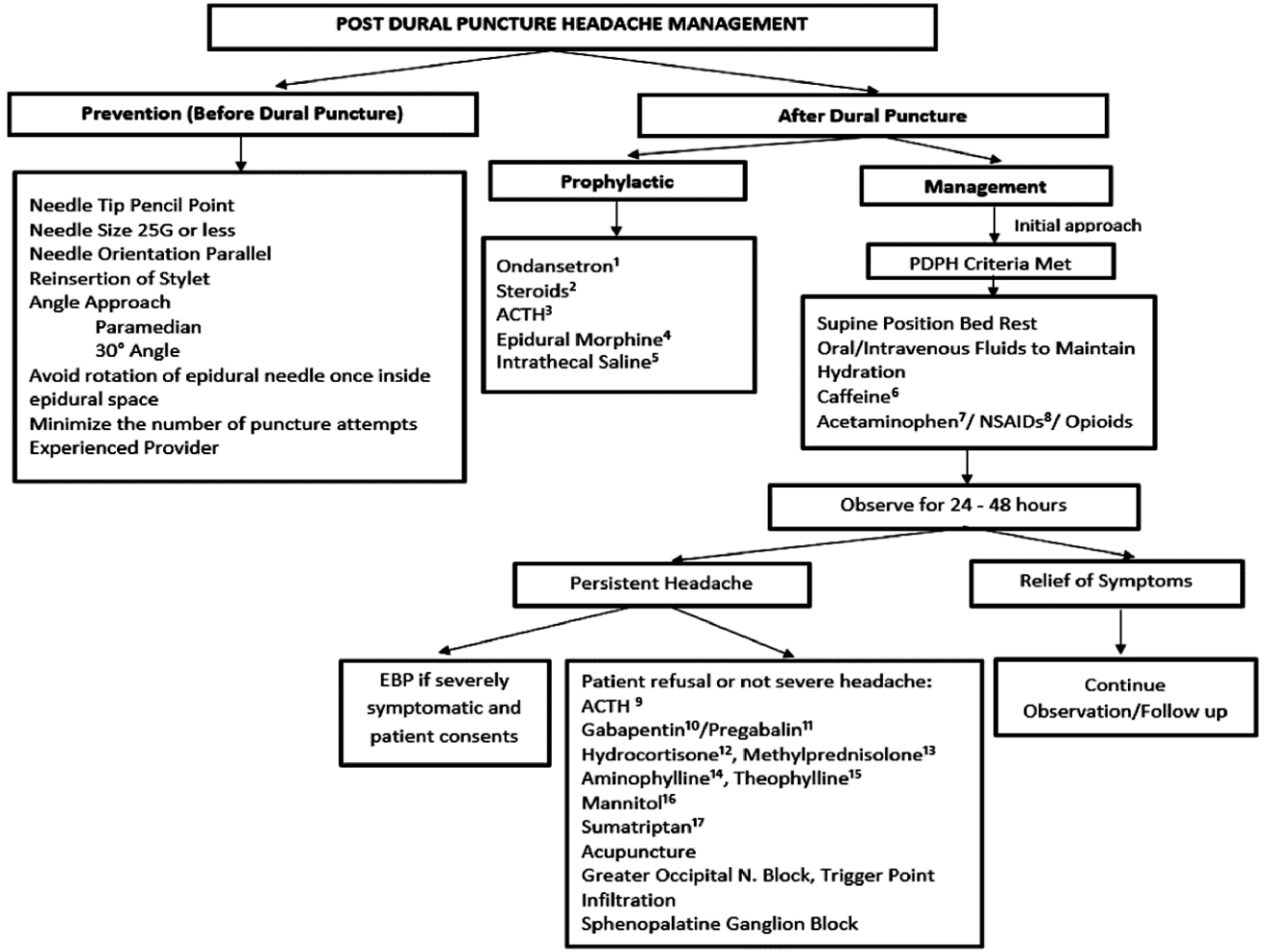
TREATMENT

New pattern or no meaningful response

Think *Cerebral Venous Sinus Thrombosis*, *Subdural hematoma*, *Hemorrhage or Meningitis*.

Our Roadmap

Iranpour et al.

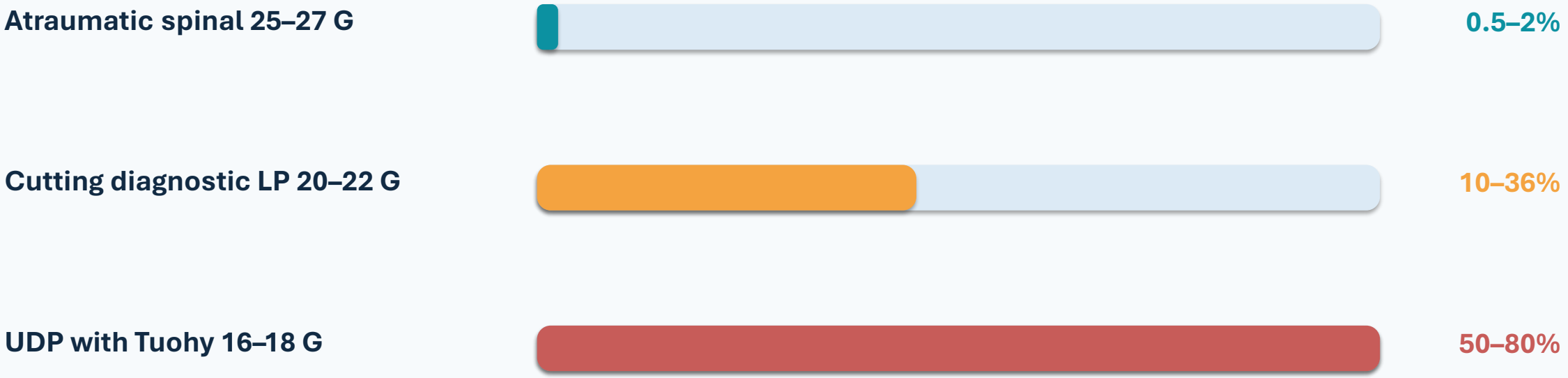


FULL FIGURE 2

ALGORITHM OVERVIEW

Prevention Starts With Needle Choice

Approximate reported PDPH ranges — different procedures and cohorts



Choose atraumatic needles when feasible; minimize attempts.

18th International Congress of Anesthesiology, Critical Care and Pain

Accidental Dural Puncture: What Next?

1 RECOGNIZE

Document and disclose UDP

2 PLAN

Intrathecal catheter vs re-site, as appropriate

3 EDUCATE

Explain symptoms and warning signs

4 FOLLOW UP

Arrange active clinical review

No routine prophylactic EBP • Intrathecal catheter evidence remains uncertain

AFTER PUNCTURE | Prophylaxis: Evidence vs Possibility

OPTIONS

- Ondansetron
- Steroids
- ACTH
- Epidural morphine
- Intrathecal saline

CLINICAL INTERPRETATION

These were studied interventions, not a routine prophylaxis bundle.

Do not convert a list of studied options into routine orders.

COSYNTROPIN UPDATE

Document UDP • Counsel • Arrange follow

DOSES 1–8

DRUG EVIDENCE

Cosyntropin in Obstetric PDPH

Synthetic ACTH • Studied for both prevention and treatment

WHY IT APPEARED IN THE ALGORITHM

Early trials suggested benefit after accidental dural puncture. The published review therefore included ACTH among investigated options.

WHAT THE EVIDENCE MEANS TODAY

Subsequent studies have been inconsistent. Routine prophylactic or therapeutic use is not supported by sufficiently reliable evidence.

OBSTETRIC SAFETY CHECK

Hypersensitivity is a labeled contraindication. Pregnancy and breastfeeding data are limited for PDPH regimens; use caution with preeclampsia / hypertension, diabetes, fluid overload and electrolyte disturbances.

CLINICAL MESSAGE • Investigational / off-label — not a routine alternative to indicated EBP.

Sources: Iranpour et al., 2024; multisociety PDPH guideline, 2023; Cortrosyn prescribing information.

OBSTETRIC SAFETY

BACK TO PROPHYLAXIS

Initial Management: Treat Symptoms, Reassess

ANALGESIA

Acetaminophen / NSAID if appropriate

FLUIDS

Maintain normal hydration; avoid forced IV fluids

CAFFEINE

Short-term symptomatic benefit; dose and breastfeeding precautions

Bed rest may relieve symptoms, but prolonged bed rest does not seal the leak

FIRST-LINE EVIDENCE

The Algorithm Says “Observe 24–48 Hours”

But is time alone the treatment threshold?

Assess disability, trajectory, diagnosis and patient preference.

The pathway is a starting point—not a mandatory 48-hour delay.

A Patient at the Decision Node

30-YEAR-OLD POSTPARTUM WOMAN

Recognized accidental dural puncture

24 HOURS LATER

Severe orthostatic headache

EXAMINATION

Normal BP; no focal neurological findings

DISABILITY

Cannot sit or care for her newborn

Would you continue observation—or offer EBP now?

Persistent / Severe Symptoms → Discuss EBP

WHY EBP?

Targets the CSF leak, unlike symptom-only therapies

WHEN?

Disabling or persistent PDPH; individualized timing

Do not treat the clock; treat the patient.

Early EBP: counsel about potentially greater need for repeat patch.

EBP | What the Anesthesiologist Actually Does

BEFORE

Confirm diagnosis; screen infection, coagulation, anticoagulants; consent

DURING

Aseptic autologous blood; commonly target ~20 mL if tolerated

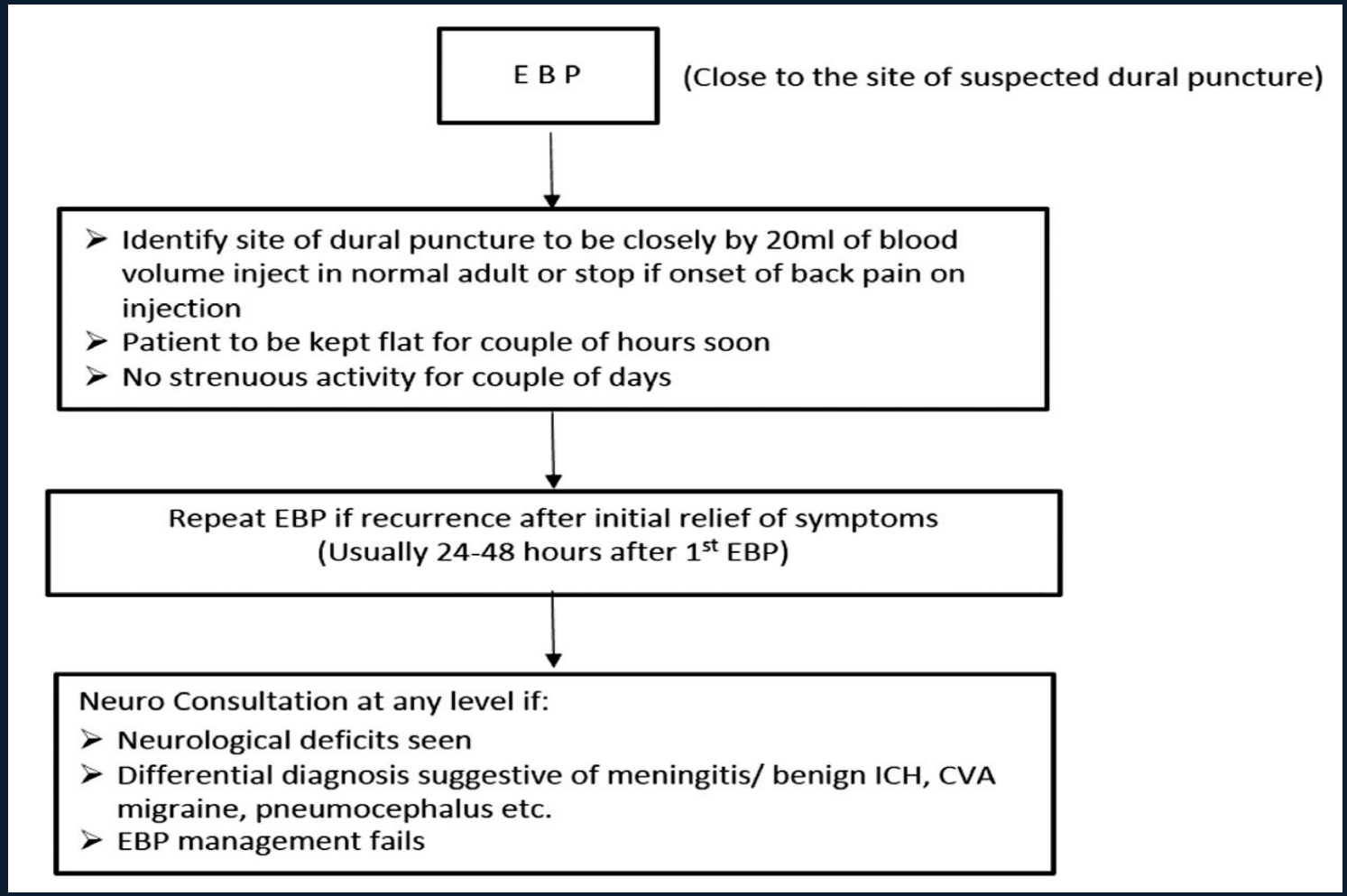
AFTER

Reassess symptoms and neurological status; document follow-up

Stop injection for significant pain or pressure; do not force a fixed volume.

FIGURE 3 — EBP ALGORITHM

Epidural Blood Patch



Original Figure 3 · J Res Clin Med. 2024;12:25 · DOI: 10.34172/jrcm.33444

← EBP TECHNIQUE

NEXT: FOLLOW-UP →

If EBP Fails, Return to the Algorithm

PARTIAL / TEMPORARY RESPONSE

PDPH remains likely → repeat EBP may help

NO RESPONSE / NEW FEATURES

Revisit diagnosis → consider imaging and consultation

Do not repeat EBP automatically.

The review explicitly advises reassessment before a second patch.

If EBP Is Declined or Contraindicated

Alternatives

- ACTH
- Gabapentinoids
- Steroids
- Aminophylline / Theophylline
- Mannitol
- GON block
- SPG block
- Acupuncture

EVIDENCE APPRAISAL

Mixed, limited or heterogeneous evidence; selected use only.
No proven equivalence to therapeutic EBP.

“Reported in studies” ≠ “recommended routinely”

DOSES 9–17

ALTERNATIVE EVIDENCE

Three Decisions to Remember

01

Prevent the leak

Needle choice and technique matter.

02

Do not miss another diagnosis

Red flags before EBP.

03

Individualize the intervention

Treat disability, not an arbitrary deadline.

Source Articles and Original Algorithm

PRIMARY SOURCE

Iranpour A, et al. Prevention and treatment approaches of post-dural puncture headache in obstetric patients: A comprehensive review. J Res Clin Med. 2024;12:25. doi:10.34172/jrcm.33444

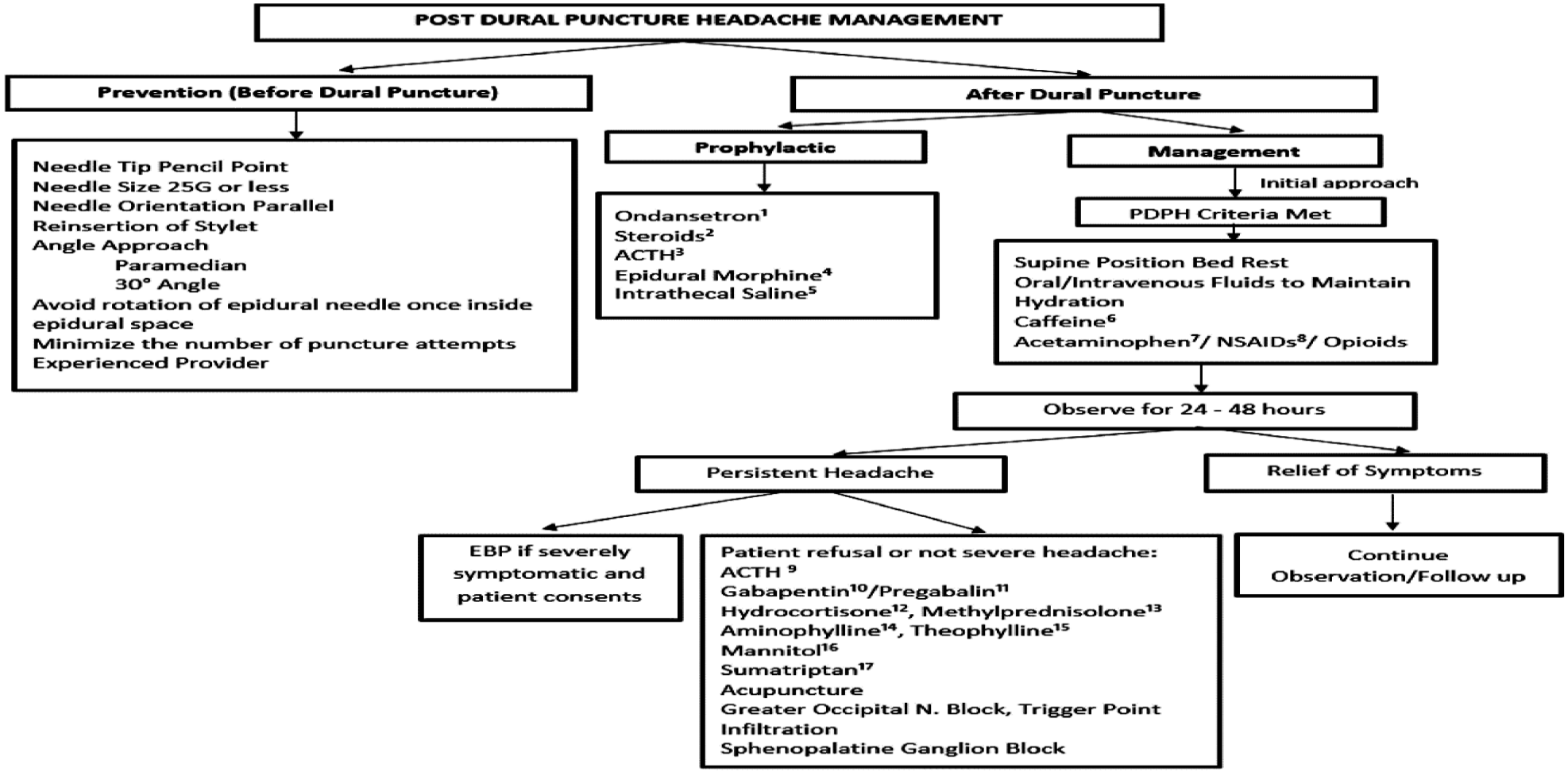
SECONDARY SOURCE

Konduru RA, et al. Post-dural Puncture Headache: Pathophysiology, Risk Stratification, Prevention, and Evidence-Based Management for Practicing Anesthesiologists. Cureus. 2026;18(4):e106499. doi:10.7759/cureus.106499

Backup: original published Figure 2 follows.

BACKUP — PRESENTER-UPDATED ALGORITHM

Iranpour et al. (2024) — Updated Figure 2



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Medication doses cited in Figure 2 | Part 1

Source image footnotes 1–8 • Prophylaxis and initial symptomatic treatment

1	**Ondansetron**	0.15 mg/kg
2	**IV Hydrocortisone**	200 mg stat, followed by 100 mg 3 times a day for 48 hours*
3	**ACTH**	1 mg dose*
4	**Epidural Morphine**	Two 3 mg doses in 10 mL saline, 24 hours apart
5	**Intrathecal Saline**	10 mL
6	**Caffeine**	300 mg–500 mg, oral or IV, once or twice daily
7	**Acetaminophen**	1 gram every 6 hours
8	**Ibuprofen**	400 mg every 6 hours

Published regimens in the 2024 review — NOT a prescribing protocol; verify indication, evidence, contraindications and patient-specific safety.

BACK TO PROPHYLAXIS

SOURCE IMAGE

Medication doses cited in Figure 2 | Part 2

Source image footnotes 9–17 • Alternatives when EBP is declined / not suitable

9	**ACTH**	1.5 mcg/kg in 500 mL saline IV over 30 minutes
10	**Gabapentin**	300 mg every 8 hours for 4 days
11	**Pregabalin**	150 mg/day for 3 days, then 300 mg/day for 2 days
12	**IV Hydrocortisone**	100 mg IV every 8 hours for 2 days
13	**Methylprednisolone**	One IV dose of 500 mg
14	**Aminophylline**	IV 250 mg
15	**Theophylline**	IV 200 mg over 45 min, 2 doses
16	**20% Mannitol**	100 mL every 12 hours for 48 hours
17	**Sumatriptan**	50 mg oral every 8 hours up to 5 days

Published regimens in the 2024 review — NOT a prescribing protocol; verify indication, evidence, contraindications and patient-specific safety.

BACK TO ALTERNATIVES

SOURCE IMAGE

Original medication-dose footnotes | Source image

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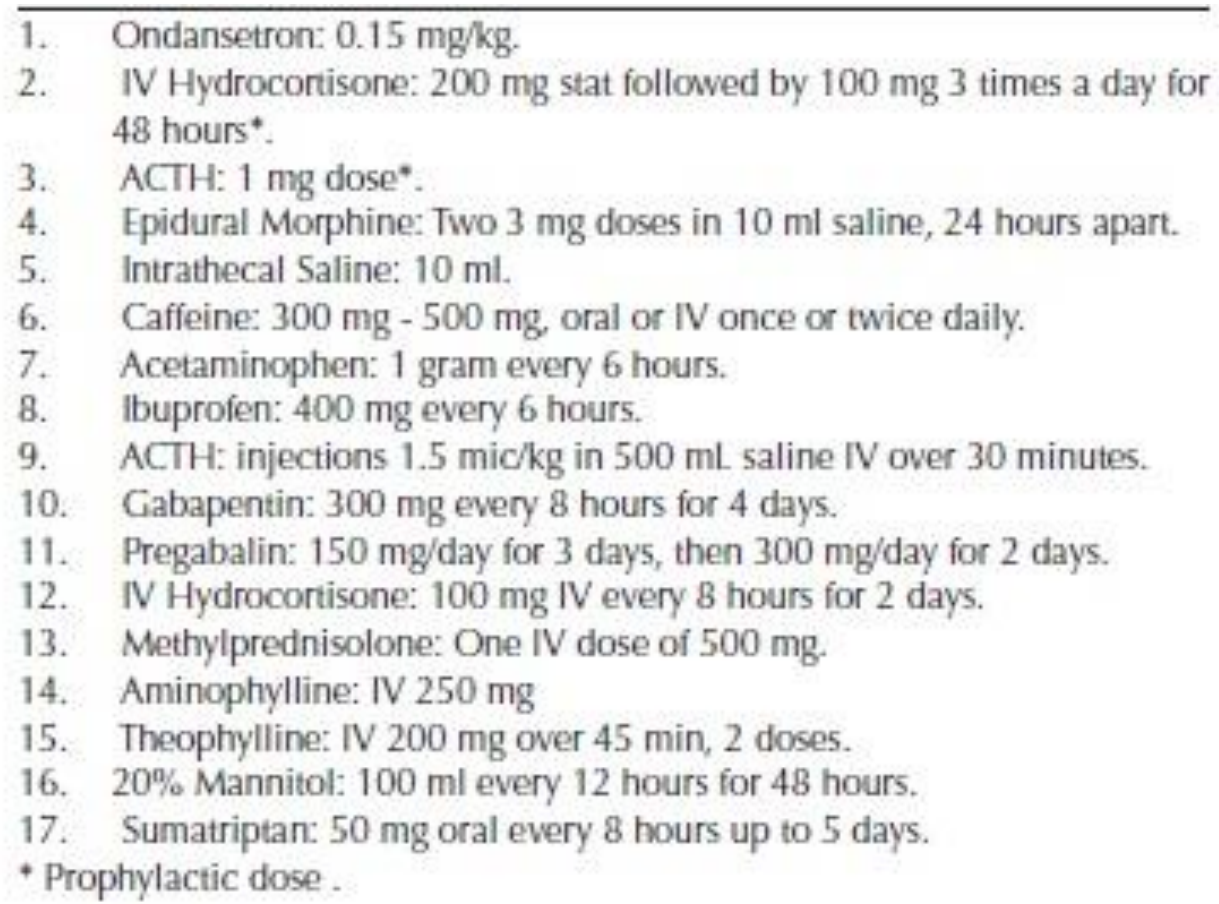

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6. Caffeine: 300 mg - 500 mg, oral or IV once or twice daily.
7. Acetaminophen: 1 gram every 6 hours.
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9. ACTH: injections 1.5 mic/kg in 500 mL saline IV over 30 minutes.
10. Gabapentin: 300 mg every 8 hours for 4 days.
11. Pregabalin: 150 mg/day for 3 days, then 300 mg/day for 2 days.
12. IV Hydrocortisone: 100 mg IV every 8 hours for 2 days.
13. Methylprednisolone: One IV dose of 500 mg.
14. Aminophylline: IV 250 mg
15. Theophylline: IV 200 mg over 45 min, 2 doses.
16. 20% Mannitol: 100 ml every 12 hours for 48 hours.
17. Sumatriptan: 50 mg oral every 8 hours up to 5 days.

* Prophylactic dose .

DOSES 1–8

notes are shown without clinical endorsement.

DOSES 9–17

After Dural Puncture: Prophylaxis

Regimens studied in the 2024 review ≠ recommended routine prophylaxis

Ondansetron	Some positive trials; inconsistent evidence.	QT prolongation risk; pregnancy timing and co-medications matter.
Hydrocortisone / steroids	Mixed small studies; no routine prophylactic role.	Hyperglycemia, hypertension, infection; consider obstetric comorbidity.
Epidural morphine	Small obstetric studies; uncertain preventive benefit.	Neuraxial opioid respiratory monitoring; pruritus and nausea.
Intrathecal saline	Small heterogeneous studies; not routine.	Invasive neuraxial intervention; procedural and infection risks.

GUIDELINE: insufficient evidence for routine systemic drugs or neuraxial injectates to prevent PDPH.

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OBSTETRIC SAFETY

First-Line Symptom Control

Treat pain and function while assessing for red flags and need for EBP

Acetaminophen	Recommended multimodal analgesic.	Generally compatible with lactation; consider hepatic disease and total dose.
Ibuprofen / NSAIDs	Recommended unless contraindicated.	Postpartum often suitable; avoid at ≥30 weeks gestation; caution from 20 weeks.
Caffeine	Short-term relief, not CSF leak closure.	Breastfeeding guideline limit 200–300 mg/day; count all sources.
Opioids	Short rescue only if basic analgesia fails.	Maternal sedation; monitor breastfed infant; avoid prolonged use.

GUIDELINE: maintain normal hydration; prolonged bed rest is not a treatment.

BACK TO SLIDE 11

Alternative Drugs: Limited Evidence

Not substitutes for EBP in disabling or refractory PDPH

Gabapentin / Pregabalin	Small trials; not routine PDPH therapy.	Sedation/dizziness; monitor breastfed infant for feeding and drowsiness.
Aminophylline / Theophylline	Small studies suggest benefit; not routine.	Narrow therapeutic index, arrhythmia/seizure risk; infant stimulation.
Mannitol	Very limited evidence; not standard PDPH care.	Fluid shifts, electrolyte/renal concerns; avoid assuming benefit.
Sumatriptan	Inconsistent small studies; not routine.	Vascular contraindications and hypertension; consider headache diagnosis.

The review lists investigated treatments; guideline support for routine use is absent.

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EVIDENCE UPDATE 04

Obstetric Medication Safety: Three Different Patients

Pregnant ≠ postpartum ≠ breastfeeding: use the correct risk framework

STILL PREGNANT	Fetal exposure matters. NSAIDs: limit 20–30 weeks; avoid at ≥30 weeks. Assess preeclampsia and fetal status.
POSTPARTUM, NOT BREASTFEEDING	Prioritize maternal BP, renal/hepatic function, bleeding risk, infection, and sedation.
BREASTFEEDING	Consider infant age/prematurity and transfer into milk; caffeine, opioids, gabapentinoids and theophylline require attention.

Do not confuse a drug's general obstetric safety with proven efficacy for PDPH.

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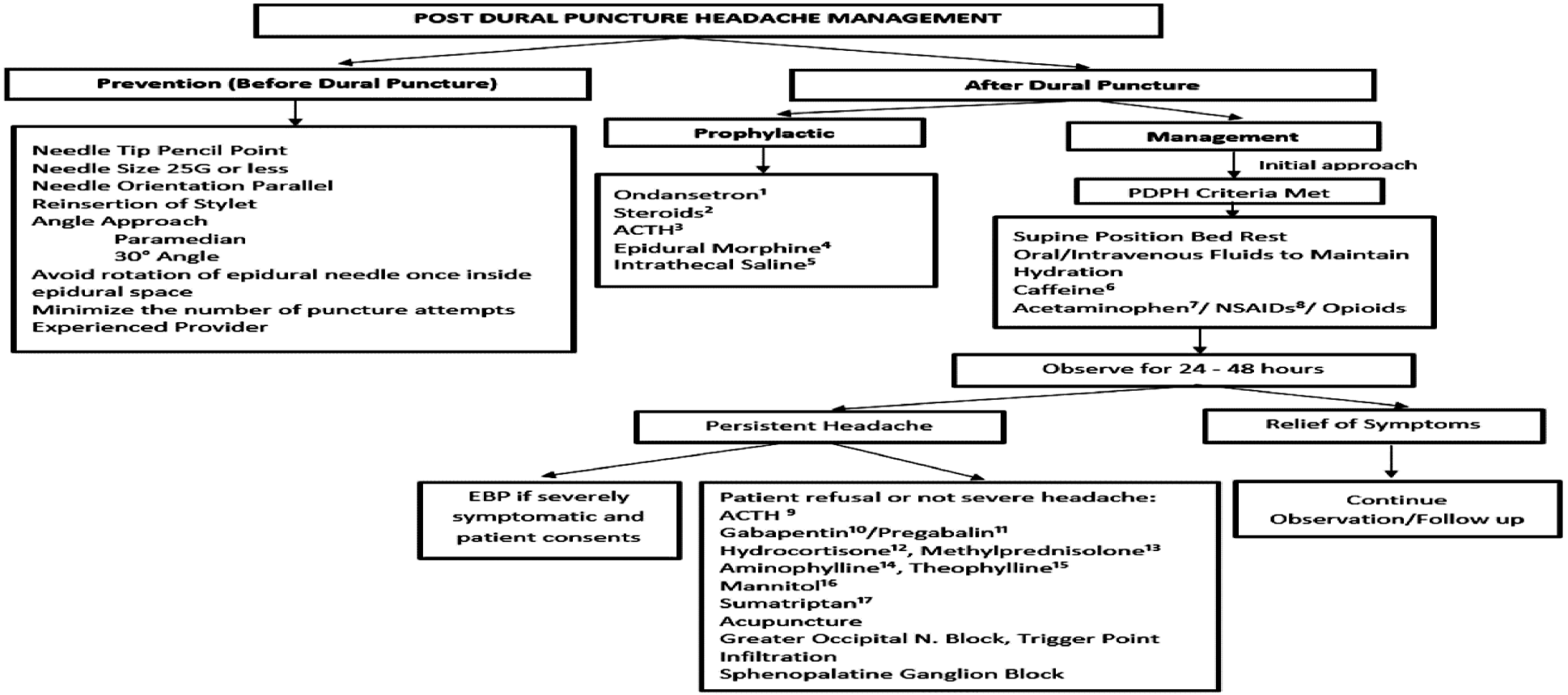
BACK TO PROPHYLAXIS

Our Roadmap

Iranpour et al



FULL FIGURE 2

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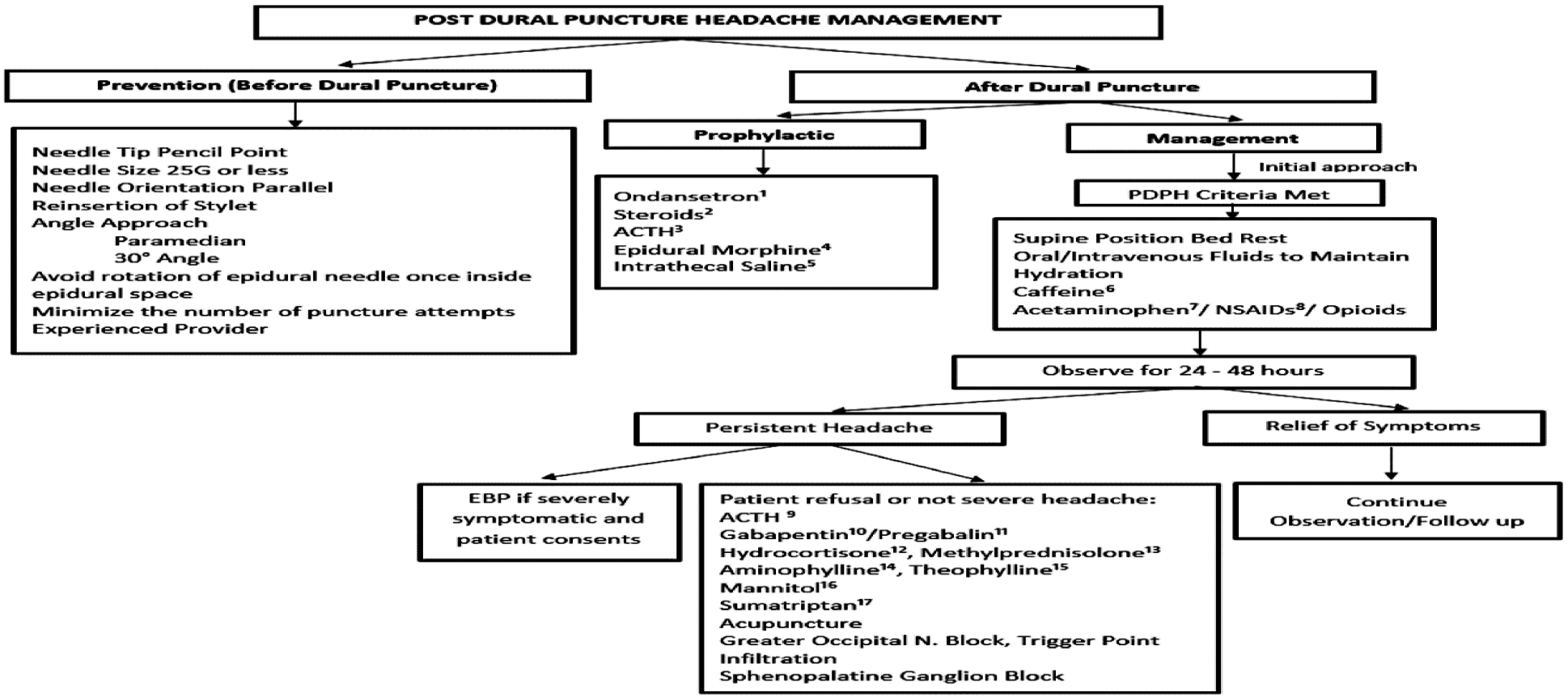
Our Roadmap

Iranpour et al



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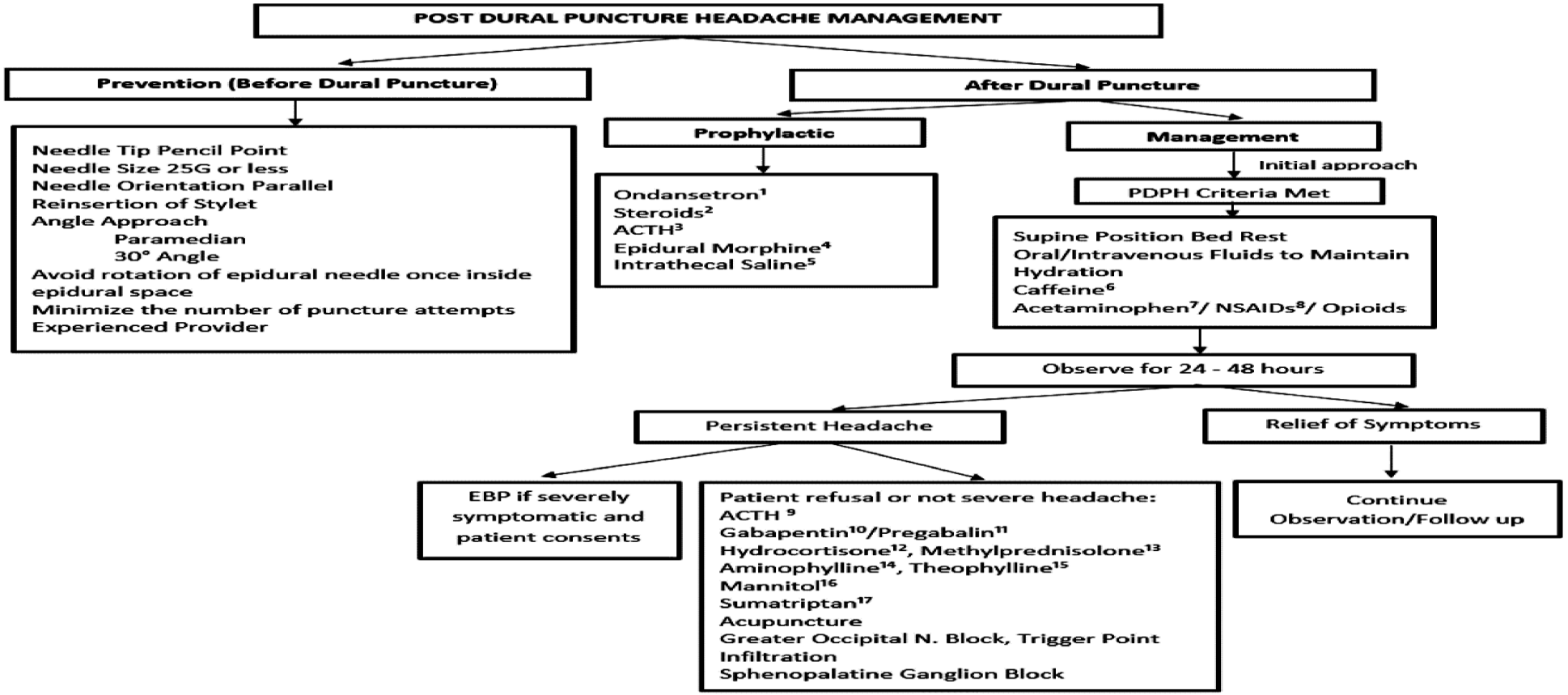
Our Roadmap

Iranpour et al



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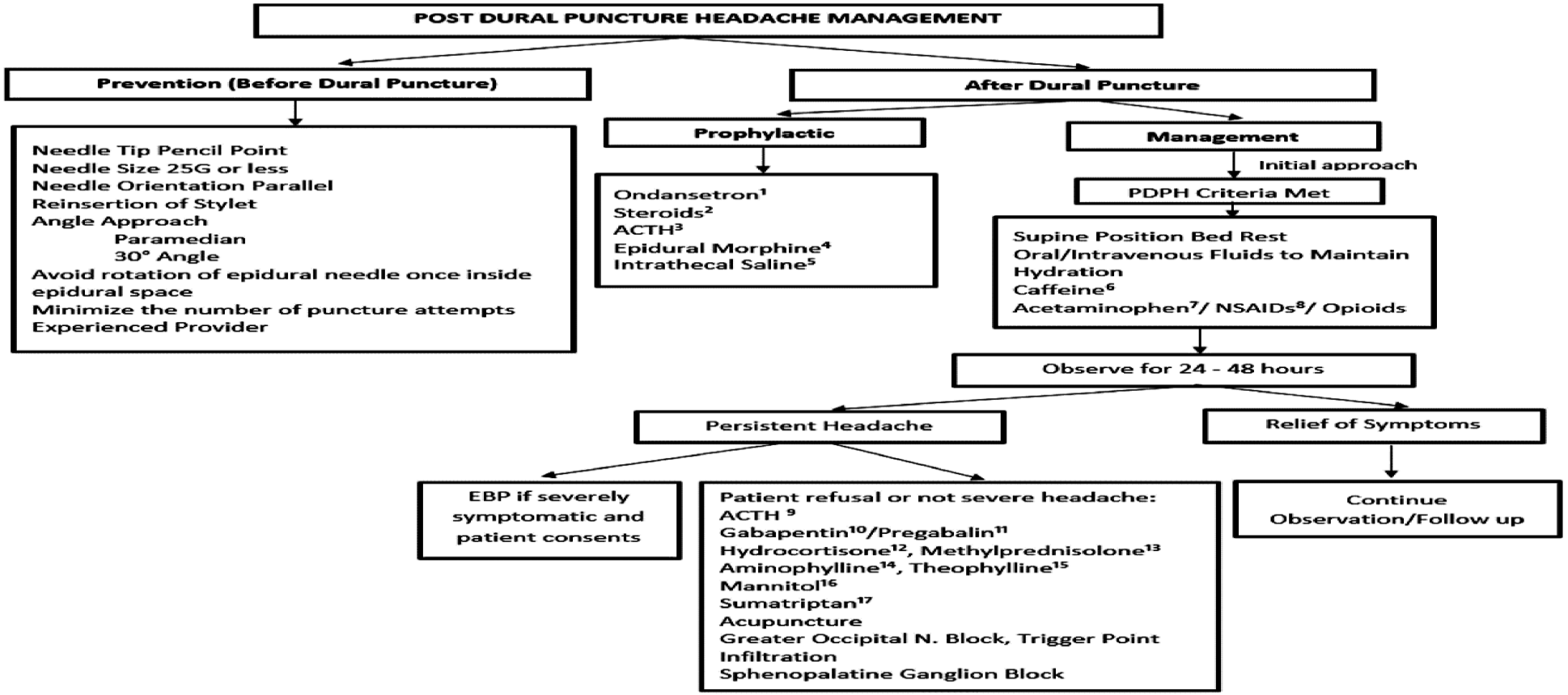
Our Roadmap

Iranpour et al



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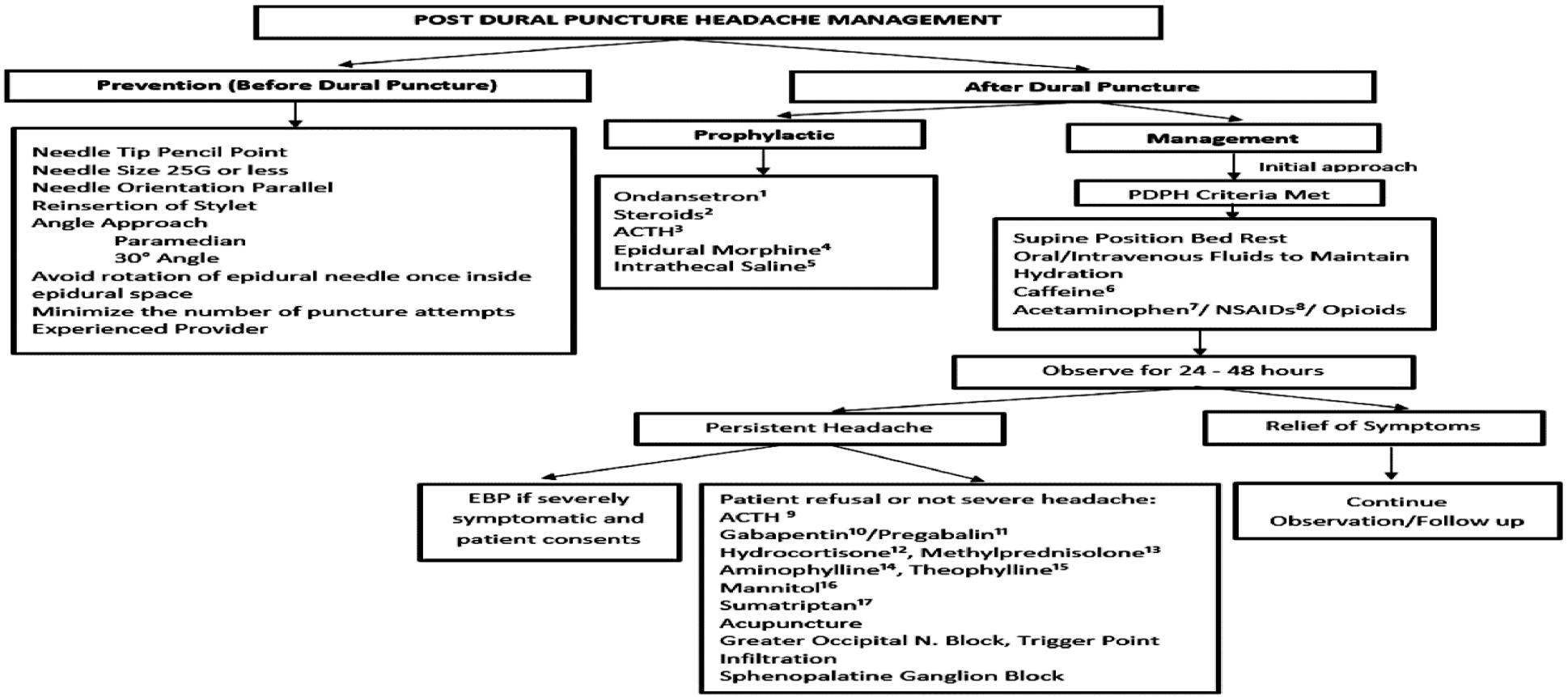
Our Roadmap

Iranpour et al



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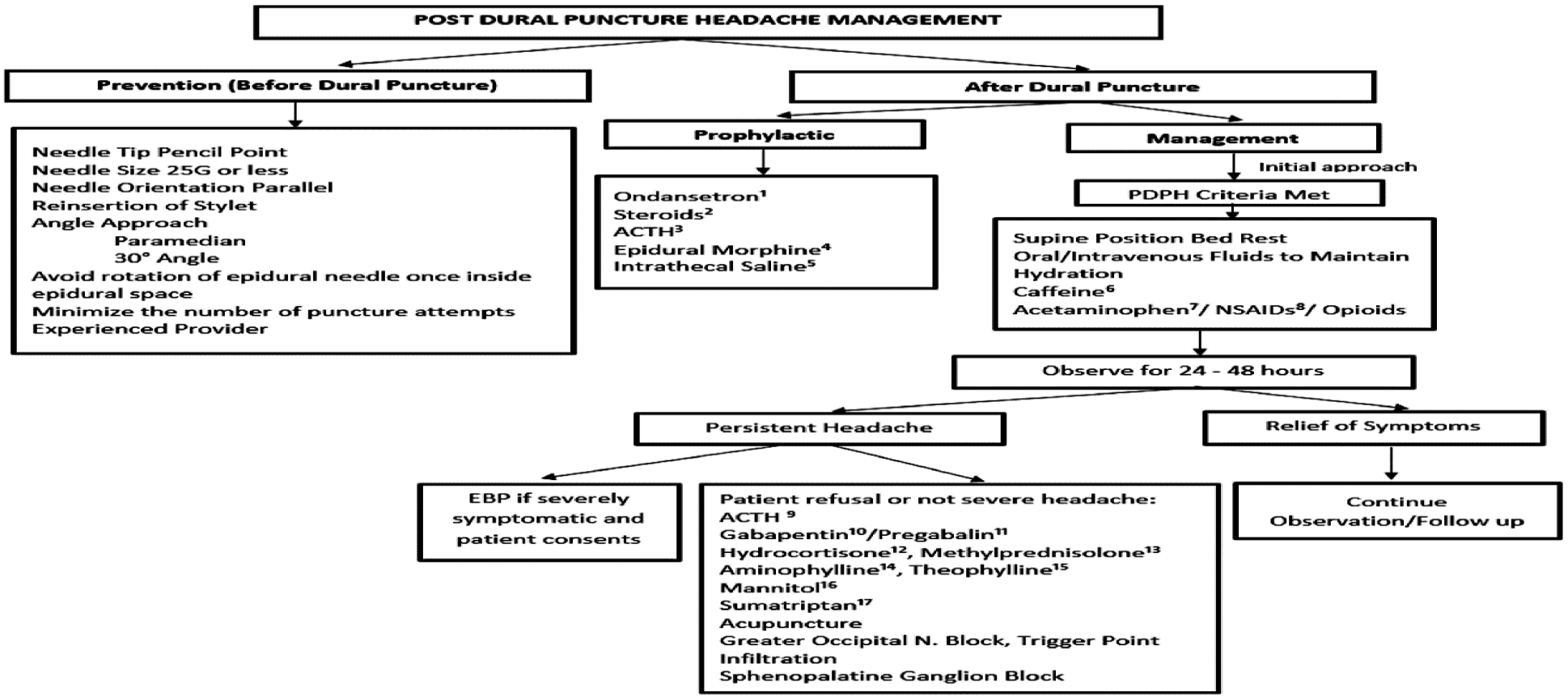
Our Roadmap

Iranpour et al



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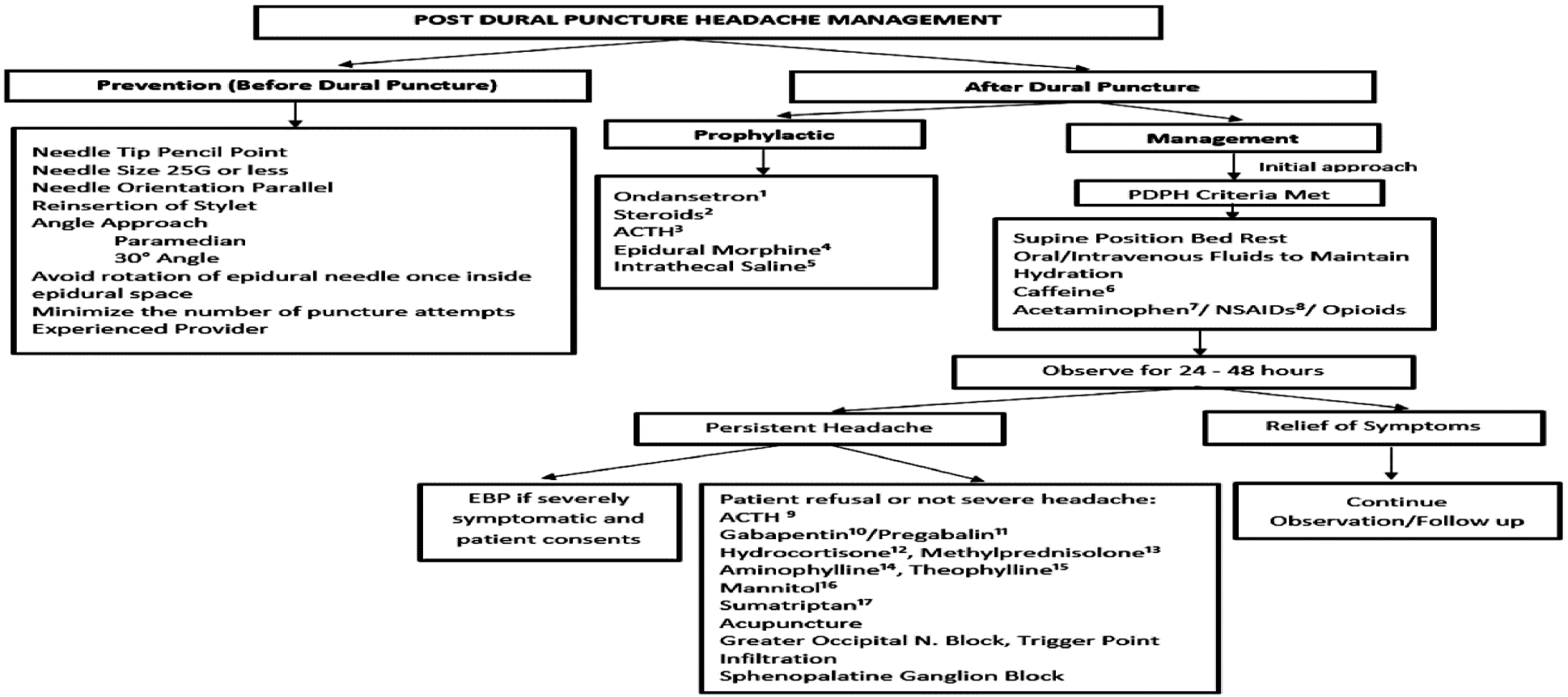
Our Roadmap

Iranpour et al



We will follow its branches, then critically appraise each treatment.

FULL FIGURE 2

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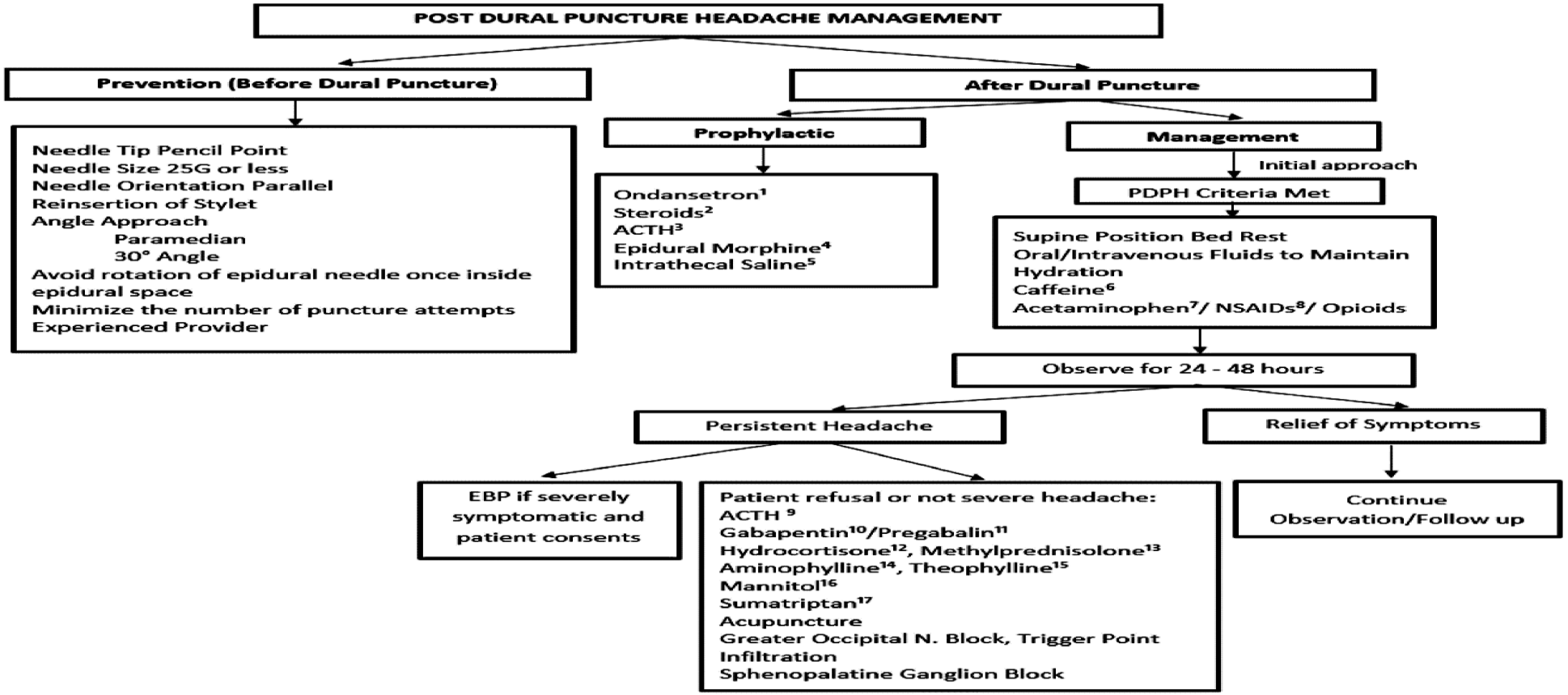
Our Roadmap

Iranpour et al



FULL FIGURE 2

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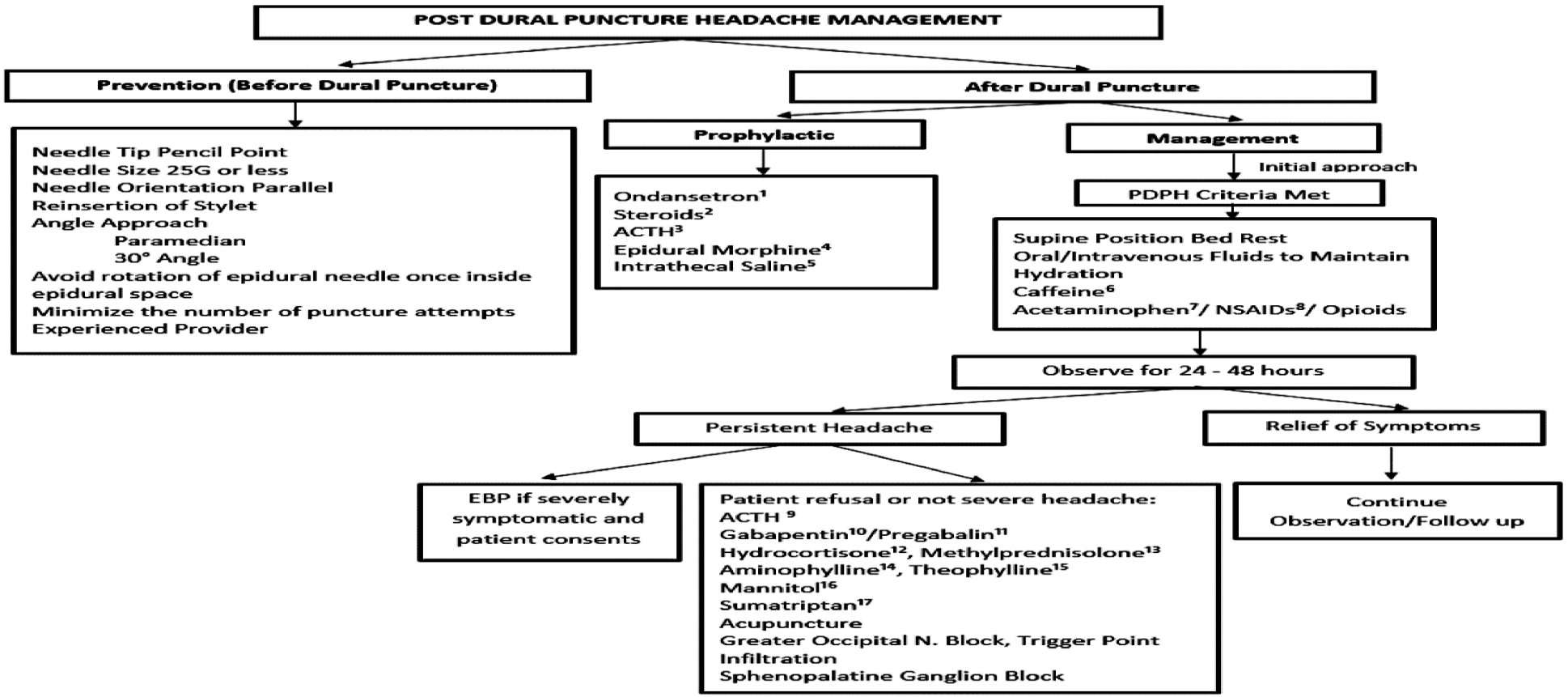
Our Roadmap

Iranpour et al



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Our Roadmap

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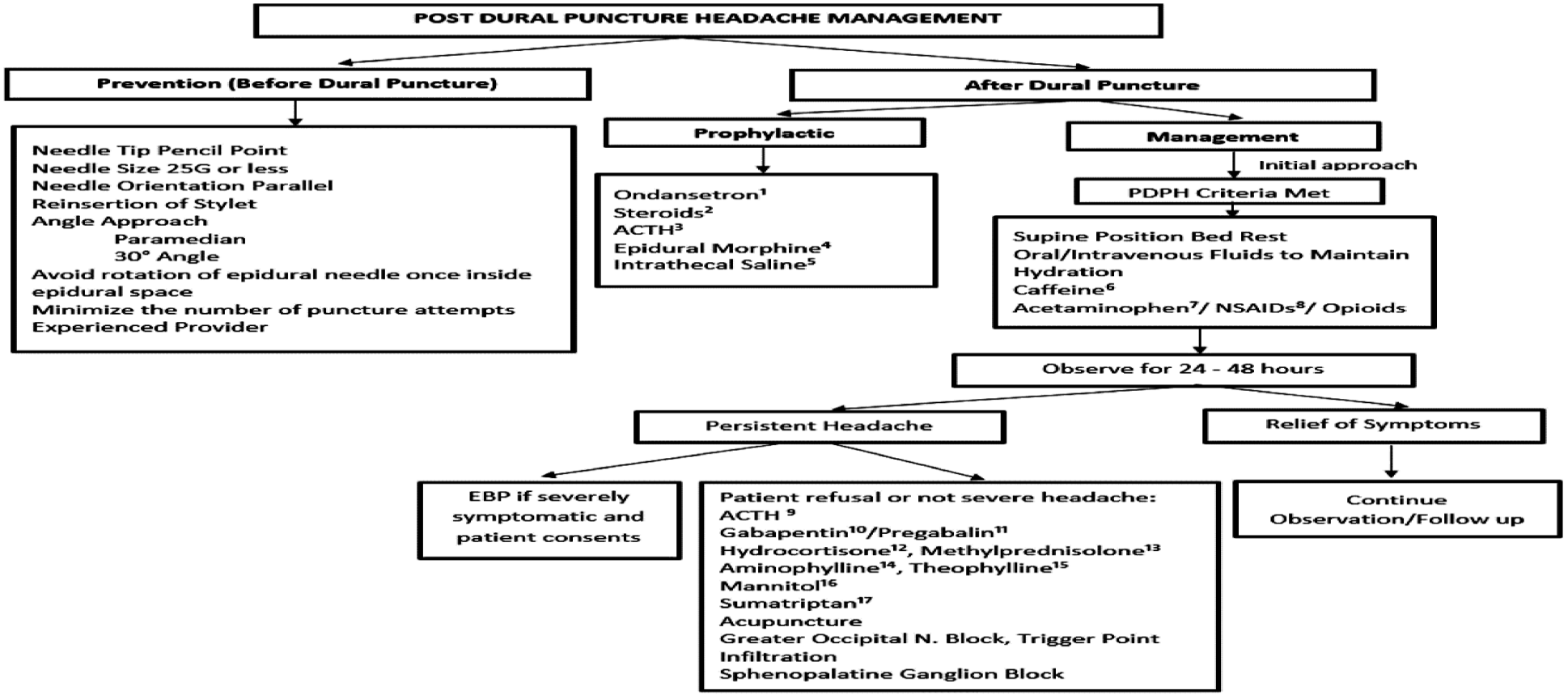

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Our Roadmap

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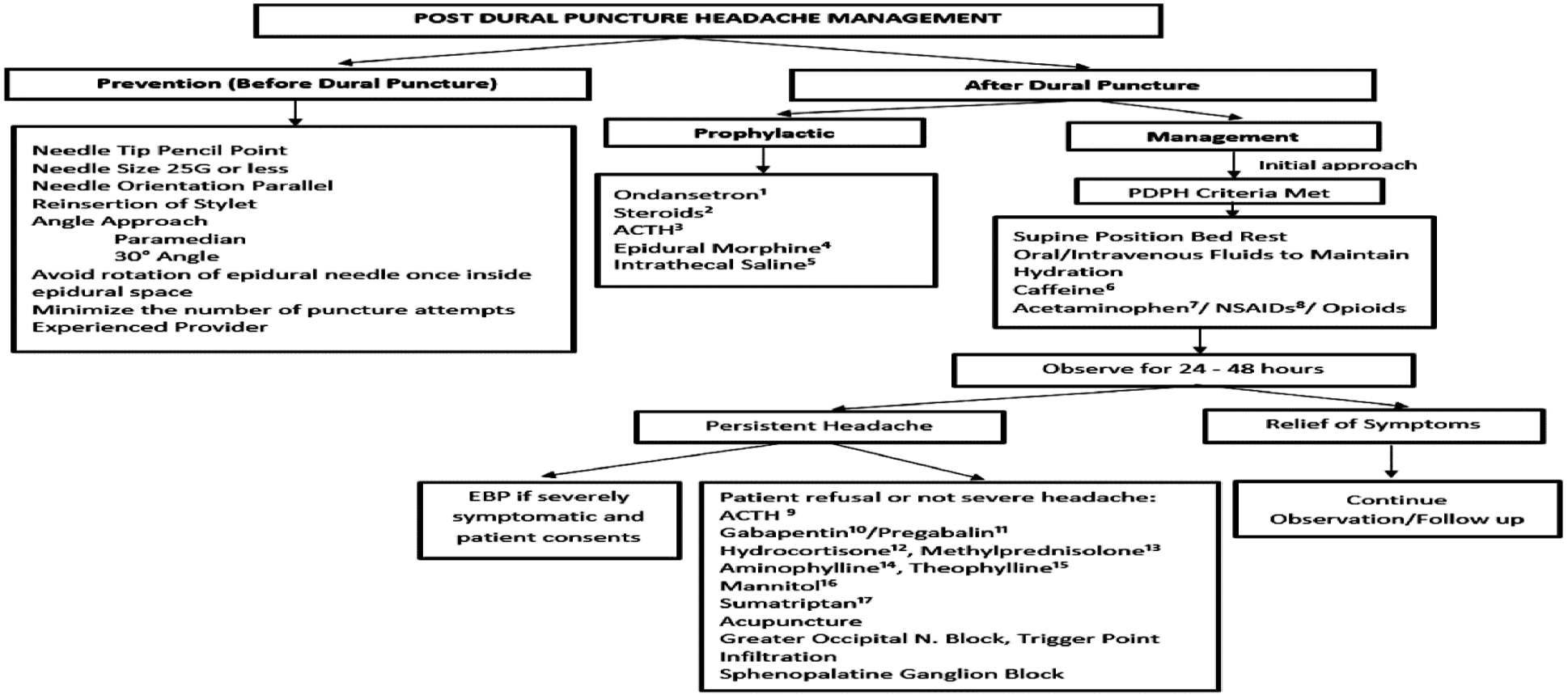

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