THE UNIVERSITY OF KANSAS HOSPITAL

Kansas Delivery System Reform Incentive Payment (DSRIP) Pool

The University of Kansas Hospital DSRIP Plan
STOP Sepsis: Standard Techniques, Operations, and Procedures for Sepsis

12/17/2014

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Hospital STOP Sepsis DSRIP Plan

EXECUTIVE SUMMARY

The University of Kansas Hospital (TUKH) has actively pursued and developed successful internal quality programs to address sepsis. It will now use the DSRIP initiative to extend these quality programs for addressing sepsis to new populations to include nursing homes and long-term care facilities as well as regional Emergency Medical Services (EMS) providers and community hospitals. This project seeks to reduce the disparity of care for sepsis patients especially in small rural communities, their nursing facilities and hospitals while at the same time addressing one of the major contributors to hospitalizations.

Standard Techniques, Operations, and Procedures (STOP) Sepsis will focus on education of sepsis recognition and management at nursing homes and long-term care facilities and their associated hospitals. To maximize success in achieving desired outcomes, it is critical to also include all facets along the continuum of care—nursing facilities, pre-hospital EMS, Critical Access Hospitals and their support hospitals. STOP Sepsis will share best practices on the early identification of severe sepsis, with the goal of identifying severe sepsis as early as possible, in the nursing home and long-term care setting, and in patient transfer by EMS personnel prior to patient arrival at the local emergency room. It will share best practices on the early identification and treatment of sepsis with a goal of reducing the need for hospitalization or minimizing the length of stay and intensity of hospital care.

Using the most recent data from 2011, sepsis was responsible for the second largest number of 30-day all-cause readmissions (92,900 readmissions) for Medicare patients. In addition, sepsis was one of the top five conditions that accounted for 78% of all avoidable 30-day readmissions from nursing facilities to hospitals.

Therefore, as part of this project it is important that both nursing facilities and hospitals are well trained and versed in the recognition and treatment of sepsis. Communication between nursing homes and hospitals is essential to providing patients with a high quality continuum of care. Readmissions from skilled nursing facilities have been shown to decrease when hospitals and skilled nursing facilities are in close communication.

Sepsis awareness education will take the form of 1-2 day regional workshops delivered across the state of Kansas. Attendees from hospitals, nursing facilities, and EMS departments will learn about the management of sepsis through an inter-professional, case based approach. The intensives will include reviewing protocols and learning how to customize the protocols for the learners' specific facilities. In addition, participants will receive training on the data base to track their progress in recognizing and tracking management of sepsis. Following the intensives, the participants will implement a quality improvement program at their own facility that will include the integration of a sepsis protocol and the tracking of their adherence to the recommended steps of the protocols. TUKH will provide guidance and educational support for the individual facility performance improvement initiatives.

The impact of this process is earlier recognition of severe sepsis resulting in the timeliness of appropriate care leading to reduced hospitalization and a decrease in mortality due to sepsis. Lessons learned in this initiative will have applicability to other rural states wanting to enhance the level of sepsis care in their nursing facilities and community hospitals.

Hospital Demographics Information

Date:	12/17/2014
Hospital Name:	The University of Kansas Hospital
Medicaid Number:	Outpatient: 100099470A Inpatient: 100103330A
Contact Person:	Terry Rusconi, Vice President for Performance Improvement
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Background

Summary of Hospital's Community Context:

With a population of 2,853,118 and 105 counties, the sixth highest total of any state, Kansas faces similar challenges to those of other states with sparse inhabitants in their rural and frontier counties—challenges that include health disparity and access to care, too few healthcare providers, loss of population, an aging population, and growing numbers of children and families living in poverty.

Though ranking 15th in land mass, population wise, Kansas ranks only 33rd in the nation. County population ranges from 1,247 in Greeley County on the Colorado border to 544,700 in Johnson County on the Missouri border. It is noteworthy that 68 counties in Kansas have fewer than 10,130 people with only 10 counties having populations greater than 55,000.

According to a 2014 report published by Kansas Department of Health and Environment, 36 Kansas counties are classified as frontier with the number of people per square mile ranging from 1.7 to 5.9 with a mean of 3.62. Twenty-six of the frontier counties are located in the western third of the state; 6 in the central third; 4 in the eastern third. Twenty western-Kansas counties have populations under 4,000

Only six counties are classified as urban defined as 150 or more persons per square mile. According to 2011 population figures, 55.18% of the Kansas population resides in these six counties.

Eighty-nine Kansas counties meet the Health and Human Services criteria as Health Professional Underserved counties and 100 counties meet the HHS criteria for being underserved by mental health professionals. Moreover, the Governor of Kansas has designated 53 Kansas counties as medically underserved.

In the western third of the state 18 of the 35 counties have three or fewer physicians. Specialists are few, distances to see a healthcare provider are often long and, with physician shortages, APRNS are assuming a primary role in provision of care.

According to the Kansas Health Institute, an independent, nonprofit health policy and research organization, as of August 11, 2014 report, there are 426,000 Kansans enrolled in Medicaid and CHIP, up

from 399,000 in July 2013. Thus the overall percentage of Kansans enrolled in Medicaid and CHIP is 14.9%. Medicare enrollees total 416,000 or 14.58% of the population.

There is some debate about the rate of uninsured in Kansas, however. According to the U.S Census 2012 figures that rate is 12.6% but lag time in reporting is an issue. Other sources show a 12.7% rate for all Kansans but a 17.6% rate for individuals between 18 and 64.

The Kansas poverty rate is 13.2% which is slightly less than the national rate of 14.2% for the period of 2008-12. But when county-by-county statistics are examined, they reveal mal-distribution of poverty in the state. Only 10 of the 70 counties in the western and central two thirds of Kansas have poverty levels of greater than 15% of their total population whereas in the eastern third of the state over 15% of the population in 19 counties live in poverty.

Several thousand once-thriving farming communities in Kansas are either ghost towns or experiencing marked decline in population. This is especially so in the western part of the state. Water necessary for agriculture is becoming scarce in western Kansas and small farmers can no longer afford the $350,000 to $500,000 price tags for the large farm equipment required to make a living.

Towns and counties have experienced a noticeable out migration of population with 77 of Kansas 105 counties experiencing loss of population. In rural and frontier counties, it is not uncommon for young people to move away leaving communities and elders with a declining tax base necessary to support basic services. Thirteen point 2 percent of Kansans are 65 or older.

If one simply looks at the numbers, it would appear that Kansas is adequately supplied with hospitals and nursing homes. The Kansas Hospital Association lists 127 hospitals as members. However, many of the hospitals are quite small. Eighty-three of those are Critical Access Hospitals—the largest number of Critical Access Hospitals in the nation. Critical Access Hospitals range in size from 6 to 25 licensed beds and many struggle to keep their doors open.

Only 20 Kansas hospitals have 100 or more licensed beds with the four largest hospitals—ranging in size from 500 to 860 beds—concentrated in Sedgwick County (2) in south central Kansas and Johnson County (1) and Wyandotte County (1) that are part of the Kansas City metroplex.

While the state has 307 licensed nursing homes, they are not evenly distributed across the state. The 35 counties in the western one third of the state have only 32 of the 307 licensed nursing homes; central Kansas has 127 and eastern Kansas, 148. In addition, there are 42 licensed long-term care facilities in Kansas—24 in western Kansas; 10 in central Kansas; 8 in eastern Kansas. Based on most recent available data, 18,479 residents live in these facilities. Of these, 10,110 were on Medicaid. However, all residents in nursing homes over 65 are eligible for Medicare as are those or who have a chronic condition.

The University of Kansas Hospital (TUKH) is the only academic teaching hospital in the state. Moreover, the state is served by only one academic medical center, The University of Kansas Medical Center, with its main campus in Wyandotte County/Kansas City, Kansas and campuses in Wichita and Salina. The University of Kansas Hospital functions in close affiliation with KU Medical Center but is governed by an independent governing authority such that it operates as a separate entity from the KU Medical Center.

Describe the Hospital's Patient Population:

TUKH primarily serves the patient population spanning the Missouri/Kansas state line, a metro area that is home to more than 2 million people. It served 131,654 unique Kansans from all 105 counties in FY 2014, plus 76,758 other, unique Americans from across the nation. TUKH has over 33,000 inpatient admissions, and over 650,000 outpatient visits annually. As the only academic teaching hospital in Kansas, it is incumbent upon the hospital to share best practices and assist in quality improvement of healthcare delivery across the state, particularly in areas without easy access to large tertiary hospitals.

We also have "additional outreach counties of focus," which include Douglas, Shawnee, Lyon, in Kansas, and Buchanan and Johnson counties in Missouri. Our extended service area (ESA) includes the entire state of Kansas and 57 counties in western Missouri.

Describe the Hospital's Health System:

Originally part of the University of Kansas system, in 1998 The University of Kansas Hospital (TUKH) became an independent public authority, operating completely separately from the University. Although the state retains ownership, TUKH receives no federal, state, or local appropriations. TUKH retains the responsibility as the academic teaching hospital for the state.

TUKH, a 751-bed quaternary-level hospital located in Kansas City, Kansas, is the region's premier academic medical center, providing advanced patient care and world-class service. We are unwavering in our goal to be the best healthcare provider in the United States. In the *U.S. News & World Report* Best Hospitals list for 2014-15, we had 12 out of 12 specialties ranked in the top 50 of their respective fields.

It ranks among the country's top academic medical centers, has nearly 7,000 employees, and cares for a diverse mix of patients.

Net revenues for FY 2014 were just over $1.25 billion. During that time, TUKH provided over $62 million in uncompensated care and gave over $147 million in support to the University of Kansas Medical Center and faculty physicians.

Physicians at TUKH are leaders in their fields and represent more than 200 specialties. In addition, TUKH has been Magnet-designated since 2006 and was the first hospital in Kansas to receive the designation by the American Nurses Credentialing Center. We continually update, expand, and build new clinical facilities. Our state-of-the-art medical office building opened in 2012 with physician offices, outpatient care areas, and lab and imaging services. Specialty clinics offer primary care, heart, cancer, and surgical services throughout the Kansas City metro area.

TUKH, in partnership with the University of Kansas Medical Center (KUMC), leads the way in innovative research, shaping the standards of care. KUMC regularly garners high spots in the National Institutes of Health (NIH) ranking of public medical schools, and ten departments in the KU School of Medicine are in the top 25 for NIH funding. KUMC is also a member of the national Clinical and Translational Science Awards consortium, has National Cancer Institute designation for the KU Cancer Center, and has earned collaborative and financial support from the National Institute on Aging for its National Alzheimer's Disease Center.

TUKH has actively pursued and developed successful quality programs internally to address severe sepsis. It will now use the DSRIP initiative to extend this program of addressing sepsis to new populations including nursing homes and long-term care facilities as well as regional EMS providers.

These quality improvement projects will enhance the delivery of healthcare across the state; reduce the disparity of care for sepsis especially in small rural communities, their nursing facilities and hospitals while at the same time addressing one of the major contributors to hospitalizations.

This project is timely since CMS has stated that reducing hospitalizations is a major public health goal and that "hospitalization measures can be used to assess the quality of care the nursing home residents receive."[1] The Medicare Payment Advisory Commission (MedPAC) recommends that nursing facilities join hospitals in accountability for avoidable 30-day hospital readmissions. As part of the 2014 budget proposal, payments would be reduced by three percent beginning in 2017 to nursing homes with high rates for Medicare rehospitalizations.[2]

Challenges Facing the Hospital:

Like hospitals across the nation, TUKH is dealing with an increasingly challenging reimbursement environment. It has suffered significant Medicare reimbursement cuts due to the American Taxpayer Relief Act, sequestration, and the Affordable Care Act. The states of Kansas and Missouri, which are our largest sources of patient volume, have not yet decided to expand Medicaid, which means there has been no meaningful increase in Medicaid business to counteract these Medicare cuts.

In addition, the hospital is constantly working to improve its quality and efficiency. Along those lines, it is subject to the Centers for Medicare and Medicaid Services' (CMS) Hospital Value-Based Purchasing (VBP) program.

Project Title:

The University of Kansas Hospital will be completing the project under its Hospital DSRIP Plan:

STOP Sepsis: Standard Techniques, Operations, and Procedures for Sepsis

Goals of DSRIP STOP Sepsis Plan:

STOP SEPSIS will focus on nursing homes and long-term care facilities and associated hospitals, to maximize success in achieving the desired outcomes of early identification and management of septic patients. It is critical to include all facets along the continuum of care—nursing facilities, pre-hospital EMS, Critical Access Hospitals and their support hospitals. STOP SEPSIS will share best practices on the early identification of sepsis, with the goal of identifying sepsis as early as possible, in the nursing home and long-term care setting, and in patient transfer by EMS personnel prior to patients arrival at the local emergency room. It will share best practices on the early identification and treatment of sepsis with a goal of reducing the need for hospitalization or minimizing length of stay and intensity of care for those patients needing hospitalization. Table 1 provides a logic model that outlines the primary components and outcomes of STOP Sepsis.

[1] November 2012 OEI-06-11-00040

[2] U.S. Department of Health and Human Services (HHS) 2014 budget proposal

Table 1: STOP Sepsis: Standard Techniques, Operations, and Procedures for Sepsis Logic Model

STOP Sepsis will focus on education of sepsis recognition and management at nursing homes and long-term care facilities and their associated hospitals and community EMS departments.

Inputs	Activities	Outcomes	
		In Process	*Long Term*
• The University of Kansas Hospital's reputation for improving outcomes for sepsis patients through early identification and a well-established sepsis management protocol • KUMC Continuing Education Extensive History across Kansas in Educational Approaches Resulting in Practice Change • Multidisciplinary Team to Provide & Support Training and Ongoing Telementoring • National Research Leaders in Sepsis Recognition and Treatment and Rural Primary Care across Health Professions • Close affiliations across KUMC Family Medicine Department, Rural Health Track, School of Nursing, and Area Health Education Centers in order to support ongoing training • Kansas Sepsis Data Base provides method for screening, tracking and analyzing sepsis data	**Across cohorts:** • Assess capabilities of nursing facilities, community hospitals & EMS • Recruit and train champions • Complete intensive workshop for representatives from participating facilities • Facilities train staff and implement sepsis process improvement program • Facilities complete PDSA cycles to continuously improve the program • Implementation focused evaluation to identify challenges and barriers to adopting the evidence-based approach as well as necessary success factors • Continuously refine intervention protocols and procedures based on feedback	**Patient Level** • Septic patient identified more quickly • Timely transfer of septic patients from nursing facility to hospital • Decrease in hospitalizations or length of stay • Decrease mortality **Trainer Level:** Improved Knowledge, Self-Efficacy, and Skills in Identification and Management of Sepsis **Practice Level** • Health providers more readily identify and appropriate manage sepsis • Tools provided to monitor results at patient level • Increased integration of healthcare team at all levels • Improved Practice Performance Improvement Skills to Implement System Change **System Level** • Decrease costs due to timely evidence-based management and decreased hospitalizations • Raised awareness of sepsis at the community level	• Continued Advances in Patient, Trainer, Practice, and System Outcomes, with a focus on decrease in hospitalizations and mortality • Increased capacity across rural and other underserved communities to effectively triage patients and when appropriate, provide evidence-based treatment in the home community • Utilize the established community of practice to quickly disseminate updates in evidence-based practice across underserved communities • Leverage the strong relationships developed between the expert team and the community champions to sustain and further advance the team approach • Decrease cost of hospitalization by avoiding readmission or reducing length of stay • Strong communication interactions among nursing facilities and applicable hospitals

Community Partners Participating in Project:

Community Outreach Plan:

One of the goals of the DSRIP initiative is building awareness throughout the state about recognition and treatment of sepsis.

We will accomplish this goal in several ways:

1. Based on review of an array of data, described below in *Project Description*, we will recruit identified counties as host sites for sepsis educational intensives. These programs will target health professionals and administrators from nursing homes, long-term care facilities, emergency medical services personnel and hospitals.
2. We will develop a marketing campaign to broadly promote the training to these audiences in all counties that might wish to participate.
3. We will identify facilities in counties most likely to undertake a sepsis performance improvement initiative after attending educational and training programs.
4. We will conduct an awareness campaign throughout the state. Through local newspapers and other media outlets, augmented by flyers for distribution as appropriate, we will make the public aware of what sepsis is and associated signs and symptoms.

Participating partners for the sepsis project will be nursing homes, long-term care facilities, emergency medical services personnel, community hospitals and critical access hospitals. Support hospitals associated with Critical Access Hospitals will be included in the overall approach in order to provide a continuum of care if patients require transfer to a larger facility.

Project Description

Identification of Need for Projects:

Sepsis is the body's response to any kind of infection: bacterial, viral, parasitic, or fungal. Severe sepsis is present when infection leads to dysfunction or failure of vital organs. Anyone with an infection may be at risk for developing severe sepsis, but certain factors may increase this risk. The very old, the very young, hospitalized patients, and people with certain chronic medical conditions (such as pneumonia, trauma, surgery, burns, cancer and AIDS) are at greater risk. Sepsis symptoms are often nonspecific (such as fever, rapid heart rate, increased respiratory rate, lethargy, confusion) making it difficult for providers who are unfamiliar with the diagnostic criteria to recognize and treat the condition properly. Healthcare providers are in a unique position to identify patients with the earliest signs of sepsis and to prevent the spread of severe infection. Early recognition of severe sepsis allows for appropriate treatment to begin sooner, decreasing the likelihood of septic shock, the associated cascade of life-threatening organ failure and mortality.

One of the desired overall outcomes of the DSRIP program is the reduction in hospital readmissions. In 2011 sepsis was responsible for the second largest number of 30-day all-cause readmissions (92, 9000 readmissions) for Medicare patients.[1] In addition, sepsis was one of the top five conditions that accounted for 78% of all avoidable 30-day readmissions from skilled nursing facilities to hospitals. The five conditions were heart failure, respiratory infection, urinary tract infection, sepsis, and electrolyte imbalance.[2] One can also argue that patients readmitted with urinary tract and respiratory infections were actually readmitted to the hospital for treatment of severe sepsis, though it was unrecognized as

[1] Hines AL (Truven Health Analytics), Barrett ML (ML Barrett, Inc), Jiang HJ (AHRQ), and Steiner CA(AHRQ). Conditions With the Largest Number of Adult Hospital Readmissions by Payer, 2011

[2] http://www.ltlmagazine.com/sites/ltlmagazine.com/files/whitepapers/How-Hospitals-Measure-SNF-Performance-FINAL2.

such. Recent studies indicate that readmission due to sepsis can be decreased in skilled nursing facilities if infections are recognized and monitored for early signs of severe sepsis. This allows for treatment of some patients to occur in the nursing facility, thus avoiding costly hospitalization, while allowing earlier transfer to the hospital for other patients, thereby decreasing mortality and length of stay.[1]

Approximately 40% of Medicare patients complete their recovery in skilled nursing or rehab facilities following hospital discharge. However, nearly 20% of these patients will be readmitted to a hospital within 30 days.[2]

Therefore, as part of this project it is important that both nursing facilities and hospitals become competent in the recognition and treatment of severe sepsis. This project focuses on recognition and early treatment of severe sepsis, according to definitions accepted by the Surviving Sepsis Campaign and the National Quality Forum.[6,7] However, it is likely that through training and practice, facilities will become more adept at responding quickly to early signs of infection that can progress to severe sepsis among their patients. Early recognition and response to severe sepsis will, with high probability, reduce hospitalization or the delayed transfer of a patient in late stages of severe sepsis or septic shock. Communication among nursing homes, EMS providers, and hospitals is essential to providing patients with a high quality continuum of care. Readmissions from skilled nursing facilities have been shown to decrease when hospitals and NF are in close communication.[3]

Sepsis affects more than 10,000 Kansans each year, and the sepsis-related mortality rate is 30%-50% in most Kansas hospitals—which markedly exceeds the mortality rate associated with acute myocardial infarction[4]. Mortality rates across the nation can exceed 60%-80% when four or more organs are affected. In the U.S. there are > 1,000,000 new sepsis cases each year, with at least a 50% fatality rate.[5] As medicine becomes more advanced, with invasive procedures and immunosuppression, and as the population ages the incidence of sepsis will increase even more.

While progress has been made, there is more to do. Research has proven that early detection of severe sepsis is critical. In addition, for each stage along the sepsis continuum, standards of care (goal directed therapy) have proven successful in reducing mortality.[6] These standards include quickly getting blood cultures when severe sepsis is suspected, providing early treatment with appropriate antibiotics and normalizing lactate levels. If this goal directed therapy is implemented in a timely manner, better patient outcomes and a reduction in utilization of the healthcare system results[7].

The primary diagnosis claim of all hospitalized Medicare nursing home residents in FY 2011 was septicemia (13.4%). The cost to Medicare for these hospitalizations was almost $3 billion. This is more than the combined cost of the next three most expensive conditions, pneumonia, congestive heart failure/non-hypertensive, and respiratory failure/insufficiency or arrest.[8]

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[1] Sepsis Management in Skilled Nursing Facilities, Jennifer Azaen, Harboview Long Term Care, Presentation, February, 6, 2014 http://blogs.uw.edu/sepsis/files/2014/02/Azen-14.pdf

[2] Mor V, Inrator O, Feng Z, Grabowski DC, "The Revoloving Door of Rehospitalization From Skilled Nursing Facilities" Health Affairs, January 2010

[3] Rahman M, Foster A, Grabowski D, Zinn J, Mor V. "Effect of Hospital-SNF Referral Linkages on Rehospitalization. Academy Health Annual Research Meeting, June 22-24, 2013. Baltimore

[4] Kansas Sepsis Project Website: http://beta.kansassepsisproject.org/

[5] Centers of Disease control and Prevention: Media Statement (Sept. 2014) http://www.cdc.gov/media/releases/2014/s0903-sepsis-awareness.html

[6] Severe Sepsis and Septic Shock: Management Bundle (NQF measure #0500) National Quality Forum. http://www.qualityforum.org/

[7] "Surviving Sepsis Campaign: International Guidelines for Management of Severe Sepsis and Septic Shock: 2012." 3rd ed. *Critical Care Medicine* and *Intensive Care Medicine (Feb 2013).*

[8] Medicare Nursing Home Resident Hospitalization Rates Merit Additional Monitoring. November 2013, OEI-06-00040

Despite the high association of severe sepsis with the need for hospitalization, very little outreach has taken place to retirement homes, skilled nursing facilities and other long-term care facilities across the state to educate staff on the early signs/symptoms of severe sepsis and the steps which can be taken to implement early goal directed therapy. Even if an elderly patient recovers from severe sepsis and/or septic shock, the quality of life is diminished with a subsequent high incidence of reoccurrence and hospital readmission. However, recent literature indicates that if severe sepsis is recognized early in the sepsis continuum patients may be treated within the nursing facility. Allowing patients to stay in familiar surroundings increases their quality of life while reducing the cost due to hospital admission or readmission. Parenthetically, we anticipate that during this project the actual diagnosis of severe sepsis or septic shock may appear to increase in NF, due to the condition being recognized with greater frequency than previously.

Similarly, there has been little education to the general public regarding early warning signs related to sepsis and steps to take to prevent a patient from progressing through the sepsis continuum to septic shock. Often, patients and families wait until the patient is further down the sepsis continuum to seek help, and statistics show a 7% increase in mortality for each hour in delay of treatment.[1] Education of the general public, along with health care personnel could reduce the negative outcomes associated with of severe sepsis and septic shock, by allowing patients to be treated earlier in the sepsis continuum.

Criteria for inclusion:

Identification of training sites and potential facilities to engage in this project was determined through a rigorous examination of county-by-county data. Of special interest were data that would identify those counties with highest rates of sepsis, Medicare, Medicaid and CHIP beneficiaries, uninsured populations, and populations living below the poverty line.

Using the Angus 2 method, described in Appendix 1, *Method to Determine Severe Sepsis*, Kansas rate for sepsis is 304.3 hospitalizations/100,000 population/year. The national rate ranges from 40 per 100,000 (ages 1-17) up to 4,020 hospitalizations/100,000 (age ≥85) with the average at 540 hospitalizations/ 100,000. However, individual counties within Kansas are above the national average. In addition, since a major focus is on nursing homes, this population is definitely above the national average for hospitalizations due to sepsis. In fact within Kansas we have hospitals where 25% of the presenting sepsis patients come from nursing facilities. (The Kansas Sepsis Project, unpublished)

Accordingly, we developed criteria, as displayed in Table 2, for determining which counties to recruit to host the education and training sessions. Criteria are based on factors listed below. However, we will reach out to other counties to participate in educational and training opportunities. Final selection of host sites will depend upon the communities willing to participate.

[1] Sepsis in the 21st century: recent definitions and therapeutic advances; American Journal of Emergency Medicine (2007) 25,564-571

Table 2: Criteria for recruitment of potential training sites. The following table shows type and source of county-by-county data gathered

Type Data	Number and/or percent of county population	Data Source
Population	Number of people per county	2010 U.S. Census
Number hospitals	Number in each county	Kansas Hospital Association
Number of licensed beds	Number in each hospital/total in county	Kansas Hospital Association
Number of nursing homes	Number in each county	Landon Center on Aging, KU Med Center
Number of licensed beds	Number in each nursing home/total in county	Landon Center on Aging, KU Med Center
Number of physicians	Needed for physician champions for sepsis projects	Kansas Board of Healing Arts
Medicaid beneficiaries	Number in/percent of county population	KDHE, Bureau, Epidemiology & Health Informatics
CHIP beneficiaries	Number in/percent of county population	KDHE, Epidemiology & Health Informatics
Uninsured	Number in/percent of county population	*Kansas Health Matters (affiliated with KDHE as partner organization)
Medicare beneficiaries	Number in/percent of county population	Center for Medicare and Medicaid Services
Living below the poverty level	Percent of counties below poverty level, 2008-12	American Community Survey 2008-2012
Rate of HF Admissions 2009-11/100,000 population	HF admissions rate 2009-11 per 100,000 population*	Kansas Health Matters/Kansas Department of Health & Environment
Sepsis prevalence data	Rate of sepsis (see below for data acquisition method**	KDHE Epidemiology & Health Informatics

*Kansas Health Matters: A partnership organization that provides Kansas communities with dash board data on a number of health related factors and issues that affect community health. Organization partners include: Kansas Association for the Medically Underserved; Kansas Association of Local Health Departments, Kansas Department of Health & Environment, Kansas Health Institute, Kansas Hospital Association, United Way of the Plains and University of Kansas

** Please see appendix 1 for method used to determine sepsis prevalence data and see appendix 2 for a listing of counties that match criteria

In addition to these data, we also noted the locations of the 44 Safety Net Clinics and Federally Qualified Health Centers that provide medical services to Medicaid and low income populations. Seven counties have multiple clinics ranging in numbers from two per to seven per one county. It is noteworthy that 27 of our planned DSRIP events take place directly in, or immediately adjacent to, counties where the Safety Net Clinics and FQHCs are located. Further, the data base included in Appendix 3 provides the names of all nursing facilities and hospitals within the selected counties.

It is also important to consider the selection of sites to host training intensives that have sufficient populations in their catchment area in order to maximize the impact of the DSRIP initiative. While data described in Table 2 will play an important role in determining host sites for educational and training programs, it is important to remember that we will promote these educational and training opportunities to counties with lower population in proximity to host sites. We will also use electronic means, e.g., telemedicine and Adobe Connect, to facilities with individuals at remote locations who desire to participate.

As a first order in determining counties as host sites for training, we considered counties that have the highest rates of sepsis, Medicaid and Medicare beneficiaries, numbers of uninsured and percent of population living below the poverty level. In addition to the rates, we also took into account actual number of identified septic patients. If we are to measure significant change, it is important to have a large enough “test” population to determine whether an initiative effected meaningful or reproducible change.

Given the synergistic role that nursing homes and hospitals will play in the DRSIP initiative, the number of, and licensed beds in these facilities are critical elements for inclusion with criteria set to include counties with at least one 25 bed hospital and at least one nursing home. There are nine counties that have no hospital but do have one or more nursing homes; two in western Kansas and seven in eastern Kansas. These counties, however, are located either immediately adjacent to or in easy driving distance of counties likely selected as host sites for educational and training programs.

We justified these inclusion criteria based on the fact that in the 35 county western third of the state, two counties have no hospital and 11 hospitals in that region have fewer than 25 beds. Fifteen counties of the 35 western Kansas counties have no nursing home but 11 of those counties do have long-term care facilities.

Population data were considered in developing the inclusion criteria given that 68 Kansas counties have fewer than 10,130 population and 31 of those have populations under 4,000. Accordingly, we had to set population criteria at a fairly low number for inclusion at ≥5,000.

We also factored into account the number of physicians practicing in each county as we have found through experience on other statewide quality improvement initiatives that when implementing performance improvement and quality improvement initiatives, it is important to have a physician champion.

We also considered the hospitals, nursing homes, long-term care facilities and primary care practices with which TUKH, KU Medical Center, KU Medical Center's Area Health Education Centers, and the KUMC Landon Center on Aging have existing relationships. Existing affiliations and relationships will help pave the way to successful recruitment of host sites for education and training programs.

Given that most health care in our rural and frontier counties is provided by primary care practices, we will draw on the close affiliations our Family Medicine Department, Rural Health Track and Area Health Education Centers have with these practices across the state.

Plan for Delivery of Sepsis Education and Training

Education and training of health professionals associated with emergency medical service (EMS) providers, nursing homes, long-term care facilities and hospitals on severe sepsis recognition and management will play a critical role in meeting the overall goals of the DSRIP initiative. We are including EMS personnel in the effort, because they will be the first responders at most nursing homes and in the community for patients with severe sepsis and septic shock.

Education on early identification of sepsis and its appropriate management will take the form of the intensive workshop—a highly interactive, interprofessional, case-based approach designed as the educational foundation for the sepsis performance improvement projects at the facility level that will follow. Attendees at the intensives would then implement performance improvement processes at their respective facilities, including EMS units. Nursing facilities (NF), EMS providers, and hospitals within the various counties will integrate their processes to result in early recognition of severe sepsis and improved outcomes for patients with severe sepsis. Individuals who participate in the sepsis intensives can also potentially be involved as faculty in subsequent intensives. Facilities that choose to implement a performance improvement project will receive additional training on how to acquire base-line severe

sepsis data, how to enter performance improvement data over the period of the improvement project into the sepsis data base, and how to track and trend those data.

We envision that intensives for sepsis will begin with plenary sessions for the interprofessional audience with a focus on an integrated approach—nursing facilities, pre-hospital and hospital—to the early recognition and aggressive management of severe sepsis. Plenary sessions will be followed by breakout workshops for each sector of the target audience. We will use evidence-based educational and training methods particularly appropriate for practicing professionals that are shown to translate knowledge into change in behavior and performance improvement at the practice level.

It is important to note, however, that to maximize the effectiveness of education and training which results in change and quality improvement, we must tailor that education and training to fit the circumstances and realities of the host sites. One size does not fit all. We will be mindful of prevailing conditions at host sites including circumstances that may present as barriers to change. Project team members involved with the sepsis initiative will provide ongoing follow up and support necessary to ensure implementation success.

Educational intensives will provide health professionals, including certified nurse assistants and health technicians, in nursing facilities the training on evidence-based, easy to follow, protocols and tools necessary for early recognition of sepsis. The goal is appropriate and prompt intervention to ensure that the condition does not deteriorate and evolve along the continuum to severe sepsis and septic shock. The overall outcomes are reduced hospitalizations due to sepsis, minimizing length of stay for those requiring hospitalization and reduction in mortality.

However, to ensure coordinated care and achieve the best possible outcomes for the patient, the nursing facilities, emergency medical services and hospitals must work in tandem and all will require training on the evidence-based protocols. The nursing facilities, in the majority, are not equipped to deal with the more advanced stages of sepsis and thus must work in a coordinated fashion with vicinity hospitals to maximize best outcomes for patients.

An intensive educational session is only one part of the equation in producing the behavioral change necessary to reach desired outcome goals. The expectation is that nursing facility and hospital personnel and others who attend an intensive training will implement a performance improvement initiative in their facility by training their staff on use of the evidence-based protocols on the early recognition of severe sepsis and the appropriate next steps. This performance improvement approach will help ensure the integration of protocol-driven best practices in early recognition of sepsis into the nursing facility environment.

Protocols will be provided to nursing facilities for daily monitoring of patients with infection. These will be fill-in forms that can be retained in the patient's file. The protocols will contain check lists of criteria to monitor as early warning signs that the infection may be progressing to severe sepsis and/or septic shock. As part of the performance improvement project we will work with facilities to determine their response if sepsis is suspected.

This project addresses the "evaluation/assessment" of recognition and treatment of severe sepsis and septic shock in such a way that areas for improvement can be objectively measured and analyzed against evidence-based practices. Analysis can identify areas for change that will result in improved patient outcomes as well as lowered cost for the hospital.

As previously noted, a data driven approach will be used to identify, and invite to participate, *community partners* across the state—partners that can potentially host education and training programs on sepsis. These data will also identify partners that can potentially implement sepsis quality/performance improvement projects in their respective institutions.

For ease of data management, site selection and plan for a logical progression of hosting the educational and training events across the state, we divided the state into three regions—western, central, and eastern—with 35 counties in each region—and recorded and reviewed data by region. The plan is for delivery of STOP SEPSIS education and training in a manner to touch as many counties as possible. See appendix 2 for counties that meet criteria.

Using the selection criteria detailed in Table 2, hub and spoke counties were identified for intensive recruitment. Larger or largest communities in hub counties will be recruited to host sepsis intensives/workshops. Spoke sites, which have sent people to the sepsis training, will then implement sepsis quality/performance improvement initiatives. Facilities in both hub and spoke counties will be actively recruited to attend intensives/workshops and, as noted above, and subsequently implement a performance improvement (PI) initiative. See Figures 1 & 2.

Figure 1 was developed based on the criteria discussed previously. In identifying potential hub sites, we gave strong consideration to recruiting those sites that are in close proximity to counties in the state with the highest instance of sepsis.

Figure 1: Potential Hub and Spoke Sites

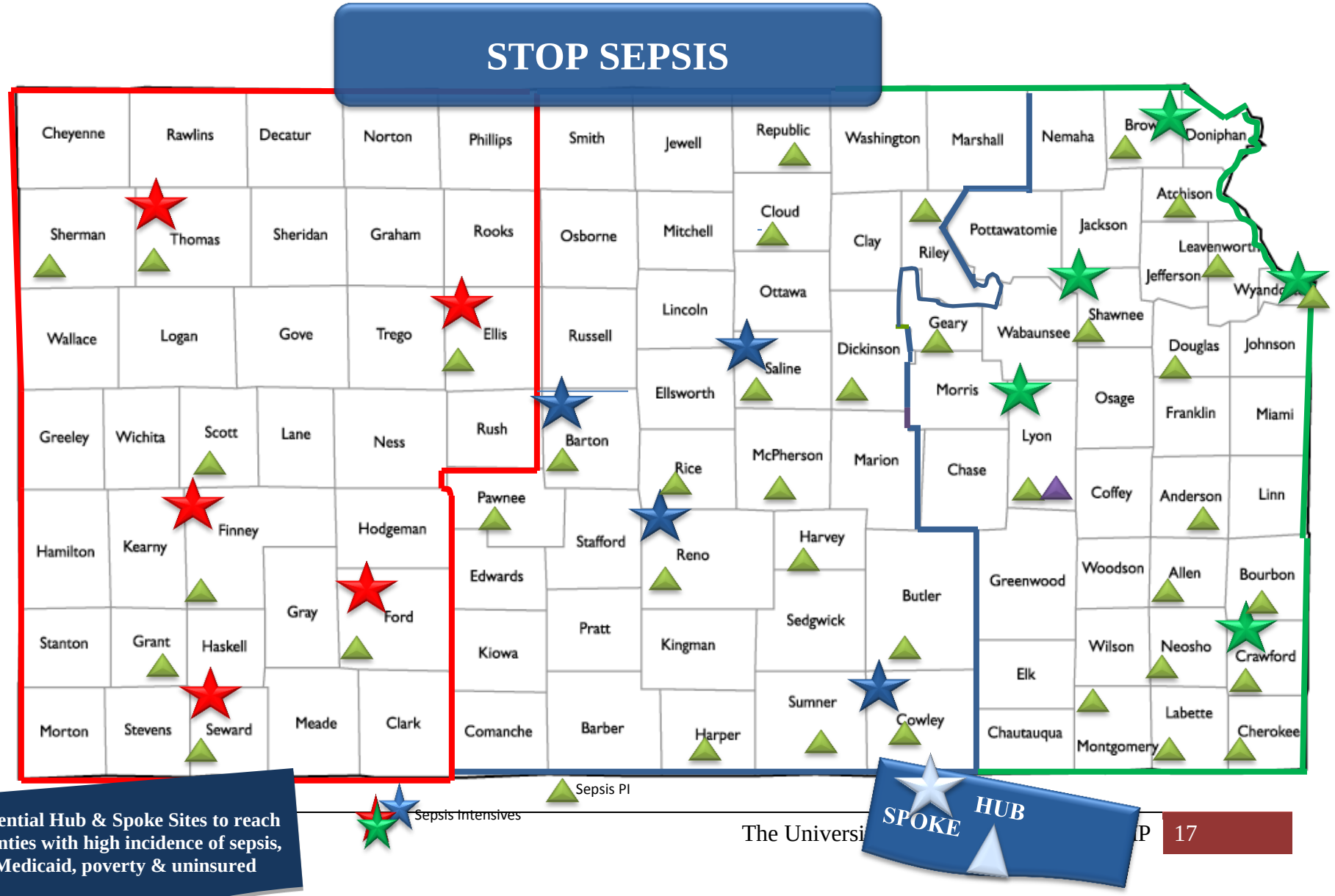
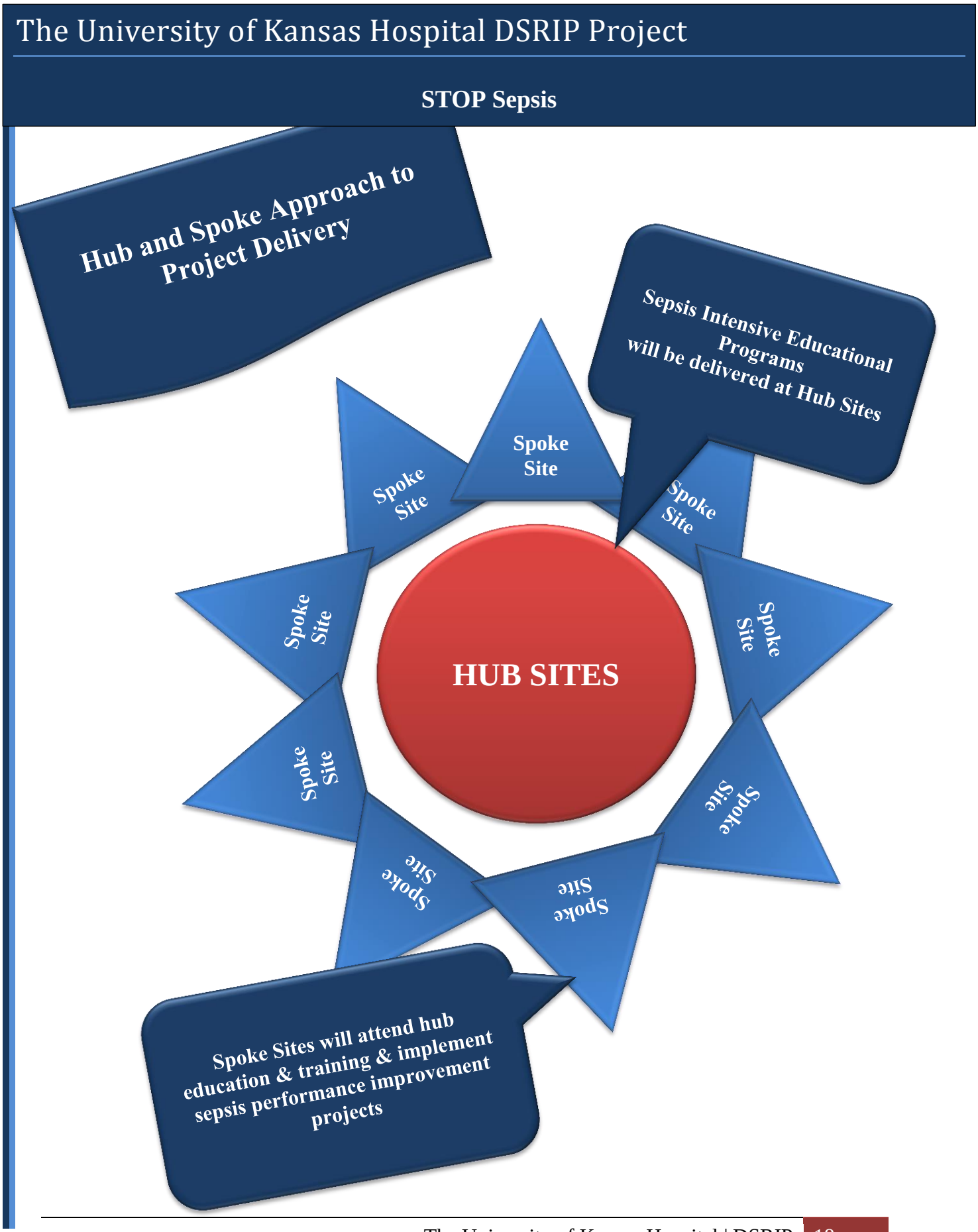


Figure 2: Hub & Spoke Model



The Table 3 below represents the targeted number of sepsis intensives and sepsis performance improvement projects for the three-year period of the DSRIP initiative. It also shows the number of nursing facilities and hospitals within the counties that met the inclusion criteria as a hub or spoke site.

Table 3: Targeted Training Sites

	Western KS	Central KS	Eastern KS	Totals
Training (hubs)	5	4	5	14
Performance improvement (spokes)	8	15	16	39
Number of nursing facilities	21	74	79	174
Number of hospitals	9	22	22	56

Table 4 shows the potential locations that will be recruited as host sites (hubs) for sepsis intensives/workshops and the counties we will recruit to attend the intensives/ workshops and subsequently implement a performance improvement initiative. Realizing that not all sites will be able to accept, our goal is to engage at least twelve training sites.

Table 4: Potential Locations

Target Locations for Sepsis Intensives/Workshops & Performance Improvement Initiatives		
Sepsis Intensives/Workshops		**Target Counties for Sepsis PI**
Community	County	*Counties meet inclusion criteria* *
Western Kansas		
Colby, KS	Thomas	Thomas, Sherman
Hays, KS	Ellis	Ellis, Scott
Garden City, KS	Finney	Finney
Dodge City, KS	Ford	Ford
Liberal, KS	Serward	Serward, Grant
Central Kansas		
Salina, KS	Saline	Republic, Cloud, Dickson, Saline, Riely
Great Bend, KS	Barton	Pawnee, Rice, McPherson, Barton
Hutchison, KS	Reno	Harvey, Reno
Arkansas City, KS	Cowley	Butler, Cowley, Sumner, Harper
Eastern Kansas		
Hiawatha, KS	Brown	Brown, Atchison
Kansas City, KS	Wyandotte	Leavenworth, Wyandotte
Topeka, KS	Shawnee	Geary, Shawnee, Douglas
Emporia, KS	Lyon	Lyon, Anderson
Pittsburg, KS	Crawford	Allen Bourbon, Neosho, Crawford, Cherokee, Labette, Montgomery
** Communities and counties listed in chart meet inclusion criteria and will be actively recrutied; other counties will be invited*		

We will initiate recruitment for the first intensive in southeastern Kansas with Pittsburg as the hub site to host one or more intensives/workshops. Facilities in Crawford, Allen, Bourbon, Neosho, Cherokee, Labette, and Montgomery counties will be recruited to attend the intensive and encouraged to implement PI projects. These counties were selected as they meet all 11 of the selection criteria. Lessons learned during the rapid cycle evaluation of this initial roll-out will be used as we proceed to other communities and counties across the state.

Irrespective of the educational and training methods used, translating knowledge into practice requires multiple reinforcing exposures to material. This will be accomplished by developing short on-line educational modules, apps for electronic devices, badge buddy cards, and web-based resources. We will use telemedicine technology to provide on-going interaction with sepsis PI initiatives.

We also know that a vital component to the success of the sepsis initiative will depend on recruiting a local leader and a physician and/or nurse champion at each hub and spoke site. Leaders, who have a significant sphere of influence, can be a community leader with interest in health care quality improvement, a hospital or nursing home administrator, a county public health officer—an individual who sees value in the sepsis initiative for their community and who will provide their support and assistance.

Given the shortage of health professionals in Kansas, one of the goals of our educational approach is to build and expand local capacity and expertise and expand the scope of provider capabilities. This, in part, addresses the post-DSRIP sustainability issue and also provides additional rationale for having a health professional champion at each location.

The number of family medicine, general internal medicine (including pulmonary/critical care), general practitioners, cardiologists, nurse practitioners, and physician assistants by counties is shown in Table 5. Our data base includes all contact information for each of these health professionals. Engaging with them will help ensure the sustainability of the initiatives as some of these health professionals may become local experts, champions, faculty for intensives, advocates, and resources individuals at the community level.

Table 5: Health Professionals

Health Professionals							
	Total MDs/Dos	Fam. Med.	Gen. Int. Med.	GPs	Cardio-logists	NPs	PAs
Western Kansas							
Sherman	2	2				1	5
Thomas	10	2	2			4	1
Grant	7	4				1	4
Scott	6	5				3	5
Finney	59	9	5	3	2	16	
Seward	34	4	6	1		8	
Ford	42	11	2	2	2	6	5
Rooks	5	5				2	2
Ellis	93	9	8	3	7	38	11
Totals	258	51	23	9	11	79	33
Central Kansas							
Pawnee	10	5		1		4	
Russell	6	3		1		9	1
Barton	42	8	4			10	9
Rice	4	6		1		2	2
Reno	110	23	11	1	4	24	22
Republic	6	2		2		3	
Cloud	7	3		1		6	3
Saline	154	45	9	5	7	24	15
Butler	57	32	12	1	3	46	34
McPherson	25	19	1		1	16	11
Harvey	73	23	5			35	13
Sumner	14	9				13	4
Harper	5	4	1	2		6	7
Dickinson	10	10				7	7
Cowley	43	11	3	5	1	10	6
Riley	120	21	16	2	4	47	31
Totals	686	224	62	22	20	262	165
Eastern Kansas							
Brown	12	8				6	5
Pottawatomie	15	12	1	4	1	17	6
Atchison	23	8	2			2	7
Geary	28	6	4			8	7
Shawnee	461	62	49	7	10	138	52
Leavenworth	200	15	7	4	1	51	7
Wyandotte	676	56	26		59	43	15
Douglas	167	46	35	6	10	84	30
Lyon	31	11	7	1	1	17	1
Franklin	20	7		2		12	
Anderson	8	3				2	2
Allen	10	6		1		6	3
Bourbon	19	7	1			6	2
Neosho	10	10		1		10	9
Crawford	58	15	7	3		55	2
Montgomery	42	7	5	3	2	18	7
Labette	44	7	1	1		7	4
Cherokee	18	1	1	1		11	11
Totals	1842	287	146	34	84	493	170
Totals in all selected counties	2786	562	231	65	115	834	368

Working with hospitals, nursing homes, and community EMS departments together will be, we believe, mutually advantageous to each. The goal for each is to help people avoid hospitalization and decrease readmissions. And, to the extent possible, a further goal is to minimize the progression of sepsis so as to provide care and treatment to patients in their own locale as opposed to having to transfer them to other facilities further away.

While the focus of the education is on sepsis, the lessons learned from the education can be much more broadly applied to other quality improvement projects.

Project Goals:

The University of Kansas Hospital has been a leader in implementing processes internally for early identification of sepsis across the system and has seen a significant reduction in sepsis mortality. Working with its teaching partner, the University of Kansas Medical Center, the organization will be reaching out to identify nursing homes, emergency medical service providers, long-term care facilities, and hospital partners across the state to implement sepsis early warning systems and early goal directed therapy known to minimize the impact of sepsis.

Goals

1. Establish a network of nursing homes, long-term/extended care facilities willing to partner with community and critical access hospitals to effect positive change in early recognition of sepsis among residents and patients
    a. All organizations—nursing homes, long-term care, EMS, emergency room personnel and others health professionals in hospitals— work synergistically to rapidly identify septic patients and administer appropriate measures along the continuum of care
    b. Nursing and long-term care facilities and hospitals work synergistically to avoid re-admittance or reduce length of stay for readmitted sepsis residents

2. Develop a curriculum specific for nursing homes and long-term care facilities to train staff and family members on signs and symptoms of sepsis

3. Develop a curriculum, or use an existing curriculum, specific for emergency medical services personnel on recognition of sepsis in transfer patients and, as feasible, depending on the resources within ambulances, begin implementation of the sepsis bundle

4. Increase the number of community hospitals and Critical Access Hospitals across the state that are actively implementing the sepsis bundle in a timely fashion by ≥ 100% above the current baseline of 14 hospitals, statewide

5. Translate to sustained practice performance improvement in sepsis recognition and management

6. Build expertise and capacity in dealing with sepsis at the local level especially within nursing facilities and critical access hospitals.

7. Provide an array of resources and tools—hard copy and on-line—to providers and patients in recognition of sepsis

8. Increase the rate of recognizing early severe sepsis and reduce the rate of infections progressing to septic shock by 20% above baseline in participating facilities

Expected Results:

Participating facilities implementing a sepsis protocol such that:

1. Improved identification of septic patients within nursing facilities
2. Improved hospital identification over baseline of septic patients at any stage of the continuum
3. Improved hospital implementation of sepsis management bundles
4. Improved emergency department identification of septic patients at any stage of the continuum
5. Improved emergency department implementation of sepsis management bundles
6. Proper management of septic patients to reduce rate of transfer to a higher level facility
7. Accurate identification of septic patients transferred to the hospital from a nursing home

Relationship to Other Projects:

The University of Kansas Hospital has been a leader in implementing systems within its institution for early identification of severe sepsis across the system and has seen a significant reduction in sepsis mortality. The University of Kansas Medical Center, in concert with the Midwest Critical Care Collaborative and the Kansas Sepsis Project, has reached out to implement the sepsis protocols in selected hospitals. This work lays the foundation for the DSRIP sepsis initiative.

It is important to note the distinguishing characteristics between earlier TUKH sepsis initiatives and the DSRIP sepsis initiative which will focus on: 1) early identification and management of severe sepsis in nursing homes and long-term care facilities; 2) identification and rapid response in managing sepsis along the continuum of care including nursing facilities, pre-hospital EMS and hospitals; 3) facilitating learning collaboratives between nursing facilities and hospitals that result in an integrated approach to the management of sepsis. We will draw on the resources and the expertise of the Midwest Critical Care Collaborative and the Kansas Sepsis Project in the execution of the DSRIP sepsis initiative.

Even though TUKH and KUMC function under separate governing bodies, TUKH will be using KUMC office of Continuing Education and Professional Development (CEPD) for the program management of this project. CEPD has been actively involved with the Kansas Sepsis Project (KSP) and is aware the hospitals trained and engaged with the KSP. There is the expectation that these hospitals will support sepsis training for the nursing homes and long term care facilities in their regions. Such training should mitigate patients arriving at the hospital towards the very severe end of sepsis when length of stay and mortality increase. It is important to emphasize that the incidence of severe sepsis and hospitalization from nursing facilities may rise following training and the initiation of protocols for the simple reason that severe sepsis is now being recognized and treated earlier in these facilities. Early recognition at nursing facilities may result in hospitalization simply because necessary treatments such as a fluid bolus or IV antibiotics for examples are usually only possible at the hospitals.

The University of Kansas Hospital, along with other major hospitals in the state, has reduced mortality through rigorous implementation of Surviving Sepsis Campaign guidelines. These guidelines focus on early recognition and treatment of severe sepsis, emphasizing the early administration of antimicrobial agents and goal-directed therapy. Unfortunately, rural Kansans, like inhabitants of other predominantly rural states, are subject to significant geographic health disparities, and suffer from increased mortality from severe sepsis relative to their urban counterparts. We previously demonstrated that mortality in

transferred patients with severe sepsis to TUKH is twice that of patients who present directly to our institution.[1]

This project is the inauguration of TUKH reaching out to nursing facilities-nursing homes and long term care facilities-in order to provide education and training on the early recognition of severe sepsis and its treatment. Successful treatment of severe sepsis must be a collaborative effort between nursing facilities and the associated hospitals. Even hospitals with active sepsis protocols will benefit from closer communication with nursing facilities and EMS personnel concerning the sepsis status of transferred patients. The more information available on a patient's arrival to the emergency department will facilitate a quicker response by the hospital. In the case of severe sepsis, just a few hours of delayed treatment can make the difference between a short or long length of stay and even survival of the patient. In addition, healthcare acquired infections (HAI) are a major threat to patient safety and severe sepsis is a primary result of HAI. Therefore, reducing the severity of severe sepsis improves patient safety.

Relationship to other participating providers' projects and plan for Learning Collaborative:

The necessary communication among community hospitals and nursing homes and long-term care facilities will form the foundation for a Learning Collaborative. The learning collaborative participants will receive education on processes and protocols and will share best practices. This project will provide ongoing learning and support to participants for duration of the project. This project will also promote communication and sharing of information among participating critical access hospitals (CAHs) and their support hospital.

This project meets the following Health Kansas 2020 goals and ties into the tri-part aim in the following ways:

The overall goals of the Health Kansas 2020 (HK 2020) Steering Committee are improving access to services, promoting healthy living, and promoting healthy communities.

Through the DSRIP program, TUKH aims to work toward these three, broad objectives by implementing two projects which promote two key areas

- Increase access to services, including primary care and preventive services
- Increase integration of the health care delivery system, including medical, behavioral, health, and social services
- Expand chronic and complex care management models

Challenges:

Overarching challenges facing any quality improvement initiative are the conditions and circumstances that face many rural health providers whether they are in nursing facilities or hospitals. These include shortage of health professionals, high employee turnover, especially in nursing facilities, declining populations, focus on bottom line issues as facilities struggle to stay in operation, and resistance to change. A specific challenge for the STOP SEPSIS project will be demonstrating to health care facilities the need to perform chart reviews of their own patients to assess number of sepsis patients missed or identified late in the process. This is important to establish a baseline in order to measure increments of change overtime following program implementation.

Nursing facilities will need to review files of patients transferred to hospitals and compare the reason for transfer with the diagnosis at the ED or upon admittance. This will require developing strong

[1] Pitts, L et al. AJRCCM 181: A4100, 2010

communication channels between hospitals and nursing facilities. Other challenges include convincing CEO's and/or directors to provide resources and time for staff to be trained in the sepsis bundle as well as support for implementation of the protocols. And lastly, it is important for at least one physician and quality or risk manager nurse to be leadership champions for the project within their facility.

5-Year Expected Outcomes for Provider and Patients:

Currently, disparities exist in the treatment and outcome of sepsis patients. However, with early recognition and implementation of the sepsis management bundles improved outcomes can be achieved across the state.

Through training at nursing facilities, the expectation is the elderly sepsis patients will be identified more quickly so that treatment will begin earlier at the nursing facilities eliminating the need for hospitalization or the patient will be transferred before the condition is life threatening. The expectation is that this will lessen or prevent the poor outcomes normally observed with these patients. Given that training for nursing facilities will also cover conditions that potentially lead to sepsis, a secondary potential outcome will be preventing, and/or aggressively managing, those conditions that lead to sepsis thus resulting in a lowering of the severity of severe sepsis in this population.

Expected outcomes for rural hospitals are that early recognition and treatment of septic patients will result in a lower percentage of septic patients being transferred to larger hospitals with patients returning to their homes in a shorter period of time.

Starting Point/Baseline:

The starting point for this project is variable for each healthcare facility and depends upon each facility's ability to recognize sepsis and implement the sepsis management bundle. Each facility will determine the baseline by patient chart reviews of sixty patients or a six month period of all patients entering the facility with an infection or acquiring one while in the facility prior to a hospital initiating a sepsis project. Hospitals will look at the rate of diagnosis as well as the treatment including the time treatment was initiated and comparing these results to the recommended sepsis management bundle. This assessment will provide both the gap in treatment as well as show the areas of other deficiencies that will be addressed by implementing the sepsis management bundle. Nursing homes and long-term care facilities will review the past six months of files of patients transferred to hospitals. These facilities will determine whether they identified transferred patients with severe sepsis/septic shock appropriately and in a timely manner.

Rationale for the Project:

The need for this project was demonstrated by a 29-item questionnaire administered to focus groups consisting of rural physicians, nurse practitioners, and physician assistants. Forty-eight rural practitioners participated in the focus groups. These practitioners represented practices in southwest, central and southeast Kansas. Forty-two percent stated they were "extremely" or "very" knowledgeable about sepsis, while 29% stated they were "extremely" or "very" familiar with the differences among uncomplicated sepsis, severe sepsis, and septic shock. Eighteen percent were "extremely" or "very" familiar with Early Goal Directed Therapy (EGDT), while only 16% were "extremely" or "very" familiar with the SSC.

The mortality rate of severe sepsis and septic shock was understood to be 50-70% by 38% of participants. The majority of participants acknowledged that sepsis was under diagnosed in their practices, with 62% stating that such a possibility was "extremely" or "very" likely. Sixty-two percent understood the incidence of sepsis, severe sepsis, and septic shock to be increasing, with the same

number acknowledging that associated costs were "significant." Eighty percent thought additional training regarding recognition and treatment of sepsis would be "extremely beneficial" and 32% believed the principle problem with the diagnosis of sepsis to be an absence of established diagnostic criteria[1].

Inconsistent implementation of the Surviving Sepsis Campaign guidelines in Kansas correlates with a lack of knowledge and/or understanding of the guidelines. Significant variability exists among Kansas physicians in the identification and treatment of severe sepsis)[2,3]. Less than one fourth of healthcare providers associated with small hospitals were familiar with diagnostic criteria for severe sepsis.

Recent results from one Critical Access Hospital located in northwest Kansas demonstrate the under-reported nature of severe sepsis. The baseline data from 67 infected patients indicated that 28 of these patients should have been initially diagnosed with, and treated as having, severe sepsis but were not at the time. With participation in intensive sepsis education, plus protocol development and hospital leadership involvement, the hospital is now accurately diagnosing septic patients and aggressively implementing recommended treatment protocols and tracking patient outcomes.

Management, physician and nursing leadership is essential for implementation of a sepsis improvement program. Although health care providers have been exposed to the sepsis bundle through statewide presentations, the adoption of protocols and monitoring the implementation of the protocols is lacking especially in the smaller community hospitals. In addition, nursing homes and long-term facilities have had little exposure to the rapid recognition of sepsis or even training on how to prevent the progression of an infection to sepsis. Focusing on long-term care and nursing homes in the training and implementation of sepsis care is essential if we hope to reduce the high rate of hospitalization, readmissions and cost due to sepsis in this population.

This project represents a new initiative or significantly enhances an existing delivery system reform initiative in the following ways:

This project represents a new initiative in that TUKH will actively provide training and education for healthcare providers associated with nursing facilities and community hospitals as well as EMS departments in the recognition and treatment of sepsis. This initiative is novel within Kansas as it promotes communication and partnering among EMS services, hospitals and nursing facilities to jointly address the issues of sepsis recognition and treatment within their own communities.

Rapid Cycle Evaluation

This project will follow Rapid Cycle evaluation as outlined in "Rapid Evaluation Approaches for Complex Initiatives"[4]. We will use quantitative and qualitative evaluation methods to measure the impact of the project on delivery of care, patient outcome and sustainability. The project data will be evaluated at least monthly for any course correction and timely changes to enhance the delivery and outcomes of the project.[5] This project incorporates both a process change (implementation of sepsis bundle protocol) and an organizational change (cross department and/or facility cooperation and communication).

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1 Pitts,L et al. AJRCCM 183;2011:A4699.

2 Burenheide, K et al. Kansas Department of Health and Environment, 2007; and Berg-Copas, G., et al. Crit Care Med. 2008; 35:A71

3 Berg-Copas, G., et al. Crit Care Med. 2008; 35:A71

4 Hargreaves. Rapid Evaluation Approaches for Complex Initiatives" (White Paper, March 31, 2014

5 Shrank, W. "The Center for Medicare and Medicaid Innovation's Blueprint for Rapid-Cycle Evaluation of New Care and Payment Models." *Health Affairs*, vol. 32, no. 4, April 2013, pp. 807–812.

The project consists of educational intensives and workshops targeting healthcare providers at nursing facilities and hospitals. These intensives and workshops will provide education on recognition and treatment of septic patients as well as implementing the sepsis bundle protocols. Participants will practice Plan/Do/Study/Act (PDSA) activities during the workshop. Additional site support will then be given to those communities agreeing to actively implement the sepsis bundle protocol and coordinate care between nursing facilities and hospitals. Initially, as previously indicated, the base-line data will be generated from file review of patients treated prior to initiation of the project.

Since data are captured at least monthly by the participating facilities, the data will be closely monitored by the individual facility and the subject matter experts on the project. At least every three months the information will be reviewed critically by the project team in conjunction with participating facilities and required changes or enhancements can be addressed.

The effectiveness of a nursing facility's ability to accurately recognize severe sepsis and septic shock at the facility before transfer will initially be measured at the admitting hospital. Upon admittance, the hospital will determine where the patient is in the sepsis continuum. The goal is that patients will arrive at the hospital from the nursing facility earlier in the sepsis continuum and/or in a more stable state.

The Kansas Sepsis Project database provides tools for a) screening patients for severe sepsis, b) tracking whether appropriate steps have been taken, and c) tracking patients' ultimate outcome for hospitalization. Currently, the process trackers are available for large hospitals (those who have an ICU with dedicated ICU nurses) and small hospitals (those who do not have an ICU, e.g. Critical Access Hospitals). As part of the investment being made to enhance the ability of non-hospital providers to identify and escalate care of septic patients, the database will include process trackers for Nursing Homes, Long Term Care/Skilled Nursing Facilities and Emergency Medical Service providers.

Each nursing facility, hospital, or EMS provider will designate personnel to record the clinical findings of severe sepsis, along with the times they are noted, and enter them into the Kansas Sepsis Project database. Data may be entered in real time via: a) desktop or laptop computer, b) iPad or other tablet computer, or c) smart phone. Additionally, some facilities may choose to use paper forms modified from the database for bedside use, with subsequent entry into the online database. Examples of the screener, a hospital tracker, tracker, and the outcome tracker are included in Appendix 4, as well as examples of paper versions of the sepsis screening tool Appendix 5. The screener will be the most relevant for patients at the nursing facility and then these patients will be tracked at the hospital using the tracker forms.

The Kansas Sepsis Project database allows DSRIP personnel to prepare reports on individual facilities, as well as cumulative data for the entire state. The data include number of patients screened, accuracy of diagnosis, achievement of treatment goals, and outcome, with numerous possible facets of treatment addressed. Nursing facilities will use the data base to enter screening information on their patients. This will inform them of how well they are recognizing severe sepsis so as to alert medical personnel in a timely fashion. We predict, the transfer of patients to hospitals early in the process with appropriate treatment at the hospital will shorten length of stay and reduce mortality.

Examples of some of the reports, which are both numeric and visual, are given in Appendix 6. DSRIP personnel will monitor individual facilities and will be able to determine a) whether a facility is actively screening for severe sepsis, b) whether a facility is accurate in its diagnosis of severe sepsis, c) whether a facility is meeting milestones in sepsis care and which they are not meeting, and d) whether a facility's

patients are surviving episodes of severe sepsis. The ability to monitor on an individual facility basis allows for DSRIP personal to tailor corrective measures for the specific facility and implement educational interventions specific to their need. Reports are currently being established to allow for monthly analysis. An example of such a report is shown in Appendix 6. Individual facilities are able to and intended to use these reports to inform their own efforts and help them to remedy deficiencies.

By reviewing the data, it will be evident where challenges occur; root causes determined; and corrective actions implemented. For example, if an infection is noted but there is no assessment for SIRS, then the corrective action would be to determine why the assessment was not done (root cause) and how this can be corrected for future patients.

Basic training cycle is outlined in the figure 3 and review of the cycle is presented in the table 6.

Figure 3: Training Cycle (PDSA cycle)

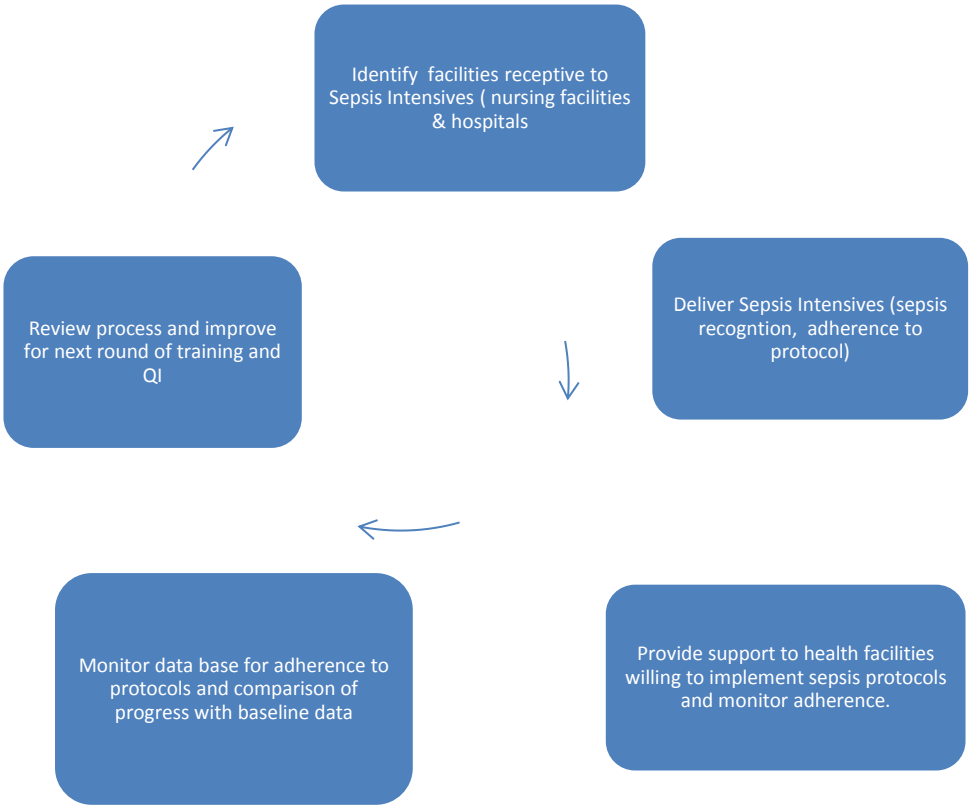

Table 6: Rapid Evaluation: Organization and Process Change, STOP SEPSIS		
Evaluation Factor	Process and/or Organizational Change	Sepsis Project
1. Situational dynamics	Simple to Complex	Individual facility may implement protocol. Cross facility communication between hospitals and NF
2. Intervention complexity	Simple	Individual facilities adhere to protocol within facility
3. Governance Structure	Individual Hospital/NF	Implementation and adherence to protocol is under the individual participating facility with oversight by project expert committee
4. Scale of outcomes	Individual list of outcomes	Implementation of Protocol Adherence to Protocol Reduction in patient progression to severe sepsis and/or death
5. Timeline of expected results	Expected results within weeks	Expect to see increase rate of adherence to bundle protocol
6. Theory of Change	Implementing and Evidence Based Practice	All participating facilities adhering to surviving sepsis bundle
7. Execution strategy	Adherence to protocol	Facilities receive training; integrate protocol into their standard operating procedures. Facilities track adherence to protocols and communicate
8. Purpose	Implementation, efficacy, and Outcome questions	The project tests the efficacy of adhering to the sepsis bundle protocol while reducing rate of sepsis progression and death
9. Reporting and use of findings	Department managers and staff receive and use evaluation results	Track metrics by reviewing information collected in data base
10. Rapid evaluation methods	Quality improvement— PDSA cycle	Data reviewed by facility team and project team monthly and changes made to protocol implementation as applicable.

The proposed high level timeline for the Stop sepsis project is shown in Table 7. Fourteen sites have been identified as potential sites for delivering sepsis intensive training. These sites will be invited to host an intensive training. The goal is to have at least 12 of these sites willing to host a sepsis intensive training. Once the intensives have been delivered, participants will return to their facilities to implement a performance improvement process. Data will be collected by the individual facility using the Kansas Sepsis Data Base.

At the conclusion of each task, the process will be assessed as to the actual measurement versus the goal; identification of challenges or barriers to meeting the goal; means to mitigate challenges; recognized factors for success; and recommended changes and corrective actions to the protocol for the next repeat of that step. Changes will be reviewed and agreed upon by facilities and TUKH experts.

Table 7: Timeline for STOP Sepsis-Year 1

TASKS	Duration	YEAR 1				YEAR 2				YEAR 3			
		Quarters				Quarters				Quarters			
		1	2	3	4	1	2	3	4	1	2	3	4
Tasks for													
Assess capabilities of Facilities	3 wks												
Intensive 1 participants													
Intensive 2 participants													
Intensive 3 participants													
Intensive 4 participants													
Recruit Facilities for Intensives	2 wks												
Intensive 1 participants													
Intensive 2 participants													
Intensive 3 participants													
Intensive 4 participants													
Recruit Facility Participants	4 wks												
Intensive 1 participants													
Intensive 2 participants													
Intensive 3 participants													
Intensive 4 participants													
Deliver Intensive on Sepsis	2 days												
Intensive 1 participants													
Intensive 2 participants													
Intensive 3 participants													
Intensive 4 participants													
Develop and train staff on protocols	4 wks												
Intensive 1 participants				#									
Intensive 2 participants					#								
Intensive 3 participants						#							
Intensive 4 participants							#						
Perform Chart review for baseline	4 wks												
Intensive 1 participants													
Intensive 2 participants													
Intensive 3 participants													
Intensive 4 participants						#							
Facilities implement protocols	ongoing												
Intensive 1 participants			#										
Intensive 2 participants				#									
Intensive 3 participants					#								
Intensive 4 participants						#							
Review progress at least monthly	ongoing												
Intensive 1 participants			#										
Intensive 2 participants				#									
Intensive 3 participants					#								
Intensive 4 participants						#							
Feedback & dissemination of Results monthly.	ongoing												
Intensive 1 participants			*										
Intensive 2 participants				*									
Intensive 3 participants					*								
Intensive 4 participants						*							
Facility level rapid cycle improvement*	ongoing												
Intensive 1 participants			*										
Intensive 2 participants				*									
Intensive 3 participants					*								
Intensive 4 participants						*				#			

#Represents ongoing tracking and screening of patients and assessment

*Identify potential interventions to help advance lower performing organizations' results

Table 7: Timeline for STOP Sepsis-Year 2

TASKS	Duration	YEAR 2				YEAR 3			
		Quarters				Quarters			
		1	2	3	4	1	2	3	4
Cohort Hospitals									
Assess capabilities of facilities	3 wks								
Intensive 5 participants									
Intensive 6 participants									
Intensive 7 participants									
Intensive 8 participants									
Recruit Facilities for Intensives	2 wks								
Intensive 5 participants									
Intensive 6 participants									
Intensive 7 participants									
Intensive 8 participants									
Recruit Facility Participants	4 wks								
Intensive 5 participants									
Intensive 6 participants									
Intensive 7 participants									
Intensive 8 participants									
Deliver Intensive on Sepsis	1-2 days								
Intensive 5 participants									
Intensive 6 participants									
Intensive 7 participants									
Intensive 8 participants									
Develop and train staff on protocols	4 wks								
Intensive 5 participants				#					
Intensive 6 participants					#				
Intensive 7 participants						#			
Intensive 8 participants							#		
Perform Chart review for baseline	4 wks								
Intensive 5 participants									
Intensive 6 participants									
Intensive 7 participants									
Intensive 8 participants									
Facilities implement protocols	ongoing								
Intensive 5 participants			#						
Intensive 6 participants				#					
Intensive 7 participants					#				
Intensive 8 participants						#			
Review progress at least monthly	ongoing								
Intensive 5 participants			#						
Intensive 6 participants				#					
Intensive 7 participants					#				
Intensive 8 participants						#			
Feedback & dissemination of Results monthly.	ongoing								
Intensive 5 participants			*						
Intensive 6 participants				*					
Intensive 7 participants					*				
Intensive 8 participants						*			
Facility level rapid cycle improvement*	ongoing								
Intensive 5 participants			*						
Intensive 6 participants				*					
Intensive 7 participants					*				
Intensive 8 participants						*			

[#]Represents on going rolling tracking and screening of patients and assessment

*Identify potential interventions to help advance lower performing organizations' results

Table 7: Timeline for STOP Sepsis-Year 3

TASKS	Duration	YEAR 3			
		Quarters			
		1	2	3	4
Cohort Hospitals					
Assess capabilities of facilities	3 wks				
Intensive 9 participants					
Intensive 10 participants					
Intensive 11 participants					
Intensive 12 participants					
Recruit Facilities for Intensives	2 wks				
Intensive 9 participants					
Intensive 10 participants					
Intensive 11 participants					
Intensive 12 participants					
Recruit Facility Participants	4 wks				
Intensive 9 participants					
Intensive 10 participants					
Intensive 11 participants					
Intensive 12 participants					
Deliver Intensive on Sepsis	4 wks				
Intensive 9 participants					
Intensive 10 participants					
Intensive 11 participants					
Intensive 12 participants					
Develop and train staff on protocols	4 wks				
Intensive 9 participants				#	
Intensive 10 participants					#
Intensive 11 participants					
Intensive 12 participants					
Perform Chart review for baseline	4 wks				
Intensive 9 participants					
Intensive 10 participants					
Intensive 11 participants					
Intensive 12 participants					
Facilities implement protocols	ongoing				
Intensive 9 participants			#		
Intensive 10 participants				#	
Intensive 11 participants					#
Intensive 12 participants					#
Review progress at least monthly	ongoing				
Intensive 9 participants			#		
Intensive 10 participants				#	
Intensive 11 participants					#
Intensive 12 participants					#
Feedback & dissemination of Results monthly.	ongoing				
Intensive 9 participants			*		
Intensive 10 participants				*	
Intensive 11 participants					*
Intensive 12 participants					*
Facility level rapid cycle improvement*	ongoing				
Intensive 9 participants			*		
Intensive 10 participants				*	
Intensive 11 participants					*
Intensive 12 participants					*

#Represents ongoing tracking, screening of patients and assessment

*Identify potential interventions to help advance lower performing organizations

Following the intensive training, the first step of facilities involved in a performance improvement plan will be to determine their baseline for recognition and treatment of sepsis. The data base can be used to capture this baseline data. Capturing the baseline data will require reviewing files of patients with infections six months prior to initiating a performance improvement plan and inputting that data into the data base. Nursing facilities will need to work collaboratively with associated hospitals to determine retrospectively patient outcomes especially if patients do not return to the nursing facility.

Baseline data will be reviewed with the expert team and areas of needed improvement identified. This will allow additional training to be tailored to the facilities defined need. Quantitative measurements will be obtained by comparing data over the programs time frame to the initial baseline data.

Three fundamental questions which are addressed in this project are:

1. What are we trying to accomplish?
    a. Reduction of the progression of sepsis to the critical stages of severe sepsis or septic shock leading to death or significant reduction in quality of life for residents of nursing facilities
    b. Recognition of severe sepsis early in the continuum to reduce hospital stay of transferred nursing home residents and death at the hospital.
2. How will we know that a change is an improvement?
    a. We expect the incidence of reported severe sepsis will initially increase due to its recognition in facilities which had not been previously sensitized to its symptoms.
    b. We will be able to assess positive change or improvement by reduction in hospital stay and mortality. These data will be captured in the data base and will be analyzed monthly at both aggregate and facility levels.
3. What changes can we make that will result in improvement?
    a. Educating facilities which do not currently have the awareness of signs and symptoms of sepsis, severe sepsis and septic shock should result in earlier diagnosis of the condition and earlier application of evidence-based protocols.
    b. Providing nursing facilities with a sepsis protocol, training to the protocol and tools for measuring adherence to the protocol we hypothesize will reduce costs (avoid hospital stay and/or reduce hospital stay) and save lives
    c. Applying Rapid Cycle Evaluation through review of data to address challenges to protocol adherence.

Important to this project is determining the root cause of challenges that decrease the likelihood of success. Even after a protocol is implemented and individuals trained there will be challenges that are unrelated to personnel training or protocol implementation. These may include lack of responsiveness by medical director or attending physicians; rapid turnover or staff; lack of resources for data collection, lack of community resources (especially in the more remote and/or underserved areas of the state), etc.

While this initiative is not focused on research, there has been one scientifically-proven premise underlying its design and implementation—identifying patients suffering from sepsis at the earliest possible point in the continuum and providing the most appropriate evidence-based care for them reduces mortality, reduces cost and reduces length of stay. Our hypothesis is that, through the partnership with nursing homes, long-term care facilities, emergency medicine providers and associated hospitals is to identify sepsis earlier in the continuum and provide appropriate care, costs will be reduced and lives will be saved.

Project Budget

Provide a detailed budget for all three years of DSRIP the project:

Estimated DSRIP Budget University of Kansas Hospital

Personnel, project management and data analyst	$691,171.00
Data management system	$90,000.00
Marketing	$30,000.00
On-line applications curriculum development	$250,000.00
Sepsis Intensive Workshops	$170,700.00
Sepsis PI/QI projects	$192,700.00
Total	$1,424,571.00

Project Governance

A number of the project team members are integrally involved with the education and training aspects of the DSRIP project. These individuals have extensive and in-depth experience in design and delivery of outcomes-based quality improvement education and training in sepsis as well as in a range of other topics in health care and long-term care. At least three of these individuals will serve as lead faculty for the sepsis. Given that two of team members are affiliated with the University of Kansas Medical Center's nationally accredited continuing medical and nursing education, they bring a depth of experience in development of educational programs designed to make a positive difference in practice performance improvement and patient outcomes. And two members of the team will bring their expertise in quality improvement to bear on the quality improvement aspects of the projects.

TUKH proposes to work with selected communities across the state of Kansas that represent a chosen rate of sepsis, a predetermined Medicaid and/or uninsured population, a population living below the poverty level, and a willingness to support individuals becoming educated on early diagnosis and aggressive management of sepsis.

As community partners come on board, the Steering Committee and Expert Panel for the DSRIP projects will evolve. Each hospital and/or other community partner may request either a seat on the Steering Committee or the Expert Panel. Review of the project implementation within the community will occur monthly with direct input from the clinical leads of the project. The Project Management leads will continue to be Dale Grube and Elizabeth Wenske-Mullinax, and they may add ad hoc members as needed, especially as data collection efforts grow along with the number of community partners.

The complete project team for the Sepsis DSRIP Project at TUKH

- Project management
    - Dale Grube, MA, Associate Dean of Continuing Education and Professional Development and Director of Continuing Medical Education
    - Elizabeth Wenske-Mullinax, PhD, Project Manager, Continuing Education and Professional Development
- Steering Committee
    - Clinical Lead: Steven Simpson, MD, Professor, Acting Director, Division of Pulmonary Disease and Critical Care Medicine; Director, Fellowship Training, Division of Pulmonary Disease and Critical Care Medicine
    - Linda Redford, PhD, Director, Central Plains Geriatric Education Center, Landon Center on Aging at the University of Kansas Medical Center
    - Amanda Gartner, RN, Nurse Manager, Nursing Quality and Research
- Expert Panel
    - Dustin Pierce, RN, Quality Outcomes Coordinator, Nursing Quality and Research
    - Carol Cleek, RN, MSN, CCNS, CCRN, Director of Emergency and Critical Care Services
    - Chad Cannon, MD, Emergency Department Physician
- Ad Hoc Members
    - Chris Wittkopp, Director of Quality Outcomes, Organizational Improvement
    - Cathy Gardner, Senior Director of Business Operations, Organizational Improvement
    - Dorothy Hughes, Government Relations Liaison
- Community partners involved in this project include:
  To be determined

Data Sharing and Confidentiality

The Sepsis DSRIP Project will build upon a database established through the Kansas Sepsis Project. All patient information collected in the data based is de-identified. Hospitals can only see their individual data and how it compares to the aggregate.

Baseline data will be obtained from files of previously treated patients for comparison with data obtained prospectively during the course of the project. Hospitals and nursing facilities will review files of patients with infections who were hospitalized in the six months prior to the participation in the project. Information from the files will be used to populate the database and provide feedback to the facilities as to their current practice in recognition of severe sepsis and adhering to the surviving sepsis management bundle.

All data collected in the baseline and subsequent periods are stored in a cloud-served SQL database (AOS Cloud Services, Olathe, KS). The data are encrypted, password protected, backed up in separate physical servers, and HIPAA compliant. All patient data is de-identified. Every key aspect of collected data can be analyzed for before and after performance, or by comparison of any time periods selected by the users, including monthly time course data. Individual facility data are only available at the local facility level. In addition, facilities can see their own data vs. only aggregate data. With respect to hospitals, they can only see their own providers' individual data, but can compare their whole hospital data only to an aggregate of other hospitals of their size.

Expectation of Sustainability

Three essential leadership roles are necessary in order to successfully launch a sepsis quality improvement project within a healthcare facility: 1) administrative (CEO) support such as providing time for training and making this a priority project for the facility; 2) a physician champion who acknowledges the need and serves on the implementation team; and 3) the quality or risk manager nurse who supports the crucial role of nurses in early recognition of sepsis. The methodology for implementing a sustainable program includes participants reviewing the patient's files from their own facilities. This serves to "personalize" the sense of urgency to address the sepsis. Our approach is to address this as a team approach and guide each facility in a process that allows them to implement the sepsis bundle in such a way that is integrated into their processes. In this manner, it does not become "another" initiative, but rather an improved way to deliver healthcare.

Each individual on the team is trained and thus empowered to recognize the beginning signs of severe sepsis. Those involved in the everyday care of patients are provided training and tools to implement the sepsis bundle. A key element of the implementation is constant review of the data to measure adherence to the sepsis bundle. Through consistent monitoring and measuring strong positive habits can be formed. These habits are reinforced by review of the data to maintain improved rates.

Project Milestones and Performance Indicators

Related Category 1 Outcome Measures (Appendix 7):

Metrics

- 1.1 Identify community partners
  - Metric: Number of nursing homes, community hospitals, etc
- 1.2 Database development
  - Metric: Participation by community partners in database relative to sepsis identification
- 1.3 Baseline Awareness Survey
  - Metric: Survey staff in participating facilities as to their knowledge of the sepsis recognition and care especially with regards to the Surviving Sepsis bundles.

Rationales

Community partners willing to spend the time to review data to determine baseline and then train in the sepsis management bundle is critical for success.

Related Category 2 Outcome Measures (Appendix 7):

Metrics

- 2.1 LCA engagement
  - Metric: Submission of monthly sepsis data
- 2.2 Educational curriculum development
  - Metric: Completion of professional web based modules
  - Metric: Curriculum specific for nursing homes

Rationales

Improvement in sepsis management will occur when measured appropriately and partners review the data to access the progress. The data are to be reviewed as a team.

Related Category 3 Outcome Measures (Appendix 7):

Metrics

- 5.5 Improved in-hospital implementation of sepsis management bundles as defined by the Surviving Sepsis Campaign
    - Identify hospitalized patients from nursing facilities
    - Metric: Number of in-hospital documented, appropriate interventions using sepsis management bundles as defined by the Surviving Sepsis Campaign
    - Rational: Increase in-hospital documented, appropriate interventions using sepsis management bundles as defined by the Surviving Sepsis Campaign
- 5.6 Increased ED identification of septic patients at any stage of the continuum
    - Identify patients transferred from NF because of recognized sepsis at any phase in the continuum
    - Metric: Number of ED patients identified as septic pre- and post-implementation at each facility
    - Rational: Narrow the severe sepsis diagnostic gap by 20% for each participating hospital
- 5.7 Increased ED identification of septic patients in early stages of severe sepsis
    - Identify patients transferred from NF because of recognized early stages of severe sepsis
    - Metric: Number of ED patients diagnosed at early stages of sepsis at each facility
    - Rational: Increase accuracy of sepsis recognition over baseline
- 5.8 Increased ED identification of septic patients with severe sepsis
    - Identify patients transferred from NF because of recognized severe sepsis
    - Metric: Number of ED patients diagnosed initially with severe sepsis at each facility
    - Rational: Increase accuracy of severe sepsis recognition over baseline
- 5.9 Increased ED identification of septic patients with septic shock
    - Identify patients transferred from NF because of recognized septic shock
    - Metric: Number of ED patients diagnosed initially with septic shock at each facility
    - Rational: Increase accuracy of septic shock recognition over baseline
- 5.10 Improved ED implementation of sepsis management bundles as defined by the Surviving Sepsis Campaign
    - Identify patients transferred from NF treated with the sepsis management bundle at the ED
    - Metric: Number of ED documented, appropriate interventions using sepsis management bundles as defined by the Surviving Sepsis Campaign
    - Rational: Increased in-hospital documented, appropriate interventions using sepsis management bundles as defined by the Surviving Sepsis Campaign
- 5.11 Decrease in rate of transfer of septic patients to a higher level facility
    - Identify patients transferred from nursing facilities
    - Metric: Number of septic patients transferred to a higher level facility
    - Rational: Treat higher percentage of septic patients successfully at initial facility over baseline
- 5.12 Increased identification of septic patients transferred to the hospital from a long-term care facility

    - Metric: Number of septic patients transferred to the hospital from a long-term care facility who are identified as septic (severe sepsis or septic shock) pre- and post-implementation at each participating facility
    - Rational: Decrease time and increase accuracy of identifying septic patients transferred to the hospital from a nursing facility
- 5.13 Decrease in proportion of septic patients progressing from severe sepsis to septic shock after 12 months of facility participation (hospital or nursing facility)
    - Metric: Ratio of septic shock patients to number of total of identified septic patients
    - Rational: Increase overall adherence to sepsis management bundle

Overall Rationales

Adherence to the sepsis management bundle should improve the timely recognition of severe sepsis and reduce the rate of patients progressing to later stages of severe sepsis and septic shock. In addition, preventing the patients from progressing to more severe stages of sepsis will decrease the mortality rate.

Related Category 4 Outcome Measures (Appendix 7):

Metrics

- 4.1 Reduce overall ED utilization
    - Metric: # of ED visits
    - Metric: # of frequent users
- 4.2 Decrease 30-day, readmission rate following hospitalization
    - Metric: # of patients readmitted to the index hospital following a hospitalization
- 4.3 Controlling High Blood Pressure
    - Metric: Percentage of patients 1-85 years of age who had a diagnosis of hypertension and whose blood pressure was adequately controlled (<140/90mmHg) during the measurement period
- 4.4 Preventive Care and Screening: Tobacco Use: Screening and Cessation Intervention
    - Metric: Percentage of patients aged 18 years and older who were screened for tobacco use one or more times within 24 months AND who received cessation counseling intervention if identified as a tobacco user.

Project Valuation

As the Large Public Teaching Hospital (LPTH), TUKH has been allocated a total of $45 million across DY 3 through DY 5. This amount is split equally between the two DSRIP projects, giving STOP Sepsis a total value of $22.5 across the three demonstration years.

Base Valuation

The base valuation is 75% of the total, and half is STOP Sepsis (therefore 37.5% of the total), which equals $16,875,000. The table below shows the base valuation by year for STOP Sepsis:

	DY 3	DY 4	DY 5	Total
Base Valuation	37.5%	37.5%	37.5%	
LPTH Pool: Sepsis Project	$2,812,500	$5,625,000	$8,437,500	**$16,875,000**

Secondary Valuation

Secondary valuation payments are comprised of a "Partner Secondary Value Proportion" and a "Trailblazer Secondary Value Proportion." Achievement of the Partner Secondary Value is based on the number of Medicaid/CHIP beneficiaries served in the project, and the percent of patients primarily serve by community partners.

The Partner Secondary Value of 15 percent (7.5% attributable to STOP Sepsis) is achieved if at least 20 percent of the patients served through the project are affiliated with external partners:

The Trailblazer Secondary Value of 10 percent (5% attributable to STOP Sepsis) is achieved if TUKH includes outreach and capacity building components that disseminate the project's outcomes and methods to rural and underserved areas of Kansas in order to expand access to best practices:

The dollar amounts possible under the secondary valuation methodology are outlined for Sepsis in the table below:

	DY 3	DY 4	DY 5	Total
Partner Secondary Value	7.5%	7.5%	7.5%	
LPTH Pool: STOP Sepsis Project	$562,500	$1,125,000	$1,687,500	$3,375,000
Trailblazer Secondary Value	5%	5%	5%	
LPTH Pool: STOP Sepsis Project	$375,000	$750,000	$1,125,000	$2,250,000
Totals	$937,500	$1,875,000	$2,812,500	**$5,625,000**

Per the DSRIP Protocols, metric milestone categories are each assigned a percentage (value) in each demonstration year. These percentages are applied to the dollar amounts in each project's base valuation.

For STOP Sepsis, the metric milestone categories, their percentages, and their corresponding values are as follows:

Metric Milestone Categories	Payment Type	DY 3	DY 4	DY 5	Total
	Performance/ Reporting	45%	25%	10%	
Category 1		$1,265,625	$1,406,250	$843,750	$3,515,625
	Performance/ Reporting	30%	25%	20%	
Category 2		$843,750	$1,406,250	$1,687,500	$3,937,500
	Performance Reporting	5% 10%	25% 10%	45% 5%	
Category 3		$140,625 $281,250	$1,406,250 $562,500	$3,796,875 $421,875	$5,343,750 $1,265,625
	Performance Reporting	0% 10%	5% 10%	15% 5%	
Category 4		$0 $281,250	$281,250 $562,500	$1,265,625 $421,875	$1,546,875 $1,265,625
Totals		$2,812,500	$5,625,000	$8,437,500	**$16,875,000**

Appendix 1

Method for Determination of Severe Sepsis Incidence

To determine the incidence of severe sepsis by county, we used the KDHE's hospital discharge database for years 2008 – 2012. This database uses administrative data supplied by the Kansas Hospital Association from its own annual survey of hospitals in Kansas. We used a modification of the method of Angus, et al, who performed the first large-scale epidemiologic study of severe sepsis by using 7 state hospital discharge databases and extrapolating their data to the US population. [1] Our method has been used successfully for the past decade to track performance in diagnosing severe sepsis at the University of Kansas hospital.[2] Gaiesky, et al recently reviewed the major published methods for determining incidence and outcomes of severe sepsis, including Angus, et al, Martin, et al, and Dombrovskiy, et al. [3] [1,4,5] They applied the definitions used in these major studies to data from the Nationwide Inpatient Sample for the periods of 2004 – 2009 to demonstrate a substantial growth in the incidence of severe sepsis.

The Angus method suggests a higher incidence than either Martin or Dombrovskiy, and this can be attributed to the fact that both of the latter techniques rely on finding sepsis-associated diagnosis codes in the administrative data. In other words, both of the latter techniques require providers to have diagnosed severe sepsis during a hospitalization. The Angus technique, on the other hand, relies on providers to have diagnosed both an acute infection and an acute organ dysfunction, but not necessarily to have connected these two defining features of severe sepsis into the formal diagnosis of severe sepsis Since there are gaps in provider knowledge of severe sepsis in our state, the Angus technique was preferable. [6]

We modified the Angus technique in two ways. First, we added viral sources of sepsis to the definition. Viruses are important causes of severe sepsis. We make another modification of Angus, et al that is important. They search for acute infection plus one organ dysfunction code, whereas we seek two organ dysfunctions. There are two reasons for this modification. The first and most important reason is that when we explored the technique 10 years ago, the unmodified Angus method returned a patient population with a mortality rate of 17%, which was well below the expected mortality rate at the time. Secondly, pneumonia causes approximately 40% to 50% of cases of severe sepsis. All pneumonia will have associated hypoxemia as an organ dysfunction, and for this reason the consensus definition excludes hypoxemia as a qualifying organ dysfunction when pneumonia is present. By requiring a second organ dysfunction, we believe that we have decreased the number of cases of pneumonia that our screen identifies, but have ensured that the ones identified actually do have severe sepsis. Adding the second organ dysfunction also squeezes the non-pneumonia infections and perhaps loses some of the "milder" cases of severe sepsis. However, this modification resulted in detecting a population with a 25% mortality, which is in line with national estimates. When tested in the statewide database, this modification resulted in an incidence estimate lower than the unmodified Angus technique, but higher than the Martin technique.

References

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2. Pitts L, Moncure M, Cannon C, Simpson S. The Use of a Hospital Discharge Database to Track Performance Improvement and Mortality From Severe Sepsis. CHEST 2011;140(4_MeetingAbstracts):345A–345A.

3. Gaieski DF, Edwards JM, Kallan MJ, Carr BG. Benchmarking the Incidence and Mortality of Severe Sepsis in the United States*. Crit Care Med 2013;41(5):1167–1174.

4. Martin. 030417 The Epidemiology of Sepsis in the United States from 1979 through 2000. 2003:1–9.

5. Dombrovskiy VY, Martin AA, Sunderram J, Paz HL. Rapid increase in hospitalization and mortality rates for severe sepsis in the United States: A trend analysis from 1993 to 2003*. Critical Care Medicine 2007;35(5):1244–1250.

6. Pitts L, Sims T, Wenske-Mullinax E. A Needs Assessment For Severe Sepsis Education And Performance Improvement In The Rural Midwest. 2011:1.

Appendix 2

Counties Chosen as Hub and Spoke Sites

Western Kansas

County	Pop.	Hospt.	Licensed Beds	Nursing Homes	Licensed Beds	MDs Dos	HF. Admits per/100,000	Sepsis Rate Angus 2	% Medicaid /CHIP	Percent Medicare	Percent Uninsured	% Below Poverty	Criteria Met(11)
Sherman	6010	1	25	1	57	12	184.9	229.8	18.59	23.64	18.9	8.4	10
Thomas	7900	1	25	1	45	10	229.8	222.7	14.87	18.18	15.8	10.3	9
Grant	7829	1	26	1	56	7	232.5	188.7	23.12	13.27	23.7	11.6	9
Scott	4936	1	25	1	68	6	260.5	322.8	16.84	20.42	19.2	6.7	10
Finney	36776	1	132	2	121	59	142.7	194.3	28.89	11.54	25.6	13.6	8
Seward	22952	1	83	3	133	34	179.7	180.9	30.45	10.9	30.9	17.4	9
Ford	33848	1	99	5	273	42	191.9	206.5	26.34	11.93	27.9	16.4	10
Rooks	5181	1	25	2	70	5	151.8	444.2	16.25	25.67	17.1	16.3	11
Ellis	28452	1	222	3	211	93	241.9	373.8	12.75	5.2	15.7	15.2	9

Central Kansas

County	Pop.	Hospt.	Licensed Beds	Nursing Homes	Licensed Beds	MDs Dos	HF Admits per/100,000	Sepsis Rate Angus 2	Percent Medicaid/CHII	Percent Medicare	Percent Uninsured	% Below Poverty	Criteria Met(11)
Pawnee	6973	1	25	1	80	10	180	463.9	14.54	21.14	15.6	8.9	9
Russell	6970	1	22	1	59	6	121.5	463.6	18.61	27.62	19.3	10.9	9
Barton	27674	3	83	3	210	42	133.8	332.2	22.1	20.5	20.9	14.9	9
Rice	10083	1	25	3	132	4	187.7	326.5	17.87	21.65	18	16.4	10
Reno	64511	1	209	9	653	110	117.9	290.8	20.28	21.67	18.1	12	9
Republic	4980	1	25			6	186.1	151.4	15.32	30.36	18	13.9	9
Cloud	9533	1	25	4	169	7	365.6	203.3	19.01	25.27	17.9	16	11
Saline	55606	1	411	6	422	154	91.1	268.5	20.73	19.28	19	15.6	10
Butler	65880	1	74	7	624	57	152	265	14.52	16.78	13.2	7.00	10
McPherson	29180	3	95	7	572	25	185.5	195.8	13.75	24.51	13.9	8.1	8
Harvey	34684	1	106	7	496	73	177.3	376.7	17.15	21.55	16.5	11.9	9
Sumner	24132	2	50	2	262	14	153.6	334.6	18.94	20.36	15.6	13.5	10
Haprer	6034	2	50	2	97	5	279.7	388.4	18.95	24.7	21.1	16.2	10
Dickinson	19754	2	50	3	134	10	220.5	218.5	20.73	21.9	15.3	11.4	10
Cowley	24132	2	74	6	357	43	154.3	216.5	24.81	31.7	18.9	18.1	11
Riley	71115	1	150	4	358	120	119.6	146.8	13.46	9.58	14.2	22.7	6

Eastern Kansas

County	Pop.	Hospit.	Licensed Beds	Nursing Homes	Licensed Beds	MDs Dos	HF Admits per/100,000	Sepsis Rate Angus 2	Percent Medicaid/CHII	Percent Medicare	Percent Uninsured	% Below Poverty	Criteria Met(11)
Brown	10030	1	26	2	102	12	357.6	280.7	25.57	23.13	20.3	21.4	11
Pottawatomie	21604	1	25	3	145	15	221.7	234.8	13.07	16.19	14.8	8.2	8
Atchison	16924	1	25	3	162	23	191.3	420.9	20.76	18.88	15.6	15	11
Geary	34362	1	92	1	100	28	186.8	180.8	15.4	10.94	19.4	10.8	8
Shawnee	177934	2	964	16	1439	461	206.2	483	21.79	20.27	17.5	15.9	11
Leavenworth	76227	2	150	5	352	200	199.5	404.6	12.5	15.4	13	9.6	8
Wyandotte	157505	2	1127	9	775	676	381	640	33.92	15.5	27.3	23.4	11
Douglas	110862	1	161	6	402	167	120.4	256.7	12.29	12.81	17.2	19.5	8
Lyon	35369	1	53	3	249	31	196.5	270.8	19.51	16.25	22.7	20.7	11
Franklin	25992	1	44	3	225	20	222.5	370.6	21.4	20.03	15.3	12.2	10
Anderson	7920	1	25	1	51	8	175.5	404.7	18.79	24.22	20.5	15.3	11
Allen	13371	1	25	3	146	10	180.3	346.1	24.82	23.21	17.7	17.2	11
Bourbon	15173	1	177	2	111	19	271.6	349.7	26.69	22.75	17.6	17.7	11
Neosho	16512	1	25	4	220	10	356.3	379.4	23.67	22.36	18.2	17.6	11
Crawford	39134	1	188	6	457	58	314.3	478.1	24.51	18.68	21.6	20.4	11
Montgomery	35471	2	108	7	409	42	266.7	328.3	26.27	22.52	19.3	17.4	11
Labette	21607	2	111	6	259	44	195.4	735.7	25.28	23.55	17.7	16.6	11
Cherokee	21603	1	25	4	211	18	231.5	855.7	26.23	23.9	19.4	17.8	11

Criteria: Counties with: population of ≥5,000; at least one 25 bed hospital; at least one nursing home; ≥5 physicians; of ≥150/100,000; sepsis Angus 2 rate of ≥200/100,000; percent population covered by Medicaid/CHIP ≥ 15%; heart failure admit. rate percent population covered by Medicare ≥15%; percent of population uninsured ≥ 15%; percent population living below poverty ³ 15% percent population living below poverty ³ 15%

Please note: counties meeting the majority of criteria were included

Appendix 3

Western Kansas					
County	Hospitals & Nursing Facilities	Location		Type Facility	Licensed Beds
Training Sites	Note: this is a truncated version of the master data base that includes				
Spoke Sites	hospitals & nursing facilities for STOP SEPSIS in counties meeting inclusion criteria;				
	master includes all contact information/phone numbers & other relevant information				
Sherman	Goodland Regional Medical Center	Goodland	KS	Hospital	25
	Good Samaritan Society	Goodland	KS	NH	60
Thomas	Citizens Medical Center	Colby	KS	Hospital	25
	Desert Health & Rehabilitation	Colby	KS	Rehab	45
	Citizens Medical Center LTC	Colby	KS	LTC	63
Grant	Bob Wilson Grant County Hospital	Ulysses	KS	Hospital	26
	The Legacy at Park View	Ulysses	KS	NH	52
Scott	Scott County Hospital	Scott City	KS	Hospital	25
	Park Lane Nursing Home	Scott City	KS	NH	68
Finney	St Catherine Hospital	Garden City	KS	Hospital	132
	Garden City Retirement Village	Garden City	KS	NH	82
	The Homestead Health & Rehab Center	Garden City	KS	Rehab	43
Seward	Southwest Medical Center	Liberal	KS	Hospital	83
	Good Samaritan Liberal	Liberal	KS	NH	60
	Southwest Medical Center Skilled Nursing	Liberal	KS	SNF	18
	Wheatridge Park Care Center	Liberal	KS	SH	66
Ford	Western Plains Medical Center	Dodge City	KS	Hospital	99
	Manor of the Plains	Dodge City	KS	NH	50
	Kansas Soldiers Home	Ft. Dodge	KS	NH	72
	Hilltop House	Bucklin	KS	NH	32
	Trinity Manor	Dodge City	KS	NH	59
	Good Samaritan Society Dodge City	Dodge City	KS	NH	60
Rooks	Rooks County Health Care	Plainville	KS	Hospital	25
	Soloman Valley Manor (Dementia/Asst. Living)	Stockton	KS	Asst. Liv	33
	Rooks County Senior Services	Plainville	KS	NH	37
Ellis	Hays Medical Center	Hays	KS	Hospital	222
	Good Samaritan Society- Ellis	Ellis	KS	NH	57
	Via Christi Village	Hays	KS	NH	96
	Good Samaritan Society- Hays	Hays	KS	NH	70
	Hays Medical Center LTC	Hays	KS	LTC	12

Central Kansas					
County	Nursing & Hospital Facilities	Location		Type Facility	Licensed Beds
Training Sites					
Spoke Sites					
Pawnee	Pawnee Valley Community Hospital	Larned	KS	Hospital	80
	Diversicare of Larned	Larned	KS	NH	44
Russell	Russell Regional Medical Center	Russell	KS	Hospital	22
	Russell Regional Hospital LTCU	Russell	KS	LTCU	21
	Wheatland Nursing Rehabilitation Center	Russell	KS	Rehab	59
Barton	Great Bend Regional Hospital	Great Bend	KS	Hospital	42
	Clara Barton Hospital	Hoisington	KS	Hospital	25
	Ellinwood District Hospital	Ellinwood	KS		25
	Cherry Village	Great Bend	KS	NH	44
	Woodhaven Care Center	Ellinwood	KS	NH	56
Rice	Hospital District # 1 of Rice County	Lyons	KS	Hospital	25
	Good Samaritan Society	Lyons	KS	NH	45
	Sandstone Heights	Little River	KS	NH	40
	Sterling Presbyterian Manor	Sterling	KS	NH	55
Reno	Hutchinson Regional Hospital	Hutchinson	KS	Hospital	209
	Buhler Sunshine Home	Buhler	KS	NH	55
	Golden Plains Rehabilitation Center	Hutchinson	KS	Rehab	85
	Good Samaritan Society Hutchinson Village	Hutchinson	KS	NH	79
	Hutchinson Care Clinic	Hutchinson	KS	NH	60
	Hutchinson Regional Medical Center SNU	Hutchinson	KS	SNU	15
	Mennonite Friendship Communities	Hutchinson	KS	NH	126
	Prairie Sunset Home	Pretty Prairie	KS	NH	34
	Ray E. Dillon Living Center	Hutchinson	KS	NH	60
	Wesley Towers	Hutchinson	KS	NH	130
Republic	Republic County Hospital	Belleville	KS	Hospital	25
	Republic County LTC	Belleville	KS	LTC	38
	Belleville Health Care Center	Belleville	KS	NH	72
Cloud	Cloud County Health Center	Concordia	KS	Hospital	25
	Mt. St. Joseph Sr. Village LLC	Concordia	KS	NH	60
	Park Villa	Clyde	KS	NH	36
	Sunset Home, Inc.	Concordia	KS	NH	45
	The Nicol Home, Inc.	Glasco	KS	HN	28

Saline	Salina Reginal Medical Center	Salina	KS	Hospital	411
	Holiday Resort of Salina	Salina	KS	NH	85
	Kenwood View Health and Rehabilitation Cent	Salina	KS	Rehab	82
	Pinnacle Park Nursing and Rehabilitation Cent	Salina	KS	Rehab	60
	Salina Presbyterian Holiday Manor	Salina	KS	NH	60
	Smokey Hill Rehabilitation Center	Salina	KS	Rehab	90
	Windsor Estates	Salina	KS	NH	53
Butler	Susan B. Allen Hospital	El Dorado	KS	Hospital	74
	Fountain View Nursing and Rehabilitation Cent	Rose Hill	KS	Rehab	56
	Golden Living Center	El Dorado	KS	NH	62
	Lakepoint Nursing & Rehab Center of El Dorado	El Dorado	KS	Rehab/NH	121
	Lakepoint Nursing Center	Agusta	KS	NH	100
	Lifecare Center of Andover	Andover	KS	NH	154
	Medical Lodges Douglass	Douglass	KS	NH	42
	Victora Falls	Andover	KS	NH	76
	Wheat State Manor	Whitewater	KS	NH	65
McPherson	McPherson Hospital, Inc.	McPherson	KS	Hospital	49
	Mercy Hospital, Inc.	Moundridge	KS	Hospital	21
	Lindsborg Community Hospital	Lindsborg	Ks	Hospital	25
	Bethany Home Association	Lindsborg	KS	NH	105
	McPherson Care Center LTC	McPherson	KS	LTC	46
	Moundridge Manor	Moundridge	KS	NH	77
	Pine Village	Moundridge	KS	NH	74
	Pleasant View Home	Inman	KS	NH	124
	Riverview Estates	Marquette	KS	NH	45
	The Cedars	McPherson	KS	NH	107
Harvey	Newton Medical Center	Newton	KS	Hospital	106
	Asbury Park	Newton	KS	NH	99
	Bethel Health Care Center	North Newton	KS	NH	60
	Diversicare of Sedgwick	Sedgwick	KS	NH	62
	Halstead Health & Rehabilitation Center	Halstead	KS	Rehab/NH	60
	Kansas Christian Home	Newton	KS	NH	92
	Newton Presbyterian Home	Newton	KS	NH	60
	Schowalter Villa	Hesston	KS	NH	105

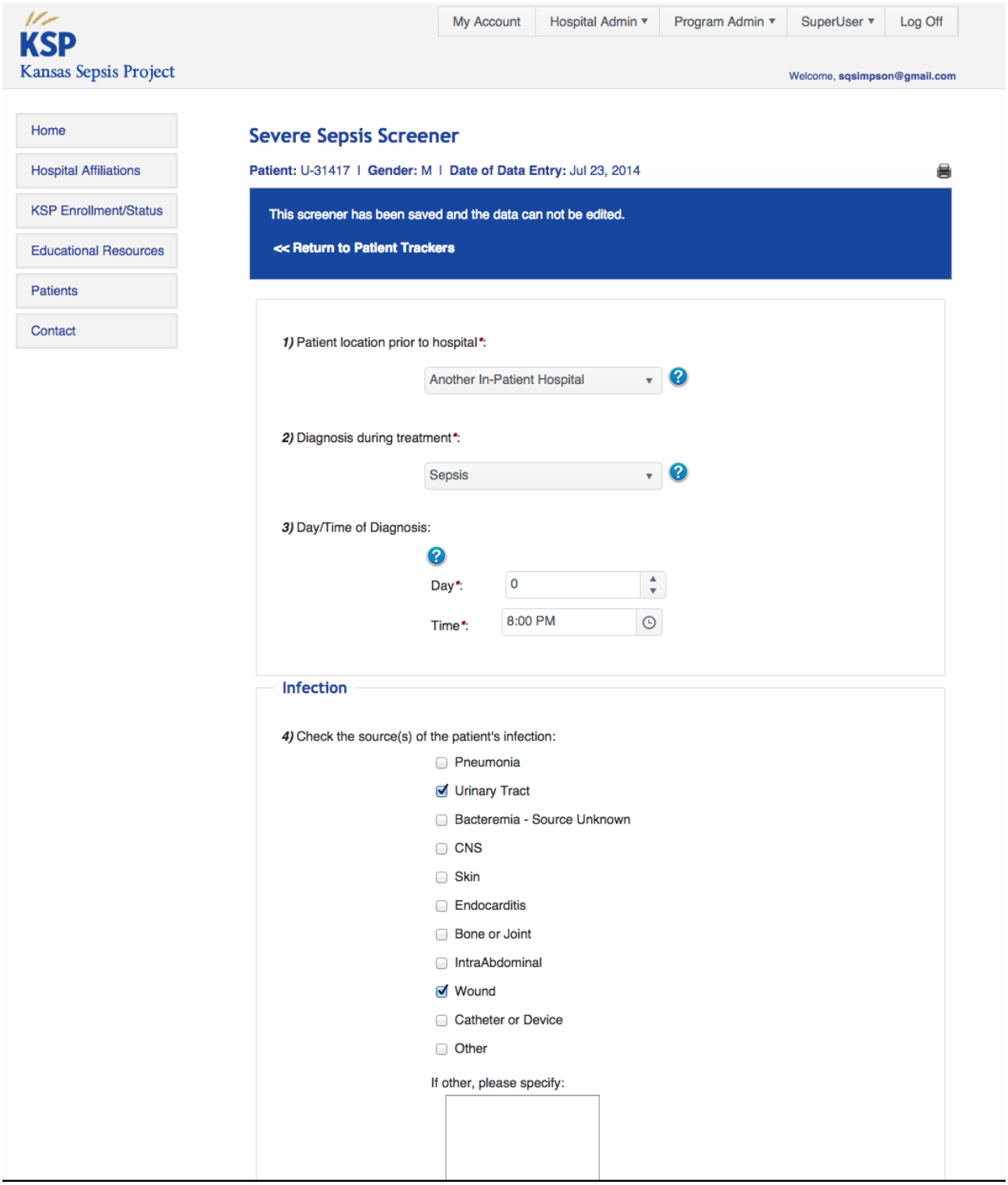
Sumner	Sumner Regional Medical Center	Wellington	KS	Hospital	65
	Sumner County District #1 Hospital	Caldwell	KS	Hospital	15
	Golden Living Center	Wellington	KS	NH	55
	Riverview Manor	Oxford	KS	NH	45
	Spring View Manor	Conway Springs	KS	NH	45
	Sumner County Care Center	Wellington	KS	NH	44
	Sumner Regional Medical Center SNF	Wellington	KS	SNF	9
	Vialla Maria	Mulvane	KS	NH	64
Harper	Anthony Medical Center	Anthony	KS	Hospital	25
	Harper Hospital District #5	Harper	KS	Hospital	25
	Anthony Community Care Center	Anthony	KS	NH	40
	Attica Long Term Care	Attica	KS	LTC	57
Dickinson	Memorial Health System	Abilene	KS	Hospital	25
	Chapman Valley Manor	Chapman	KS	NH	45
	Enterprise Estates Nursing Cnter	Enterprise	KS	NH	44
	Medical Lodges-Herington	Herington	KS	NH	45
	Memorial Hospital LTC	Abilene	KS	LTC	81
Cowley	South Central Kansas Medical Center	Arkansas City	KS	Hospital	49
	Arkansas City Presbyterian Manor	Arkansas City	KS	NH	60
	Cumbernauld Village	Winfield	KS	NH	42
	Good Samaritan Winfield	Winfield	KS	NH	45
	Kansas Veterans Home	Winfield	KS	NH	107
	Medical Lodges of Arkansas City	Arkansas City	KS	NH	58
	Winfield Rest Haven II, LLC	Winfield	KS	NH	45
Riley	Mercy Regional Health Center, Inc.	Manhattan	KS	Hospital	120
	Leonardville Nursing Home	Leonardville	KS	NH	56
	Meadowlark Hills	Manhattan	KS	NH	133
	Stoney Brook Retirement Community	Manhattan	KS	Retirement	64
	Via Christi Village Manhattan, Inc	Manhattan	KS	NH	96

Eastern Kansas					
County	Nursing & Hospital Facilities	Location		Type Facility	Licensed Beds
Training Sites					
Spoke Sites					
Brown	Hiawatha Community Hospital	Hiawatha	KS	Hospital	25
	Horton Commt. Hospt./Ctr. for Health & Wellne	Horton	KS	Hospital	15
	Maple Heights Nursing and Rehabilitation Cen	Hiawatha	KS	NH & Rehab	67
	Tri County Manor & Living Center, Inc.	Horton	KS		50
Pottawatomie	Onaga Community Health	Onaga	KS	Hospital	25
	Wamego Health Center	Wamego	KS		25
	Community Hospital of Onaga LTC	St. Marys	KS	LTC	39
	Deseret Health & Rehabilitation Onega LLC	Onega	KS	NH & Rehab	45
	Good Samaritan Society-Valley Vista	Wamego	KS	NH	50
	Westy Community Care Home	Westmorland	KS	NH	77
Atchison	Atchison Hospital	Atchison	KS	Hospital	25
	Atchison Senior Village	Atchison	KS	NH	56
	Dooley Center	Atchison	KS	NH	46
	Medicalodges Atchinson	Atchison	KS	NH	50
Geary	Geary Community Hospital	Junction City	KS		92
	Valley View Senior Life	Junction City	KS	NH	100
Shawnee	St. Francis	Topeka	KS	Hospital	378
	Stormont Vail	Topeka	KS	Hospital	586
	Aldersgate Village	Topeka	KS	NH	209
	Brewster Health Center	Topeka	KS	NH	97
	Brighton Place North	Topeka	KS	NH	34
	Brighton Place West	Topeka	KS	NH	50
	Countryside Health Center	Topeka	KS	NH	77
	Lexington Park Nursing & Post Acute Care Cent	Topeka	KS	NH/post acu	90
	Manor Cre Health Services Topeka	Topeka	KS	NH	120
	McCrite Plaza Health Center	Topeka	KS	NH	91
	Plaza West Regional Health Center	Topeka	KS	NH	151
	Providence Living Center	Topeka	KS	NH	78

Leavenworth	St. Luke's Cushing Hospital	Leavenworth	KS	Hospital	74
	St John Hospital	Leavenworth	KS	Hospital	76
	Country Care, Inc.	Easton	KS	NH	45
	Golden Living Center Lansing	Lansing	KS	NH	60
	Medicalodges Leavenworth	Leavenworth	KS	NH	80
	Tonganoxie Nursing Center	Tonganoxie	KS	NH	90
	Twin Oaks Health & Rehabilitation	Lansing	KS	Rehab/NH ?	80
Wyandotte	Providence Hospital	Kansas City	KS	Hospital	400
	University of Kansas Hospital	Kansas City	KS	Hospital	727
	Bonner Springs Nursing & Rehabilitation	Bonner Springs	KS	NH & Rehab	46
	Golden Living Center Edwardsville	Edwardsville	KS	NH	100
	Golden Living Center Kaw River	Edwardsville	KS	NH	50
	Golden Living Center Parkway	Edwardsville	KS	NH	50
	Kansas City Presbyterian Manor	Kansas City	KS	NH	161
	Kansas City Transitional Care Center	Kansas City	KS	Transitional	96
	Life Care of Kansas City	Kansas City	KS	NH	82
	Medicalodges Post Acute Care	Kansas City	KS	Post acute	122
	Providence Place	Kansas City	KS	NH (?)	70
Douglas	Lawrence Memorial Hospital	Lawrence	KS	Hospital	161
	Baldwin Healthcare and Rehab Center	Baldwin	KS	Rehab/NH?	60
	Brandon Woods at Alvamar	Lawrence	Ks	NH	140
	Lawrence Memorial Hospital SNF	Lawrence	KS	SNF	12
	Lawrence Presbyterian Manor	Lawrence	KS	NH	42
	Medicalodges of Eudora	Eudora	KS	NH	74
	Pioneer Ridge Retirement Community	Lawrence	KS	Asst. Living ?	76
Lyon	Newman Regional Medical Center	Emporia	KS	Hospital	53
	Emporia Presbyterian Manor	Emporia	KS	NH	60
	Flint Hills Care Center	Emporia	KS	NH	61
	Holiday Resort	Emporia	KS	Asst. Living ?	120
Franklin	Ransom Memorial Hospital	Ottawa	KS	Hospital	44
	Ottawa Retirement Village	Ottawa	KS	Asst. Living ?	105
	Richmond Healthcare & Rehab Center	Richmond	KS	Rehab	60
	Wellsville Manor	Wellsville	KS	NH	51
Anderson	Anderson County Hospital	Garnett	KS	Hospital	25
	Anderson County Hospital LTC	Garnett	KS	LTC	30
	Golden Heights Living Center	Garnett	KS	NH	51

Allen	Allen County Regional Hospital	Iola	KS	Hospital	25
	Iola Nursing and Residential Care Center	Iola	KS	NH	44
	Moran Manor	Moran	KS	NH	45
	Windsor Place at Iola, LLC	Iola	KS	NH	65
Bourbon	Mercy Hospital Fort Scott	Fort Scott	KS	Hospital	177
	Fort Scott Manor	Fort. Scott	KS	NH	50
	Medicalodges of Fort Scott	Fort Scott	KS	NH	61
Neosho	Neosho Memorial Hospital	Chanute	KS	Hospital	25
	Applewood Rehabilitation, Inc.	Chanute	KS	Rehab	45
	Diversicare of Chanute	Chanute	KS	NH	77
	Heritage Health Care Center	Chanute	KS	NH	53
	Prairie Mission Retirement Village	St. Paul	KS	Asst. Living ?	50
Crawford	Via Christi/Pittsburg	Pittsburg	KS	Hospital	188
	Arma Care Center, LLC	Arma	KS	NH	45
	Golden Living Center	Pittsburg	KS	NH	86
	Medicalodges Frontenac	Frontenac	KS	NH	120
	Medicalodges Pittsburg	Pittsburg	KS	NH	60
	TWG Nursing Home, Inc., DBA, The Heritage	Girard	KS	NH	40
	Vai Christi Village	Pittsburg	KS	NH	96
Montgomery	Coffeyville Regional Medical Center	Coffeyville	KS	Hospital	68
	Mercy Hospital Independence	Independence	KS	Hospital	40
	Chaney Nursing Center	Chaney	KS	NH	45
	Cherryvale Nursing & Rehabilitation Center	Cherryvale	KS	NH/Rehab	59
	Coffeyville regional Medical Center SNF	Coffeyville	KS	SNF	20
	Medicalodges Coffeyville	Coffeyville	KS	NH	40
	Medicalodges Independence	Independence	KS	NH	55
	Montgomery Place	Independence	KS	NH	43
	Windsor Place	Coffeyville	KS	NH	163
Labette	Labette Health	Parsons	KS	Hospital	99
	Oswego Community Hospital	Oswego	KS	Hospital	12
	Chetopa Manor	Chetopa	KS	NH	38
	Deseret Health and Rehab of Oswego, LLC	Oswego	KS	NH/Rehab	40
	Elmheaven West Nursing Home	Parsons	KS	NH	39
	Elmheaven East Nursing Home	Parsons	KS	NH	45
	Good Samaritan Society Parsons	Parsons	KS	NH	68
Cherokee	Mercy Hospital Columbus	Columbus	KS	Hospital	25
	Emerald Point Health & Rehabilitation Center	Galena	KS	NH/Rehab	48
	Galena Nursing and Rehabilitation Center	Galena	KS	NH/Rehab	58
	Medicalodges Columbus	Columbus	KS	NH	45
	Quaker Hill Manor	Baxter Springs	KS	NH	60

Appendix 4


KSP
Kansas Sepsis Project
My Account
Hospital Admin
Program Admin
SuperUser
Log Off
Welcome, sqsimpson@gmail.com
Home
Hospital Affiliations
KSP Enrollment/Status
Educational Resources
Patients
Contact
Severe Sepsis Screener
Patient: U-31417 | Gender: M | Date of Data Entry: Jul 23, 2014
This screener has been saved and the data can not be edited.
<< Return to Patient Trackers
1) Patient location prior to hospital*:
Another In-Patient Hospital
2) Diagnosis during treatment*:
Sepsis
3) Day/Time of Diagnosis:
Day*: 0
Time*: 8:00 PM
Infection
4) Check the source(s) of the patient's infection:
Pneumonia
Urinary Tract
Bacteremia - Source Unknown
CNS
Skin
Endocarditis
Bone or Joint
IntraAbdominal
Wound
Catheter or Device
Other
If other, please specify:

5) Day/Time of Infection:

Day: 0

Time: 8:14 PM

6) Location where infection occurred*:

Medical/Surgical/Pediatric Unit

SIRS

7) Which of the following criteria does or did the patient have? Please check all that apply:

- [ ] T (>38 C or <36 C) (>100.4 F or <96.8 F)
- [x] Tachycardia (>90 bpm)
- [ ] Tachypnea (> 20 bpm)
- [x] WBC (>12,000 or <4,000 or >10% bands)

8) SIRS Criteria Met*: Yes

9) Day/Time of SIRS:

Day: 0

Time: 8:30 PM

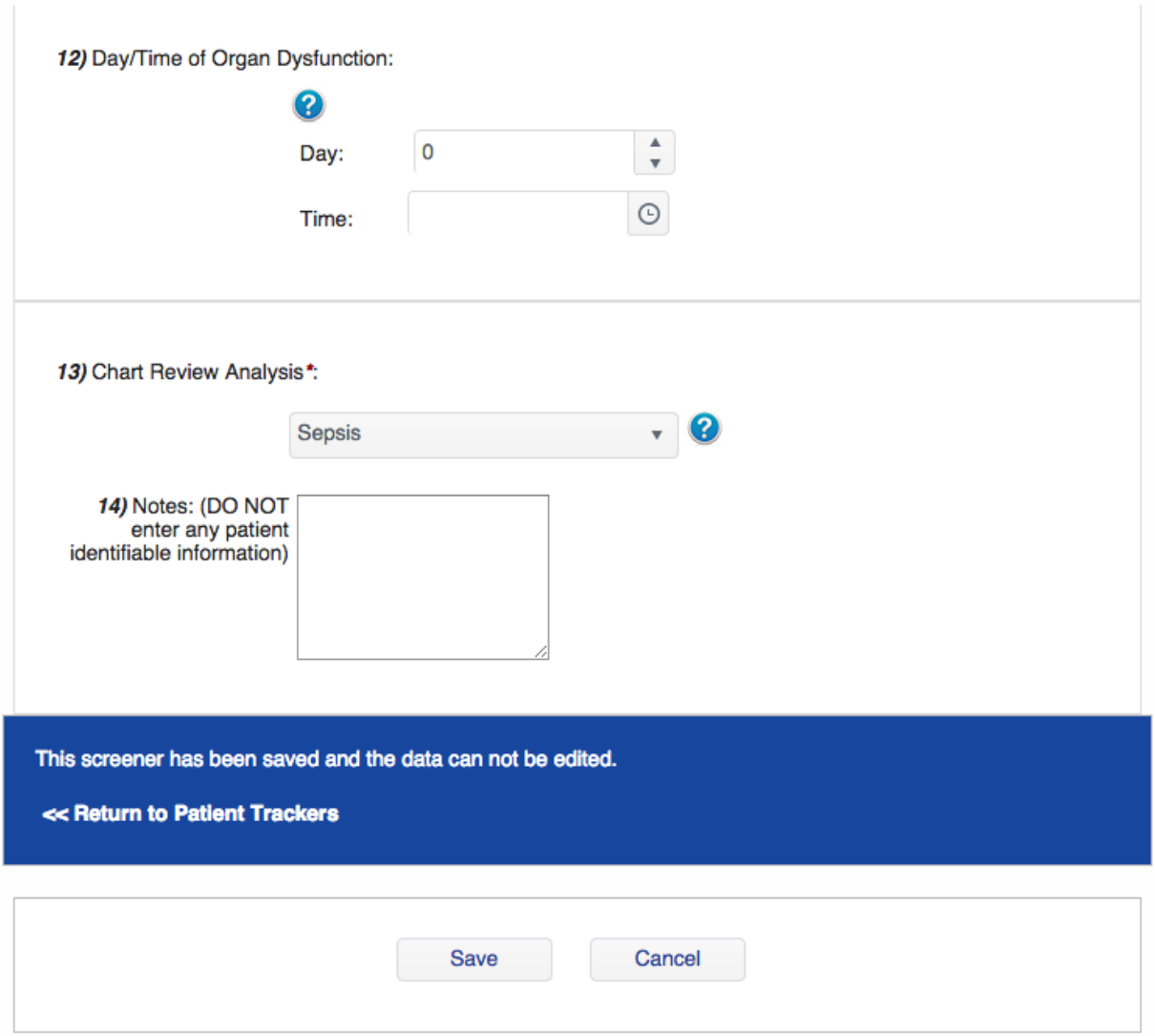
Organ Dysfunction

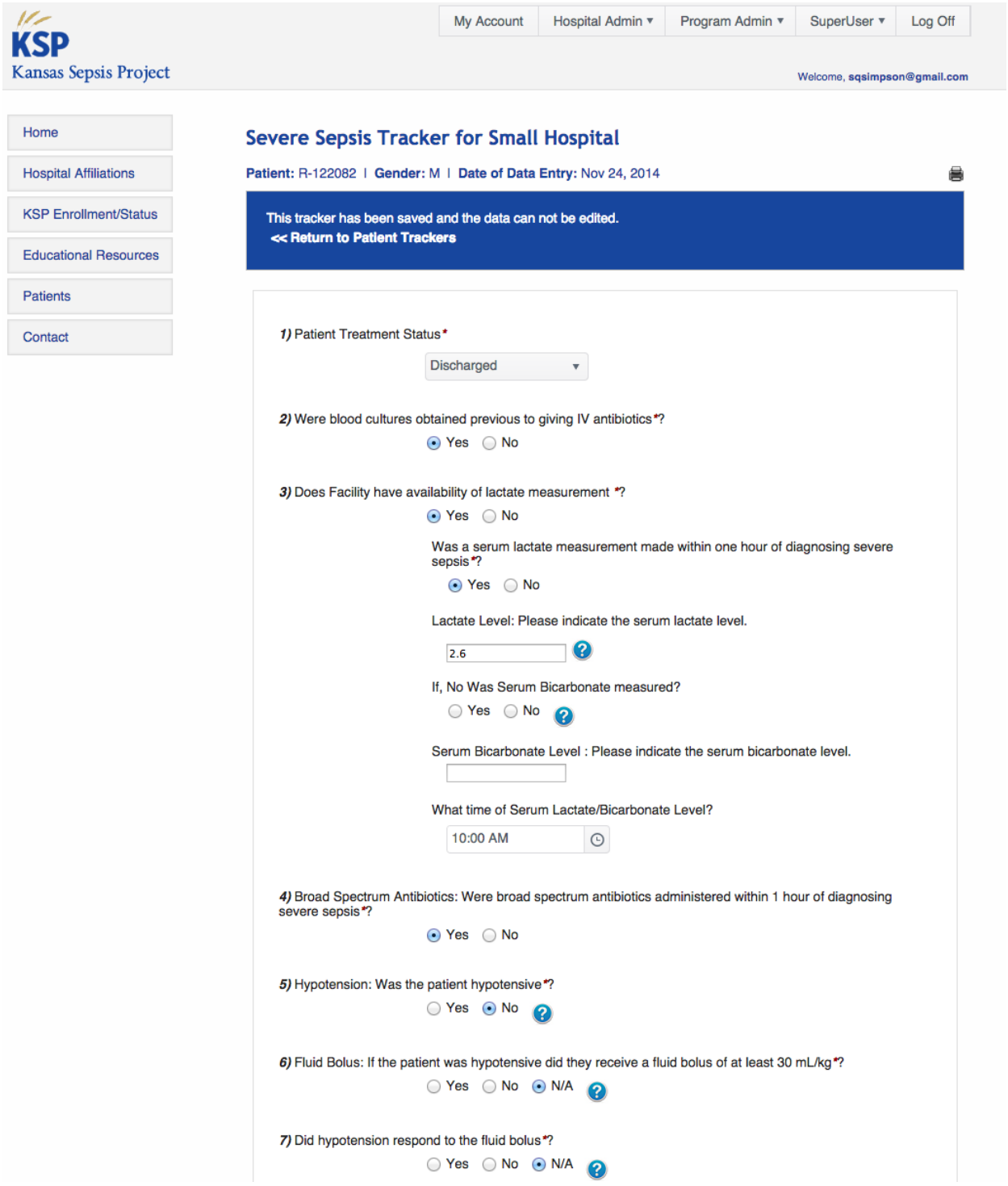
10) Organ Dysfunction*:

No

11) Check all that apply.

- [ ] CNS (altered mental status? confusion, delirium, obtundation)
- [ ] Cardiovascular (SBP<90 mm Hg OR MAP<65 mm Hg OR SBP drop >40 mm Hg from baseline)
- [ ] Pulmonary (SpO2<90%, OR PaO2/FiO2<300, OR PaO2<60 mm Hg OR patient on supplemental oxygen)
- [ ] Hepatic (t. bilirubin >2mg/dL)
- [ ] Renal (creatinine >2.0 mg/dL, OR urine output <0.5 mL/kg/hour for >2 hours)
- [ ] DIC (platelet count <100,000 or INR >1.5 or PTT > 60 seconds)
- [ ] Lactate (>2mmol/L, or serum bicarbonate <18 meq/L without other explanation)


12) Day/Time of Organ Dysfunction:
Day:
0
Time:
13) Chart Review Analysis*:
Sepsis
14) Notes: (DO NOT enter any patient identifiable information)
This screener has been saved and the data can not be edited.
<< Return to Patient Trackers
Save
Cancel


KSP
Kansas Sepsis Project
My Account
Hospital Admin
Program Admin
SuperUser
Log Off
Welcome, sqsimpson@gmail.com
Home
Hospital Affiliations
KSP Enrollment/Status
Educational Resources
Patients
Contact
Severe Sepsis Tracker for Small Hospital
Patient: R-122082 | Gender: M | Date of Data Entry: Nov 24, 2014
This tracker has been saved and the data can not be edited.
<< Return to Patient Trackers
1) Patient Treatment Status*
Discharged
2) Were blood cultures obtained previous to giving IV antibiotics*?
Yes No
3) Does Facility have availability of lactate measurement *?
Yes No
Was a serum lactate measurement made within one hour of diagnosing severe sepsis*?
Yes No
Lactate Level: Please indicate the serum lactate level.
2.6
If, No Was Serum Bicarbonate measured?
Yes No
Serum Bicarbonate Level : Please indicate the serum bicarbonate level.
What time of Serum Lactate/Bicarbonate Level?
10:00 AM
4) Broad Spectrum Antibiotics: Were broad spectrum antibiotics administered within 1 hour of diagnosing severe sepsis*?
Yes No
5) Hypotension: Was the patient hypotensive*?
Yes No
6) Fluid Bolus: If the patient was hypotensive did they receive a fluid bolus of at least 30 mL/kg*?
Yes No N/A
7) Did hypotension respond to the fluid bolus*?
Yes No N/A

8) Vasopressor: If no response to fluid bolus, was vasopressor initiated*?

N/A

9) Was a central venous catheter placed*?

○ Yes ◉ No ○ N/A

10) Was referral center contacted for transfer within 2 hours of diagnosing severe sepsis*?

○ Yes ◉ No ○ N/A

11) Day/Time of initial contact with your referral center

Day: 0

Time:

12) Day/Time patient actually left your facility

Day: 0

Time:

13) Patient Outcome at your facility*?

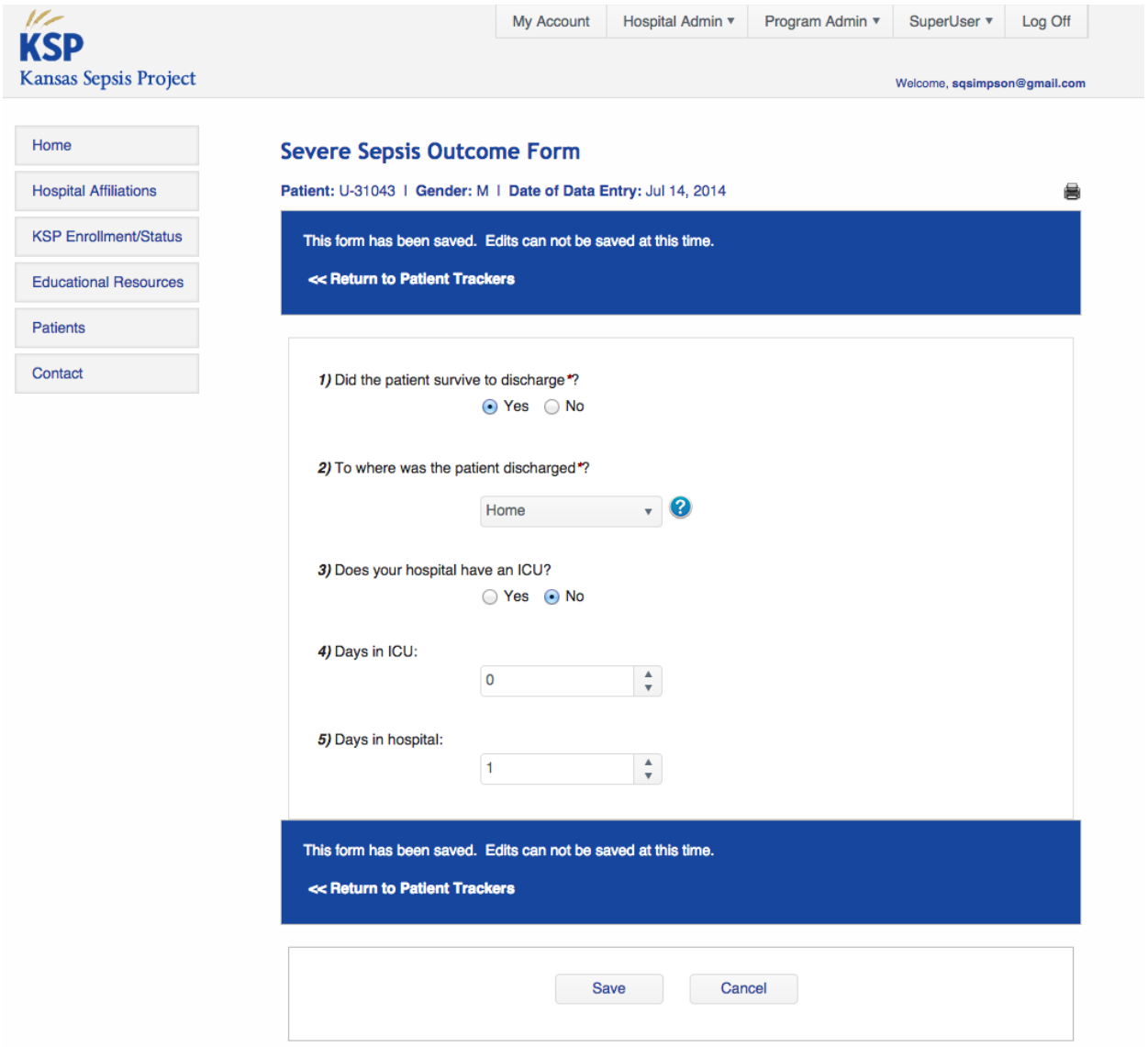
◉ Alive ○ Death ○ Death during transport

14) Notes

This tracker has been saved and the data can not be edited.

<< Return to Patient Trackers

Save Cancel


KSP
Kansas Sepsis Project
My Account
Hospital Admin
Program Admin
SuperUser
Log Off
Welcome, sqsimpson@gmail.com
Home
Hospital Affiliations
KSP Enrollment/Status
Educational Resources
Patients
Contact
Severe Sepsis Outcome Form
Patient: U-31043 | Gender: M | Date of Data Entry: Jul 14, 2014
This form has been saved. Edits can not be saved at this time.
<< Return to Patient Trackers
1) Did the patient survive to discharge*?
Yes
No
2) To where was the patient discharged*?
Home
3) Does your hospital have an ICU?
Yes
No
4) Days in ICU:
0
5) Days in hospital:
1
This form has been saved. Edits can not be saved at this time.
<< Return to Patient Trackers
Save
Cancel

Appendix 5

Sepsis Screening Tool

Stat Lab Available

Does your patient have any risk factors, signs or symptoms of infection?

Signs/Symptoms	*Risk Factors*
☐ Skin/musculoskeletal infection – wound, abscess, cellulitis	☐ Indwelling medical device other than peripheral IV (PICC line, dialysis catheter, urinary catheter, drain, etc…)
☐ Urinary tract infection – decreased urine output, dysuria, frequency, cloudy, odor	☐ Recent surgery or invasive procedure (>48 hours)
☐ Abdominal infection – pain, guarding, nausea, vomiting, diarrhea, rebound tenderness, rigidity	☐ Readmission within 48 hours from hospital discharge
☐ Chest infection – cough, shortness of breath, pneumonia/ empyema, endocarditis	☐ Recently or currently receiving antibiotics for a confirmed/documented infection
☐ Neurological infection –meningitis	☐ None of the above, reassess in 12 hours
☐ New onset of confusion, decreased level of consciousness	
☐ None of the above, reassess in 12 hours	

AND

Does your patient have 2 or more Yellow Criteria?	**OR**	**Does your patient have 1 or more Red Criteria?**
☐ Heart Rate > 90 ☐ Respirations > 20 or $PaCO_2$ < 32 mmHg ☐ Temperature >38 or <36 ☐ WBC > 12,000 or <4,000 or Bands >10% ***POSITIVE SCREEN: Risk factors, signs or symptoms of infection AND 2 or more Yellow Criteria***		☐ Systolic BP<90, MAP <70, or ↓SBP > 40 mmHg ☐ SpO2 < 92% on room air/baseline home oxygen or increased requirements of FiO2 (>10%)/supplemental oxygen >2L/min or PaO2/FiO2 <300 ☐ Lactate > 2.0 ***POSITIVE SCREEN: Risk factors, signs or symptoms of infection AND 1 or More Red Criteria***

Negative Screen:	**Positive Screen:**	**Positive Screen:**
No signs, symptoms or risk factors identified above and no qualifying SIRS or organ dysfunction present ✓ Reassess every shift and PRN as condition warrants	✓ Notify Physician within 30 Minutes ✓ Obtain appropriate cultures ✓ Start broad spectrum antibiotics ✓ Look for other causes of deterioration ✓ Monitor for signs/symptoms of **Severe Sepsis**	✓ Notify Physician Immediately ✓ Obtain appropriate cultures ✓ Start broad spectrum antibiotics ✓ Obtain IV access and begin fluid resuscitation ✓ Consider transfer to a higher level of care

Sepsis Screening Tool

No Stat Lab availability

Does your patient have any risk factors, signs or symptoms of infection?

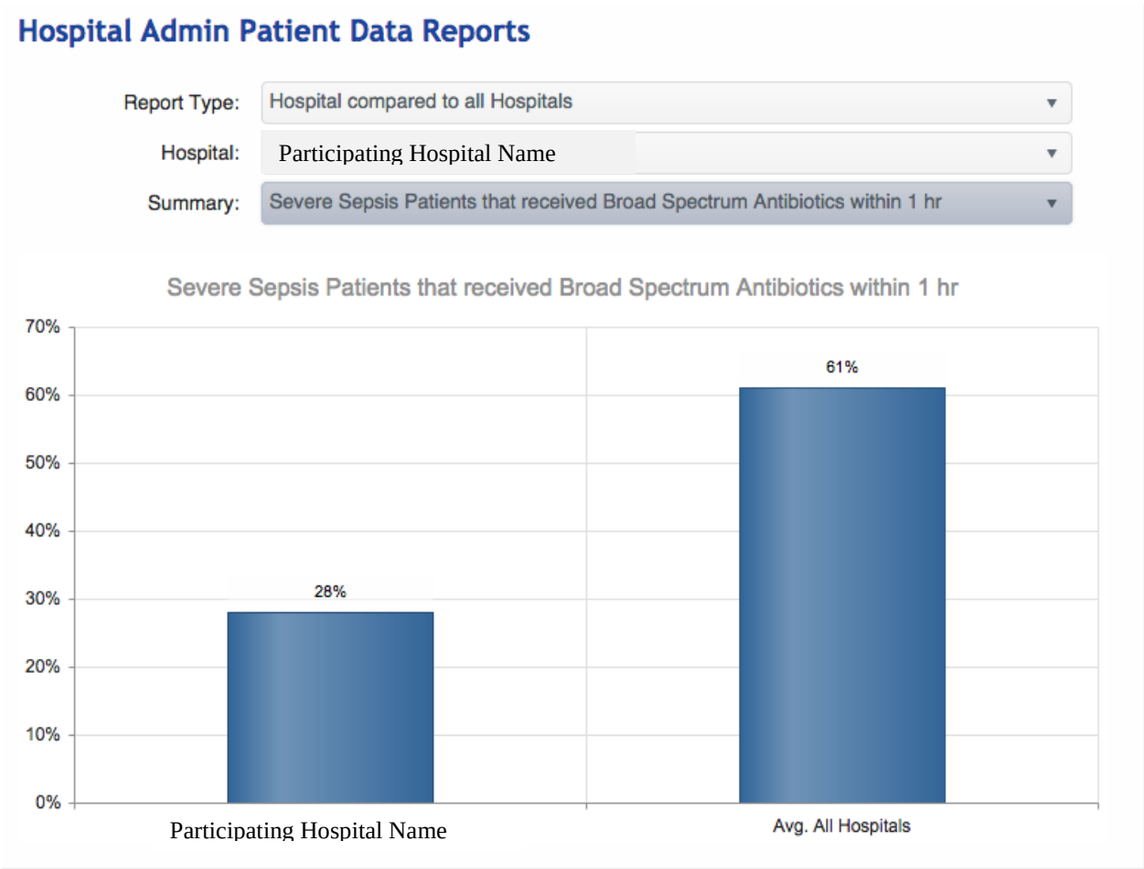
Signs/Symptoms	*Risk Factors*
☐ Skin/musculoskeletal infection – wound, abscess, cellulitis ☐ Urinary tract infection – decreased urine output, dysuria, frequency, cloudy, **odor** ☐ Abdominal infection – pain, guarding, nausea, vomiting, diarrhea, rebound tenderness, rigidity ☐ Chest infection – cough, shortness of breath, sputum, pneumonia ☐ New onset of confusion, decreased level of consciousness ☐ None of the above, reassess later	☐ Indwelling medical device (IV, PICC line, dialysis catheter, urinary catheter, drain, etc…) ☐ Recent surgery or invasive procedure (>48 hours) ☐ Recently or currently receiving antibiotics for a confirmed/documented infection ☐ None of the above, reassess later

AND

Does your patient have 2 or more SIRS Criteria?	**Do they have 1 or more Acute Organ Dysfunction Criteria?**
☐ Heart Rate > 90 ☐ Respirations > 20 ☐ Temperature >38 or <36 ***POSITIVE SCREEN for SEPSIS: Risk factors, signs or symptoms of infection AND 2 or more Yellow Criteria***	☐ Systolic BP<90, MAP <70, or ↓SBP > 40 mmHg ☐ Urine Output < 750ml in 24hrs ☐ SpO2 < 92% on room air/baseline home oxygen OR increased requirements of supplemental oxygen >2L/min ***POSITIVE SCREEN for SEVERE SEPSIS: Risk factors, signs or symptoms of infection AND 1 or More Red Criteria***

Negative Screen:	**Positive Screen: Sepsis**	**Positive Screen: Severe Sepsis**
No signs, symptoms or risk factors identified above and no qualifying SIRS or organ dysfunction present ✓ Reassess every shift and PRN as condition warrants	**Goals:** ✓ Contact medical director/personal physician within 30 minutes ✓ Start broad-spectrum antibiotics, if possible ✓ Consider patient transfer to hospital ✓ Monitor for signs/symptoms of **Severe Sepsis**	**Goals:** ✓ Contact medical director/personal physician immediately: transfer patient to hospital ✓ Communicate with receiving facility about the suspected presence of Severe Sepsis ✓ Give broad spectrum antibiotic, if possible ✓ Begin or suggest fluid resuscitation on transfer

Appendix 6


Hospital Admin Patient Data Reports
Report Type:
Hospital compared to all Hospitals
Hospital:
Participating Hospital Name
Summary:
Severe Sepsis Patients that received Broad Spectrum Antibiotics within 1 hr
Severe Sepsis Patients that received Broad Spectrum Antibiotics within 1 hr
70%
60%
50%
40%
30%
20%
10%
0%
28%
61%
Participating Hospital Name
Avg. All Hospitals

Appendix 7

Metrics: STOP Sepsis

Measure Count	Measure Name	Metric	NQF# (if applicable)	Measure Steward	Data Source	Baseline Performance Level (include numerator/ denominator)	Anticipated Completion Date (if applicable)	Report Deliverables to State	Data Periodicity	Anticipated Target Level for Triggering Payment
CATEGORY 1 MEASURES										
	Identify community partners	Nursing homes Long-Term Care Facilities Community Hospitals EMS		TUKH	TUKH	Numerator: # of facilities participating in sepsis initiative Denominator: Total # of potential facilities & EMS in designated areas	2017	Semi-annual & annual per state required schedule	data reviewed quarterly at a minimum	10% reduction in Gap or 10% increase in participation?)
	Database development	Number of community partners utilizing data to track sepsis and protocol activities		TUKH	TUKH	Numerator: # of registered facilities entering data Denominator: : # of facilities that register with data base	ongoing	Semi-annual & annual per state required schedule	data reviewed quarterly at a minimum	10% increase in completion of data base
	Baseline Awareness Survey	Number of staff in participating facilities that are surveyed for their knowledge of the early signs and symptoms of sepsis and proper application escalation of care processes for the specific facility		TUKH	TUKH	Numerator: # of healthcare staff surveyed Denominator: # of applicable healthcare staff in facility	ongoing	Semi-annual & annual per state required schedule	data reviewed quarterly at a minimum	10% reduction in Gap or 10% increase in participation?)
CATEGORY 2 MEASURES										
	LCA Engagement	Submission of monthly of data into the data base		TUKH	TUKH	Numerator: # of registered facilities entering data Denominator: : # of facilities that register with data base	ongoing	Semi-annual & annual per state required schedule	data reviewed quarterly at a minimum	10% increase in completion of data base
	Educational curriculum development	Complete professional web based modules		TUKH	TUKH	Draft of Curriculum at start of project	June 30, 2016	Semi-annual & annual per state required schedule	Review curriculum quarterly	BETA Curriculum 1.0 June 30, 2015

	Educational curriculum development	Complete Curriculum specific for nursing facilities		TUKH	TUKH	Draft of Curriculum at start of project	June 30, 2016	Semi-annual & annual per state required schedule	Review curriculum quarterly	BETA Curriculum 1.0 June 30, 2015
CATEGORY 3 MEASURES										
5.5	Improved in-hospital implementation of sepsis management bundles as defined by the Surviving Sepsis Campaign	Number of in-hospital documented, appropriate interventions using sepsis management bundles as defined by the Surviving Sepsis Campaign	0500	Henry Ford Hospital	Kansas Sepsis Project Database	Numerator: #r of hospitals following sepsis protocol Denominator: number of hospitals with a protocol	ongoing	Semi-annual & annual per state required schedule	Review curriculum quarterly	10% reduction in Gap
5.6	Increased ED identification of septic patients at any stage of the continuum	Number of ED patients identified as septic pre- and post-implementation at each facility	Not found	TUKH	Kansas Sepsis Project Database with DAI substantiation	Numerator: number of patients identified with severe sepsis/septic shock at onset Denominator: number of actual sepsis patients (identified at onset + identified retrospectively)	ongoing	Semi-annual & annual per state required schedule	Review curriculum quarterly	10% reduction in Gap
5.7	Increased ED identification of septic patients in early stages of sepsis	Number of ED patients diagnosed at early stages of sepsis at each facility	Not found	TUKH	Kansas Sepsis Project Database	Numerator: # of patients identified with early onset of sepsis Denominator: # of actual early stage sepsis patients (identified at onset + identified retrospectively)	ongoing	Semi-annual & annual per state required schedule	Review curriculum quarterly	10% reduction in Gap

5.8	Increased ED identification of septic patients with severe sepsis	Number of ED patients diagnosed initially with severe sepsis at each facility	Not found	TUKH	Kansas Sepsis Project Database with DAI substantiation	Numerator: number of patients identified with severe sepsis/septic shock at onset-early Denominator: number of actual early stage sepsis patients (identified at onset + identified retrospectively)	ongoing	Semi-annual & annual per state required schedule	Review curriculum quarterly	10% reduction in Gap
5.9	Increased ED identification of septic patients	Number of ED patients diagnosed initially with septic shock at each facility	Not found	TUKH	Kansas Sepsis Project Database with DAI substantiation	Numerator:# of ED patients identified with septic shock. Denominator: # of actual ED patients with septic shock (baseline)	ongoing	Semi-annual & annual per state required schedule	Review curriculum quarterly	10% reduction in Gap
5.10	Improved ED implementation of sepsis management bundles as defined by the Surviving Sepsis Campaign	Number of ED documented, appropriate interventions using sepsis management bundles as defined by the Surviving Sepsis Campaign	0500	Henry Ford Hospital	Kansas Sepsis Project Database	Numerator: # of ED's following sepsis protocol Denominator: number of EDs with a protocol	ongoing	Semi-annual & annual per state required schedule	Review curriculum quarterly	10% reduction in Gap
5.11	Decrease in transfer of septic patients to a higher level facility	Number of septic patients transferred to a higher level facility	Not found	TUKH	Kansas Sepsis Project Database with DAI substantiation	Numerator: # of septic patients transferred from a hospital Denominator: total # of transferring hospitalseptic patients in timeframe	ongoing	Semi-annual & annual per state required schedule	Review curriculum quarterly	10% reduction
5.12	Increased identification of septic patients transferred to the hospital from a long-term care facility	Number of septic patients transferred to the hospital from a long-term care facility who are identified as septic pre- and post-implementation at each participating facility	Not found	TUKH	Kansas Sepsis Project Database with DAI substantiation	Numerator: Septic patients transferred in time to hospitals Denominator: patients identified with severe sepsis or septic shock at the facility	ongoing	Semi-annual & annual per state required schedule	Review curriculum quarterly	Increase in appropriate transfers
5.13	Decrease in proportion of septic patients progressing to septic shock after 12 months of facility participation	Ratio of septic shock patients to number of total of identified septic patients	Not found	TUKH	Kansas Sepsis Project Database with DAI substantiation	Numerator: total # of septic shock patients Denominator: total # of severe sepsis + septic shock patients	ongoing	Semi-annual & annual per state required schedule	Review curriculum quarterly	10% reduction

CATEGORY 4 MEASURES										
	Reduce overall ED utilization	# of ED visits	n/a	KDHE/ Medicaid Managed Care Organizations (MCOs)	Medicaid claims data statewide	Numerator: number of ED visits Denominator: population of the state (same reporting period)	n/a (ongoing; likely beyond initial DSRIP period)	Semi-annual & annual per state required schedule	Data reviewed quarterly at a minimum	10% improvement in the metric each time reported for purposes of payment
		# of frequent users of ED	n/a	KDHE/ Medicaid MCOs	Medicaid claims data statewide	Numerator: number of patients visiting the ED four times a year or more Number of total ED visits	n/a (ongoing; likely beyond initial DSRIP period)	Semi-annual & annual per state required schedule	Data reviewed quarterly at a minimum	10% improvement in the metric each time reported for purposes of payment
	Decrease 30-day, readmission rate following hospitalization	# of patients readmitted to the index hospital following a hospitalization	n/a	KDHE/ Medicaid MCOs	Medicaid claims data statewide	Numerator: Number of readmissions Denominator: Total hospital admissions	n/a (ongoing; likely beyond initial DSRIP period)	Semi-annual & annual per state required schedule	Data reviewed quarterly at a minimum	10% improvement in the metric each time reported for purposes of payment
	Controlling High Blood Pressure (HBP)	Percentage of patients 18-85 years of age who had a diagnosis of hypertension and whose blood pressure was adequately controlled (<140/90mmHg) during the measurement period.	#0018 (CMS165v1)	NCQA	CMS	Numerator: Number of patients diagnosed with HBP whose BP was adequately controlled Denominator: Number of patients with a diagnosis of HBP	n/a (ongoing; likely beyond initial DSRIP period)	Semi-annual & annual per state required schedule	Data reviewed quarterly at a minimum	10% improvement in the metric each time reported for purposes of payment
	Preventive Care and Screening: Tobacco Use: Screening and Cessation Intervention	Percentage of patients aged 18 years and older who were screened for tobacco use one or more times within 24 months AND who received cessation counseling intervention if identified as a tobacco user.	#0028 (CMS 138v1)	AMA-PCPI	CMS	Numerator: Number of patients age 18+ screened and counseled if identified as a tobacco user Denominator: Total tobacco users identified	n/a (ongoing; likely beyond initial DSRIP period)	Semi-annual & annual per state required schedule	Data reviewed quarterly at a minimum	10% improvement in the metric each time reported for purposes of payment