

Project Title

“I Prevent Pneumonia” – Pneumonia Prevention Project

Project Lead and Members

- NC Zhang Ran
- NO Ma Kris
- SSN Kalayar
- SSN Dante, SN Mark John
- SN Alvernia
- SNA Joy Sugi

Organisation(s) Involved

Bethany Nursing Home

Healthcare Family Group(s) Involved in this Project

Nursing

Applicable Specialty or Discipline

Nursing Home Residents

Project Period

Start date: Dec 2019

Completed date: Jun 2022

Aim(s)

- Reduce the rate of pneumonia per 1,000 resident days by 20% over 3 years
- To train at least 80% of all direct care staff in pneumonia prevention and management by the end of the project

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Lessons Learnt

This project has been meaningful and fulfilling for the team even though we faced difficulties and challenges when embarking on this - e.g. resolution on proper feeding position, finding time to train all staff, sustaining staff motivation.

We drew inspiration from this quote - “Coming together is the beginning. Keeping together is progress. Working together is Success.” Hence, the main factor that contributed to the success of the project was working together as a team - not just within the nursing team, but also working collaboratively with other departments, e.g. Allied Health and Operation staff. Alone we can do so little; together we can do much more. With talents and contribution from each team member, no obstacle was insurmountable. We are also thankful to our management and AIC for their continuous support and guidance rendered to us throughout this project.

Conclusion

See poster appended/ below

Additional Information

Community Care Excellence Awards 2022: Clinical Quality Silver Award

Project Category

Care & Process Redesign

Quality Improvement, Job Effectiveness

Care Continuum

Intermediate and Long Term Care & Community Care, Nursing Home

Keywords

Pneumonia Prevention Care Bundle

Name and Email of Project Contact Person(s)

Name: Ms Zhang Ran

Email: zhangran@mws.sg

BACKGROUND

Pneumonia is one of the leading causes of morbidity and mortality from infection in elderly patients¹. Nursing Home residents are at high risk as they have more functional disabilities and underlying medical conditions. Recognition of signs and symptoms of pneumonia may be delayed as it may not present with fever, cough, or dyspnoea.²

In our Nursing Home, pneumonia prevention remains a key priority as many of our residents are elderly, frail and at high risk of developing pneumonia. From Mar to Aug 2019, there were 30 pneumonia cases in our 303-bed nursing home. Of which, 83% (25 out of 30) were hospitalized. Thus, early identification and prevention of pneumonia is critical to mitigate the numbers.

PROJECT GOALS

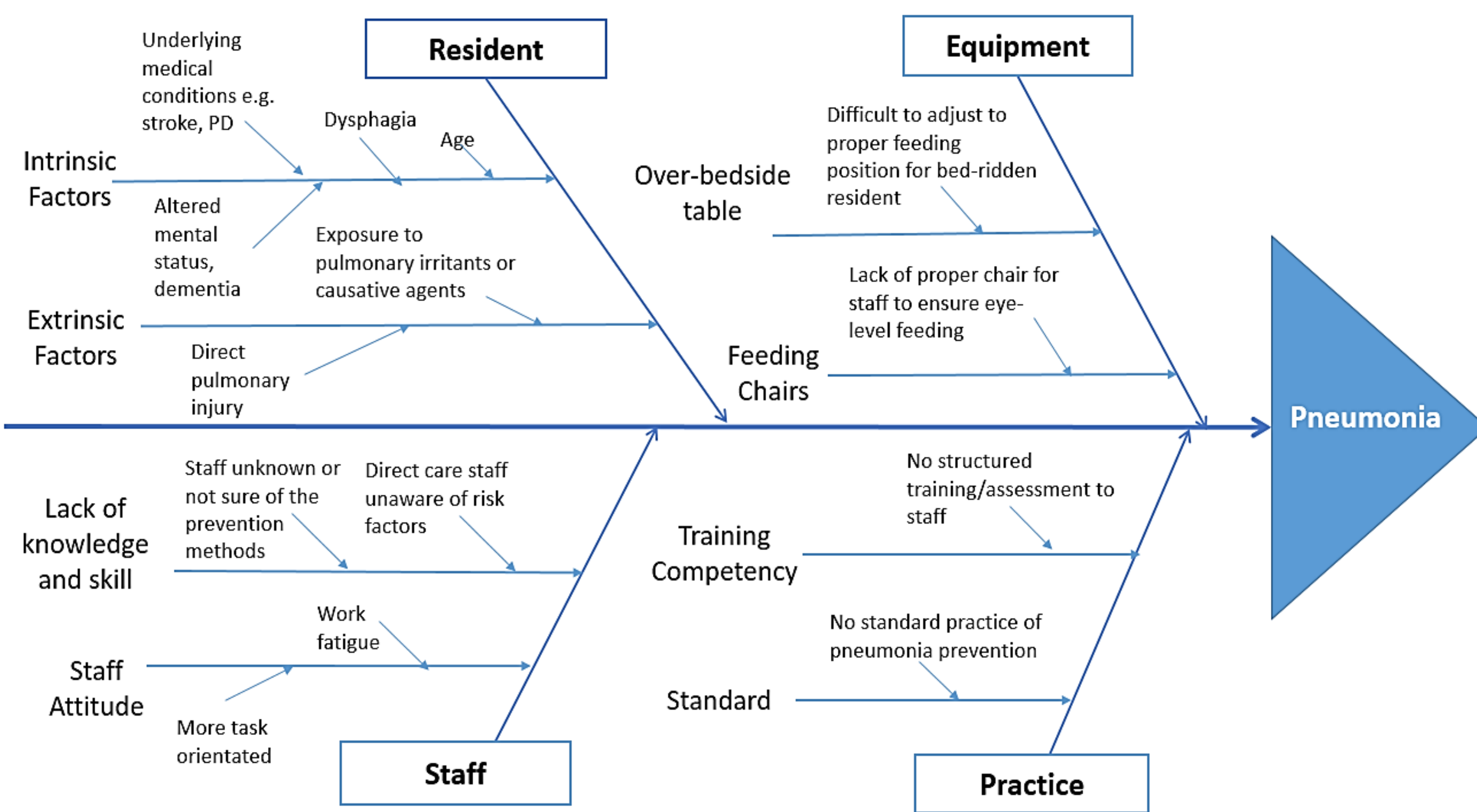
In this project, we aim to achieve the following goals:

1. Reduce the rate of pneumonia per 1,000-resident days by 20% over 3 years.
2. To train at least 80% of all direct care staff in pneumonia prevention and management by the end of the project.

ANALYSIS

Root Cause Analysis was performed using the Cause-and-Effect Diagram as shown in Figure 1 below:

Figure 1: Cause-and-Effect Diagram for occurrence of Pneumonia



SOLUTIONS AND IMPLEMENTATION PLAN

Based on the root causes identified, the team brainstormed various solutions. These solutions were evaluated for effectiveness, ease of implementation and sustainability.

Using the PICK chart, the team decided to implement the following solutions:

1. Start staff training in pneumonia prevention using interactive training methods e.g. demo, return demo, etc.

2. Implementation of Pneumonia Prevention Care Bundle (See Figure 2). We used "I Prevent Pneumonia" as a tagline for staff to easily remember its contents. Care bundles were applied to residents with 2 or more pneumonia risk factors as they are deemed to be at high risks of acquiring pneumonia. For residents with low risks, staff would continually assess if there are any change/s in their current conditions and apply the care bundle (as and when required).

Figure 2: Components of Pneumonia Care Bundle

Care Bundle Tagline: I Prevent PNEUMONIA

- Infection Prevention
- Pneumonia Alert
- Nutrition
- Education/Training
- Utensils & Oral feeding
- Mobility/ Chest Physio
- Oral Health/Care
- NGT Feeding
- Immunization
- Alert for dysphagia

MWS Bethany Nursing Home-Choa Chu Kang

Pneumonia Risk Factors:

- Age 65 and above
- History of Stroke/Dementia/ Alzheimer's/Parkinson's Disease/Mental Retardation
- Medication can cause drowsiness
- NOT tube feeding
- Overage/NGT feeding
- High Risk (More than 2 presents or have dysphagia/AOR feeding) → start use IPPCB
- Low Risk (Less than 2 presents) → Monitor for dysphagia and continue current practice

I Prevent Pneumonia Care Bundle (IPPCB)

Done by: _____ Date: _____

Infection Prevention	<input type="checkbox"/> Hand Hygiene (HH) <input type="checkbox"/> HH Practice <ul style="list-style-type: none"> 4 moments for HH <input type="checkbox"/> Cough etiquette
Pneumonia Alert	<input type="checkbox"/> Early detection (tick and circle as relevant) <input type="checkbox"/> Monitor changes of behaviour (e.g. fatigue/lethargic, sudden restlessness, refuse to sit out of bed, loss of appetite, refusal to eat/drink, fever, cough, sweating, chills and pallor, SPO2) <input type="checkbox"/> Monitor for other signs of infection (e.g. loss of consciousness) (at least 1 per 4hrs) <input type="checkbox"/> Early escalation <input type="checkbox"/> To alert Dr asap (Recommend to review and start antibiotic within 4hrs)
Nutrition	<input type="checkbox"/> Monitor weight monthly <input type="checkbox"/> Monitor oral intake <input type="checkbox"/> Weight loss of >5% over 3 months <input type="checkbox"/> TTM nutritional screening tools, stored <input type="checkbox"/> Newly start NGT/PEG feeding
Education/Training	<input type="checkbox"/> Educate resident/NGH/Volunteers/Visitors/Housekeeping (circle & tick as relevant) on: <input type="checkbox"/> HH & Cough Etiquette <input type="checkbox"/> Feeding techniques <input type="checkbox"/> Food texture and fluid consistency <input type="checkbox"/> Signs of dysphagia → inform staff if observed

Utensils & Oral feeding	<input type="checkbox"/> Food Texture/Fluid consistency <input type="checkbox"/> Food texture/fluid review: <ul style="list-style-type: none"> Normal/Soft/Blended/Chopped/Mixed Fluid consistency (oride relevant): <ul style="list-style-type: none"> Thin/Heavy/Slippery/Sludgy <input type="checkbox"/> Oral Feeding: <ul style="list-style-type: none"> Correct Utensils Proper positioning Feeding techniques <input type="checkbox"/> ST review (recommend if resident diagnose as dysphagia or 1/3 of dysphagia)
Mobility/ Chest Physio	<input type="checkbox"/> Involve in daily activities (e.g. Tai Chi exercise) <input type="checkbox"/> Sit out of bed daily <input type="checkbox"/> Alert for PT review for chest physio (if increase in secretion, abnormal lung sounds heard)
Oral Health/Care	<input type="checkbox"/> Brushing (1st choice) <input type="checkbox"/> 2nd priority using Oral Swab <input type="checkbox"/> Oral Health Assessment (OHA) on admission & 6 monthly or when necessary (NHLEP) <input type="checkbox"/> Refer Dental if any abnormalities from OHA
NGT Feeding	<input type="checkbox"/> Perform HH before and after <input type="checkbox"/> Check appetite, appearance, pH and volume before feeding <input type="checkbox"/> Position resident 30-45 degrees before AND for 30mins after <input type="checkbox"/> Flush tube with water before and after <input type="checkbox"/> Limit total volume of feeds to flush to max 300ml/per feeds
Immunization	<input type="checkbox"/> Flu vaccination (annual) <input type="checkbox"/> Pneumococcal vaccination <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> PCV23, Date: _____ <input type="checkbox"/> No (recommend to give upon TCU/Admission)
Alert for dysphagia	<input type="checkbox"/> Monitor for 1/3 of dysphagia <input type="checkbox"/> If observed: <ol style="list-style-type: none"> 1. stop feeding and inform in-charge ASAP 2. Refer Dietician or ST to review on diet modifications (Refer to Appendix: Dysphagia Workflow)

SOLUTIONS AND IMPLEMENTATION PLAN (continued)

Starting in Dec 2019, the project was piloted in one ward with a total of 54 residents and 20 staff. Staff were briefed and trained before the implementation of the care-bundle. This was gradually extended to the entire nursing home as shown in Figure 3 below. New team members were recruited from each ward and trained by the key champions to ensure its proper implementation, spread and follow up.

Figure 3: Implementation Plan

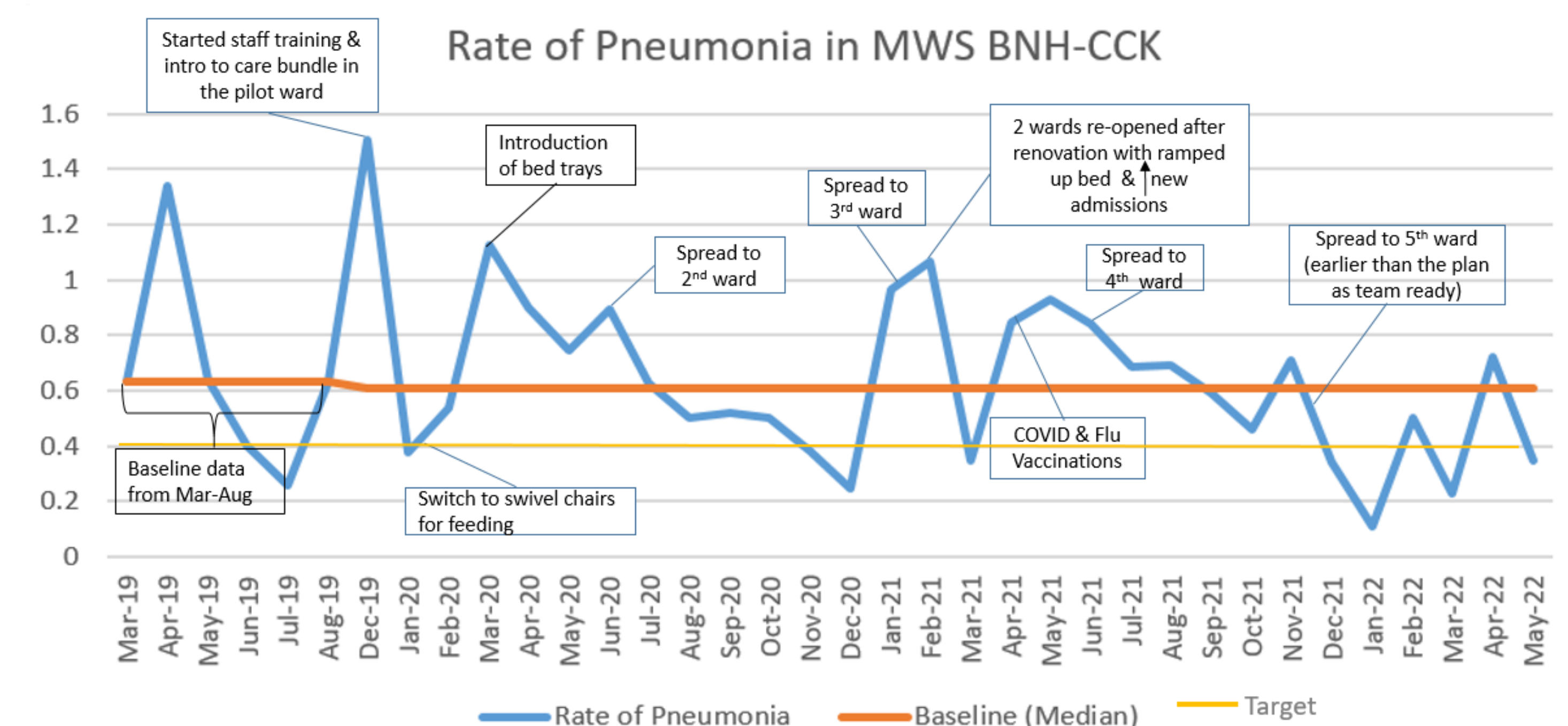


BENEFITS / RESULTS

As at May 2022, 100% of our direct care staff have been trained and the project has been rolled out to the entire nursing home. We have exceeded our original target of training 80% of direct care staff. In addition, we have incorporated the Pneumonia prevention and management training as part of the new staff orientation.

Baseline data was collected retrospectively from Mar to Aug 2019. Monthly data was collected from Dec 2019 till May 2022. The rate of Pneumonia per 1,000-resident days is shown in Chart 1 below. As at May 2022, our team achieved a 3.9% reduction in the rate of Pneumonia.

Chart 1: Rate of Pneumonia in MWS Bethany NH-CCK



As part of the project, we have also implemented several key changes as shown below in Figure 4 below, which helped to streamline the care processes and successfully reducing the number of staff involved during oral feeding by 50%.

Figure 4: Key Changes & Benefits

Pneumonia Signage at Headboard



Main Benefits
Improve the productivity
Safe Care of residents

Use of Modified bowls for identified residents



Use of Bed tray for safe feeding with residents unable to sit out of the bed



Use of Swivel Chair with adjustable height for safe feeding



NEXT STEPS

Though the project is nearing its end, the learnings from the pneumonia prevention journey will continue. Positive feedback receive from care staff who now have deeper understanding of pneumonia prevention. Due to the impact of COVID-19 and the nursing home's renovation, we would need to collect more data to achieve an even more promising outcome.

To ensure sustainability, the team will continue with:

- Monthly data collection,
- Regular check-in with staff to collect feedback, and
- Schedule refresher trainings on an annual basis.

References

1. Collaborators GL (2017) Estimates of the global, regional, and national morbidity, mortality, and aetiologies of lower respiratory tract infections in 195 countries: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet Infect Dis* 17:1133–1161.
2. Furman CD, Rayner, AV and Tobin, EP (2004) Pneumonia in Older Residents of Long-Term Care Facilities. University of Louisville School of Medicine, Louisville, Kentucky