INVESTIGATING PRESCRIBING ERRORS IN SALBUTAMOL NEBULISERS FOR ACUTE ASTHMA PATIENTS AGED 5 AND ABOVE IN A DISTRICT GENERAL HOSPITAL

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Aims Prescribing and managing acute Paediatric presentations in A&E varies on experience and confidence of clinicians, availability of trained nursing staff and using correct guidelines. Coupled with recent pressures from Covid-19, this can increase prescribing errors and incorrect management of patients. This audit investigated prescribing errors against the Trust’s latest Acute Asthma guidelines for patients aged five and above in Scarborough Hospital’s A&E department to determine levels of safe and correct prescribing in severe/life threatening asthma.

Methods Data was interrogated from A&E admissions between 1st September to 31st December 2021, for patients treated for Severe/Life Threatening Asthma, or allergic reactions needing nebulisers. Patients with viral wheeze, no nebuliser prescriptions on admission (CAS) cards, and presenting to A&E as mild/moderate asthma but were severe/life-threatening in ambulance were excluded. 47 patients were produced, and 21 were used after matching the Trust’s Acute Asthma guideline (figure.1) [1].

Results Findings show almost every patient requiring nebulisers received them; however there were fewer than expected patients receiving correctly prescribed nebulisers that met the guidelines (figure 2). This appeared to be due to smaller than required nebuliser doses or being transferred when they required a further set of nebulisers.

Further analysis identified when a Paediatric ED nurse was on shift there were substantially more correct prescriptions (figure 2). This indicates the importance of having Paediatric trained nurses in A&E departments to help cross-check prescriptions. The 19% of patients where Paediatric ED nurses were present who had incorrect prescriptions was from smaller prescribed doses of nebulisers than required.

Investigating prescribing errors and clinician grade highlighted there were more common errors among Registrar doctors, and fewer among Foundation Doctors, ACCS and GP trainees (figure 3). These again account for smaller nebuliser doses being prescribed for five year old patients, possibly from following the 2019 guidelines stating 2.5mg Salbutamol nebulisers were for two to five year olds [2].

Finally some patients failing the guidelines highlighted concerns, mainly in the delay of giving nebulisers in an adequate timeframe. These included initial nebulisers being prescribed but no follow up nebulisers being given quick enough.

Conclusion This Audit shows the importance of having confident and experienced Paediatric trained clinicians in A&E, as well as showing that the presence of Paediatric ED nurses improves safe prescribing. It also highlights difficulties in keeping up-to-date with latest guidelines as registrar grades showed more deviation away from current guidelines than junior staff, showing their reliance on previous experience. Follow up will include auditing the department while incorporating a modern prototype laminated flipbook for acute/emergency Paediatric presentations following standardised WETFLAG numbers, conditions, and management requirements all by age and cross checked by Paediatric ED nurses to improve confidence and prescribing in A&E staff as well as teaching sessions for new starters to the department highlighting where to find departmental guidelines.

[1] Protocol for the Management of Acute Asthma in Children 5 years and over, Authors Felicity Dick, Paediatric ED Sister & Jen Brownbridge, Paediatric Respiratory Nurse

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Monitor & Drugs
Figure 1. The York and Scarborough Teaching Hospital’s Protocol for the Management of Acute Asthma in Children 5 years and over, showing the strict selection criteria used for determining if our patients were Severe or Life-Threatening and if these patients followed the correct management plan.
Abstract 1273 Figure 2 and 3


EVALUATING THE FEASIBILITY OF SCREENING FOR HYPERTENSION IN THE PAEDIATRIC EMERGENCY DEPARTMENT

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Aims Attendances at the Children’s Emergency Department (CED) are an excellent opportunity for health promotion and screening, but this activity has to be balanced against the core business of treating seriously ill or injured children. Following a case where life-threatening hypertension was identified in a child attending for an unrelated matter, we wanted to explore if it was feasible to automate the screening for hypertension in children attending the ED from their triage observations using simple age-based thresholds.[1] As children do not routinely have their height measured in ED, we also sought to assess if the inclusion of weight as a proxy for height centile could be used to improve precision.

Methods We extracted the weight, age, gender and blood pressures at triage for all children aged over one year attending our tertiary paediatric emergency department between May 2019 and August 2021. Recordings over 400mmHg or less than 50mmHg were assumed data entry errors. Measurements were assessed against the American Academy of Pediatrics (AAP) systolic blood pressure ‘values for further evaluation.’ (based on the 90th centile BP for 5th centile height) using age and gender and the 90th, 95th, 95th +12mmHg thresholds for age, gender and weight centile as a proxy for height.

Results From 87,000 attendees, 34,062 had an electronically recorded blood pressure available. After cleaning the data, 21,737 systolic blood pressure data points were identified. Using the screening tables 57.0% (95%CI 56.3-57.7) triggered as possibly hypertensive. Using weight as proxy for height and the 90th centile for BP reduced this to 42.7% (95%CI 42.1- 43.4). Alternative thresholds reduced this further 95th 30.3% (95%CI 29.6-31.0) and 95th+12mmHg’ to 7.2% (95%CI 6.9- 7.6) (figure 1).

Conclusion When measured in the stressful environment of the CED, more than half of children are recorded as having high blood pressures. Our data suggest that the published AAP’s ‘recommended values for further evaluation’ whilst reported to have a 99% negative predictive value [2] would be an inefficient threshold for identifying paediatric patients with significantly high blood pressures, potentially doubling the number that should be measured. Using the threshold of 95th +12mmHg is more practical, identifying 7% of children with potentially stage 2 hypertension. We are now comparing these data against known hypertensive patients in our cohort to derive the sensitivity/specificity and plan to explore implementing this screen as an automated alert in our Electronic Patient Record.

REFERENCES
2. Simple table to identify children and adolescents needing further evaluation of blood pressure. Pediatrics. 2009;123(6), Kaelber DC, Pickett F.