

“I Prevent Pneumonia” – Pneumonia Prevention Project

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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 diseases. Recognition may be delayed because, in this population, pneumonia often presents without fever, cough, or dyspnoea.²

In our Nursing Home, Pneumonia prevention remains a priority with the majority of our resident population being elderly, frail and at high risk to develop Pneumonia. In Mar 2019 to Aug 2019, there were a total of 30 pneumonia cases were identified in our 303-bedder nursing home, 83% (25 out of 30) were hospitalized. Thus, early identification and prevention is crucial to reduce the incident rate of Pneumonia.

PROJECT GOALS

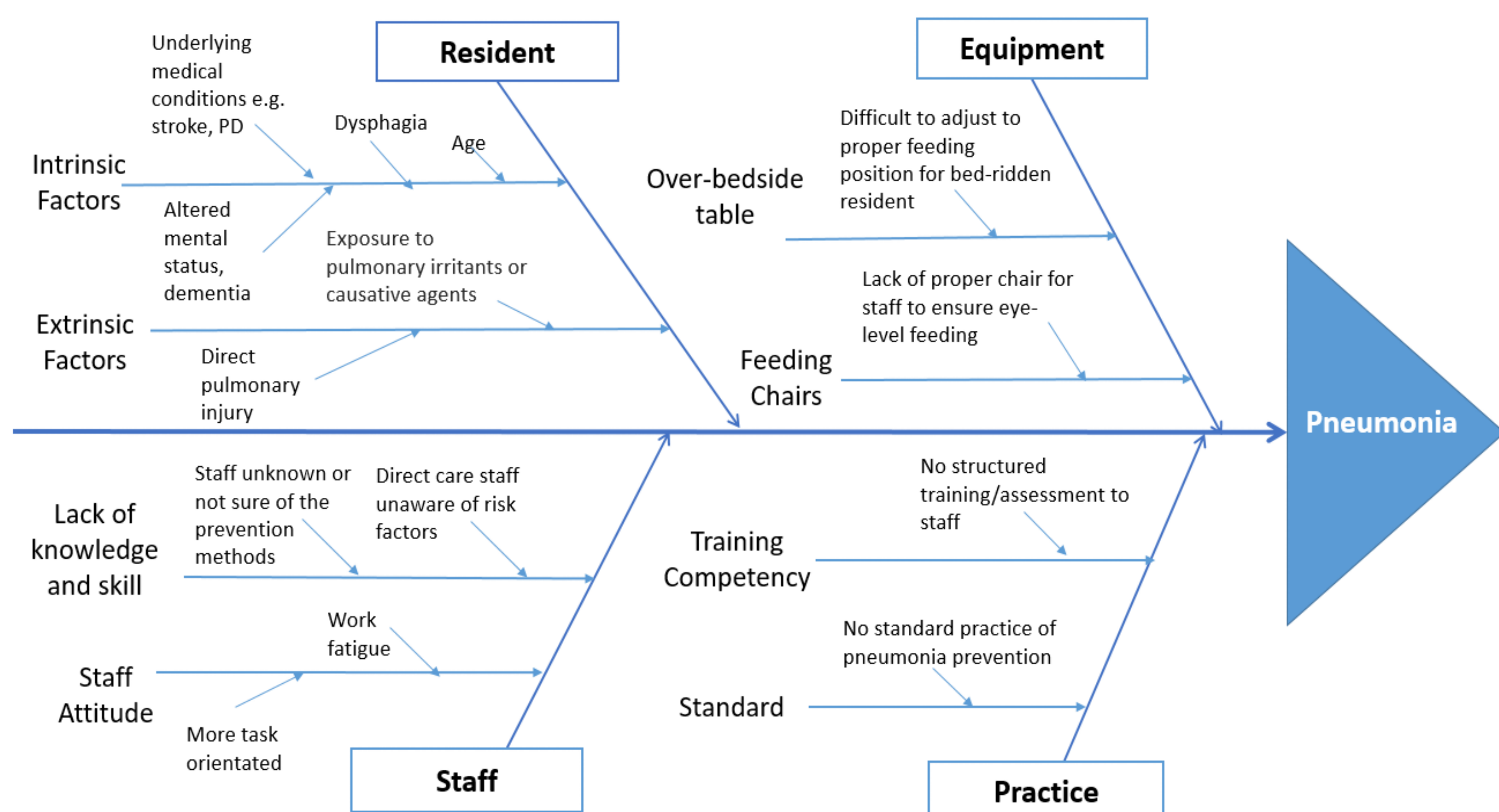
In this project, we aim to achieve the following goals:

1. Reduce the rate of Pneumonia per 1000-resident days by 20% over 3 years
2. To train at least 80% of all direct care staff in pneumonia prevention and management by end 2021

ANALYSIS

Root Cause Analysis was performed to identify root causes. The Cause-and-Effect Diagram is shown below (Figure 1).

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, team decided to implement the following solutions:

1. Interactive staff training in pneumonia prevention
2. Pneumonia Prevention Care Bundle

Figure 2: Components of Pneumonia Care Bundle

Care Bundle Tagline: **I Prevent PNEUMONIA**

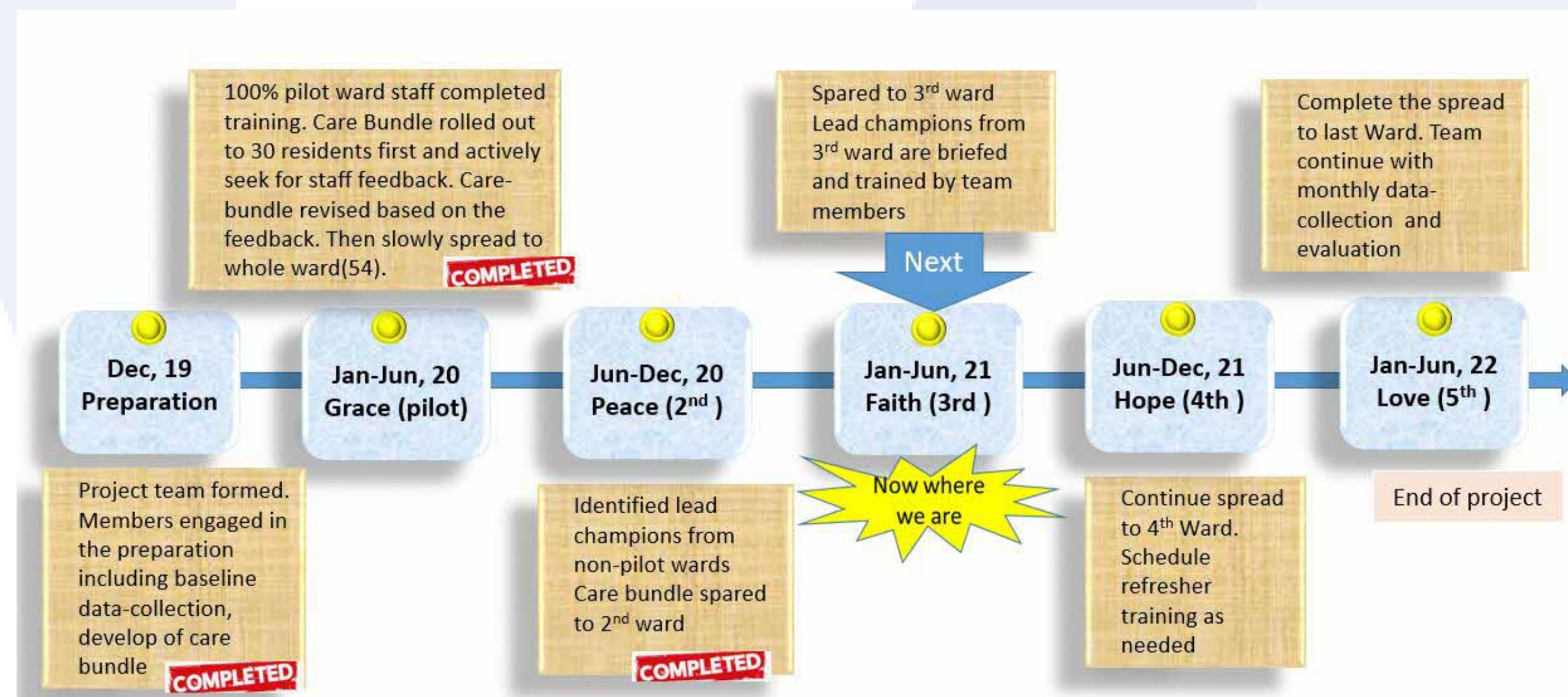
- Infection Prevention
- Pneumonia Alert
- Nutrition
- Education/Training
- Utensils & Oral feeding
- Mobility/ Chest Physio
- Oral Health/Care
- NGT Feeding
- Immunization
- Alert for dysphagia

SOLUTIONS AND IMPLEMENTATION PLAN (continued)

We used “I Prevent Pneumonia” as a tagline, also an acronym for staff to easy remember the contents. Residents with more than 2 pneumonia risk factors are identified as high risk, and selected to use of care bundle. Residents with low risk, staff are reminded to continue current practice and monitor for any change in condition.

This project was started in Dec, 2019 in pilot ward, with a total of 54 residents. Both interventions (Staff Training and Care Bundle) were first piloted for 30 residents and then gradually spread to the whole ward, then spread to the 2nd ward. The project is still ongoing and below is the outline of the implementation plan for the project.

Figure 3: Implementation Plan

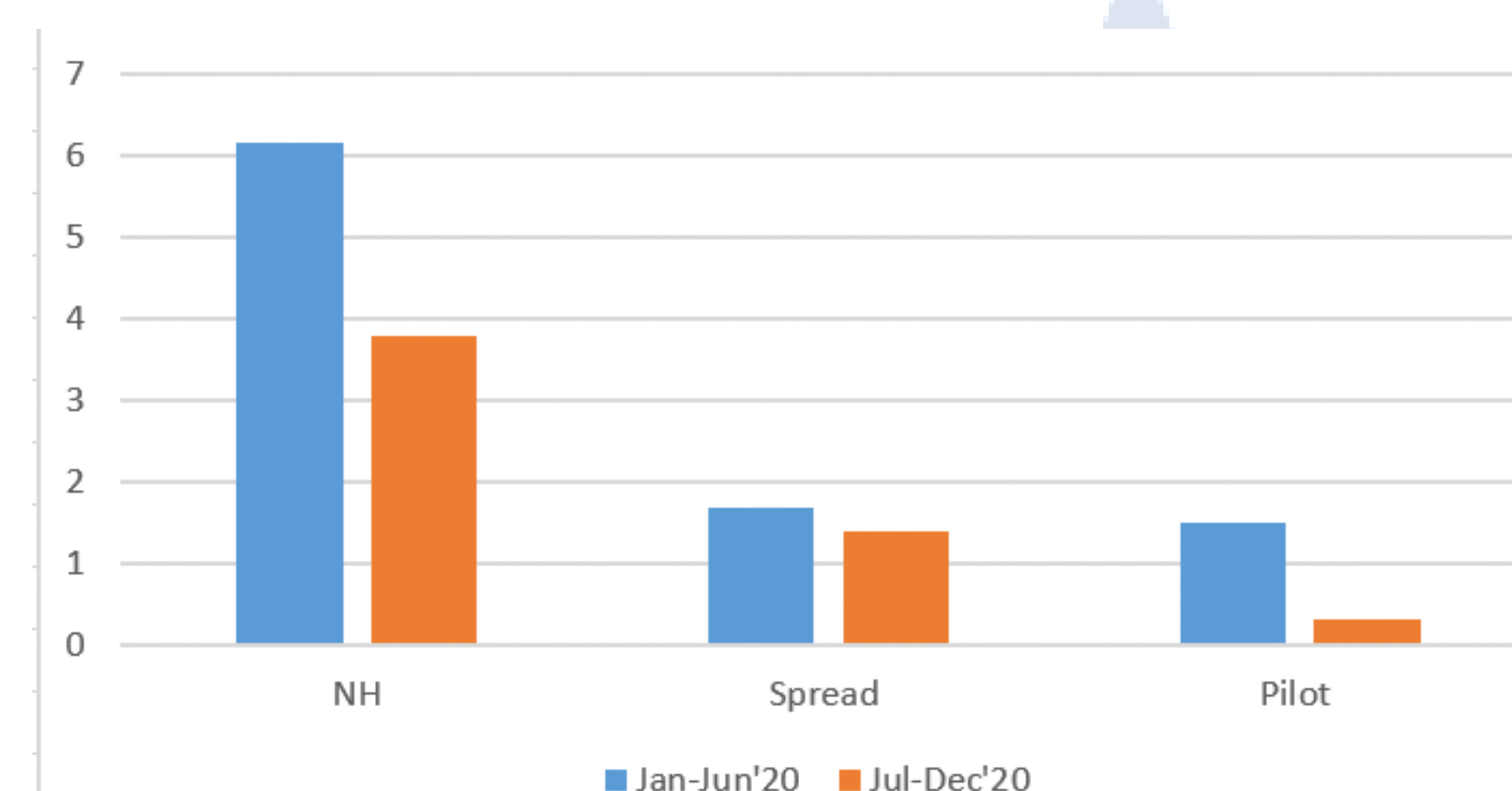


BENEFITS / RESULTS

As of December 2020, we have completed staff training and roll out of project to 2 out of the 5 wards in our nursing home. 100% of direct care staff in these 2 wards have been trained. Pneumonia prevention training and use of care bundle has also been incorporated into the orientation training for new staff.

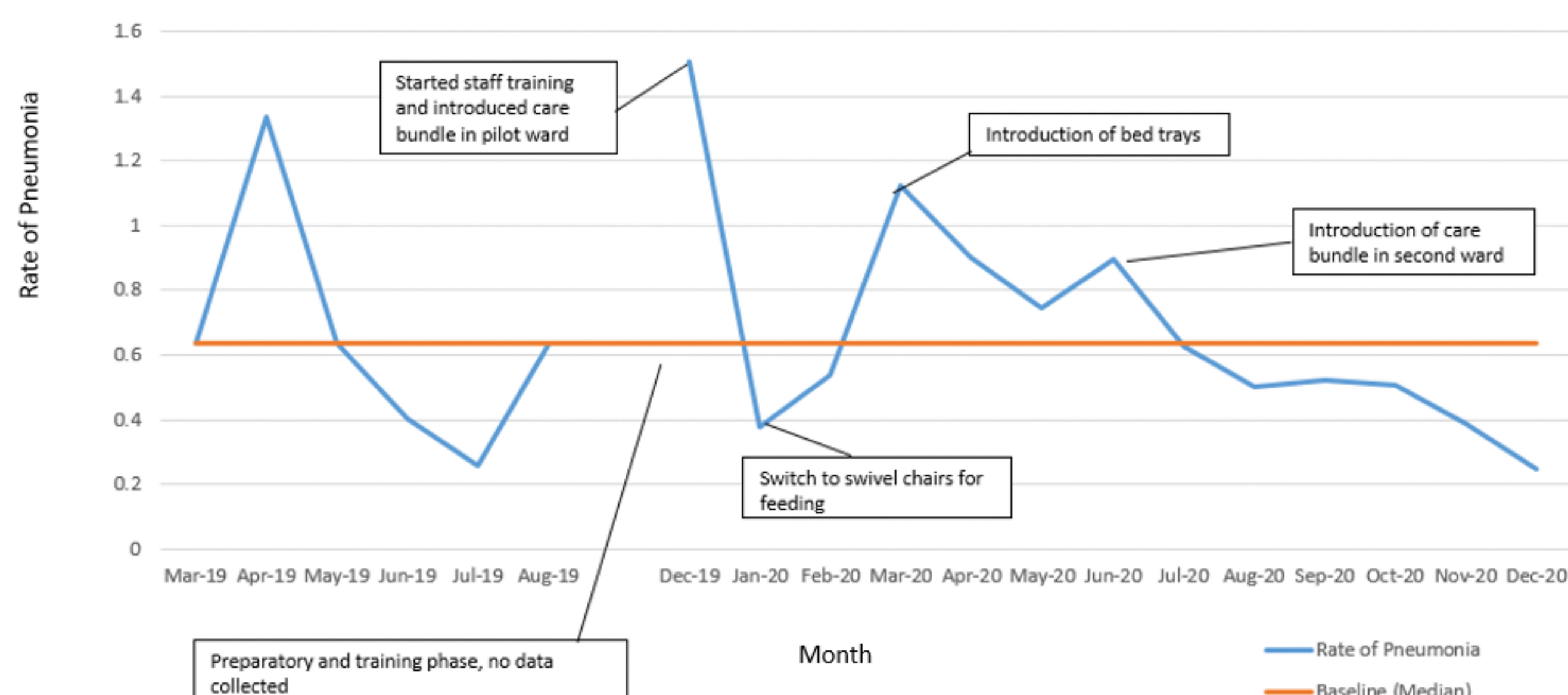
Comparing to 1st half year of 2020, there is a significant reduction of 73% (in pilot ward) and 16% (in spread ward) of pneumonia cases over 6 months.

Chart 1: Comparison of Pneumonia cases over 6 months



In Dec 2020, our rate of pneumonia cases per 1000-resident days is 0.24. This is an improvement from our baseline rate of 0.63. As of December 2020, our team has achieved a 9% reduction in rate of Pneumonia per 1000-resident days.

Chart 2: Rate of Pneumonia in MWS Bethany NH-CK



NEXT STEPS

While the project is still ongoing, we have successfully reduced the rate of Pneumonia by 9% from 63% (Mar-Aug 2019) to 54% from Dec 2019 –Dec 2020. The Team will continue to roll out to the entire nursing home by June 2022.

To ensure sustainability, the team will continue with:

- Monthly data collection,
- Regular check-ins with staff to collect feedback,
- Schedule refresher trainings on an annual basis, and
- Incorporate training on pneumonia prevention into new staff orientation training

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*