

# Reducing Costs, Improving Care With ePharmacy Services

## ORGANIZATIONS

- Aurora Health Care
- Clarian Health Partners
- Saint Luke's Health System

## CHALLENGE

Providing pharmacist coverage to critically ill patients in a resource-constrained environment.

## SOLUTION

Leveraging VISICU's eICU® Program infrastructure to provide around-the-clock clinical pharmacist support.

## BENEFITS

- Cost-effective order verification and after hours clinical pharmacy services
- Improved quality of patient care through timely interventions
- Reduced medication costs for ICU patients

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*"The implementation of a 24-hour pharmacy service as a part of our eICU Program has demonstrated improved patient care quality outcomes, reduced unnecessary drug expense, and improved service for all the hospitals in our system."*

— Dennis Brierton, PharmD, BCPS  
System Director – Clinical Services,  
Aurora Health Care

## BACKGROUND

Pharmacists are an integral part of the intensive care unit (ICU) team. From providing drug dosing and side effects information to adverse drug event (ADE) monitoring, they are essential to managing complex drug regimens, improving clinical outcomes, and ensuring patient safety in the ICU. A 1999 landmark study<sup>1</sup> found that having a pharmacist on ICU rounds decreased ADEs by 66 percent.

Yet, pharmacists are in short supply nationwide, and even more so in ICUs. A recent study reveals direct patient care is provided by pharmacists in only about 50 percent of ICUs in the United States – resulting in inconsistent care and drug mishaps.<sup>2</sup> At the same time, many health systems are without 24/7 pharmacy support and must use on-call pharmacists or contracted pharmacy services to verify medication orders after hours. Many states are now requiring hospital prescription orders to be reviewed and verified by a pharmacist for appropriateness. With heightened pressures to keep costs down and improve quality of care, health systems are looking for cost-effective ways to provide timely, consistent pharmacy expertise for all of their patients.

## SOLUTION

Three Midwest Health Systems, Aurora Health Care in Milwaukee, WI, Saint Luke's Health System in Kansas City, MO and Clarian Health Partners in Indianapolis IN are choosing to leverage the infrastructure they had already established with their eICU® Programs (VISICU, Baltimore, MD) to address this challenge. With the eICU Program, centralized critical care specialists are providing remote monitoring and critical care support to bedside care teams. By adding a pharmacist to the centralized team, these health systems are able to provide a viable alternative to outsourcing order verification while offering improved pharmacy support.

This 'ePharmacy' approach enables a centralized pharmacist to provide verification of medication orders after hours and serve as a backup resource around-the-clock to on-duty pharmacists and bedside teams. In this role, the centralized pharmacist reviews drug therapies along with continuous patient data to ensure that patients are receiving the right drugs at the right dosages and answer drug-related questions posed by the bedside and eICU care teams.

Doug DeJong, R.Ph., MBA, FASHP, Saint Luke's System Director of Pharmacy, says the program implementation is proceeding in three phases. In the first phase, the ePharmacist will provide after-hours order verification; in the second, ePharmacy coverage will be extended to 24/7 service at all six system campuses. In the third phase, ePharmacy services will be extended to other health systems/hospitals through a partnership model. DeJong says the program is expected not only to have a positive impact on costs and on patient safety, but also to help attract pharmacists to the Saint Luke's team. "If we can tell candidates that their after-hours calls will be reduced, we will see a dramatic improvement in recruitment and retention," he says.

## RESULTS

A range of benefits, from cost savings to quality of care enhancements, are resulting from these ePharmacy programs.

### Aurora Health Care

Aurora Health Care, a system of 13 acute care hospitals, has relied on the eICU Program since 2004 for centralized monitoring of its 246 intensive care unit beds. Aurora eICU Care Manager Catherine Scoon, RN, says the system added pharmacy services, or 'ePharmacy,' to its Program in 2007. "Several of our sites have struggled with not having an after-hours pharmacist on hand," she says. "We realized that eICU technology allows us to leverage available resources to provide pharmaceutical support from a central remote location."

Aurora's ePharmacists provide around-the-clock support to patients across the system and after-hours order verification coverage for the smaller hospitals that did not have an on-site pharmacist during the overnight shift. According to Dennis Brierton, PharmD, BCPS, System Director – Clinical Services, Aurora uses this off-hours work to justify the expense of the 24-hour ePharmacy. "In the past, much of this work did not get done or would require costly outsourcing," he says. "We determined that combined after-hours order verification and clinical pharmacy functions had a positive cost/benefit ratio."

Order verification turnaround time improved dramatically, with 82 percent of routine orders processed within 30 minutes and 98 percent within 60 minutes; 99 percent of STAT orders were processed within five minutes. In addition to these efficiency and turnaround time improvements, financial projections based on initial data collection indicate that remote pharmacist interventions resulted in an annualized drug cost savings of \$489,100.

Along with cost savings, the ePharmacy program at Aurora has yielded distinct benefits in quality of care. After the program was implemented, pharmacists were asked to record interventions that resulted in improved quality or cost outcomes. During a three-month data collection period, 1,093 interventions were recorded that improved the quality of patient care.<sup>3</sup> The most common interventions were changes to antimicrobial therapy, drug therapy questions, and formulary support.

### Clarian Health Partners

Clarian Health Partners, launched its eICU Program in 2005. Along with electronic monitoring equipment and early warning software to report on such patient data as heart rhythms and blood pressure, the system includes knowledge-driven algorithms and Smart Alerts<sup>®</sup> that guide in preventing ADEs. "The system has a variety of built-in support programs that help our clinicians at the ICU bedside to make complex decisions about drugs – and to troubleshoot before problems arise," says Methodist Hospital critical care pharmacist Judith Jacobi, PharmD, FCCM, FCCP.



*Aurora ePharmacists give 24/7 support to ICU patients.*

"Personally, I am responsible for 20-30 patients every day," Jacobi says. "That includes evaluating information, looking at drug therapies, making sure patients are receiving the right drugs at the right dosages, and answering questions at the bedside. If the eICU spots a problem before I do in an ICU patient – an elevated blood sugar level, for example – it can help me prioritize interventions in my daily rounds."

## CONCLUSION

Pharmacists are an essential part of delivering care to critically ill patients. Many other health systems are now utilizing their eICU Centers to centralize after-hours verification of medication orders and provide real-time support for bedside clinicians to make informed drug decisions. ePharmacy provides a cost-effective way to leverage this limited resource and for supporting system-wide efforts to improve clinical quality, reduce medical errors, manage drug costs, and extend the unique expertise of critical care pharmacists to patients anytime, anywhere. ■

## REFERENCES:

- 1) Leape, LL, Cullen, DJ, Dempsey, Clapp M, et al., "Pharmacist participation on physician rounds and adverse drug events in the intensive care unit." *JAMA* 1999; 282:267-70.
- 2) Dasta, Joseph F, "Critical Care," *The Annals of Pharmacotherapy*, April 2006.
- 3) Woller, Thomas W., Meidl, Tracy M., Iglar, Arlene M., Brierton, Dennis G. Poster presentation, "Implementation of Pharmacy Services in a Telemedicine Intensive Care Unit," American Society of Health-System Pharmacists Best Practices Award in Health-System Pharmacy, 2007.

## FOR MORE INFORMATION:

VISICU: 866-484-7428; [www.VISICU.com](http://www.VISICU.com)