Project Title

Nurse-Initiated Nebulisation in the Emergency Department

Project Lead and Members

Project lead: Nur Shahilla Binte Adam

Project members: Nur Fadilah Binte Jubir, Jessica Lee Shu Ting and Lim Siew Lian

Organisation(s) Involved

Ng Teng Fong General Hospital

Healthcare Family Group Involved in this Project

Nursing

Applicable Specialty or Discipline

Emergency Medicine

Project Period

Start date: Dec 2017

Completed date: Dec 2018

Aims

- Develop a protocol to allow triage-trained nurses to assess, auscultate, order and provide nebuliser therapy without a physician's order.
- To implement the administration of nebuliser as per protocol.
- To evaluate the effectiveness of the protocol – measuring the door to treatment time

Background

See poster attached/ below

Methods

See poster attached/ below

Results

See poster attached/ below

Lessons Learnt

Incorporating the protocol permanently within the ED helps to sustain the project. The team can continue to explore other areas in the management of Acute Asthma Exacerbations (AAE) such as patient education to help improve patient outcome and staff satisfaction.

Conclusion

See poster attached/ below

Project Category

Care & Process Redesign, Quality Improvement, Access to Care, Value Based Care, Safe Care

Keywords

Nurse-initiated Neublisation, Acute Asthma Exacerbations, Emergency Department

Name and Email of Project Contact Person(s)

Name: Lim Siew Lian

Email: siew_lian_lim@nuhs.edu.sg

NURSE-INITIATED NEBULISATION IN THE EMERGENCY DEPARTMENT

MEMBERS: ADAM, N. S., JUBIR, N. F., LEE, S. T. J., & LIM, S. L

- ❑ SAFETY
- ☑ PRODUCTIVITY
- ❑ PATIENT EXPERIENCE
- ❑ QUALITY
- ☑ VALUE

Define Problem/ Set Aim

Asthma is a common chronic disease and major health problem in Singapore (Koh et al., 2017). Patients with asthma contribute to a high disease-specific healthcare burden and costs which includes direct cost of emergency care, inpatient and outpatient services and treatment (WHO, 2016).

Asthma involves an inflammation and narrowing of airways, characterized by recurring periods of wheezing, chest tightness, shortness of breath and coughing. Patients facing acute asthma exacerbations (AAE) may face symptoms that are fatal and often require emergency medical treatment in the Emergency Department (ED).

Multiple treatment modalities have been demonstrated to significantly decrease the severity of AAE and reduce the need for hospital admission. These include the administration of nebulisation, an aerosol-based medicine which is inhaled directly into the alveolar to dilate the airway (Garrett et al., 2016).

Studies have shown that early initiation of AAE therapies can improve time to discharge and time to clinical improvement when patients are started on nebulisation therapy early at initial nurse triage (Sheldon et al, 2018). Therefore, the role of nurses are vital in ED as they are often first to assess patients and support clinical management by ensuring relevant treatment is being prioritized and given at triage.

Aims:
Based on the literature findings, a Quality Improvement (QI) workgroup was set up to recommend measures for improvement;

- ✓ ***Develop a protocol to allow triage-trained nurses to assess, auscultate, order and provide nebuliser therapy without a physician's order.***
- ✓ ***To implement the administration of nebuliser as per protocol.***
- ✓ ***To evaluate the effectiveness of the protocol – measuring the door to treatment time***

Establish Measures

In this QI project, a protocol was introduced to enable triage-trained Registered Nurses (RNs) of Ng Teng Fong General Hospital's (NTFGH) ED to order and administer first dose of nebuliser therapy for patients presenting with shortness of breath and wheezing/rhonchi.

Trial runs were conducted between December 2017 to December 2018.

As part of the trial process, each triage-trained RNs were required to complete a Competency Checklist for Performing Nurse-Initiated Nebulisation before they could participate

Analyse Problem

Thereafter, a Patient Assessment Logbook *(Figure 1.)* was distributed to each RNs, of which they needed to accomplish ten cases of nurse-initiated auscultation and order of nebulisation during triage.

Each cases had to be assessed and vetted by either a Resident Physician, Consultant or Senior Consultant on duty.

When both competency checklist and logbook have been successfully completed, the RN can independently order nebulisation at point of triage.

At the end of the trial period, a comparative study was conducted to evaluate the effectiveness of the protocol in improving patient's care by measuring the door to treatment time.

Case: Date:

Description of case	Score (visual analogue scale). Reason for the score
Situation (what is the patient's problem or what you found)	0 ——— 100
Background (brief information or related past history/medication)	0 ——— 100
Assessment (vital signs, clinical findings, what you think the key problems/needs are)	0 ——— 100 Assessment complete / incomplete Knows limitations:
Recommendation (Plan/Action to take/undertaken, request, clarify, offer)	0 ——— 100 Knows when: Knows how:
Learning Points:	

Comments/Outcome:

Time taken:

Assesor: Date:

Figure 1. Patient Assessment Logbook for triage-trained RNs.

Select Changes

The nurse-initiated nebulisation protocol will be initiated at PAC 3 Triage and PAC 2 Centralised Triage areas and will follow the workflow presented in the figure below.

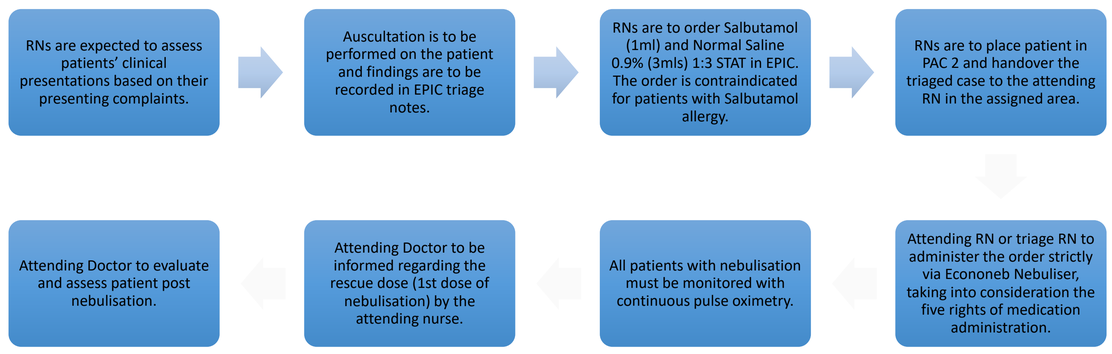

Figure 2. Protocol Workflow

Test & Implement Changes

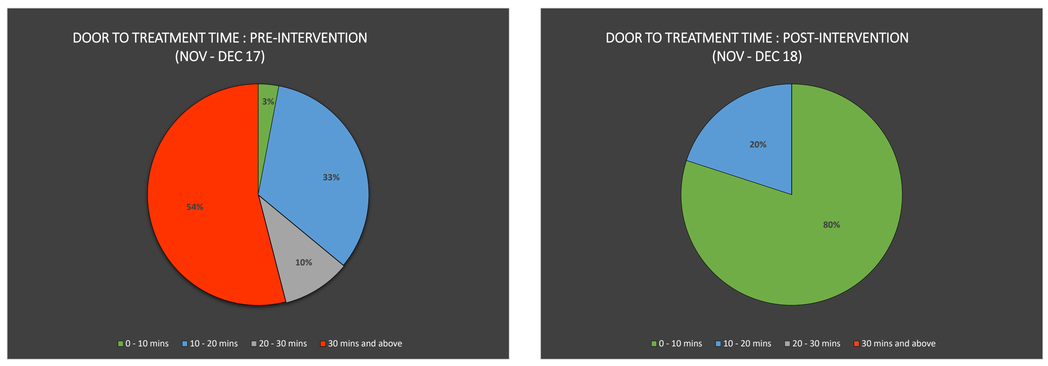

Figure 3. Comparison of Door to Treatment time Pre and Post-intervention.

- The effectiveness of the intervention on door to treatment time was evaluated by comparing time taken for 30 randomized patients pre-intervention stage (Nov –Dec 2017) and 30 randomized patients post-intervention stage (Nov –Dec 2018) to be administered nebuliser therapy after their registration time.
- Generally, nurse-initiated nebulisation at triage greatly reduced door to treatment time of patients requiring first-line treatment of AAE in ED.

Spread Change/Learning Points

In summary, the protocol has shown a commendable result indicating its effectiveness in improving the time taken for patient to receive treatment which ultimately contributes to improvement in patient care. As part of sustaining the project, the protocol can be incorporated permanently within the ED. RNs who have had participated in the trial shall continue to order nebulisation as per workflow while subsequent batches of newly triage-trained RNs shall undergo the similar process of having to complete both the competency checklist and logbook before they can singly order nebulisation.

In future, work processes to help improve patient outcome and staff satisfaction can be further refined if the team can explore other areas in the management of AAE such as patient education as part of discharge process.

References:

1. *Koh, M. S., Yii, A. C., & Ong, Y. Y. (2017). Asthma in Singapore: past, present and future.*
2. *World Health Organization (2017) Chronic Respiratory Diseases: Asthma. www.who.int/respiratory/asthma/en/*
3. *Garrett JS, Daoud YA, Gicheru E, D'Etienne J, Hart MK, et al. (2016) The Impact of Standardizing Assessment and Treatment of Acute Asthma Exacerbations on Emergency Department Efficiency. J Emerg Med Trauma Surg Care 3: 013.*
4. *Sheldon, G., Heaton, P. A., Palmer, S., & Paul, S. P. (2018). Nursing management of paediatric asthma in emergency departments. Emergency Nurse, 26(4).*

Ng Teng Fong General Hospital
Jurong Community Hospital
Jurong Medical Centre
Members of the NUHS