

Pump It Up! Elevating Smart Pump Interoperability Through Training

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Purpose

This is an overall review of the method, length, and content of nursing training to increase overall compliance and success with smart pump interoperability in a staggered rollout at a large multi-facility health system. The objective was to implement a system-wide Continuous Quality Improvement (CQI) project with a focus on creating a standardized training approach. An auto-programming compliance target of $\geq 90\%$ was established to gauge project success. Industry average auto-programming compliance rates are 70%-80%,¹ suggesting opportunities to optimize training, goal setting, and implementation success.

Description

This is a comparative analysis of auto-programming compliance reports between wave #1's Go Live (October 10th, 2022) and wave #2's Go Live (February 2nd, 2023) with smart pump interoperability. A collaborative multidisciplinary approach was utilized drawing on the expertise of nurse informaticians, pharmacy leaders, nursing leadership within the health system, and our vendor partners. This collaborative effort focused on a comprehensive review of training materials, duration and content of hands-on training sessions, supplemental support materials provided to wave #1, and a review of the safety and efficacy of the new system-wide drug library. After a review of wave #1's auto-programming compliance rates, observations of nursing workflows, and a lessons learned debrief, it was determined that enhancements were needed to effectively improve auto-programming compliance and success, not only at wave #1, but also across subsequent sites. The Nurse Informatician project team revised the initial training by incorporating several enhancements.

Classroom Attendance

Managers' active Involvement in promoting and mandating hands-on training led to a substantial rise in classroom attendance, from 73% attendance at wave #1 to 97% attendance at wave #2.

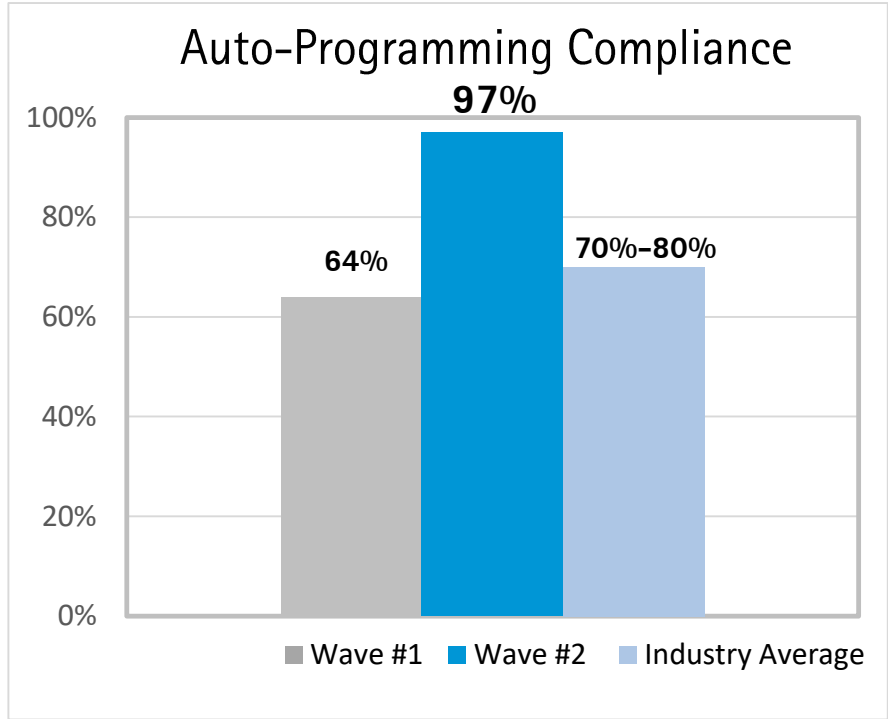
Wave	Computer Based Training (CBT)	Hands On Training
Wave #1	69%	73%
Wave #2	87%	97%

Training Enhancements

Wave #1	Wave #2
No manager involvement	Instituted weekly calls with managers to monitor training and prepare for Go Live and establish buy-in
Low compliance for CBT and hands-on training	Mandatory hands-on training with buy-in from nursing leadership
1 Hour classroom hands-on training for end users; 2 Hours for Super Users	1.5 Hours of classroom hands-on training for end users; 2 Hours for Super Users
2:1 Training (2 nurses, per pump/computer)	1:1 (each nurse has their own computer/pump)
Basic workflows covered	Revamped training materials, including additional workflows
Administration of intermittent workflow discussed during training	Implemented changes to intermittent workflows prior to Go Live
Cutover and basic error training included in Super User training only	Basic errors and cutover instructions for Go Live included in end-user training
No quiz required after training	Quiz required after training
Basic workflow guides provided at Go Live	Workflow guides provided for every scenario, including common errors and how to mitigate
Binder with educational materials placed on each unit	Educational materials made accessible on SharePoint (allowed for most current and up-to-date information)

Outcome

After adopting the enhanced training methodology at wave #2, auto-programming compliance soared to 97% overall average during the first week of Go Live, surpassing our established goal of $\geq 90\%$. Wave #1 location also substantially increased auto-programming compliance from 64% to an impressive 86% following re-education with the enhanced training materials. Additionally, wave #1, 6 months after Go Live, drug library override rates decreased from 26% to 7% and infusion-related adverse drug events were zero (Q1 2023).



Conclusion

By integrating comparative analysis and a CQI approach into our training methodology, we have effectively enhanced the understanding of the new nursing-integrated infusion pump workflows. As a result, we observed a significant boost in auto-programming compliance rates during the Go Live phases at subsequent sites. Nurse informaticians are critical to help provide training oversight, establish targets, and measure outcomes.² However, achieving long-term success and maintaining continuous quality improvement necessitates active engagement from stakeholders at the site level including leadership, nursing, pharmacy, IT, and Biomed. Interoperability requires constant vigilance, ongoing support, and a plan for sustaining success.

1. KLAS. *Smart Pump-EMR Interoperability 2017: First Look at Interoperability Performance*. Retrieved from: <https://klasresearch.com/report/smart-pump-emr-interoperability-2017/1197>

2. Johnston S, Schuster, C, Vitoux, RR, Bartos D, Curtin CR. *Is perception reality? Nurses' expectations of smart pump-EHR interoperability*. Research Poster Presentation for the American Nursing Informatics Associations, Louisville, KY, May 2023.

