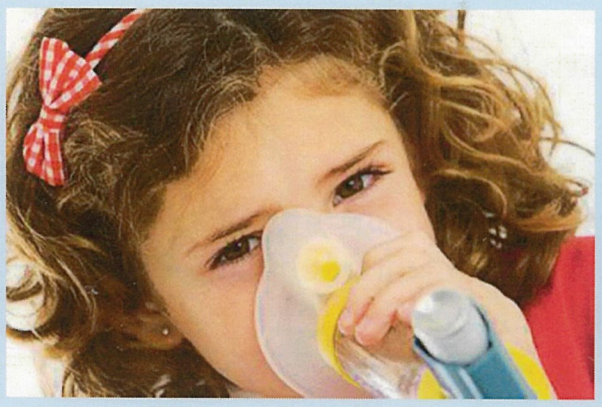

Choose Inhaler with Spacer over Nebuliser Treatment for Asthma Attacks in Children

By Tarn Neuman

Introduction

To investigate this topic a literature review was conducted into the research surrounding the question; 'In children who are experiencing an acute asthma exacerbation is using a nebuliser a more effective administration method of beta-agonist medications for controlling symptoms and sustainability when compared with administration by measured-dose inhaler and spacer?'.

Why Consider this Question?

Asthma is a significant contemporary health issue affecting the lives of one in seven New Zealand children (Asthma Foundation, 2014). Treatment for these children comes at significant economic, time and emotional cost to the children, their families, and to the health care system. With the specific clinical settings affected including hospital emergency departments, respiratory wards, and paediatric wards across New Zealand. To minimise this cost investigation into the most sustainable and effective administration method has been summarised below.

Inhaler and Spacer

Benefits of using a metered dose inhaler and spacer:

- Portable (can be carried at all times by patient which can provide earlier treatment and reduce hospital admissions from asthma exacerbations).
- Less expensive (no ongoing maintenance and less up front cost) (Kirley & Nguyen, 2014).
- Can be reused multiple times by a client and cleaned with household detergent and water (Smith & Goldman, 2012).
- Less side effects noted in children in studies comparing MDI and nebuliser treatment methods (Kirley & Nguyen, 2014).

Disadvantages:

- Correct technique needed for optimal administration of drug (Cates, 2003).

Nebuliser

Benefits of using nebulised Beta-agonist medications:

- Can be used for extended periods of time administering large doses of the drug (Bryant & Knights, 2011).
- Effective administration through passive inhalation with a face mask (no need for specific techniques) (Smith & Goldman, 2012).

Disadvantages:

-Higher dose (us to25 times the dose in an inhaler) (Cates, 2003).

- Requires power source or supply of compressed supplemental oxygen.
- Higher cost (for equipment purchase, regular maintenance and staff time) (Smith & Goldman, 2012).

Recommendation

From the literature summarised above it is recommended that the preferred method of treatment administration is to choose a metered dose inhaler to provide beta-agonist medication, in preference to using a nebuliser for the same medication. This is recommended due to the equal reduction of symptoms between the two methods, but with the inhaler method causing less side effects, being more user-friendly and proving to be more sustainable in practice.

References:

Asthma Foundation. (2014). 2014 Asthma Information. Wellington, NZ: The Asthma Foundation New Zealand.

Bryant, B. J., & Knights, K. M. (2011). Pharmacology for health professionals (3rd ed.). Chartswood, NSW: Mosby Elsevier

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Kirley, K., & Nguyen, L. (2014). Think twice about nebulizers for asthma attacks. The Journal of Family Practice, 63(6), 321-323. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/24037768

Smith, C., & Goldman, R. D. (2012). Nebulizers versus pressurized metered-dose inhalers in preschool children with wheezing. Canadian Family Physician, 54, 528-530. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/

Weisenberger, J. (2013, April). Asthma Child [Digital image]. Retrieved May 9, 2016, from http://38.98.131.40/kids/article.aspx?id=6442476349

Rationale:

The high levels of asthma prevalent in contemporary New Zealand society led me to investigate, through a literature review, the comparison between metered dose inhalers, and nebulisers, for treatment of childhood asthma attacks. A poster was chosen as the preferred method of presentation of this information as it provided a media that can be efficiently shared with those doctors and nurses who commonly prescribe and administer exacerbation treatment to children in hospital settings. Having a quick, easy-to-read summary of the comparison between the two commonly used methods, and a clear identification of the preferred choice, allows health professionals to read, and use, the information without taking up more time than they may have available to sit down and read a large document on a busy shift. With a professional target audience it is important that the information is presented in a clear and professional manner.

The placement of this poster to provide this information would ideally be in staff rooms and/or on staff notice boards, and possibly displayed on online hospital websites or information forums. This would allow exposure of the information to doctors and nurses who may be working directly with asthmatic child patients, aiming for benefits to be felt directly and immediately by the patients, their families and by the hospital.

PICOT Model:

The question investigated in the literature review is: In children who are experiencing an acute asthma exacerbation, is using a nebuliser a more effective administration method, of beta-agonist medications, for controlling symptoms and sustainability, when compared with administration by measured-dose inhaler and spacer? This was developed through use of the PICOT model (Schneider & Whitehead, 2013).

PICOT category	Information relating to question	Explanation
Population	The chosen population identified was children who are being treated in a hospital ward or emergency department setting for an acute asthma exacerbation.	In New Zealand one in every seven children suffers from asthma. Although many of these cases are able to be controlled with preventer medications, many of these children each year end up in hospitals suffering from acute exacerbation (Asthma Foundation, 2014).
Intervention	Children who are treated with beta agonist medications administered through a nebuliser.	Investigation will be carried out into how effective and sustainable this method of this treatment is for children who are experiencing an acute asthma exacerbation in a hospital setting.
Comparison	Children who are treated with beta agonist medications delivered through a metered dose inhaler with a spacer device.	While nebulisers are one method of administration, another option commonly used in New Zealand hospitals is using an inhaler and spacer, the literature review investigates comparisons between this method and nebulisation.
Outcome	Identification of the treatment administration method that was considered to be the most effective and sustainable.	The outcome of comparing the two administration methods determines which method (if one is identified as superior) is considered to be the best method to use in this clinical situation to improve sustainability and patient outcomes.
Time	Not applicable.	The treatment times for individual patients in studies was only one of the number of factors compared between the two methods investigated and not seen as a contributor to the search question.

References:

Asthma Foundation. (2014). *2014 Asthma Information*. Wellington, NZ: The Asthma Foundation New Zealand.

Schneider, Z., & Whitehead, D. (2013). *Nursing and midwifery research: Methods and appraisal for evidence-based practice* (4th ed.). Chatswood, N.S.W.: Elsevier Australia.