

**Increasing the Documentation of Incentive Spirometry Use Amongst Pneumonia Patients:
A Quality Improvement Initiative**

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Incentive spirometry (IS) strengthens the inspiratory muscles (Toor et al., 2021), clears lung fluid and debris trapped in the alveoli, and prevents pulmonary complications in patients with pneumonia. IS is ineffective as a standalone treatment for pneumonia; it requires bundle care (Toor et al., 2021).

Key Findings

- **EHR Optimization and Education:** Pre-implementation EHR optimization and standardized staff training (flyers, 2-minute video, and IS education) during the implementation period grew IS documentation from 20% (June 2025) to 79% (August 2025).
- **Multidisciplinary Ongoing Education Impact:** Ongoing education for existing and new nurses during the implementation period further increased the IS documentation to 90% in November 2025. Provider involvement in system changes increased nursing efficiency, while nurse-driven secure chats with providers about missing order sets fostered cohesive teamwork. This multidisciplinary approach resulted in better collaboration and increased compliance with IS use. Interprofessional collaboration among all employees drives change.
- **System Reminders:** Automated electronic health record (EHR) reminders every 8 hours directly improved IS documentation compliance by registered nurses (RNs) and respiratory therapists (RTs). Provider- entered electronic order sets and enhanced nursing flowsheet visibility, optimizing the care delivery. Providers' pneumonia order-sets increased significantly after secure chat reminders on EHR than to face-to-face requests.

Background and Purpose

Pneumonia readmissions within 30 days of discharge create a substantial financial penalty for hospitals. The Centers for Medicare and Medicaid Services (CMS) do not pay for these pneumonia readmissions within 30 days (2024), cutting directly into hospital revenues. In one study, Toor et al. (2021) reported that daily breathing exercises using incentive spirometry (IS) increased maximal inspiratory volume by 16% in patients with pneumonia. The pneumonia bundle care included antibiotics, mobility, oral care, IS, care plan, and pneumonia education. At the project site, IS compliance was 0% from January through April 2025, due to inconsistent documentation. The purpose of this Quality improvement DNP project was to use the Plan-Do-Study-Act (PDSA) framework to achieve and sustain a 95% IS documentation compliance rate within 13 weeks (August 2025- December 2025) of implementation. The project team included the preceptor, pneumonia coordinator, and DNP student as the team leader.

Methodology

This 13-week PDSA quality improvement project (August 4th, 2025- December 8th, 2025) optimized incentive spirometry (IS) compliance across 438 unique pneumonia patients involving 214 documenting clinicians. The population selected was RNs and RTs. The patient population comprised of all the pneumonia patients at the project site who were diagnosed having pneumonia upon admission or later during admission. During the “Plan” phase, baseline gaps- such as incorrect patient IS techniques, limited EHR visibility, and outdated patient guidebooks- were resolved by adding Epic (EHR) Brain reminders via IT collaboration and updating the patient pneumonia guidebook. In the “Do” phase, implementation started, involved the team leader conducting daily rounds across 7-8 floors (4-5 days/week in August; 2-3 days/week thereafter) to deliver face-to-face IS documentation education, flyers, a 2-minute

instructional video, and secure chat reminders and education. The team leader verified the staff understanding using the Teach-Back method based on a daily patient list provided by the pneumonia coordinator. In the “Study” phase, automated EHR documentation data were analyzed and plotted by team leader monthly to see the IS documentation trends. Finally, the “Act” phase expanded the intervention to hospitalists through meeting-based education on EHR changes and order sets, while empowering nurses to directly prompt providers to initiate IS orders when they are missing from EHR workflows.

Results

Implementation began in August 2025 and IS use increased from baseline data of 20% in June and 67% in July 2025 to 79% in August 2025, demonstrating staff knowledge, productivity, and the benefits of EHR reminders and multidisciplinary education. In September 2025, clinicians' documentation increased to 84%, in October to 87%, driven by providers' greater use of IS order sets. In November, it increased to 90%, and in December, it decreased to 78%, reflecting a partial monthly result, as it was based only on the first eight days of December, during which the team leader visited. After implementation, IS documentation remained at 90% in January 2026, 85% in February 2026, and 90% in March 2026, indicating the effectiveness of the project strategies. The plotted trendline of IS documentation percentages was consistent and showed a plateau.

Strengths and Limitations

Adding a reminder to the EHR increased IS use documentation. The education for floor RNs and RTs, delivered both face-to-face and via secure chat, contributed to the project's productivity. The project site successfully met one of its Joint Commission's pneumonia care requirements. However, there were limitations; for example, nurses were not ready to accept the

new EHR change, and burnout amongst experienced nurses. There were onboarding gaps; new employees were unfamiliar with the EHR and were unable to document IS use. There were instances where the floor providers could not order the pneumonia order set. Inconsistent provider ordering patterns limited maximum project reach.

Implications

According to American Thoracic Society guidelines, IS should be ordered by healthcare professionals after evaluating the risks and benefits for the individual patient, with the aim of increasing the accuracy of use and documentation (Graham et al., 2019). This project successfully met these regulatory compliance requirements for IS use documentation and bridged gaps by increasing providers' awareness of IS order sets and RNs' and RTs' awareness of proper IS use documentation, thereby enabling them to follow disease-specific documentation practices. The project impacted physicians' practice and made them realize they need to stay current with EHR changes on disease-specific order sets. The project also standardized EHR workflows and maintained interdisciplinary accountability, successfully meeting the Joint Commission pneumonia bundle care measures (Cassidy et al., 2020) and aligning with CMS benchmarks. The triple and quadruple aim focuses on health outcomes within healthcare delivery, and improved patient care and quality. To achieve the triple and quadruple aim, key facilitators are needed (Krumwiede et al., 2023). This project aligned well with the triple and quadruple aim by providing education, embedded EHR reminders, and a multidisciplinary approach as key facilitators. To ensure patients receive the necessary interventions and education, and to sustain IS documentation by nurses and RT's, it is essential to regularly evaluate performance measures related to incentive spirometry use, conduct periodic multidisciplinary reviews of patient care

workflows, leverage EHR capabilities to improve documentation, and support staff and providers through order sets and care workflows.

Conclusions

This DNP project demonstrates that physicians need to stay current with new disease-specific changes on the EHR. Staff nurses must ensure that patients understand how to use disease-specific tools and protocols. The organization needs to provide tools to facilitate and document efficient care and foster an environment that promotes cohesive, evidence-based care. The organization needs to institutionalize onboarding education to counter increased turnover, continuously leverage EHR capabilities, and routinely audit performance measures. This framework is highly scalable and recommended for long-term replication across other healthcare facilities.

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