

Topical or Nebulized Tranexamic Acid

The chart below provides information on how, why, and when to consider topical or nebulized tranexamic acid. Limited evidence does not suggest an increase in thrombotic events when tranexamic acid is given topically.^{2,3,10} Other **SAFETY** considerations include: (1) inclusion of route-specific orders in your electronic medical record, (2) use of auxiliary labels to highlight intended route (e.g., “For Inhalation Only” sticker), (3) avoidance of TXA as an abbreviation for tranexamic acid (could be confused with abbreviations for alteplase or tenecteplase),¹² and (4) interdisciplinary development of standardized formulations and protocols. Note that the other antifibrinolytic, aminocaproic acid, has less evidence for epistaxis, and it has not been studied for nebulization.

Dosage Form and Usage	Comments
<p>Topical for Epistaxis</p> <ul style="list-style-type: none"> Cotton pledget is soaked in tranexamic acid (500 mg/5 mL injectable tranexamic acid).^{4,5} Leave in place for 10 to 30 minutes.¹⁰ <p>OR</p> <ul style="list-style-type: none"> Spray 500 mg in 5 mL normal saline with an atomizer with external compression for 15 minutes.⁹ Spray 2 mL of 100 mg/mL injectable tranexamic acid with a Luer lock syringe attached to a mucosal atomizer, followed by gentle pressure to distribute the drug.⁸ Repeat dose if bleeding persists after 3 minutes.⁸ 	<p>Nasal pledget:</p> <ul style="list-style-type: none"> Reduces bleeding time by about 5 minutes (p<0.001) vs pledget soaked in epinephrine 1:100,00 and 2% lidocaine plus anterior nasal packing.⁴ Over 95% of patients who receive tranexamic acid are discharged in ≤2 hours vs <15% of nasal packing patients (p<0.001) [Evidence level B-1].^{4,6} Rebleeding within 24 hours may be less common with tranexamic acid.^{4,6} Patient satisfaction is higher with tranexamic acid vs packing (p<0.001).^{4,6} Has been studied in patients taking an antiplatelet [Evidence level B-1], and used in patients taking a direct-acting oral anticoagulant (case report).^{4,7} <p>Nasal spray:</p> <ul style="list-style-type: none"> Seems to be more comfortable than nasal packing.⁹ Similar rebleeding rate within 24 hours with tranexamic acid compared to nasal packing alone (86.7% vs 73.3%, respectively, had no rebleeding in one study).⁹
<p>Nebulized for Hemoptysis</p> <ul style="list-style-type: none"> Regimens that have been used or studied include: <ul style="list-style-type: none"> 500 mg/5 mL injectable tranexamic acid every 8 hours¹ for up to 5 days [Evidence level B-1]³ 500 mg/5 mL injectable tranexamic acid every 6 to 8 hours (cancer, diffuse alveolar hemorrhage, idiopathic pulmonary bleeding)¹¹ <p><i>Continued...</i></p>	<ul style="list-style-type: none"> Has been used for patients with lung cancer, lung disease (including bronchiectasis), post-tonsillectomy hemorrhage, infection, bleeding of unknown source, etc, as an adjunct or “bridge” to definitive treatment, or as an alternative for patients who desire limited intervention (e.g., palliative care patients).^{1-3,11} Consider for NONmassive hemoptysis (e.g., hemodynamically stable, expectorated blood ≤200 mL in 24 hours) without respiratory instability.³ (Patients with massive hemoptysis will probably need an invasive procedure

More . . .

Dosage Form and Usage	Comments
<p>Nebulized for Hemoptysis, continued</p> <ul style="list-style-type: none"> • 1,000 mg in 20 mL normal saline x 1 (lung cancer).¹ • 250 mg/2.5 mL injectable tranexamic acid at a flow rate of 8 L over 2 to 3 min (peds, post-tonsillectomy hemorrhage unresponsive to nebulized epinephrine).² • Pediatric diffuse alveolar hemorrhage: 250 mg for children weighing <25 kg, or 500 mg if >25 kg.² • Alternatively, 500 mg/5 mL injectable tranexamic acid has been administered with a bronchoscope in cases where bleeding source is identifiable.¹¹ 	<p>such as embolization.³). Consider for patients taking an antiplatelet, or an anticoagulant in whom reversal is not desirable (e.g., recent thromboembolism).^{1,3}</p> <ul style="list-style-type: none"> • Seems to reduce length of stay by about two days (p=0.046), reduce need for invasive procedures (p=0.041), and reduce recurrence (p=0.009) vs placebo.³ Hemoptysis resolved in 5 days in 96% of the tranexamic acid patients, while only 50% of the placebo patients achieved resolution within 5 days (p<0.0005).³ Recurrence rate at one-year follow-up was also reduced (p = 0.009).³ • Bleeding may stop within minutes to hours of a single dose, or require repeated scheduled doses.^{1,2} • Bronchospasm, responding to bronchodilators, has been reported.¹

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Levels of Evidence

In accordance with our goal of providing Evidence-Based information, we are citing the **LEVEL OF EVIDENCE** for the clinical recommendations we publish.

Level	Definition	Study Quality
A	Good-quality patient-oriented evidence.*	1. High-quality RCT 2. SR/Meta-analysis of RCTs with consistent findings 3. All-or-none study
B	Inconsistent or limited-quality patient-oriented evidence.*	1. Lower-quality RCT 2. SR/Meta-analysis with low-quality clinical trials or of studies with inconsistent findings 3. Cohort study 4. Case control study
C	Consensus; usual practice; expert opinion; disease-oriented evidence (e.g., physiologic or surrogate endpoints); case series for studies of diagnosis, treatment, prevention, or screening.	

*Outcomes that matter to patients (e.g., morbidity, mortality, symptom improvement, quality of life).

RCT = randomized controlled trial; SR = systematic review
[Adapted from Ebell MH, Siwek J, Weiss BD, et al. Strength of Recommendation Taxonomy (SORT): a patient-centered approach to grading evidence in the medical literature. *Am Fam Physician* 2004;69:548-56. <http://www.aafp.org/afp/2004/0201/p548.pdf>]

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References

- Komura S, Rodriquez RM, Peabody CR. Hemoptysis? Try inhaled tranexamic acid. *J Emerg Med* 2018;54:e97-9.
- Schwarz W, Ruttan T, Bundick K. Nebulized tranexamic acid use for pediatric secondary post-tonsillectomy hemorrhage. *Ann Emerg Med* 2019;73:269-71.
- Wand O, Guber E, Guber A, et al. Inhaled tranexamic acid for hemoptysis treatment: a randomized controlled trial. *Chest* 2018;154:1379-84.
- Zahed R, Mousavi Jazayeri MH, Naderi A, et al. Topical tranexamic acid compared with anterior nasal packing for treatment of epistaxis in patients taking antiplatelet drugs: randomized controlled trial. *Acad Emerg Med* 2018;25:261-6.
- Birmingham AR, Mah ND, Ran R, Hansen M. Topical tranexamic acid for the treatment of acute epistaxis in the emergency department. *Am J Emerg Med* 2018;36:1242-5.
- Zahed R, Moharamzadeh P, Alizadeharasi S, et al. A new and rapid method for epistaxis treatment using injectable form of tranexamic acid topically: a randomized controlled trial. *Am J Emerg Med* 2013;31:1389-92.
- Utkewicz MD, Brunetti L, Awad NI, et al. Epistaxis complicated by rivaroxaban managed with topical tranexamic acid. *Am J Emerg Med* 2015;33:1329e5-7.
- Heymer J, Schilling T, Rappale D. Use of a mucosal atomization device for local application of tranexamic acid in patients. *Am J Emerg Med* 2018;36:2327.
- Akkan S, Corbacioglu SK, Aytar H, et al. Evaluating effectiveness of nasal compression with tranexamic acid compared with simple nasal compression and *Meroce*l packing: a randomized controlled trial. *Ann Emerg Med* 2019;74:72-8.
- Gottlieb M, DeMott JM, Peksa GD. Topical tranexamic acid for the treatment of acute epistaxis: a systematic review and meta-analysis. *Ann Pharmacother* 2019;53:652-7.
- Solomonov A, Fruchter O, Zuckerman T, et al. Pulmonary hemorrhage: a novel mode of therapy. *Respir Med* 2009;103:1196-200.
- ISMP. Confusion when thinking about error-prone drug abbreviations. *ISMP Medication Safety Alert! (Acute Care)*. 2018;23(21):4. <https://www.ismp.org/sites/default/files/attachments/2018-10/20181018.pdf>. (Accessed July 22, 2019).

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