

2013 Rural Hospital Capital Improvement Grant Program

Stage 1 – Pre-application

Minnesota Department of Health

Office of Rural Health & Primary Care

Application submitted by:
Sanford Health Network d/b/a
Sanford Canby Medical Center
Canby, MN

Project title: Medication Management System

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I. Applicant Information

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4. System Affiliation (if applicable)

Name of System Sanford Health

Nature of Affiliation Leased to _____
(Managed by, leased to, owned by, etc.)

5. Grant Amount Requested \$80,000 **Match to Be Provided** \$43,531 **Total Cost** \$123,531

6. Name of Project

Medication Management System

II. Project Information

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B. Brief project description (no more than five pages)

1. Project description

Sanford Canby Medical Center (SCMC) proposes to purchase an automated medication dispensing system that will help ensure accurate selection and dosing, streamline pharmacy operations and provide security in storing and administering medications. SCMC has identified the Pyxis MedStation 4000 platform, manufactured by CareFusion (see attached pricing estimate), as a strong fit with the hospital's needs. The Pyxis system supports decentralized medication management, integration with the electronic medical record (EMR), barcode scanning and other features to prevent loading of incorrect substances. The Pyxis provides active alerts as an added safety precaution for high-risk medications.

The Pyxis solution will improve patient care and staff experience throughout the community-based critical access hospital. SCMC serves more than 6,000 people in its market area, operating a 25-bed acute care hospital, an attached seven-practitioner medical clinic with Rural Health Clinic status, an attached skilled nursing facility, an attached senior housing/assisted living facility, a dental clinic, home health care service, a dialysis unit, ambulance service and a wellness center. SCMC is associated with and leased by Sanford Health Network, but SCMC's local leadership is responsible for setting and maintaining a balanced budget, as well as for meeting all financial obligations. In an effort to maximize efficiencies that benefit patients and employees alike, SCMC strategically seeks external funding from agency and community sources.

2. Objectives and Goals of proposed project

Sanford Canby Medical Center's goals for this proposed project are threefold: Patient safety, workflow efficiency and added security controls.

Patient safety is always the paramount concern of SCMC's direct-care staff and administrators, and the Pyxis system includes several built-in checks and balances that support the "five rights" of medication use: right patient, right medication, right dose, right route and right time.

Second, the Pyxis system promotes workflow efficiency for pharmacy and nursing staff. This project includes the purchase and installation of two Pyxis dispensation units – one in the nursing department that serves the inpatient hospital and one directly within the Emergency Department (ED). The second unit is necessary to the successful implementation of automated medication dispensation throughout SCMC. It allows SCMC staff to triage the acute needs of ED patients and administer critical medications without losing precious moments to access drugs kept off-unit. Decentralized sites for medications will decrease the time to first and subsequent doses for those in SCMC's inpatient beds as well. Not all emergent situations take place in the ED. SCMC strives for a consistent standard of care for all patients, across all departments.

Third, the Pyxis solution offers added security to help prevent diversion of controlled substances and to detect diversion, in the very rare instance that it could occur. SCMC holds its staff to the utmost levels of accountability. The Pyxis system protects staff by providing them with added tools to safeguard and confirm the dosages they document through the EMR.

3. Relationship of proposed project to Strategic Plan or Capital Improvement Plan

Sanford Canby Medical Center’s Strategic Planning Accountability Template (see attached) is guided by six pillars of patient-centered experience –

- Learning and Growth,
- People
- Quality, Safety and Risk,
- Community,
- Finance, and
- Service.

The ultimate impact of this project cuts across all six pillars above. Specific to the Quality, Safety, and Risk pillar, implementation of the Pyxis system will drive real and tangible benefits. As such, the Pyxis project is integral to several of SCMC’s strategic priorities for the current fiscal year.

SCMC Strategic Planning Accountability Template – summary of selected priorities

<i>Strategic Priorities</i>	<i>Key Outcome Indicators</i>	<i>Tactics/Action Items</i>
B3	Heart Failure drug interventions overall goal at 100% for FYE 2013	Targeted drug interventions will be utilized for all patients with LVSD (left ventricular systolic dysfunction)
C2	Antibiotics administration for Pneumonia patients overall at 100% for FYE 2013	Initial antibiotics will be appropriate for all immunocompromised CAP (community-acquired pneumonia) patients
D1-D3, D6	Surgical Care Improvement Project implementation overall at 100% for FYE 2013	Appropriate prophylactic antibiotics will be administered prior to surgical incision and discontinued within 24 hours after surgery’s end. Patients on beta-blocker therapy prior to arrival for surgery will receive a beta-blocker during the perioperative period.
F1	Medication errors with harm at 0% for FYE 2013	All medication errors will be evaluated and investigated for root cause, then tracked for patterns/trends.
K1-K2	Reduce risk of drug diversion and medication errors through pharmacy computerization by 9/30/2013	Acquire automated medication dispensing system and bar-coding technology through reserves and grant funding.

4. Plan to operate or maintain equipment

The attached cost estimate from CareFusion (see attached) includes both Purchase Terms for the Pyxis equipment (\$123,531, equal to the project’s total cost) and Support Terms (\$463 per month). The Support Terms are not included in the proposal budget and will come solely from operational funds in the current fiscal year and beyond. Sanford Canby Medical Center leaders are aware of this ongoing cost and of the need for periodic software upgrades that drive the safe and effective delivery of medications.

C. Brief case for the project (no more than six pages)

1. Problem statement (Document and quantify, if possible.)

Medication errors are the most frequent cause of adverse medical events – a larger category estimated by the Institute of Medicine to cause more than 1 million injuries and nearly 100,000 deaths each year. These errors have a human toll that cannot be measured. In terms of healthcare operations, these errors are financially costly as well.

Sanford Canby Medical Center has made impressive strides by implementing computerized physician order entry (CPOE) management. But CPOE is just the starting point in getting the right medication in the right dose – via the right route – to the right patient at the right time. At each step in the “five rights” process, there are variables that can cause errors in transcribing, dispensing and administering medications. Medication variations, which result when drugs are not administered properly, can negatively impact patient outcomes and even can be fatal.

In the fiscal year completed June 30, 2012, SCMC served 444 hospital inpatients (including those using swing beds) and treated 1,034 patients in the Emergency Department. During that same time frame, pharmacy and nursing staff processed and dispensed 52,267 medication doses – all the while using a cumbersome process. Nurses must make multiple trips to the main hospital during a single shift. When a staff pharmacist is not present, nurses must hand-select medications based on the physician’s order record, and then verify first dose via the online Web site for SCMC’s contract pharmacy. In addition to opening the door for error, this multi-step, multi-platform approach delays the patient’s receipt of medication. The delays are magnified for patients in the Emergency Department (ED), which is located some distance from the central pharmacy. Due to security concerns, no narcotics or prepacks are kept in the ED. As a result, only a limited supply of select medications is immediately available for ED patients and the staff who treat them.

It is a testament to staff members’ professionalism and consistent use of the “five rights” that SCMC has been able to provide medications safely for so long. But staff can offer only so much efficiency and cost-effectiveness within the boundaries of an outdated process. Leaders at Sanford Canby Medical Center strive for a proactive, rather than reactive, approach to this significant problem. SCMC employees are community members, too, and none believes a tragic error need occur before change can take place.

2. Proposed solution

The Pyxis MedStation 4000 system offers tested tools to reduce medication variances, provide predictable results for patients and staff, and securely store medications and record dispensed dosage amount. The Pyxis integrates with Sanford Canby Medical Center’s electronic medical record (EMR), an EPIC software product branded as Sanford One Chart. Upgrades to Pyxis software also will be supported by designer and vendor EPIC. This embedded connectivity will facilitate SCMC’s transition to automated medication administration.

3. **Importance to hospital and community**

The chief value of this system is simple – it will enable Sanford Canby Medical Center to deliver medications more safely to patients, with fewer risks of drug variance.

Less visible to the greater community, but just as important in terms of healthcare operations, is the issue of medications diverted from patient care to provider use. Patients who do not receive drugs or other controlled substances prescribed in their treatment plans cannot benefit from these therapies. According to data from the U.S. Drug Enforcement Administration (DEA), there were 250 reports of theft or loss of controlled substances from Minnesota hospitals and nursing homes from 2005 to 2011. Prescription drug monitoring programs and other initiatives exist to combat this growing problem: Reports increased by 325% between 2006 and 2010. The Pyxis system gives pharmacists and nurses additional tools to document and confirm medications in the electronic medical record (EMR) and adds another layer of safeguards to protect patients.

4. **Personnel involved**

Cheryl Ferguson, Associate Administrator of Sanford Canby Medical Center, will oversee project implementation for the Pyxis system. A member of the SCMC Patient Safety Committee, she will coordinate interdepartmental collaborative efforts.

Directory of Pharmacy Dean Fenenga, PharmD, and his colleagues in the Pharmacy Department will have an integral role in transitioning SCMC to an automated medication administration system. Fenenga also has a leadership position in a separate project to secure funding and install a barcode medication administration (BCMA) system. A second PharmD and a pharmacy technician will play important roles as well.

Chief Nursing Officer Lori Sisk will ensure that her entire RN staff (approximately 25 at present) receives proper training on the Pyxis system. Sisk serves on the SCMC Patient Safety Committee with Ferguson and will be responsible for reporting any direct-service challenges in implementation.

Physicians at SCMC champion patient safety initiatives such as the Pyxis system and already have moved to a computerized physician order entry (CPOE) and management process. Sanford Health Network provides support through the CPOE model and will maintain the IT structure needed for the Pyxis system.

5. **Beneficiaries** (How will they benefit? How will you know?)

Most important, the Pyxis system will benefit patients at Sanford Canby Medical Center. Whether in the hospital or at the Emergency Department, patients will be able to start medication therapy more quickly, and in a safer manner. This is a direct result of Pyxis' benefits for nursing and pharmacy staff. Nurses will have faster, easier access to needed medications. In addition, the streamlined order-filling process will enable nurses to spend more time in direct patient care – time now spent in the multistep manual process that requires nurses to leave the department to access drugs.

A CareFusion-sponsored white paper in 2008 shared results from a study of seven hospitals that recently had transitioned to automated medication management system from a centralized pharmacy model. The study indicated that as the number of medications managed through automated dispensing cabinets (ADCs) increased, the time to a patient's first dose decreased. The study also noted fewer missed doses with ADCs than via traditional, manual processes.

6. **Location** (Why here?)

The Pyxis system will be located in a community-based hospital, serving the inpatient population as well as patients and staff in the Emergency Department (ED). In addition to the Pyxis dispensation units in the nursing department and ED, the integrated system relies on a centralized console to provide computing power – the “brain” – that will be housed in the Pharmacy Department.

Canby is located in a Medically Underserved Area, designated by the federal Health Resources and Services Administration (HRSA). As such, SCMC operates in an environment with too few primary care providers, high infant mortality, high poverty, and/or a high elderly population. That last point is particularly evident within SCMC's patient base, since Yellow Medicine County has an elderly dependency ratio not quite twice that of the State of Minnesota (32.9 compared with 17.9). Elderly patients often are unable to travel for routine health care services, yet the nearest tertiary care center is more than 100 miles away, in Sioux Falls, S.D. Elderly residents in Yellow Medicine and surrounding counties may neglect their health needs until a developing condition escalates to an emergency. More prone than younger adults to suffer the severe effects of dehydration or delayed interventions, these elderly patients cannot afford to wait on medications. Nor can they recover as quickly if incorrect drugs or dosages are given.

7. **Timeline** (Why now?)

As noted above, Sanford Canby Medical Center physicians place medication orders through a computerized physician order entry (CPOE) system. Implemented in December 2011, the CPOE transition has removed a certain amount of guesswork and potential for human error in interpreting doctor's orders. The Pyxis system is a logical next step to further improve patient safety and experience. The table below outlines the proposed timeline for converting to an automated medication administration process.

<i>Activity</i>	<i>Timetable</i>	<i>Responsible Party</i>
Order equipment	July 15, 2013	Director of Pharmacy Equipment Vendor Purchasing Department Sanford Health Network IT
Install Pyxis system equipment	August 19, 2013	Director of Pharmacy Equipment Vendor Sanford Health Network IT
Train pharmacy and RN staff	August 28-September 13, 2013	Director of Pharmacy Chief Nursing Officer On-site IT Staff
Pyxis system fully operational	September 30, 2013	Director of Pharmacy Chief Nursing Officer

Sanford Canby Medical Center also is actively pursuing funding to purchase and install a barcode medication administration (BCMA) system, through a separate granting mechanism. SCMC already has the capability for electronic medication administration records (eMAR), and the BCMA scanners will interface with both eMAR (through Sanford One Chart) and the Pyxis system itself. Together, these powerful solutions will offer unprecedented streamlining of medications for patients and staff at Sanford Canby Medical Center.

8. Cost (Why?)

Sanford Canby Medical Center has evaluated patient and staff need, taking into account areas of the hospital that require the greatest and most immediate access to medications. The most current estimate from Pyxis manufacturer and vendor CareFusion (see attached) totals \$123,531. The equipment detailed within the CareFusion estimate provides for Pyxis units with sufficient capacity to be placed at both the inpatient nursing station and within the Emergency Department.

SCMC's leadership team recognizes the need to direct resources toward the Pyxis project and has outlined a match of \$43,531 in its Capital Improvement Plan Budget for FY 2013 (see attached budget worksheet). This represents a 35% match and illustrates SCMC's commitment to this patient-safety project. Sanford Health Network (SHN) executives, including SHN Vice President Eric Hilmoe, strongly support the Pyxis project.

9. Need for grant funds

As a rural facility and Critical Access Hospital (CAH), Sanford Canby Medical Center is challenged to provide high-quality care and diverse services while recovering costs from a declining population base that's increasingly dependent on Medicare and Medicaid. Several of the services SCMC provides produce negative revenue compared to expense, and a few others result in a slim margin above operational costs. Therefore, the few programs that are comparably self-sustaining must not only cover their own needs, but also subsidize programs that fall short. SCMC traditionally sets a budget sufficient to meet both its operating and capital needs. However, for the past several years the operating margin has fallen below budgeted levels, requiring reductions in capital expenditures.

In addition to these realities, the Pyxis system is a significant financial investment: It is the single most expensive item in SCMC's 2013 Capital Improvement Plan and represents 40% of the total price tag for the fiscal year's CIP budget. As noted in the Strategic Planning Accountability Template, the CIP does not include sufficient dollars to secure the Pyxis system without external support.

10. Collaboration with neighboring facilities and/or hospital system

Sanford Canby Medical Center collaborates with numerous vendors to secure preferred pricing on equipment. SCMC also has access to certain purchasing programs and volume vendor contracts through the larger Sanford Health Network. Together, these efforts make a tremendous difference in obtaining the products and supplies that are so vital to SCMC's patient community. In fact, SCMC leadership places a high premium on projects that address patient safety, and directors work to make capital resources available for these initiatives.

Informally, SCMC staff may call on other Sanford Health Network sites that have implemented automated medication administration systems to compare best practices and share workflow experiences.

11. Demand for services and sustainability of project

Sanford Canby Medical Center holds all employees accountable for quick and efficient care. The Pyxis system directly supports this demand and provides the safest, most effective medication management available. Through the information management budget – a component of the overall operational budget – SCMC commits to support the ongoing needs of software updates and other maintenance throughout the Pyxis system’s usable life. A portion of this support is provided through negotiated, enterprise-wide agreements between Sanford Health Network and the Pyxis manufacturer, CareFusion. This includes on-site services to establish and maintain connectivity among the Pyxis Console and the two Main Units, which will be housed in the inpatient nursing department and within the Emergency Department.

12. Relevant portion of current hospital Strategic Plan or Capital Improvement Plan.

Relevant portions of the strategic plan, in the form of the Strategic Planning Accountability Template, are attached.

In addition, a Capital Improvement Plan Budget worksheet for the current fiscal year (FY 2013) is provided.

D. Brief project budget

1. Budget form

PRE-APPLICATION PRELIMINARY BUDGET FORM

Categories	Rural Hospital Capital Improvement Funding Requested	Funding From Other Sources	Total Cost
Acquisition, Demolition, Site Improvements and Related			
Construction/Remodeling			
Architect and Engineering Fees			
Other soft costs (legal, permits, survey, interim financing, etc)			
Supplies			
Capital Equipment	\$80,000	\$43,531	\$123,531
Other (explain)			
TOTAL	\$80,000	\$43,531	\$123,531

2. Anticipated total project cost and grant funds

The total project budget is estimated to be \$123,213, of which \$80,000 is respectfully requested through the Rural Hospital Capital Improvement Grant Program.

3. Sources, uses and amounts of required match

Sanford Canby commits to a 35% match, for a hospital investment of \$43,531. These monies will come from the Capital Improvement Plan budget, which highlights the Pyxis system as one of the top-priority items. Hospital leadership first identified a medication management system as a “future need” in 2010.

4. Other supporting project funding

None. Sanford Canby Medical Center proposes to purchase the Pyxis system entirely with funds earmarked in its own Capital Improvement Plan budget and support secured through a successful submission to the Rural Hospital Capital Improvement Grant Program.

5. **Budget justification narrative** (explain the cost basis for each line item)
- a. *Capital equipment* of \$123,531 includes the following items, all of which are manufactured by CareFusion under the Pyxis brand –

Equipment	Cost /Unit	Units Needed	Subtotal
MedStation 4000 Main Unit <i>One each to be placed in the nursing department for the inpatient hospital and in the Emergency Department; each unit has six medication drawers</i>	\$43,522	2	\$87,044
MedStation 4000 Auxiliary Tower <i>One Auxiliary Tower to be paired with each Main Unit, at the locations noted above; Towers expand the drawer capacity of each Main Unit, allowing for a greater variety and number of medications to be safely stored, accessed and dispensed</i>	\$7,987	2	\$15,974
MedStation 4000 Console <i>Console provides the central computerized processing power for Main Units and Auxiliary Towers; Console will be maintained in the Pharmacy Department</i>	\$20,513	1	\$20,513
Total Cost			\$123,531

- b. *Funding from other sources*

None, other than the 35% match (equivalent to \$43,531) committed by Sanford Canby Medical Center. SCMC also will underwrite the cost of staff training time for Pharmacy Department staff and RNs to learn how to use the Pyxis medication management system and navigate its integration with Sanford One Chart.