

Help Prevent TBI Complications

There will be continued emphasis on how to **help prevent traumatic brain injury (TBI) complications**.

TBI led to over 200,000 US hospitalizations in 2020 and over 60,000 deaths in 2021...often from falls, motor vehicle accidents, or firearms.

These patients can also develop seizures and blood clots during admission...worsening outcomes and increasing the risk of death.

Help coordinate meds to prevent adult TBI complications.

Anticipate meds to prevent seizures. High-risk patients include those with penetrating head injuries...sunken skull fractures...or bleeding in or around the brain.

Expect to see levetiracetam over fosphenytoin first-line. Fosphenytoin has more downsides, such as drug interactions...side effects...lab monitoring...and long infusion times.

Keep in mind that levetiracetam prophylaxis dosing varies. Some experts use up to 1,000 mg IV or po bid...with or without a loading dose.

You may see levetiracetam orders given as undiluted IV push for convenience...and to conserve IV fluids during shortages. Stock vials in hospital areas that treat patients with TBI...the ED, ICU, and ORs...if your hospital allows.

Don't be surprised to see 7-day stop times for most prophylaxis orders...only certain cases need to continue it longer. For example, patients with seizures after 24 hours post-TBI will need longer therapy.

Dispense anticoagulants safely. In general, expect to see a low-molecular-weight heparin (LMWH), such as enoxaparin, to prevent clots. LMWH prevents more blood clots in patients with TBI than unfractionated heparin...and has similar brain-bleeding risks.

Continue to read anticoagulant labels carefully to prevent mix-ups. For example, enoxaparin comes in 7 prefilled syringe strengths (30 mg, 40 mg, etc)...and they have similar-looking packaging.

Stock these in ED and ICU areas...but avoid storing different strengths next to each other in automated dispensing cabinets. This helps prevent staff from stocking or grabbing the wrong dose.

Consider applying "High alert" auxiliary labels to syringes to reinforce safety. And continue using barcode scanning technology, if available...to confirm you have the correct product.

Key References:

- American College of Surgeons. Best Practices Guidelines: The Management of Traumatic Brain Injury. October 29, 2024. <https://www.facs.org/media/vgfgjpfk/best-practices-guidelines-traumatic-brain-injury.pdf> (Accessed November 20, 2024).
- Angriman F, Taran S, Angeloni N, et al. Antiseizure Medications in Adult Patients With Traumatic Brain Injury: A Systematic Review and Bayesian Network Meta-Analysis. Crit Care Explor. 2024 Sep 25;6(10):e1160. doi: 10.1097/CCE.0000000000001160.
- CDC. Facts About TBI. April 29, 2024. <https://www.cdc.gov/traumatic-brain-injury/data-research/facts-stats/index.html> (Accessed November 20, 2024).

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