

Epistaxis Guidelines: A Comprehensive Guide to Manage Epistaxis in the Primary Care Setting

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ABSTRACT

Nosebleeds, or epistaxis, is a common problem that affects almost 60% of Americans during their lifetime. Epistaxis can significantly impact a patient's health and quality of life; it is critical that primary care physicians be familiar with the most up-to-date guidelines on managing epistaxis. Primary care providers are pivotal in being able to stabilize and treat epistaxis, to avoid the need for unnecessary interventions and to reduce the risk of patient harm. The American Academy of Otolaryngology recently updated otolaryngologic clinical practice guidelines (CPG) on epistaxis management. As the circulation of these guidelines has been limited to a subspecialty journal, we provide this focused review to clarify and disseminate the epistaxis guidelines for the frontline primary care physician.

Keywords

Epistaxis, Kiesselbach, Otolaryngology, Nosebleed.

Introduction

Epistaxis is one of the most common otolaryngologic emergencies, occurring in about 60% of the population of the United States. One in ten of these patients eventually seek medical intervention, and 0.2% will need hospitalization [1]. However, most epistaxis cases are managed by general practitioners without the need for complex interventions and only a few are ever seen by an otolaryngologist. The common bimodal age distribution requires practitioners to care for relatively healthy individuals aged 2 to 10 years and more complex cases involving those aged 50 to 80 years. Epistaxis is rarely a direct cause of mortality at 3.4%, but it can be used as a general marker of poor health and is a poor prognostic sign among already morbid patients [2]. Many practitioners need the skills to navigate these difficult epistaxis cases, but a myriad of different techniques exist without consensus. Sowerby et al. found that less than half of family practitioners and emergency physicians at a tertiary hospital were able to identify basic first-aid measures for managing acute epistaxis [3]. The incidence, complexity

of cases, and need to improve quality and reduce variations in the care of patient with epistaxis led the American Academy of Otolaryngology-Head and Neck Surgery to develop a clinical practice guideline (CPG) that was recently updated in 2020 to assist providers in appropriately managing this condition.

The purpose of the epistaxis CPG is to provide evidence-based recommendations and clear actionable statements for all providers who care for patients with bleeding from the nostril, nasal cavity, or nasopharynx that require medical attention or care. The treatment protocol outlined in the guidelines is broad and includes evaluation and treatment of nosebleeds originating from any site. Despite intense efforts to disseminate CPGs, previous studies have shown that uptake of recommendations in CPGs is limited and adherence to key action statements is low [4,5]. To our knowledge, this is the first report specifically aimed at disseminating the guidelines for epistaxis into the family medicine literature, with a goal of achieving broader knowledge of the CPG. The general practitioner's role in recognizing and managing a multitude of epistaxis case complexities is pivotal. Improved awareness, clarity, and dissemination of CPGs is critical to improve adherence and

the quality of clinical care [4,5]. We will summarize and adapt the action statements addressed in the CPG to equip frontline general practitioners with the skills to diagnose, treat, and prevent epistaxis as well as recognize complex epistaxis presentations [5].

Clinical Practice Guidelines for Epistaxis

Discussion

Etiology

Epistaxis is classified based on the anatomic source, as either anterior or posterior. Further classification includes primary or secondary epistaxis, which is based on etiology. Primary causes of epistaxis arise spontaneously and are often idiopathic, which is the etiology in most cases [5]. Environmental factors have a significant role in primary epistaxis, with rates much higher in the winter months, regardless of age, risk factors, or comorbidities. Decreased temperature and being exposed to indoor heating results in decreased humidity and increased evaporation from the nasal mucosa. This results in desiccation and thinning of the mucosa and then epistaxis [6].

Secondary causes of epistaxis are classified as epistaxis occurring from an identifiable cause such as trauma, metabolic abnormalities, vascular abnormalities, iatrogenic, idiopathic, neoplastic, and inflammatory (Table 1). In children, most bleeds are from the anterior nasal septum and can be caused or aggravated by digital trauma, crusting from nasal inflammation, or nasal foreign bodies [7]. General practitioners should be wary of more persistent or recurrent nasal bleeding in adolescent males, particularly unilateral nosebleed in the presence of nasal obstruction, because it could suggest the diagnosis of juvenile nasopharyngeal angiofibroma, an uncommon locally invasive vascular tumor [8]. Upwards of 45% of adult patients with epistaxis have systemic illnesses contributing to the nosebleeds [9]. Heart failure, diabetes, liver disease, and kidney disease increase epistaxis rates, but the often-assumed causal relationship between epistaxis and hypertension remains poorly established [5,10]. Some patients have inherited bleeding disorders such as von Willebrand disease and hemophilia; others have abnormal nasal vasculature, such as that seen in HHT syndrome [5]. Nosebleeds are also common in patients taking anticoagulants and medications that impair platelet function. New-generation anticoagulants appear to increase the risk of nosebleed, and algorithms for treating these nosebleeds and indications for discontinuing such medications in these patients are being developed [11-13].

Table 1: Etiologies of Epistaxis.

Trauma	Digital trauma, foreign body insertion, illicit drug use, facial trauma, nasal fracture, septal perforation
Metabolic	Alcohol, renal failure, uremia, hepatic dysfunction
Vascular	Hereditary hemorrhagic telangiectasia, hypertension, congestive heart failure, Diabetes, Granulomatous with polyangiitis
Inflammatory	Nasal polyps, rhinosinusitis, viral illness, granulomatous disease
Congenital	Septal deviation, septal spur
Medication side effect	NSAIDs, anticoagulation, antiplatelet therapy
Iatrogenic	Trauma from surgery (nasotracheal tubes, nasogastric tubes, passage of tubes)
Neoplastic	Paranasal sinus tumor, nasopharyngeal carcinoma, squamous cell cancer
Other	Thrombocytopenia, hemophilia, vitamin deficiencies (A,D,E,K,C)

Anatomy

There are two main types of nosebleeds: anterior and posterior, with anterior being more common [14]. Anterior bleeds account for 80-90% of epistaxis cases and are less challenging to manage [15]. The vessels involved are smaller, easier to treat with compression, and responsive to topical treatments and electrocautery [16]. Posterior nosebleeds are typically more severe and warrant medical attention [5]. The nose is a highly vascularized area and is supplied by branches from both the external and internal carotid arteries [17]. The bleeding source of anterior epistaxis is 90% likely within Kiesselbach's plexus, which is located on the anterior nasal septum, above the vestibule (Figure 1) [15]. The Kiesselbach's plexus is composed of

- Sphenopalatine branch – from maxillary artery
- Greater palatine branch – from maxillary artery
- Anterior ethmoidal branch – from ophthalmic artery
- Posterior ethmoidal artery – from ophthalmic artery
- Superior labial branch – from maxillary artery

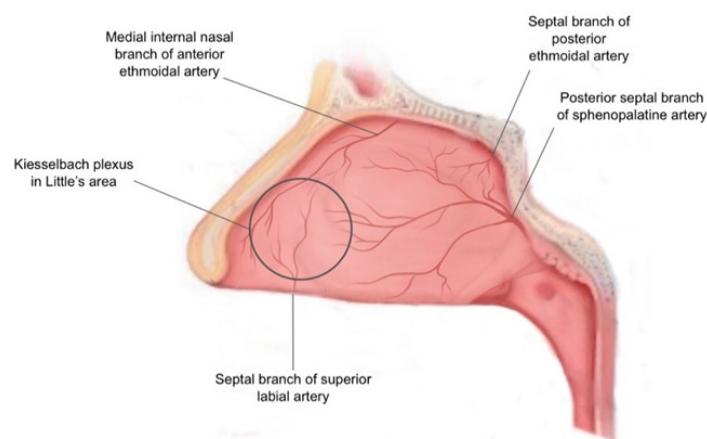


Figure 1: Diagram of Kiesselbach's plexus located on the anterior nasal septum.

This area is susceptible to bleeding because the mucosa overlying the septum in this location is especially thin. Bleeding from the vessels located in the posterior or superior portion of the nasal cavity will lead to posterior epistaxis. The posterior nasal septum is supplied by the sphenopalatine artery, and terminal branches of the maxillary artery [18]. Posterior epistaxis occurs most often

among patients who are on anticoagulation, patients with vascular abnormalities, or in the setting of trauma.

History and Physical

A quick approach to managing epistaxis is summarized in Figure 2. When a patient presents with acute epistaxis, it is critical to identify patients that need prompt or emergent management from a patient who has a more benign presentation (Grade C). Active bleeding should be triaged into needing emergent care at a hospital or can be safely managed in an ambulatory setting. Obtaining an estimate of the volume of blood loss or ongoing bleeding is essential. Those presenting with “severe/high” volume bleeding or persistent bleeding, airway compromise, symptoms of hypovolemia, syncope, severe underlying medical conditions, history of anticoagulation, or underlying clotting disorder indicate a need for emergent management. Severity can be assessed by a bleeding duration >30 min in 24 hrs, a history of hospitalization for bleeds, and patients saturating a small bath towel [5].

The initial history should include onset, duration, sidedness, and frequency of nosebleed; other sites of bleeding or bruising; prior nasal or sinus surgery, nasal cannula oxygen, or use of CPAP (continuous positive airway pressure). It is also important for the clinician to inquire and document risk factors for any patient suffering from nose bleeding. This includes personal medical history, family history of bleeding disorders, medication use of antiplatelet, anticoagulant, and/or intranasal medications (Grade C). These questions can guide practitioners toward signs and symptoms of systemic disease that would warrant further workup.

In particular, the CPG recommends evaluating all patients for nasal telangiectasias and/or oral mucosal telangiectasias in patients who have a history of recurrent bilateral nosebleeds or a family history of recurrent nosebleeds to diagnose hereditary hemorrhagic telangiectasia (HHT) syndrome (Grade B). HHT-related epistaxis poses unique challenges and management strategies, and such identified patients should be referred to a team of providers with experience treating HHT or to an HHT center of excellence.

Nosebleeds are a known side effect of antiplatelet and anticoagulation medications, and patients taking these medications are more likely to present with recurrent epistaxis, have a large volume of blood loss (>250 mL), and require blood transfusion for treatment [19]. In the absence of life-threatening bleeding, the clinician should initiate first-line treatments prior to transfusion, reversal of anticoagulation, or withdrawal of anticoagulation/antiplatelet medications for patients using these medications (Grade C). When possible, identify the site from which the bleeding is arising. The CPG recommends all providers perform anterior rhinoscopy to identify a source of bleeding after removal of any blood clot (Grade C). Providers should also consider using nasal endoscopy to identify sites of bleeding and guide further management. The CPG recommends endoscopy in settings of recurrent bleeding, failure of packing or cautery, or when there is concern for unrecognized pathology contributing to epistaxis (Grade C). Nasal endoscopy provides magnification of anterior nasal structures and a direct view of posterior nasal structures. With nasal endoscopy, the bleeding site can be localized in 87% to 93% of cases [20]. Posterior epistaxis can occur from locations on

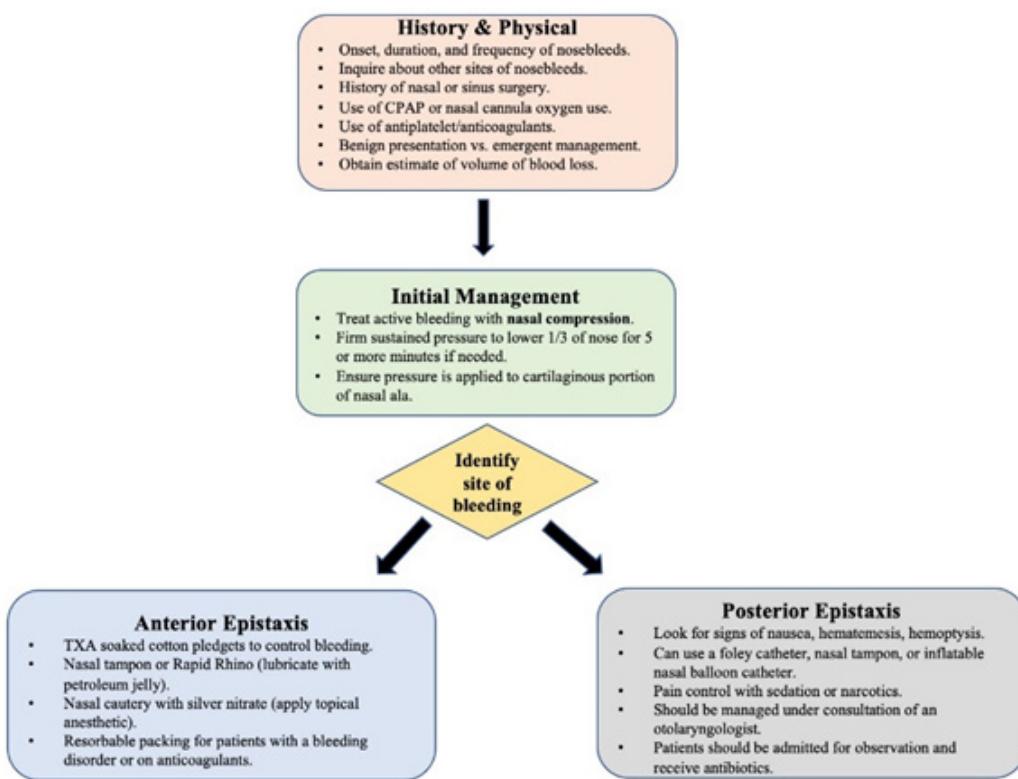


Figure 2: Summary of management of anterior and posterior epistaxis.

the septum (70%) or the lateral nasal wall (24%), making targeted therapy difficult without endoscopic identification of the source of bleeding [21].

Initial Management for Epistaxis

The first step in treating any active bleeding is nasal compression (Grade C). Simultaneously the provider can obtain a complete history and should determine if escalation of care is necessary. The clinician or patient should apply firm sustained compression to the lower third of the nose for 5 minutes or longer if needed. It is critical that the pressure be applied to the cartilaginous, nasal ala, part of the nose as attempted compression over the nasal bones will be ineffective. Some reports suggest that a nose clip may be superior to digital compression for controlling severe epistaxis, however the evidence is limited, and the CPG does not recommend a clip over simple compression with fingers [5,22].

The second step includes attempting to identify the source of bleeding using anterior rhinoscopy or endoscopy. As this is an aerosol generating procedure, the highest level of PPE should be used [23]. The examiner should have the patient positioned at the appropriate height and suction, and nasal speculum should be available. Using a headlamp for the light source is ideal because this enables the examiner to use both hands freely. The CPG emphasizes the importance of patient education and prevention (Grade B) [20]. The clinician should educate patients with nosebleeds and their caregivers about how to prevent nosebleeds, how to stabilize at home and the indications to seek medical care. Patients should be taught proper nasal compression techniques and given vasoconstrictors for home use if needed. Other recommendations to prevent nosebleeds include advising patients to sleep in humidified environments, using saline nasal spray, Vaseline at night, and avoiding spraying nasal sprays directly to the nasal septum [24].

Anterior Nosebleeds

Localized anterior epistaxis should be managed with one or more of the following: topical vasoconstrictors, nasal cauterization, and moisturizing or lubricating agents (Grade B). Initial use of a vasoconstrictor may allow either nosebleed control or improved initial identification of a bleeding site amenable to cauterization. Studies report that 65% to 75% of patients have resolution of nasal bleeding with vasoconstrictors alone [25]. If bleeding continues or if a blood vessel is prominent, nasal cauterization after topical anesthetization is a good option (Grade C). Cautery should be restricted to only visualized sites of bleeding or suspected sites to avoid excessive tissue injury, infection, or perforation. There are multiple methods for cauterization and the best in-office choice is likely silver nitrate. Regardless of cauterization choice, studies have demonstrated greater efficacy than with nasal packing if a bleeding site is identified [26].

Anterior nasal packing should be used for bleeding that has not resolved after applying direct pressure, using vasoconstrictive medications, or unidentified sources of bleeding (Grade C) [26]. Resorbable packing, like oxidized regenerated cellulose (Surgicel), is easy to use and has less complications compared to

non-resorbable [4]. Non-absorbable packing for anterior epistaxis should be used if the above methods are unsuccessful. It is more traumatic to nasal mucosa, requires antibiotics, and requires close follow up. Zahed et al. 2013 determined that tranexamic acid-soaked cotton pledgets is a preferable step in achieving hemostasis prior to proceeding to non-absorbable nasal packing, if available [19,28]. Krulewitz et al. states that nasal packing can be done by first applying direct pressure to the mucosa and inserting a nasal tampon along the superior portion of the hard palate. The nasal tampon is often first-line for uncomplicated anterior bleeding. The Rapid Rhino is another option that can be used. It is strongly recommended to lubricate the nasal packing with antibiotic ointment and/or petroleum jelly, which will help with insertion as well as preventing toxic-shock syndrome [17].

Nasal packing in anterior epistaxis is contraindicated if there is suspicion or visible facial/nasal bone fractures, basilar skull fractures, airway compromise requiring intubation. Packing is indicated once the patient is stabilized [29,30]. Should the patient require nasal packing, it is imperative that the clinician educates the patient regarding the procedure and informs the patient on the type of packing used, the duration and plan for removal (for non-resorbable packing), and post-procedure care (Grade C). Nasal packing may cause significant discomfort for patients, as well as side effects such as impaired breathing and nasal crusting [17].

Posterior Nosebleeds

Posterior epistaxis is mostly seen in adults and should be considered when protocol for managing anterior epistaxis has failed, or if the bleeding is brisk. Other clinical signs that may suggest posterior etiology are nausea, hematemesis, and hemoptysis [17]. Compared with anterior epistaxis, patients with posterior epistaxis are more likely to require hospitalization and are twice as likely to require nasal packing [27].

The initial approach for posterior epistaxis is similar to that for anterior epistaxis. Management usually necessitates a type of posterior pack, a Foley catheter, nasal tampon, or inflatable nasal balloon catheter. It is recommended that patients who undergo posterior packing should be admitted for observation and receive systemic antibiotics [17]. Potential complications include bradycardia, hypotension, nasal septal necrosis, syncope, aspiration, and toxic shock syndrome [17]. Studies have shown that posterior packing is very painful, and sedation/narcotic pain control should be strongly considered. All posterior epistaxis should be managed in consultation with an Otolaryngologist if possible. Patients with posterior epistaxis that is not controlled by the above methods will need surgical intervention by an ENT provider, including endoscopic evaluation and potentially ligation or embolization. The CBG recommends that all patients should be evaluated for ligation/embolization for posterior nosebleeds, persistent nosebleeds, or nosebleeds refractory to nasal packing or cauterization (Grade C).

Conclusion

The primary care physician often is the first-line clinician to

encounter nosebleed cases. The clinical decision making, and management of the primary care physician is critical in preventing complications, as well as referring patients to the appropriate specialist, depending on the complexity and severity of the case. Implementing conservative treatment modalities such as nasal compression and packing are vital in acute cases. It is crucial for the clinician to determine the need for acute care vs. chronic or recurrent cases of epistaxis. Contributing clinical factors such as family history of bleeding disorders or medication use should be elicited during the H&P. This review of the CPG is intended to encourage the primary care physician to initiate appropriate care for epistaxis, prior to further evaluation by a specialist if warranted.

References

1. Yau S. An update on epistaxis. *Aust Fam Physician*. 2015; 44: 653-656.
2. Fishman J, Fisher E, Hussain M. Epistaxis audit revisited. *J Laryngol Otol*. 2018; 132: 1045.
3. Sowerby L, Rajakumar C, Davis M, et al. Epistaxis first-aid management: a needs assessment among healthcare providers. *J Otolaryngol Head Neck Surg*. 2021; 50: 7.
4. Ryan MA. Adherence to Clinical Practice Guidelines. *Otolaryngol Head Neck Surg*. 2017; 157: 548-550.
5. Tunkel DE, Anne S, Payne SC, et al. Clinical Practice Guideline: Nosebleed (Epistaxis). *Otolaryngol Head Neck Surg*. 2020; 162: 1-38.
6. Purkey MR, Seeskin Z, Chandra R. Seasonal variation and predictors of epistaxis. *Laryngoscope*. 2014; 124: 2028-2033.
7. Béquignon E, Teissier N, Gauthier A, et al. Emergency Department care of childhood epistaxis. *Emerg Med J*. 2017; 34: 543-548.
8. Makhasana JA, Kulkarni MA, Vaze S, et al. Juvenile nasopharyngeal angiofibroma. *J Oral Maxillofac Pathol*. 2016; 20: 330.
9. Lin G, Bleier B. Surgical Management of Severe Epistaxis. *Otolaryngol Clin North Am*. 2016; 49: 627-637.
10. Schlosser RJ. Clinical practice. *Epistaxis* *N Engl J Med*. 2009; 360: 784-789.
11. Escabasse V, Bequignon E, Vérillaud B, et al. Guidelines of the French Society of Otorhinolaryngology (SFORL). Managing epistaxis under coagulation disorder due to antithrombotic therapy. *Eur Ann Otorhinolaryngol Head Neck Dis*. 2017; 134: 195-199.
12. Williams A, Biffen A, Pilkington N, et al. Haematological factors in the management of adult epistaxis: systematic review. *J Laryngol Otol*. 2017; 131: 1093-1107.
13. Biggs TC, Baruah P, Mainwaring J, et al. Treatment algorithm for oral anticoagulant and antiplatelet therapy in epistaxis patients. *J Laryngol Otol*. 2013; 127: 483-488.
14. Tabassom A, Cho JJ. Epistaxis Stat Pearls. *StatPearls*. 2022.
15. Seikaly H. Epistaxis. *N Engl J Med*. 2021; 384: 944-951.
16. Logan JK, Pantle H. Role of topical tranexamic acid in the management of idiopathic anterior epistaxis in adult patients in the emergency department. *Am J Health Syst Pharm*. 2016; 73: 1755-1759.
17. Krulewitz NA, Fix ML. Epistaxis. *Emerg Med Clin North Am*. 2019; 37: 29-39.
18. Viehweg TL, Roberson JB, Hudson JW. Epistaxis: diagnosis and treatment. *J Oral Maxillofac Surg*. 2006; 64: 511-518.
19. Khan M, Conroy K, Ubayasiri K, et al. Initial assessment in the management of adult epistaxis: systematic review. *J Laryngol Otol*. 2017; 131: 1035-1055.
20. National ENT Trainee Research Network. The British Rhinological Society multidisciplinary consensus recommendations on the hospital management of epistaxis. *J Laryngol Otol*. 2017; 131: 1142-1156.
21. Chiu TW, McGarry GW. Prospective clinical study of bleeding sites in idiopathic adult posterior epistaxis. *Otolaryngol Head Neck Surg*. 2007; 137: 390-393.
22. Hajimaghsoodi M, Largani HA, Baradaranfar MH, et al. A novel method for epistaxis management: Randomized clinical trial comparing nose clip with manual compression. *Am J Emerg Med*. 2018; 36: 149-150.
23. Aguanno V, Ralli M, Greco A, et al. Clinical Recommendations for Epistaxis Management During the COVID-19 Pandemic. *Otolaryngol Head Neck Surg*. 2020; 163: 75-77.
24. Burton MJ, Dorée CJ. Interventions for recurrent idiopathic epistaxis (nosebleeds) in children. *Cochrane Database Syst Rev*. 2004; 004461.
25. Krempl GA, Noorly AD. Use of oxymetazoline in the management of epistaxis. *Ann Otol Rhinol Laryngol*. 1995; 104: 704-706.
26. Mcleod RWJ, Price A, Williams RJ, et al. Intranasal cauterization for the management of adult epistaxis: systematic review. *J Laryngol Otol*. 2017; 131: 1056-1064.
27. Supriya M, Shakeel M, Veitch D, et al. Epistaxis: prospective evaluation of bleeding site and its impact on patient outcome. *J Laryngol Otol*. 2010; 124: 744-749.
28. 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: 1389-1392.
29. Iqbal IZ, Jones GH, Dawe N, et al. Intranasal packs and haemostatic agents for the management of adult epistaxis: systematic review. *J Laryngol Otol*. 2017; 131: 1065-1092.
30. Kravchik L, Jamal Z, Pester JM. Anterior Epistaxis Nasal Pack. *StatPearls*. 2022.