Management of non-traumatic epistaxis in adults in the emergency department

Abstract

Background/Aims Despite epistaxis being a common presentation to emergency departments there is a lack of guidelines, both nationally and internationally, for its management. The authors reviewed the current management of epistaxis and then introduced a new pathway for management to see if care could be improved. The aims were to evaluate the impact of the pathway on reduction of emergency department breaches, emergency ambulance transfers and hospital admissions.

Methods The study was an interrupted time series analysis over 29 months and included 903 participants. A pathway for the management of adults with non-traumatic epistaxis was designed and implemented in a university teaching hospital with an emergency department annual attendance rate of 105 495 in 2019–20.

Results The pathway led to a 14-minute longer stay in the emergency department, a 5% increase in emergency department breaches, an 8.2% reduction in admissions, a 3.6% reduction in emergency ambulance transfers, a 14.1% increase in nasal cautery and a 3.2% reduction in nasal packing.

Conclusions The authors calculate that these results equate to roughly 56 hospital bed days saved, providing better care closer to home for patients, in addition to beneficial knock-on effects for other emergency department and admitted patients.

Key words: Emergency medicine; Epistaxis; Quality improvement

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Introduction

There were 20 543 emergency admissions in England for epistaxis in 2019–20, with a mean length of stay of 1.5 days (NHS Digital, 2020). Approximately 90% of cases of epistaxis are anterior in origin and may therefore be amenable to local measures that can be performed in the emergency department (Tabassom and Cho, 2020). There are no national or international guidelines published regarding the management of epistaxis in the emergency department. This leads to variations in practice, patients being unnecessarily admitted and breaches of the national 4-hour standard as a result of differing methods of management. The authors felt that implementation of a standardised and structured approach may lead to significant improvements in care. The specific aims were to reduce admissions to hospital, emergency ambulance transfers and breaches of the 4-hour standard.

Methods

A new pathway was iteratively designed collaboratively between the emergency department and the ear nose and throat department, based upon previous studies by Van Wyk et al (2007) and Upile et al (2007, 2008). The pathway (Appendix 1) was amended to fit the needs of the local population and the resources available, while keeping patient safety at the forefront.

Alongside the introduction of the pathway, teaching and training were provided, a frequently asked question document was created, clinical supervision was provided (which had not been previously provided) and an epistaxis drawer was made for convenience and to increase use of the pathway (Appendix 2).

An interrupted time series design was used, as this allows natural trends to be accounted for and the identification of any trends that have been caused by the intervention, providing

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a more robust analysis of the effect of the intervention compared to a before and after study design. It was planned to obtain 15 time points in each period, but the COVID-19 pandemic meant that the post-intervention collection points were reduced to 14.

Results

The 15-month pre-intervention study period was November 2017 to January 2019, and included 442 participants, and the 14-month post-intervention study period was February 2019 to March 2020 and included 461 participants.

The demographics showed that the pre- and post-intervention groups were well matched with regard to age (median age 73 years (interquartile range 23 years) in both groups) and gender (54.5% male vs 54.0% male in the pre- and post-intervention groups respectively). Use of anticoagulants was 2.5% higher in the post-intervention group.

The median time in the emergency department increased from 181 minutes to 195 minutes. It should be noted this is still less than the 4-hour standard (240 minutes) on average. The emergency department breaches (a patient remaining in the emergency department for longer than 4 hours) increased with the intervention by 5%.

The percentage of bloods taken decreased by 8.4%, which is positive given that they are not required in a large proportion of patients with epistaxis.

The final interventions performed are illustrated in Figure 1. Nasal cautery increased by 14.1%, nasal packing decreased by 3.2% and first aid increased by 3.1%, which are all positive results.

The treatment paths for the patients are shown in Figure 2. More patients went home with advice to follow up with their GP or with an ear nose and throat doctor as an outpatient. Notably, admissions decreased by 8.2%, which has a direct impact on the emergency ambulance journeys, which reduced by 3.6% in the post-intervention group.

The reattendance within 7 days for epistaxis remained constant in both groups at 14.9% and 15% respectively.

The compliance with the pathway is illustrated in Figure 3. Every case was assessed to see if they used the pathway; if they did, this was considered compliant. If they followed the pathway, apart from doing blood tests that were not indicated, then this was considered partially compliant. If the management did not follow the pathway at all, such as not using the step wise approach and proceeded directly to packing, then this was considered non-compliant.

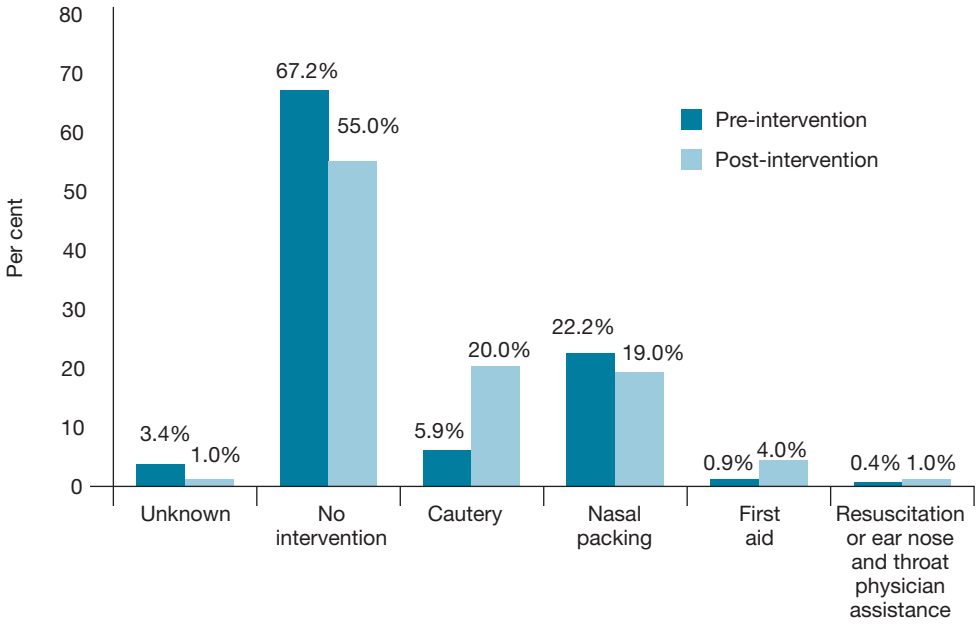

Figure 1. Final interventions performed.

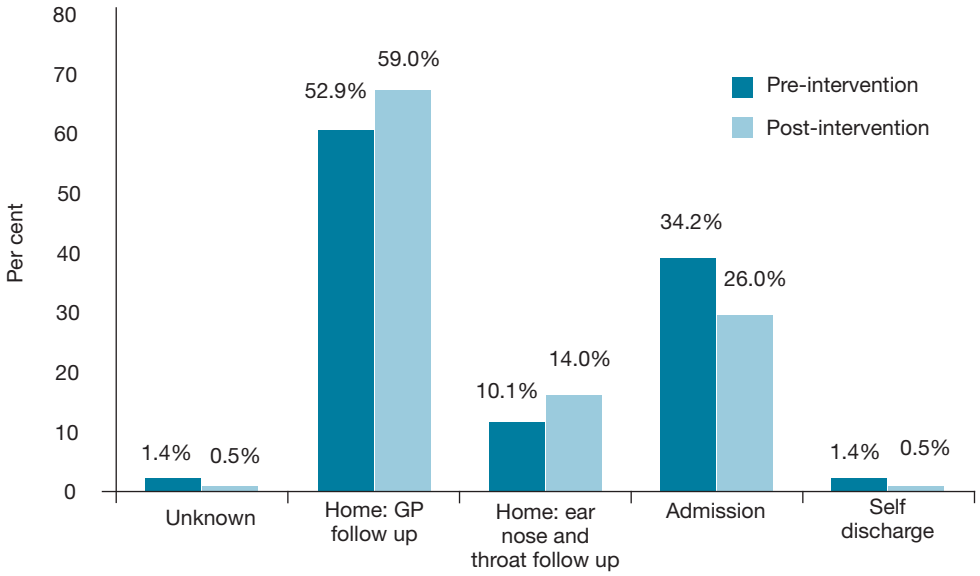

Figure 2. Treatment pathways for patients.

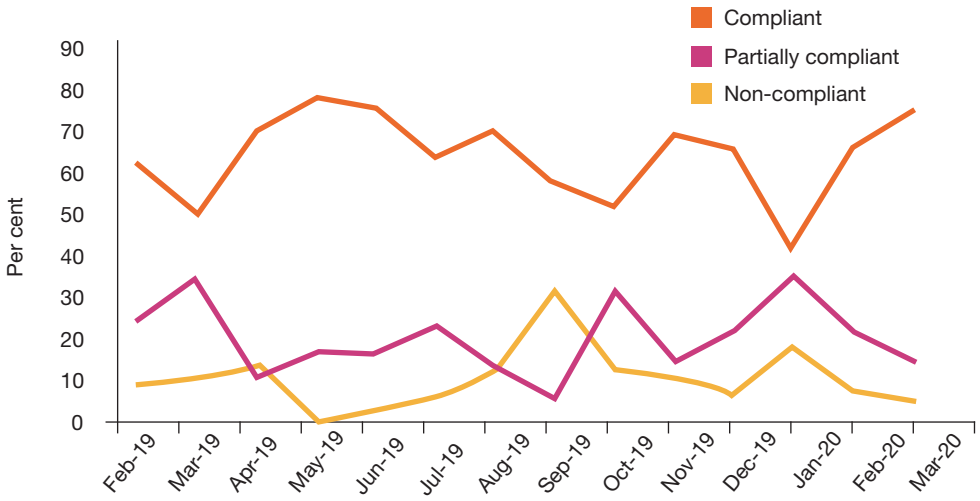

Figure 3. Staff compliance with the pathway.

Discussion

The pre- and post-intervention groups were well matched, meaning that the data collected can be attributed to the intervention, rather than other variables.

The minor increase in use of anticoagulants in the post-intervention group may have led to patients presenting with epistaxis that is more challenging to manage, given the prolonged bleeding times associated with anticoagulants, or to more index presentations or repeat attendances within 7 days as a result of recurrent haemorrhage. Despite this, overall positive results were seen.

The increased time in the emergency department (on average of 14 minutes) is to be expected, given that the emergency department practitioners are doing more interventions and providing more information, both verbally and in the form of patient information leaflets, than before the intervention. This is not viewed negatively, as a compromise should be met between taking more time to provide a better level of care and reducing avoidable admissions and transfers. The emergency department breach did increase by 5% after the intervention, but this may be multifactorial (eg increasing emergency department pressures annually, staff illness and other factors). While this should be noted and acknowledged, it seems unlikely that the pathway is the reason why the breach rate increased and cannot be controlled for.

Key points

- Simple interventions and a pathway with training can provide notable improvements in patient care for epistaxis patients.
- Staff engagement with new models of care is challenging within the emergency department where the staff change often.
- Nasal cautery can be easily taught and retained by staff to abate epistaxis with little cost, and this can reduce admissions.

The 8.2% reduction in admissions resulting from use of this pathway where an admission is on average 1.5 days equates to approximately 56 bed days saved. The minimal initial costs to set up this pathway are offset by cost savings from the reduction in bloods being taken and processed, combined with the reduction in admissions and emergency ambulance transfers.

Being managed and discharged is much better for the patient than having a prolonged stay in the emergency department or an emergency ambulance transfer to a hospital 23 miles away with an uncomfortable nasal pack.

Finally, staff compliance with the pathway varied monthly, as shown in Figure 3; this is the biggest factor determining the efficacy of the pathway, but is the hardest to control. Staff compliance is influenced by factors that include the changing workforce in the emergency department, difficulty assembling for teaching, junior doctor rotations, staff grades moving to training posts, staff vacancies, staff sickness, staff engagement and willingness to change practice.

Overall, the introduction of a new pathway for managing non-traumatic epistaxis in the emergency department has been a success. Patients are given more definitive care at the index presentation by the emergency department and fewer patients are admitted and transferred, which all leads to cost savings for the wider healthcare system. In addition, the emergency department trolleys and hospital beds that are then not occupied by epistaxis patients can be provided to other patients attending emergency departments and requiring admission, thus reducing emergency department crowding and 'bed-blocking'.

This approach could easily be tailored to other emergency departments in the UK or internationally. The key to success is staff engagement with change to their practice.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

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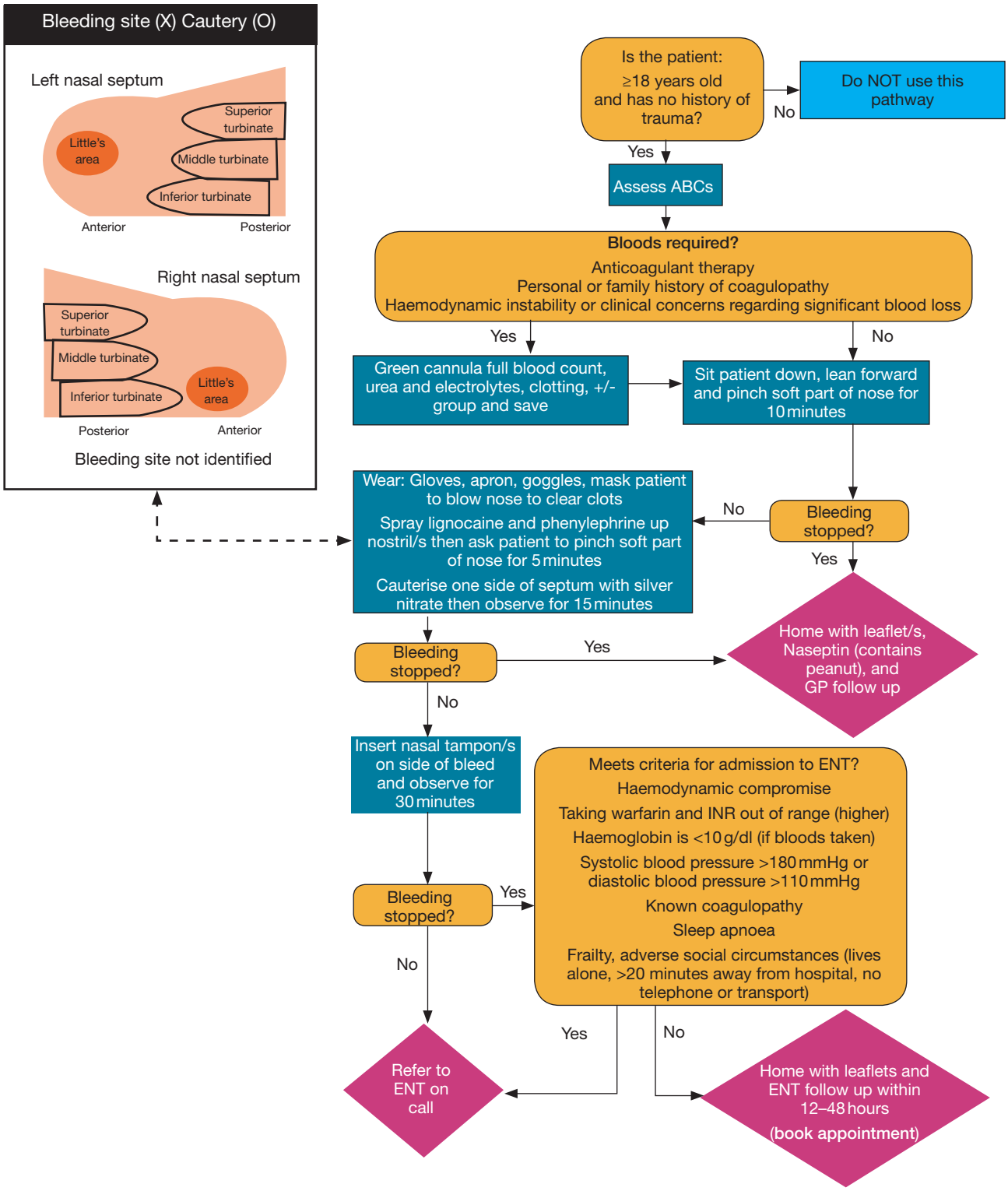
Appendices

Appendix 1. Pathway for management of adult non-traumatic epistaxis. ABC = airway, breathing, circulation; ENT = ear nose and throat; INR = international normalised ratio.



Appendix 2. Layout of the epistaxis drawer. As well as this, the additional equipment required is silver nitrate cautery sticks (locked away in drug room away from cotton bud sticks to avoid confusion as per Royal College of Emergency Medicine (2019) safety alert). Lignocaine 5%/phenylephrine 0.5% spray in drug room as prescription only medicine. Headlight in drug room for security and charged ready for use.