



The Impact of Changing from Prednisolone to Dexamethasone for the Management of Wheeze in Children- A Service Evaluation

**James Thyng¹, Lynn Cunningham², Susanne McKinley², Felix Hay²,
Catherine Nunn² and Damian Roland^{2,3*}**

¹*Northampton General Hospital, Cliftonville, Northampton, NN1 5BD, England.*

²*Children's Emergency Department, Paediatric Emergency Medicine Leicester Academic (PEMLA) Group, Leicester Royal Infirmary, Leicester, LE1 5WW, England.*

³*SAPPHIRE Group, Health Sciences, Leicester University, Leicester, England.*

Authors' contributions

This work was carried out in collaboration between all authors. Author DR designed the study; author JT performed the statistical analysis and wrote the first draft of the manuscript. Authors LM, SM, FH and CN undertook initial analyses of the study. Author JT managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JAMMR/2021/v33i1230941

Editor(s):

(1) Dr.Chan-Min Liu, Xuzhou Normal University, PR China.

Reviewers:

(1) Hagi Bogdan-Alexandru, Alexandru Ioan Cuza University of Iasi, Romania.

(2) Karishma Rajbhandari Panday, B. P. Koirala Institute of Health Sciences, Nepal.

(3) Enmanuel Jimenez Castro, Hospital San Juan De Dios, Chile.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/68823>

Short Communication

Received 20 March 2021

Accepted 24 May 2021

Published 26 May 2021

ABSTRACT

Dexamethasone has become a popular alternative to Prednisolone as an oral steroid used for wheeze in children in many Paediatric Emergency Departments. It has proved non-inferior to Prednisolone in several studies [1,2] and its main advantages are single dose requirement and greater tolerability in children [3,4]. However, to the best of our knowledge there are no studies looking into the differences in re-attendance rates. Using our local Electronic Health Records, we extracted data of all over 5-year olds presenting with asthma and wheeze for 21 months of Prednisolone data and 15 months of Dexamethasone and found no statistically significant increase in re-attendance rates.

*Corresponding author: E-mail: Damian.Roland@uhl-tr.nhs.uk;

Keywords: Asthma; corticosteroids; dexamethasone; prednisolone; wheeze.

1. BACKGROUND

Oral steroids were often prescribed to children who present to the Paediatric Emergency Department (PED) with asthma or wheezing. Prednisolone was the common oral steroid of choice, but non expensive versions have a chalky, unpalatable taste and induce vomiting in children. It was the most common reason for discontinuing steroid treatment [3]. Dexamethasone is an obvious alternative, being well tolerated by children [4] and still proving non-inferior in the management of childhood asthma and wheeze [1].

2. OBJECTIVE

We aimed to determine if using single dose Dexamethasone rather than a 3-day course of Prednisolone impacted the 7-day re-attendance rate to the Paediatric Emergency Department.

3. METHODS

Following recent studies [3-5] our large (> 60,000 presentations per annum pre the SARS-CoV 2 pandemic) Paediatric Emergency Department made a decision in October 2018 to switch from a three day course of oral Prednisolone to a single dose of 0.6mg per kg oral Dexamethasone (non-diluted) as first line oral steroid for children presenting with reversible (excluding pre-school viral) wheeze. To ensure only Dexamethasone was used oral Prednisolone was removed from the department.

Using our local Electronic Health Records, we extracted data of patients over 5 years olds presenting with asthma and wheeze. We collected data of 21 months of Prednisolone and 15 months of Dexamethasone. No funding was received for this project. Patients and public were not involved in the design, data gathering, analysis or distribution of this research.

The department uses an electronic health record system which records information covering patient demographics, episode, clinical presentation and discharge information. From this we were able to extract presenting problem, age and clinical discharge information in an anonymised fashion and determine if these

children re-presented to the PED within 7 days with the same presenting problem.

We extracted all attendances presenting with asthma or wheeze between the age of 5 and 16, for 21 months before the medication change (PRE group) and 15 months after (POST group). We did not know which children received steroid therapy but instead chose to look at the entire group to determine if changing from Prednisolone to Dexamethasone had a global impact on re-attendance rates. We chose to look at only children over 5, knowing that although some children less than 5 may receive oral steroid therapy this would be a minority as the use of oral steroids in pre-school wheeze is controversial [6].

4. RESULTS

We found no significant increase in re-attendance rates.

In the PRE group there were 1085 asthma and wheeze attendances. There were 33 re-attendance within 7 days, a rate of 3.04% (Confidence Interval 2.00-4.08). In the POST group there were 1078 attendances and 53 reattendances with-in 7 days, a rate of 4.92 (CI 3.60- 6.24).

Additionally, in the Leicester Royal Infirmary, in a convenience sample of 92 children we determined 27 vomited following oral Prednisolone therapy (29.3%).

5. CONCLUSION

Given the benefits of single dose Dexamethasone in simplified dosing and tolerability in children, we show oral Dexamethasone can be effectively used in the PED for children over 5 presenting with asthma and wheeze without increasing 7-day reattendance rates.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Volk A, Marton S, Richardson B, Rauda L, Schwarzwald H, Naik N. Oral Dexamethasone to Control Wheezing in Children at an Outpatient Clinic. *Clinical Pediatrics*. 2018;58(2):151-158.
2. Cronin J, Kennedy U, McCoy S, an Fhailí S, Crispino-O'Connell G, Hayden J et al. Single dose oral dexamethasone versus multi-dose prednisolone in the treatment of acute exacerbations of asthma in children who attend the emergency department: study protocol for a randomized controlled trial. *Trials*. 2012;13(1).
3. Aljebab F, Choonara I, Conroy S. Systematic review of the toxicity of short-course oral corticosteroids in children. *Archives of Disease in Childhood*. 2016;101(4):365-370.
4. Aljebab F, Alanazi M, Choonara I, Conroy S. Observational study on the palatability and tolerability of oral prednisolone and oral dexamethasone in children in Saudi Arabia and the UK. *Archives of Disease in Childhood*. 2017; 103(1):83-88.
5. Creasey N. G252(P) Dexamethasone as an alternative to prednisolone for children with wheeze: A review of the literature. *Archives of Disease in Childhood*. 2016;101(Suppl 1):A137-A138.
6. Bush A, Grigg J, Saglani S. Managing wheeze in preschool children. *BMJ*. 2014;348(feb04 16):g15-g15.

© 2021 Thyng et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<http://www.sdiarticle4.com/review-history/68823>