Grant ID: 5UC1HS014965-03

HIT Based Regional Medication Management Pharmacy System

Inclusive dates: 09/30/04 - 09/29/07

Principal Investigator:
Mark Schmidt, Chief Information Officer, SISU Medical Systems, Duluth, MN

Team members:
Michael Dudzik, RPh, MHA, Director of Pharmacy, St. Luke's Hospital, Duluth, MN (Co-PI)
Timothy P. Stratton, PhD, BCPS, FAPhA (Evaluation Consultant)
Marcia M. Worley, PhD, RPh (Evaluation Consultant)

Performing Organization:
Department of Pharmacy Practice and Pharmaceutical Sciences
University of Minnesota College of Pharmacy, Duluth

Project Officer:
Ronda G. Hughes, PhD, MHS, RN

Abstract

Purpose: Utilize health information technology to provide geographically-remote Critical Access Hospitals (CAHs) with around-the-clock access to pharmacist expertise when each CAH's local pharmacist is unavailable.

Scope: Eight CAHs in rural northern Minnesota communities and a tertiary-care hospital in Duluth, MN with around-the clock pharmacy operations participated.

Methods: The Internet linked the MEDITECH patient information management system at each CAH to the urban hospital pharmacy. When the local pharmacist was unavailable, the CAHs faxed new medication orders to the urban hospital for pharmacist review. The urban hospital pharmacist downloaded the CAH patient's EMR via the Internet, reviewing the new medication orders against the patient's record for appropriateness of indication, formulary availability, dose, frequency, duplicative therapy, etc. The urban hospital pharmacist would verify the order, releasing the medication from an automated dispensing cabinet located at the rural CAH.

Results: Implementation challenges were identified and addressed. Clinical Messages transmitted from the urban pharmacists to CAH nursing staff and prescribers regarding medication orders positively impacted patient care by avoiding medication misadventures. Patients in geographically-isolated rural CAHs received <u>safer</u> and more <u>effective</u> medication therapy than if there were no pharmacist involvement and the system was well accepted by CAH nursing and pharmacy staff.

Key Words: Pharmacy Service, Hospital; Rural Hospitals; Telemedicine (Utilization)

Final Report

Purpose

The purpose of this project was to utilize health information technology to provide geographically-remote Critical Access Hospitals in rural northern Minnesota with around-the-clock access to pharmacist expertise when each rural hospital's local pharmacist was unavailable. Specific goals were to:

1. Improve patient safety in participating Critical Access Hospitals by utilizing health information technology to provide CAH patients with around-the-clock access to pharmacist services for medication consultation and dispensing; and

2. Utilize health information technology to develop a shared pharmacy program in partnership with a tertiary care health care system that would make it economically possible for the rural hospitals to sustain the availability and quality of professional pharmacy services described in (1).

Scope

The Institute of Medicine (IOM) declares in *Crossing the Quality Chasm* that improvements in U.S. health outcomes can only result if health care is made safe, effective, patient-centered, timely, efficient, and equitable.[1] This IOM report emphasizes that these improvements should not be limited to hospitals in urban areas, but should extend to rural hospitals as well.[2] One approach to improving patient outcomes is by employing information and communications technologies which can link urban-based healthcare expertise with rural healthcare providers. Providing rural practitioners with more immediate access to clinical knowledge and specialized expertise not generally available in remote, sparsely populated areas, information and communications technologies can enhance patient care in rural hospitals by improving the effectiveness of communication among caregivers and improving, among other things, the safe use of medications.[3]

IOM estimates that a patient in the hospital is subject to at least one medication error per day; fully one-quarter of all of these medication errors are preventable.[4] The National Quality Forum (NQF) recommends that one approach to minimizing avoidable adverse drug events is to involve the pharmacist in the prescribing process at the time the prescription is written. NQF specifically lists this timely pharmacist involvement as one of NQF's "safe practices for better health care."[5]

In March, 2007, the Joint Commission on the Accreditation of Health Care Organizations (JCAHO) released the following proposed revisions to their Medication Management Standards (MM 4.10 and MM 8.10):[6]

- Knowing the medications the patient is currently taking, including over-the-counter and vitamin/herbal preparations, which will facilitate the identification of potential drug/drug and drug/food adverse reactions.

- Proactively identifying prescribing errors, potential drug/drug and drug/food interactions, clinical interventions needed and other patient risks through a pharmacist's review of medication orders.

JCAHO notes in this proposed revision that, "The requirement for a prospective review of the medication orders by a pharmacist is a key safety activity."

Achieving the around-the-clock pharmacist coverage necessary to attain the level of pharmacist involvement implied in the IOM, NQF and JCAHO statements above has been difficult for rural hospitals particularly due to the challenges in recruiting pharmacists to practice in rural areas,[7] exacerbated by the current shortage of pharmacists nationwide.[8] In addition to recruiting challenges, the increased costs associated with maintaining consistent around-the-clock pharmacist coverage in a typical rural hospital is a barrier to providing this level of pharmacy service.

In response to a Request for Applications from the Agency for Health Research and Quality (AHRQ), CAHs who are voluntary members of northern Minnesota's Wilderness Health Care Coalition contracted with a grant writer who facilitated a meeting between Wilderness Coalition hospital representatives, SISU Medical Systems, St. Luke's Hospital in Duluth and faculty from the University of Minnesota College of Pharmacy, Duluth campus, resulting in the grant proposal which funded this project. A brief introduction to each of the participating organizations in this project follows.

The Wilderness Health Care Coalition (Wilderness Coalition) is a consortium of 501(c)(3) not-for-profit CAHs in northern Minnesota. Formed in 1982, the Wilderness Coalition enables member hospitals to work collectively to improve the delivery of services to patients who live in, or travel through communities where Wilderness Coalition hospitals are located, as well as improve the quality of services provided.

Many of northern Minnesota's early European settlers immigrated from Scandinavia or Finland, and the cultural influences of these early settlers remain strong throughout the state today. "Sisu" is a Finnish word which describes a uniquely Finnish concept. Roughly, sisu describes a special inner strength, a stubborn determination to continue and overcome in the moment of adversity – a combination of stamina, courage, and obstinacy held in reserve for hard times.[9] In 1997, seven Wilderness Coalition hospitals established SISU Medical Systems as a not-for-profit corporation to collectively address the hospitals' healthcare information technology needs.

SISU has grown from the original seven hospitals to 16 hospitals, as well as several clinics and long-term care facilities. Collaboratively, these rural institutions share information technology as well as information technology staff. SISU utilizes the MEDITECH healthcare information system to provide technology solutions to its members (MEDITECH, Westwood, MA; http://www.meditech.com/PublicRelations/pages/product.htm).

The University of Minnesota College of Pharmacy expanded its Doctor of Pharmacy program in 2003 to the University of Minnesota, Duluth campus to address the shortage of pharmacists in Greater Minnesota (counties beyond the seven-county Twin Cities metropolitan area). The mission of the Duluth-based pharmacy program is to prepare pharmacists to practice in rural communities, the first class having graduated in May, 2007.

Methods

Through the AHRQ grant, between June, 2005 and February, 2006 eight of the Wilderness Coalition member CAHs ("rural hospitals") obtained the technology necessary to allow pharmacy staff at St. Luke's Hospital in Duluth, MN, a tertiary care, Level II trauma center with around-the-clock pharmacist staffing (the "hub hospital") to electronically enter orders into the rural hospitals' patient electronic medical records. The system also populates these orders into the patients' medication profiles on automated dispensing machine(s) located at seven out of eight rural hospitals. Participating rural Minnesota communities include (in the order in which the hospital came on line with the project): Two Harbors, Moose Lake, Aitkin, Cloquet, Bigfork, Cook, Deer River and Ely (Figure 1).

Figure 1. Wilderness Health Care Coalition rural hospitals participating in after hours remote pharmacy order entry project*
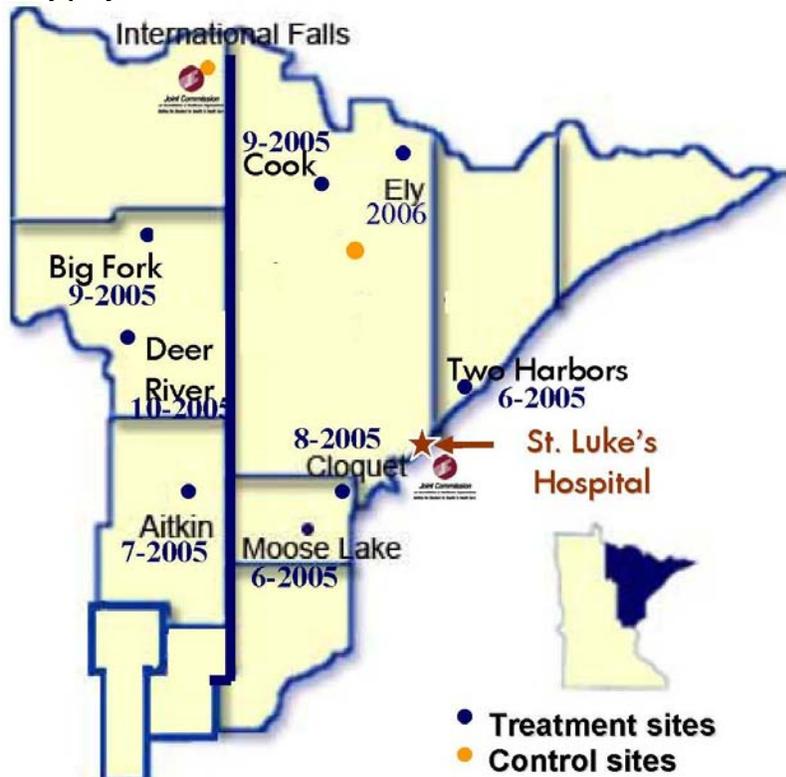

* St. Luke's Hospital in Duluth served as the hub hospital. Dates next to each rural community denote the month and year that the remote pharmacy order entry system came on line in that community's hospital.

5

The Wilderness Health Care Coalition was awarded a federal grant of $1.3 million over three years to implement an after-hours remote pharmacy order entry (ARPOE) service. Of this amount, 80% was designated – on a decreasing scale over the life of the grant – to cover the salary expenses for the "Wilderness" pharmacist and technicians at the hub hospital as well as for a pharmacist who would provide on-site vacation coverage for the rural hospitals. Funds were also allocated to purchase and installation of the telecommunications technology in the rural hospitals necessary for the project, and evaluation of the project.

MEDITECH System Description

As implemented at the rural Wilderness Coalition hospitals, MEDITECH's pharmacy information system is integrated with the patient's electronic medical record and medication administration record. None of the Wilderness Coalition facilities had implemented computerized physician order entry (CPOE) at the time of this project. Using Internet connections, the MEDITECH pharmacy system allows for medication order processing, drug interaction checking, medication dispensing via automated dispensing cabinets at the rural hospital sites, and formulary management and inventory management between the hub hospital and the rural hospitals. The steps involved in processing a medication order received from a rural hospital are outlined in Figure 2.

Figure 2. Steps in processing an after-hours medication order
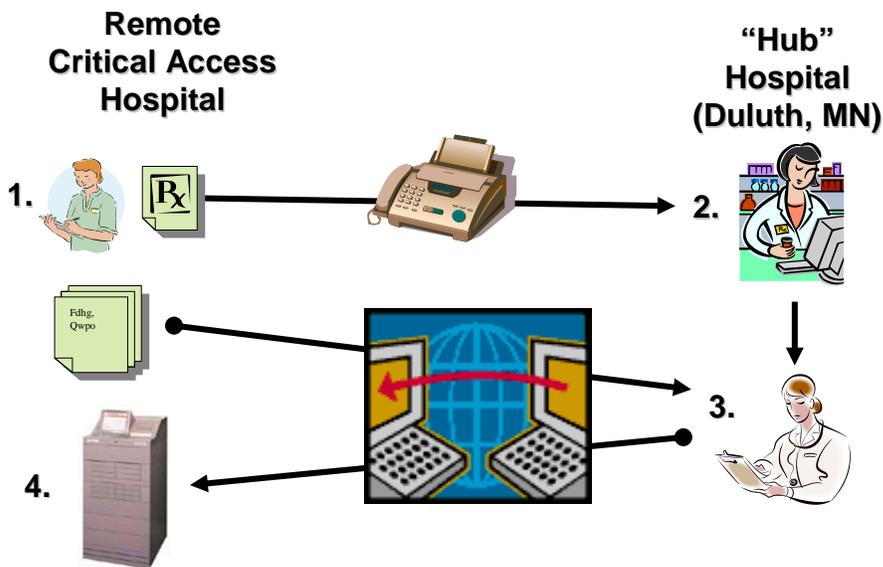
1. a. A new medication order is written at one of the rural hospitals when the rural hospital's pharmacist is not on site (middle of the night, weekends, etc.).

   b. Nursing staff at the rural hospital transmit a facsimile of the order to the hub hospital's inpatient pharmacy (St Luke's Hospital in Duluth, MN).

2. a. The "Wilderness Technician" at the hub hospital inpatient pharmacy retrieves the faxed order and accesses the rural patient's electronic medical record through SISU Medical System's secure wide area network (to which all participating hospitals are connected).

   b. The technician enters the order(s) into the rural hospital's Pharmacy Information System utilizing instructions given by each hospital's pharmacy department for order entry.

   c. The technician notes allergies that need verification, whether a first dose was already removed from the automated dispensing cabinet at the remote hospital and whether to print a Medication Administration Record for the nursing staff.

   d. Any questions needing clarification for order entry are requested via phone, fax or through MEDITECH with the use of a "clarify" order.

3. a. The hub hospital pharmacist downloads the patient's electronic medical record from the remote hospital via the Internet and reviews/verifies the order against information in the patient's record for contraindications, interactions, allergies, adverse drug reactions and appropriateness of dose.

   b. Any interventions that the pharmacist feels are necessary can be transmitted to the attention of the nursing or pharmacy staff via a "clinical message" order in the MEDITECH system.

4. The hub hospital pharmacist verifies/approves the completed order, initiating a command from the MEDITECH system across the wide-area network which releases the order onto the patient's medication profile on the automated medication dispensing cabinet (AcuDose or Omnicell) at the rural hospital. The nurse at the rural hospital obtains the medication from the automated dispensing cabinet for dispensing to the patient.

The MEDITECH pharmacy information system is being used somewhat differently in the present project than other remote order entry systems currently in use in Minnesota. Cardinal\McKesson's "Rxe-source" system is a national franchise operating out of four hubs within the United States that handles ARPOE services. Pharmacists based at Cardinal-contracted hospital pharmacies enter orders received from remote hospitals, providing around-the-clock coverage.[1,11] As of 2004, the boards of pharmacy in 37 states had licensed Cardinal/McKesson to conduct off-site reviews of medication orders and fill orders remotely. The Cardinal/McKesson system differs from the Wilderness Project in two major ways: (1) Pharmacy technicians play no role in the Cardinal/McKesson model; and (2) Cardinal/McKesson trains their order-entry pharmacists

on numerous pharmacy information systems in use at remote client hospitals, as opposed to only one system in the Wilderness project. Wilderness hospitals also report that the charge to use Cardinal/McKesson's service is greater than what these hospitals pay to utilize the Wilderness Coalition's service.

Fairview Northland Hospital of Princeton, MN has also established an ARPOE service.[12] This service was started to supply smaller hospitals within Minnesota's Fairview Care System with additional pharmacist medication review coverage. By providing this service to other Fairview hospitals, Fairview Northland's pharmacy department was able to justify hiring additional pharmacy staff at Northland to provide around-the-clock pharmacy coverage. Similar to the Cardinal/McKesson model, but unlike the Wilderness project, the Fairview Northland service utilizes only pharmacists to enter orders. Fairview Northland's system is based on the WORX pharmacy information system, although a non-Fairview hospital utilizing the MEDITECH system also subscribes to the service. Similar to Cardinal/McKesson, but again unlike the Wilderness project, Fairview Northland's pharmacists are trained on more than one pharmacy information system.

Preparations Prior to Implementing the Health Information Technology System

Prior to implementing the (ARPOE) system, order entry technicians had to be hired by the hub hospital and trained on the system, as did pharmacists already employed by the hub hospital who would be working with the ARPOE system. ARPOE system policies and procedures needed to be developed to standardize operations between the hub hospital and the remote rural hospitals to the greatest extent possible. These documents were reviewed and approved by a committee of all participating pharmacists at the hub hospital and from the rural hospitals. The Minnesota Board of Pharmacy also reviewed and approved these policies and procedures, a copy of which can be obtained from the investigators.

In anticipation of hiring an additional pharmacist to provide on-site vacation coverage for the remote rural hospitals, an assessment of the rural hospitals' needs for pharmacist coverage was conducted. A lottery system was also developed to determine the dates that the vacation coverage pharmacist would be available to specific hospitals, and a pricing system developed by which the rural hospitals would be charged for the coverage pharmacist's time when the pharmacist was providing pharmacy services on-site. Despite these preparations, the on-site relief service was never launched as it proved impossible to recruit a pharmacist willing to regularly work at multiple rural sites spread across an area larger than the state of Maryland.

The evaluation plan for the project was developed based upon Donabedian's model for evaluating the quality of healthcare services.[13] An initial list of 15 metrics across the three Donabedian assessment domains of Structure, Process and Outcomes was whittled down to a final list of seven (Table 1) following consultation with the AHRQ-funded National Resource Council (NRC). NRC's Evaluation Metric Importance/Feasibility Matrix (Figure 3) was used to identify metrics for which data were already readily available or were readily retrievable from the MEDITECH software.

Evaluation plans were reviewed by the Institutional Review Boards of St. Luke's Hospital and the University of Minnesota.

Table 1. Final evaluation metrics for after hours remote pharmacy order entry project

Donabedian assessment domain*	Research question
Structure	1. Did the after hours rural pharmacy order entry system provide around-the-clock pharmacist review of medication orders during those times that the local pharmacist was off-site?
Structure	2. Did rural hospitals establish and implement policies and procedures regarding pharmacist review of medication orders written after hours (when the local pharmacist was not on-site) as intended by licensing/accrediting agencies?
Process	1. What pitfalls were encountered in implementing the after hours remote pharmacy order entry system?
Process	2. What impact did the after hours remote pharmacy order system have on the number of first doses administered without a priori review by a pharmacist?
Process	3. What impact did the after hours remote pharmacy order entry system have on the time lag from the time the order was written to the time the first dose was administered?
Process	4. What impact did the after hours remote pharmacy order entry system have on staff and prescriber satisfaction with the medication process at the rural hospitals?
Outcomes	5. What impact did the after hours remote pharmacy order entry system have on clinical outcomes?

* Donabedian A. Evaluating the quality of medical care. *Millbank Memorial Fund Q* 1966; 44: 166-203.

Figure 3. Importance/feasibility matrix for evaluation metrics*
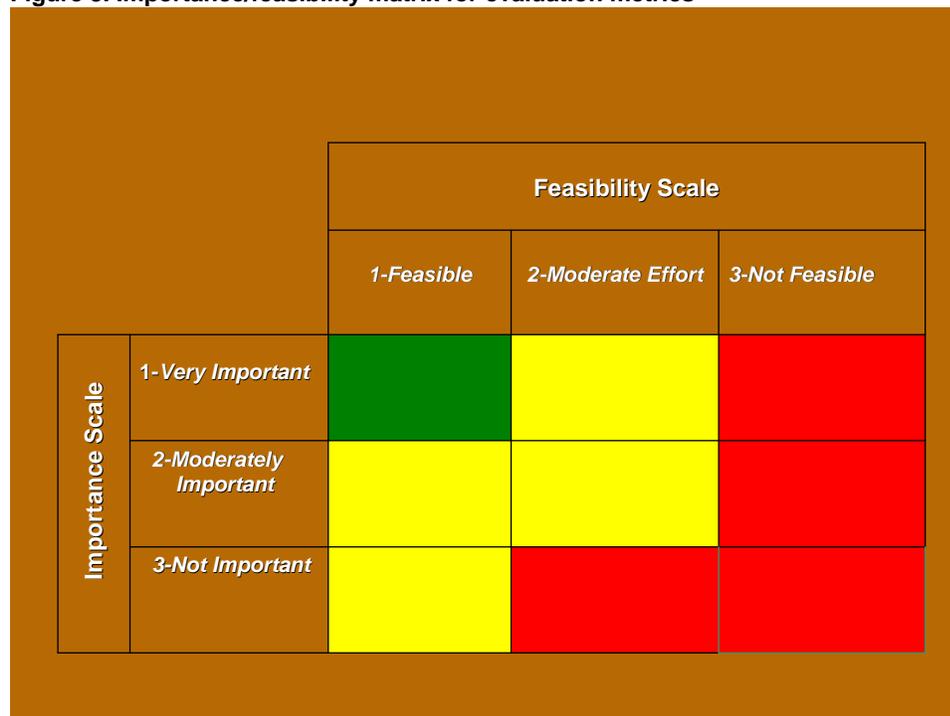
Green Zone: Definitely measure any metric falling within this zone.
Yellow Zone: For metrics falling within this zone, weigh the importance of the metric to the project against the challenges in obtaining data to measure this metric.
Red Zone: The costs of obtaining the data for metrics falling within this zone exceed the value of the information these metrics will provide to the project.
* Agency for Healthcare Research and Quality – National Resource Council, 2005

Results

Structure Metrics

24-Hour Pharmacist Coverage. Around-the-clock pharmacist coverage at the rural hospitals has been nearly fully achieved at the time of this report. While participating rural hospitals receive 24-hour coverage from the hub hospital during weekends and holidays, no after-hours coverage is provided on weekdays from 0400-0700. The rural hospitals have collectively determined from their experiences that these are the hours during which new orders are least likely to be written and therefore find it difficult to justify paying for the service to cover these 15 hours per week.

Remote Order Entry Policies and Procedures. Standardization of remote order entry policies and procedures among the various participating hospitals continues to be an ongoing and necessary process. Harmonization of medication order-related dictionaries between the hub hospital and the rural facilities has proven particularly vexing because of different abbreviation codes in each rural hospital's MEDITECH drug dictionary. A complete set of the policies and procedures available to date can be obtained from the investigators.

Process Metrics

Implementation Surprises. It was discovered early on during implementation that at some rural hospitals, labels for large volume parenterals entered at the hub hospital were not printing at the rural hospital's nursing station. The problem was isolated to the use of Citrix® (Citrix Systems, Inc., Ft. Lauderdale, FL) by the hub hospital staff which would cause the labels, on occasion, to print at some other printer in the rural hospital. A solution was identified and rectified the problem.

Scheduling coverage for the rural hospitals occasionally proved a challenge when a major holiday occurred on a Sunday. Although the rural hospital arranged for the hub hospital pharmacy to provide coverage during the actual holiday, staff at the rural hospital pharmacies might forget to schedule coverage for the following Monday, which many rural hospital pharmacists took off in observance of the Sunday holiday.

Number of First Doses Administered Without *a priori* Pharmacist Review. This analysis is in progress and will be discussed in the 'Remaining Analyses' section.

Impact on Time Lag From Time Order Written to Time First Dose Administered. After the project was implemented, the evaluation team discovered that the clocks on the fax machines at many of the rural hospitals were not set to the proper time. Because of this, it was impossible to correctly calculate the lag time between when a medication order was transmitted from the rural hospital and when the first dose was administered to the patient. This process metric will now be evaluated by analyzing trends in the date and time stamps corresponding to over-ride codes from the automated medication dispensing cabinets used at the rural hospitals, to be discussed in the "Remaining Analyses" section of this paper.

Staff Satisfaction. Nursing staff, pharmacists and prescribers at the rural hospitals were surveyed in a pre-post fashion, prior to (or immediately after) implementation of the ARPOE system, and then again after all rural hospitals had gained at least several months of experience with the system. At the time of this report, only staff surveys have been analyzed. A total of 385 satisfaction surveys were distributed to hospital nursing staff, with 56 pre-implementation and 51 post-implementation surveys being received from the eight sites. Only statistically significant differences between the staff pre- and post-ARPOE implementation surveys are summarized in Table 2. Post-implementation improvements were reported in the areas of timeliness and usefulness of responses to drug information questions, overall availability and helpfulness of pharmacists, staff interactions with both on-site and hub hospital pharmacists, the quality of patient care provided by pharmacists, communications between the Nursing and Pharmacy Departments, and overall satisfaction with pharmacy services. Copies of the satisfaction surveys are available from the investigators.

Anecdotal reports from the pharmacists at the rural hospitals have been helpful. Early on, the pharmacists at one rural hospital noted that the hub hospital was taking excessive amounts of time to respond to new medication orders. This concern led to an on-site meeting at the rural hospital by one of the co-principal investigators, and the problems were resolved. At two other sites, the rural pharmacists noted how helpful it is to arrive at their respective hospital pharmacies after a weekend or holiday to find all of the weekend/holiday orders already entered into the system, doses already dispensed and many order-related questions already dealt with. Through Clinical Messages (described below), the hub hospital pharmacists were also able to alert the rural pharmacist immediately to any medication-related issues which had to be handled locally upon arrival of the local pharmacist.

Table 2. Nursing satisfaction survey Results Pre-ARPOE* and Post-ARPOE* implementation

Survey Item	Mean pre-ARPOE score $\pm$ sd* (n=56)	Mean post-ARPOE score $\pm$ sd* (n=51)	p
Timeliness of responses to clinical drug information questions from the <u>on-site</u> pharmacist	8.13 $\pm$ 2.25	9.07 $\pm$ 1.17	0.008
Usefulness of responses to clinical drug information questions from both on-site and SLH** pharmacists	8.29 $\pm$ 1.86	9.17 $\pm$ 1.11	< 0.001
The overall helpfulness of the hospital's pharmacy staff (both on-site and SLH)	8.42 $\pm$ 1.79	9.23 $\pm$ 1.22	0.008
The overall availability of the hospital's pharmacy staff (both on-site and SLH)	8.15 $\pm$ 1.87	8.87 $\pm$ 1.64	0.037
The quality of the hospital pharmacy's educational materials	6.31 $\pm$ 2.20	7.30 $\pm$ 2.17	0.021
Interactions with the on-site pharmacist	7.56 $\pm$ 2.75	8.79 $\pm$ 1.79	0.008
Interactions with the hub hospital (SLH) pharmacists	4.44 $\pm$ 3.66	6.30 $\pm$ 2.63	0.003
The quality of patient care provided by the on-site pharmacist	6.37 $\pm$ 3.33	8.68 $\pm$ 1.49	<0.001
The quality of care provided by the hub hospital (SLH) pharmacists	3.94 $\pm$ 3.70	6.17 $\pm$ 2.94	<0.001
Educational services offered by the pharmacy department for hospital staff and patients	5.19 $\pm$ 3.06	6.49 $\pm$ 2.94	0.028
Communications between Nursing and Pharmacy departments	7.19 $\pm$ 2.47	8.19 $\pm$ 2.31	0.033
Overall satisfaction with pharmacy services	7.04 $\pm$ 2.41	8.06 $\pm$ 2.19	0.024

*ARPOE: After-hours Remote Pharmacy Order Entry
**SLH: St. Luke's Hospital (the hub hospital)

Outcomes Metrics

    Impact on Patient Care. Impact of pharmacist intervention on patient care was measured by reviewing the Clinical Messages transmitted by pharmacists at the hub hospital through the MEDITECH system to nursing staff, pharmacists and/or prescribers at the rural hospitals. Administrative "clarify" messages which have no potential impact on patient outcomes are ignored. Project evaluators, both pharmacists with hospital pharmacy practice experience (TPS, MMW), classified the remaining clinical messages as one of 16 Drug Therapy Problems, adapting a schema developed by Cipolle, Strand and Morley[14] to the inpatient setting (Table 3). In the first 20 months of the project, more than 700 pharmacist interventions were documented through Clinical Messages, most often preventing a drug from being administered for which the patient had a contraindication (191 occurrences) or preventing an excessive dose of a drug from being administered (172 occurrences). The most acutely dangerous example of the latter was a 10-fold overdose of an injectable drug ordered for a pediatric patient which was caught and stopped by the hub hospital pharmacist.

Table 3. Drug therapy problem categories used to classify clinical messages left by hub hospital pharmacists for nursing staff and prescribers at rural hospitals, 9/16/2005 – 5/18/2007*

Problem
Drug order NOT released to patient profile due to contraindication (191)**
Dose too high (172)
Drug order NOT released to patient profile: Confirmation of "no contraindication" needed from patient (80)
Drug order NOT released to patient profile: duplicative drug therapy ordered for the same indication (77)
Laboratory data needed, e.g., results from a follow-up INR for a patient receiving warfarin (54)
Duration of therapy too long (24)
Medical condition warrants initiation of new drug therapy which was not ordered (23)
Drug has been administered, resulting in an interaction which causes an undesirable reaction unrelated to dose (22)
Dose too low to produce desired response (13)
Preventative therapy required, e.g., pneumococcal vaccine (12)
Inappropriate dosage form or wrong route (11)
Drug has been administered, resulting in an undesirable reaction unrelated to dose (11)
Dosing frequency too short (7)
Dosage interval too infrequent to produce desired response (4)
Drug has been administered, resulting in an allergic reaction (3)
No valid medical indication for drug ordered (1)
Medical condition requires an additional drug (1)
Duration of therapy too short (1)
Drug interaction results in toxicity (1)
Dosage regimen administered or changed too rapidly (1)

Remaining 1373 Clinical Messages were primarily administrative in nature (e.g., missing dosing frequency, ordered drug not of rural hospital's formulary, etc.). An additional 55 Clinical Messages could not be categorized due to insufficient information in the message.

*A total of 2204 Clinical Messages were generated during this time period.

**Number of Clinical Messages related to category

Discussion

In this project, health information technology was utilized to provide small hospitals in geographically-remote rural communities in rural Minnesota with around-the-clock access to pharmacist expertise when each rural hospital's local pharmacist is unavailable. Implementation results to date show that the after-hours remote pharmacy order entry (ARPOE) system used by the eight rural Wilderness Coalition hospitals in conjunction with St. Luke's Hospital has generally had a positive impact on the structure, process and outcome metrics evaluated. Regarding structure metrics, around-the-clock pharmacist coverage at the rural hospitals has been nearly fully achieved and implementation of standardized ARPOE policies and procedures is progressing well. Hiring a "circuit-rider" relief pharmacist to cover vacation and sick leaves at the rural hospitals proved impossible due to the extensive travel and nights away from home that would be necessary, and these efforts were abandoned.

For process metrics, although scheduling issues related to holiday staffing at the rural hospitals has raised challenges, these issues were successfully addressed. Post-implementation nursing staff satisfaction survey results show improvements in satisfaction with pharmacy services in a variety of areas (Table 2).

Focusing on patient outcomes, in over 700 instances pharmacists at the hub hospital identified potential drug therapy problems for patients in rural hospitals. It is difficult, of course, to predict how many of the ordered medications would have actually been administered to patients had the hub hospital pharmacist not intervened. It is also difficult to predict the number of resultant patient injuries that might have arisen had these medications been administered. However, based on results to date, it appears that hub hospital pharmacist involvement in the ARPOE system has resulted in positive contributions to patient care in the rural hospitals. Patients in the rural hospitals appear to have received safer and more effective medication therapy than if there had been no pharmacist involvement. These results support the National Quality Forum's recommendation to have the pharmacist involved in the prescribing process at the time the prescription is written.[5]

Remaining Analyses. Some process and outcome metrics remain to be evaluated in the next few months.

Process. In addition to analyzing satisfaction survey results from rural hospital pharmacists and prescribers, a final satisfaction survey will be distributed during Winter, 2008. The number of first doses administered without *a priori* order review by a pharmacist will be assessed by comparing the over-ride reports from the automated medication cabinets prior to, and following implementation of the ARPOE system. This will be critical to measure in those hospitals that have implemented bedside medication verification. Without a verified order on the electronic medical record the nurse will only be able to scan an over-ride medication order generated by the automated dispensing cabinet. Numbers and types of over-rides during each rural hospitals' normal hours of operation will also be compared to over-rides occurring when the local pharmacist is on-site at each rural hospital.

Outcomes. Clinical Messages since mid May, 2007 through the end of September, 2007 will be reviewed and categorized. A cost-benefit analysis is also being planned to help the Chief Executive Officers of the rural hospitals determine if the benefits attained by their patients,

pharmacists and staff justify the annual expenditures necessary to continue to subscribe to the service.

Conclusions and Implications

Using Internet-based health information technology, participation of pharmacists from a metropolitan hospital with around-the-clock pharmacist coverage (hub hospital) in the care of patients at a number of small, geographically-isolated rural Critical Access Hospitals helped ensure that rural hospital patients received <u>safer</u> and more <u>effective</u> medication therapy than if there were no pharmacist involvement. Coverage by hub hospital pharmacists was well accepted by nursing staff at the rural hospitals, and improved nursing satisfaction with the overall quality of pharmacy services provided at these hospitals by both the hub hospital pharmacists as well as by the local on-site pharmacists.

References

1. Committee on Quality Health Care in America, Institute of Medicine. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: Institute of Medicine of the National Academies, The National Academies Press. 2001.

2. 2. Joint Commission on the Accreditation of Health Organizations. Joint Commission pharmacy standards for Critical Access Hospitals and National Patient Safety Goals (2006) http://www.jointcommission.org/ PatientSafety/NationalPatientSafetyGoals/06_npsg_ca h.htm (Accessed 3/19/2007.)

3. Committee on the Future of Rural Health Care, Institute of Medicine. *Quality Through Collaboration: The Future of Rural Health Care*. Washington, DC: Institute of Medicine of the National Academies, The National Academies Press. 2005.

4. Aspden P, JA Wolcott, JL Bootman, LR Cronenwett, eds. *Preventing Medication Errors*. Washington, DC: Institute of Medicine of the National Academies, The National Academies Press. 2007.

5. National Quality Forum. *Safe Practices for Better Healthcare: A Consensus Report*. Washington, DC: NQF. 2003.

6. Joint Commission on the Accreditation of Health Organizations. Proposed Revisions to Standards MM.4.10 and MM.8.10. (2007-03-18). WWW document: http://www.jointcommission.org/ NR/rdonlyres/A53CAB2B-2B5F-442E-8B5E-0412BD5838FD/ 0/proprevisions_mm_stds.pdf (Accessed 3/19/2007.)

7. Stratton TP. The Economic Realities of Rural Pharmacy Practice. *J Rural Health*. 2001(Spring); 17(2):77-81.

8. Bureau of Health Professions. Report to Congress. *The Pharmacist Workforce: A Study of the Supply and Demand for Pharmacists.* Washington DC: Department of Health & Human Services, Health Resources and Services Administration, Bureau of Health Professions. 2000. [Online]. Available: ftp://ftp.hrsa.gov/bhpr/nationalcenter/phar macy/pharmstudy.pdf. [accessed 2/9/2007].

9. Wikipedia. Sisu. WWW document: http://en.wikipedia.org/wiki/Sisu. (Accessed 4/4/2007)

10. Graham R. Remote Support Provides 24-hour Pharm. Coverage. *U.S. Pharmacist*. 2004(June 15); 29:6.

11. Anon. Rxe-source Helps with Pharmacy Shortage. *Pharmacy Times*. WWW document: http://www.pharmacytimes.com/Article.cfm?Menu=1 &ID=4597. April, 2007. (Accessed 719/2007.)

12. Thompson, B. Remote 24 Hour Pharmacy Service: From 40 Feet to 200 Miles. WWW document. http://www.ashp.org/s_ashp/docs/files/SRH_Remote2 4HrPharmacyService. ppt#582 (Accessed 7/19/2007.)

13. Donabedian A. Evaluating the quality of medical care. *Millbank Memorial Fund Q* 1966; 44: 166-203.

14. Cipolle, RJ, LM Strand and PC Morley. *Pharmaceutical Care Practice: The Clinician's Guide*. 2nd Edition. New York: The McGraw-Hill Companies, Inc. 2004. Chapter 7.

List of Publications and Products

Wilderness
Pharmacy Policy and Procedure

POLICY: Confidentiality and HIPAA

| DEPARTMENT: Pharmacy |
| EFFECTIVE DATE: 2/2005 |
| SUPERSEDES: New |
| REVIEWED: |

PURPOSE: To insure that all patient medical information shared between SLHP and the participating Wilderness Hospitals (PWH) is protected by confidentiality and covered by the HIPAA standards.

PROCEDURE:

1. All PWH CEOs will be required to sign a SLH generated "Business Associate Agreement" to allow St. Lukes to receive and handle patient health information (PHI) from the hospitals that utilize the After Hours Order Entry service offered by the Wilderness Coalition. This will provide confidentiality and HIPAA safeties for each PWH and St. Lukes.

2. This Business Associate agreement *must be signed if you are* applying for a variance waiver with the Minnesota Board of Pharmacy to provide the pharmacy after hours order entry services.

3. Each pharmacist and technician at St. Lukes signs an agreement concerning conflict of interest and holding all PHI as confidential annually and is on file in the Human Resources department.

4. Each pharmacist, technician and nurse from the PWH should also sign a confidentiality statement at their respective hospital to protect *all* patients' PHI. PHI will be interchanged between these parties in some form throughout this process.

Approved:_____ _____
　　　　　　Wilderness Co-Investigator　　　Date

C:\policy\　　　　　　　　　　　　　　　　Page 1 of 1

Wilderness
Pharmacy Policy and Procedure

POLICY: Drug Formulary

| DEPARTMENT: Pharmacy |
| EFFECTIVE DATE: January 05 |
| SUPERSEDES: New |
| REVIEWED: |

PURPOSE: To develop a process to insure that each hospital has a copy of their pharmacy's current policies and procedures and approved drug formulary on file at St. Luke's Pharmacy as a reference in entering remote medication orders.

PROCEDURE:

1. Each participating Wilderness Hospital (PWH) pharmacy department will be required to send or have electronically available a current copy of their pharmacy Policies and Procedures (P&P) and a copy of their approved drug formulary. Updates and new P&P and formulary changes should be forwarded to St. Luke's on a regular basis once approved.

2. St. Luke's will be developing an *intranet-based* set of hospital pharmacy policies and procedures based upon JCAHO and/or Critical Access guidelines. These policies will be generic and each hospital that decides to utilize them must download them and make them hospital specific. Once these P&Ps are approved a copy should be forwarded to St. Lukes Pharmacy and they should be uploaded onto the intranet P&P site that is maintained by SISU.

3. Remote "after hours order entry" will not be implemented until a copy of the current drug formulary and P&P are received or available electronically by SLHP.

APPROVED: _____ _____
　　　　　　Wilderness Co-Investigator　　　Date

Updated: 2/11/05
C:\policy\　　　　　　　　　　　　　　　　Page 1 of 1

Wilderness
Pharmacy Policy and Procedure

POLICY: Hours of Operation for WAH

| DEPARTMENT: Pharmacy |
| EFFECTIVE DATE: 1/7/05 |
| SUPERSEDES: New |
| REVIEWED: 4/14/05; 6/20/05 |

PURPOSE: To set the standard hours of operation for the Wilderness After Hours Order Entry program (WAH). This will increase the amount of time that a Minnesota registered hospital pharmacist is reviewing medication orders when the pharmacy departments are closed from normal hours of operation by 84 hours per week.

SCHEDULE:
Note: Holidays not below listed will be staffed as a normal weekday 4PM-4AM

Monday: 4pm-4am

Tuesday: 4pm-4am

Wednesday: 4pm-4am

Thursday: 4pm-4am

Friday: 4pm-4am

Saturday: 8am-8pm

Sunday: 8am-8pm

New Years: 8am-6pm

Easter: 8am-6pm

Thanksgiving: 8am-4pm

Christmas: 8am-4pm

Exceptions: If the Wilderness Order Entry Technician's cannot staff the service during any shift due to unforeseen circumstances, the hospitals will be contacted that the After Hours Service will not operate during those hours indicated.

Approved:_____ _____
　　　　　　Wilderness Co-Investigator　　　Date

C:\policy\　　　　　　　　　　　　　　　　Page 1 of 1

Wilderness
Pharmacy Policy and Procedure

POLICY: Physician Order Entry "After Hours" for the Wilderness Hospitals with the Meditech PIS- Standard Operating Procedures(SOP)

| DEPARTMENT: Pharmacy |
| EFFECTIVE DATE: 2/1/05 |
| SUPERSEDES: New |
| REVIEWED: |

PURPOSE:
To develop a process for the entering of inpatient physician medication orders at St. Luke's Hospital Pharmacy for the participating Wilderness Hospitals utilizing the Meditech PIS in their pharmacy departments. These hospitals will include: Cloquet, Two Harbors, Moose Lake, Aitkin, Cook, Ely, Deer River and Big Fork.

This list of hospitals may increase as other Wilderness Hospitals convert to the Meditech PIS in the future or other hospitals elect to purchase this service from St. Luke's Hospital Pharmacy.

PROCEDURE:

1. Each participating hospital will request that St. Luke's Hospital Pharmacy (SLHP) to enter physicians' inpatient medication orders at times when their pharmacy department is closed (please refer to the hours of operation times) Monday through Sundays. This does not include medication orders for outpatient orders or nursing home patients.

2. The process will involve the participating Wilderness Hospital (PWH) faxing the original physician's medication orders to the St. Luke's Pharmacy at: 218-249-2407 or 218-249-5609, when the PWH pharmacy closes from their regularly scheduled hours of operation. This process is not intended nor approved by the variances issued by the Minnesota Board of Pharmacy to cover order entry if a pharmacist is unable to work during the normal hours of operation to include sick calls and/or vacation coverage.

C:\policy\　　　　　　　　　　　　　　　　Page 1 of 1

3. SLHP will enter physician medication orders only. This will include only FDA approved oral medications, injectable meds, IVPBs, nebulizer treatments, large volume IVs.   TPNs, outpatient prescriptions, nursing home residents' orders, investigational or chemotherapy orders will not be entered by SLHP.

4. Orders received from the PWH will be entered into that hospital's Meditech Pharmacy Information System (PIS) by the SLHP staff. If the Wilderness hospitals' nursing staffs do not enter allergies/ADRs into Meditech, they must write them on the medication order sheets prior to faxing. If SLH pharmacy receives a medication order sheet without any allergies or NKA stated, SLHP will fax the order back to the hospital for written documentation of the patient's allergies. Phone calls will not be utilized for this process. *All changes will be in writing.* The above OE process into Meditech involves PIS order entry allergy checking, food drug interaction checking, adverse drug reaction (ADR) checking, class duplication checking and drug to drug interaction checking prior to releasing the order to the patients' pharmacy profile, automated dispensing cabinet and/or medication administration record (MAR).

   If any of the aforementioned checks reveal a *severe* level reaction, the SLHP pharmacist will research the options and notify the PWH nurse if any further action will be required, such as contacting the prescribing physician prior to administration or holding the administration until the order can be clarified by the PWH pharmacy department during their next day of operation. This may include up to calling the PWH's pharmacist on call or pharmacist in-charge (PIC). Under most circumstances the PWH nurse will contact the prescribing physician for routine order clarification, since they have an established relationship with the prescriber established. Once clarified, the nurse will *write a new order and refax* it to the SLH pharmacy. In rare instances, the SLH pharmacist may want to talk to the physician directly. In this case the physician's contact number will be provided by the PWH nursing staff.

5. Once the physician's medication order is entered/ verified into the PWH Meditech PIS, the order will appear on the automated dispensing cabinet's profile under the corresponding patient. Should the hospital not utilize automated dispensing cabinets, this prior statement would not pertain. The order will also appear on any subsequent printings of the patient's MAR or drug profile.

13. Only medication orders signed and dated by a physician (or medical staff approved provider) or verbal(VO) or telephoned(TO) orders from a prescriber to a registered nurse and signed and dated by the nurse will be accepted for OE by St Luke's pharmacy staff. Medication reconciliation sheets or MARs will not be accepted for OE, unless they meet the prior conditions of signature and date.

14. St. Lukes Pharmacy will only enter physicians' medication orders during the Wilderness After Hours scheduled hours of operation. Any medication orders faxed to St. Luke's will remain un-entered until the next scheduled After Hours Order Entry shift commences or the Wilderness hospital pharmacy opens, whichever occurs first.

15. The SLH Pharmacists will review the following on each patient during the order entry (OE) or verification process:

   a. medication history (med reconciliation sheet, patient profile,etc)
   b. diagnoses
   c. allergies
   d. height, weight and age
   e. drug duplications
   f. potential drug interactions
   g. adverse drug reactions (ADRs)
   h. pertinent lab data on the EMR
   i. any other necessary patient information

Approved: _____
                   Wilderness Pharmacy Co-Investigator   Date

Updated:2/11/05; 3/8/05; 6/20/05; 4/25/06; 5/30/06

6. Routine medication orders should be verified in Meditech within an hour from the time faxed under normal circumstances. STAT or NOW orders should be verified within 30 minutes. Nursing staff should not delay patient care by with holding urgently needed medications that would harm the patient by waiting for the order to be entered into the PIS.

7. The technician and/or pharmacist will request a MAR to print at the Wilderness Hospitals' *default* nurse's station printer after completing the order entry process on all patients' initial admissions to any of the Wilderness hospital(s). In order to print MARs to the nursing station, SLHP *recommends* that the PWH selects the nurse's station printer, on their PIS, for default printing of MARs.

8. Medication orders should be entered into the PWH PIS prior to administration to prevent any serious allergies/ADRs to the patient. An exception will be in the case where a delay of the medication administration would harm or delay care that is needed in an urgent time frame such as antibiotics, pain medications or a neb treatment. In these cases, a system over-ride with a staff witness is recommended.

9. St. Luke's Hospital Pharmacy department will not enter any medication orders that the St. Luke's pharmacist feels are unclear or unsafe, unless they can be acceptably clarified, within normal channels, prior to order entry.

10. All medication orders faxed to St. Lukes for order entry will be filed at the PWH and their pharmacist will be required to verify correct order entry and proper charging as soon as the pharmacy departments opens the next business day. The extent of this order checking process will be determined by the PIC of each PWH.

11. Any OE questions should be directed to: Mike Dudzik 218-249-5621 or mdudzik@slhduluth.com

12. Any MAR corrections noted by nursing when their pharmacy is closed, shall be conveyed to the St. Luke's Pharmacy via a written order faxed to St. Luke's canceling the previous order and requiring the new order to be entered into their PIS by St. Luke's. No MAR correction sheets or telephoned orders for the above MAR changes will be accepted by St. Luke's.

AFTER HOURS ORDER ENTRY PRE-CHECKLIST
Wilderness Hospitals

These conditions must be completed *prior* to implementation of order entry:

o   Do you admit patients 24/7 into Meditech?

o   Has the Hospital been added to Meditech sign-on menu by SISU? Yes
o   Have the hours of order entry (OE) been delineated clearly with a copy of the OE schedule provided? 4PM-4AM Mon-Fri and 8AM-8PM weekends
o   Does St. Luke's have all pharmacists' and technicians' work email addresses? Yes/No
o   Do we have the Dir of Pharmacy's home contact info- for emergencies only? Yes/No
o   Does the hospital have all of Wilderness pharmacy staffs' work telephone numbers and emails? Yes/No

o   Does St. Luke's have the fax numbers for the Wilderness pharmacy and all nursing stations? Yes/No

o   Does SLH have all the telephone numbers for all nursing stations and the pharmacy's main phone number? Yes/No

o   Your hospital must have written approval from your risk manager or legal department prior to commencing After Hours Order Entry with St Luke's Hospital.

o   What is the number of actual beds that can be occupied on any given day?
o   What is the average daily census?
o   Has the hospital completed a one week study of the number of line item medication orders when pharmacy is closed on Mon-Fri, Saturday, Sunday and holidays? Yes/No

o   What are the nursing unit locations and names on Meditech?

o   The After Hours OE fee for service has been clearly determined prior to implementation?
o   Has the hospital faxed copies to St. Lukes (1-218-249-2407 and mark TEST % Mike Dudzik) to test for clarity prior to implementation? Yes/No
o   All faxed medication orders must clearly state hospital name and town location.
o   All med orders will have the allergies written on the order or they will not be entered on Meditech, unverified by nursing, with a reason.
o   If allergies are entered into Meditech- who enters the allergies into Meditech, nursing, pharmacy or both?
o   All medication order changes will be communicated to St. Luke's via a new written med order. Telephoned change orders will not be accepted by the St. Luke's pharmacists
o   Medication order questions faxed back to the hospital will be clarified by the Wilderness Hospital nursing/ pharmacy staff, and then communicated to St. Luke's as a new written order.
o   How are non-formulary drugs handled in OE?

o   How are therapeutic substitutions handled?

16

- o Does St. Luke's have a written therapeutic substitution list with criteria? Yes/No

- o If you have O/P meds listed in the formulary dictionary how can we identify them to prevent using that pneumonic for I/Ps?

- o Have you provided the hospital's pertinent medication policy and procedures? Yes/No
- o How are MDV, bulk meds such as creams or liquid orders entered?

- o Does SLH have hard copies of the medication standing orders, sets and their corresponding pneumonic? Yes/No
- o Does SLH have a list of standard administration times? Yes/No
- o Are the standard administration times uniform hospital wide? Yes/No
- o Antibiotics, etc will be entered for the safety and proper treatment of the patient's condition. This means we will enter all Wilderness medication orders the same. If this does not suit your specific hospital, please feel free to change the next day.
  Example: Rocephin 1gm Q24H ordered at 2200 hours. We will enter to dose the 1st dose tonight and the next in 24 hours.

- o Does SLH have a list of diluents for your IVPBs? If not SLH will mix the way it does in D5W the majority of the time unless contraindicated.
- o Does your hospital have a Coumadin check message? Yes/No
- o How do you want SLH to handle "zero dosing"?

- o What does your TKO IV rate=_____ml/hour?
- o Are peripheral locks saline or heparin? We need the strength and pneumonic for each.

- o If Protonix IV used, is it IVP or IVPB?
- o What orders should not be entered?
  Example: Patient's own meds, labor and delivery, bolus, nursery anesthesia, etc

- o If St. Luke's Pharmacy enters medication orders where the patient has been allowed to use their own medications, we will enter it as if the hospital's medications are being used with the following entered on the comment line: patient may use own med- NOT RPh verified. We will not enter any patient charges.

- o Do you utilize a daily or _____ medication cart delivery? Or what? Explain.

- o What is your medication cart delivery time?
- o How do you want us to handle charging?   Let Meditech determine # charges. Non- routine orders (pms) will be charged out of AcuDose/Pyxis or Omnicell?

- • SLH will not accept MAR correction sheets or medication reconciliation sheets for order entry, unless the physician has signed and dated them and indicated what orders to continue or the registered nurse has a VO or TO from the prescriber to use these as new admission or transfer orders.

- • All order changes must be handled as a new order signed by the physician/prescriber or as VO or TO by a registered nurse, dated and faxed to SLH.
- • All standing orders must have a patient sticker(name and account #) , allergies listed, medications requested and either a physician's or a VO/TO and a nurse's signature.
- • Are standing orders on Meditech should be in the same order as meds on the paper standing order and is the drug listing up to-date and accurate? Yes/No
- • Do order sets have expiration dates and route auto entered under the ("Rx Info" tab for IV's) esp for drugs with auto stop dates such as narcotics and antibiotics, etc Yes/No
- • Are HT and WT required on OE? Yes/No
- • Do you utilize "PRN" sigs? Yes/No
- • Do you want St. Luke's to print MAR's on all new admits? Yes/No Does your MAR print request self populate with the correct date and shift and printer? Y/N To which printer #?
  What date and shift do you want us to put in for MAR printing?
- • St. Luke's will not enter one time orders that are already taken out of AcuDose/Omnicell/Pyxis.
- • St. Luke's request that you have the following sigs in your dictionary- NOW, STAT
- • Can you set your drug interaction checking to "severe"? Yes/No Do you allow Meditech to perform class interaction checking? Yes/No
- • St. Luke's can only enter medication orders to patients assigned an inpatient bed.
- • Do you ever need to enter orders for a 23 hour patient not assigned an I/P bed? Explain
- • If your pharmacy is entering orders at different times than the normal pharmacy hours, please notify St. Luke's that this is happening to prevent duplications and errors.
- • St. Luke's only faxes orders back to nursing for clarification.
- • Do you use any type of medication reconciliation sheets?
- • Are LVIVs entered Ex: LR or D50.45NS-1000ml Yes/No
- • Do you utilize order sets/ standing orders? Yes/No
- • Are nursing home and hospital meds distinguishable in the Meditech formulary? Yes/No How: _____

- • SLH does not routinely enter SIG info in the comment line, duplication of work.
- • If you utilize "paper" standing orders? Yes/No Are they named to ease locating in Meditech? Yes/No

I:\med101\wilderness P&P\Wilderness pre-implement checklist 2006
Updated: 7/13/05; 8/3/05; 9/14/05; 9/21/05;1/5/06; 5/30/06

Wilderness

Pharmacy Policy and Procedure

POLICY: Quality Assurance/ Quality Improvement and Failure Mode Effects Analysis

DEPARTMENT:	Pharmacy
EFFECTIVE DATE:	6/1/06
SUPERSEDES:	New
REVIEWED:	

PURPOSE: To insure that the Wilderness After Hours Order Entry service has a process in place to monitor areas requiring the quality assurance/improvement and/or failure mode effects analysis of this service.

PROCEDURE:
1. All Wilderness policy and procedures should be reviewed annually by the hub hospital and each hospital's pharmacy and therapeutics committee participating in the service.
2. New policies involving medications developed by the participating hospitals or Wilderness specific policies created by the hub hospital should be communicated electronically in a timely manner to each other. The hub hospital is required to have a current copy of medication P&Ps on file from each of the participating hospitals.
3. Each hospital should have a policy regarding the handling of "high risk" medications and the proper procedure to follow for their hospital.
4. Each hospital should be monitoring the daily over-rides by nursing staff that are occurring with their automated dispensing cabinets.
5. Any significant medication variances (medication errors) or adverse events that result from a miscommunication or an error in the hub's medication order entry should be researched and all parties involved participate in a FMEA sponsored by the affected hospital. The hub pharmacy representation should be able to participate in person, if feasible, or via teleconferencing or video conferencing.

APPROVED:_____ _____
            Wilderness Co-Investigator   Date

Wilderness

Pharmacy Policy and Procedure

POLICY: Pharmacy Video Conferencing

DEPARTMENT:	Pharmacy
EFFECTIVE DATE:	1/12/05
SUPERSEDES:	New
REVIEWED:	6/06med

PURPOSE: To establish guidelines for the purpose and appropriate use of the remote video cameras installed in each participating Wilderness Hospital Pharmacy department. The camera's purpose is to allow the hospital's professional staff to videoconference between their pharmacy and St. Luke's Hospital Pharmacy during the time that the participating Wilderness Hospital (PWH) is closed from their normal business hours. They will visually televise over the videoconferencing system a medication order and the package size of medication chosen to meet the requirement for the drug's administration. Intentions:
1. This process will initially be reserved for medication orders that are unusual in strength or a dosage ordered which varies from the normal dosage seen on a routine basis.
2. This process can also be used for medications that the nurse has never administered before to insure that they understand the proper use, correct dosage and proper administration of the medication.
3. This system should be used for the identification of medications brought from home by the patient for administration while in the hospital as an I.P.
4. This system is not intended to take the place of a pharmacist being present during normal business hours or to replace a vacation pharmacist shift or a vacant position in the pharmacy department.

PROCEDURE:
1. A registered nurse, authorized to enter the pharmacy department after hours, will take the physician's medication order and proceed to pharmacy department.
2. The nurse will turn on the videoconferencing system and contact St. Luke's Pharmacy via phone and make a request for videoconferencing. She will identify her/him self, which hospital she is calling from and the intent of her videoconferencing.
3. The Wilderness Pharmacy technician at St. Lukes answering the phone will document the nurse's name, time of call, hospital and pharmacist performing the videoconferencing session on the Wilderness Video Conferencing Documentation Form.

4. The technician will turn on the St. Luke's video system and request that the pharmacist reply to the nurse calling on the video conferencing camera.

5. The pharmacist will ask the nurse to give him/her some baseline information (patient's name, age, diagnoses, allergies and any other pertinent health information on the patient) and then show via fax and over the camera a copy of the physician's order and what medication package(s) were chosen to administer to the patient. This process is for information sharing between the nurse and the pharmacist and to assure that the correct dose, quantity and product have been chosen for administration to the intended patient.

6. Once the fax has been received from the requesting hospital, the pharmacist will verify that the 5 R's are met and that there are no allergies, duplication of drug class, etc. to the administration of this medication and then proceed to enter the order into the requesting hospital's PIS. Once the order is entered, the nurse is authorized to administer the medication to the patient.

7. This video conferencing system is intended to be used prior to a medication being administered to the patient.

Approved: _____   _____
                Wilderness Co-Investigator   Date

Updated: 2/11/05; 6/06med

Wilderness

Pharmacy Policy and Procedure

DEPARTMENT: Pharmacy	
EFFECTIVE DATE: April 25, 2006	
SUPERSEDES: New	
REVIEWED: P&T 6/06	

POLICY: Staffing in the Hub Pharmacy to Cover for After Hours Order Entry

PURPOSE: To insure that there is always adequate pharmacy staff on duty to handle the patient load for St Luke's Hospital as well as for the After Hours Order Entry (OE) for the Wilderness Order Entry Hospitals. This staffing will consist of dedicated order entry technicians and registered pharmacists.

PROCEDURE:

The Wilderness Order Entry Service will be open for 84 hours each week. For the most part these hours correspond to when the remote hospitals Pharmacies are closed from their normal hours of operation. This varies on the weekend days when several of the hospitals are open.

The After Hours Order Entry Service operates daily as outlined in the Hours of Operation for WAH policy. During these hours there will be at least one (1) nationally certified technician fully trained in Meditech order entry to enter the orders faxed from the Wilderness Hospitals. Five days during the week there is an additional full-time pharmacist on duty to cover the increased combined work load during the busy hours of 4PM through mid-night.

Also available and fully functional is the ability of the St Luke's pharmacy staff to fax orders to the Dir of Pharmacy and Pharmacy Operations Manager that have security access to enter Wilderness orders from their home. This service is used only in times of an "abnormally" heavy work-load, which would cause undue delays in order entry/verification of Wilderness or hub hospital medication orders.

APPROVED: _____   _____
                  Wilderness Co-Investigator   Date

18