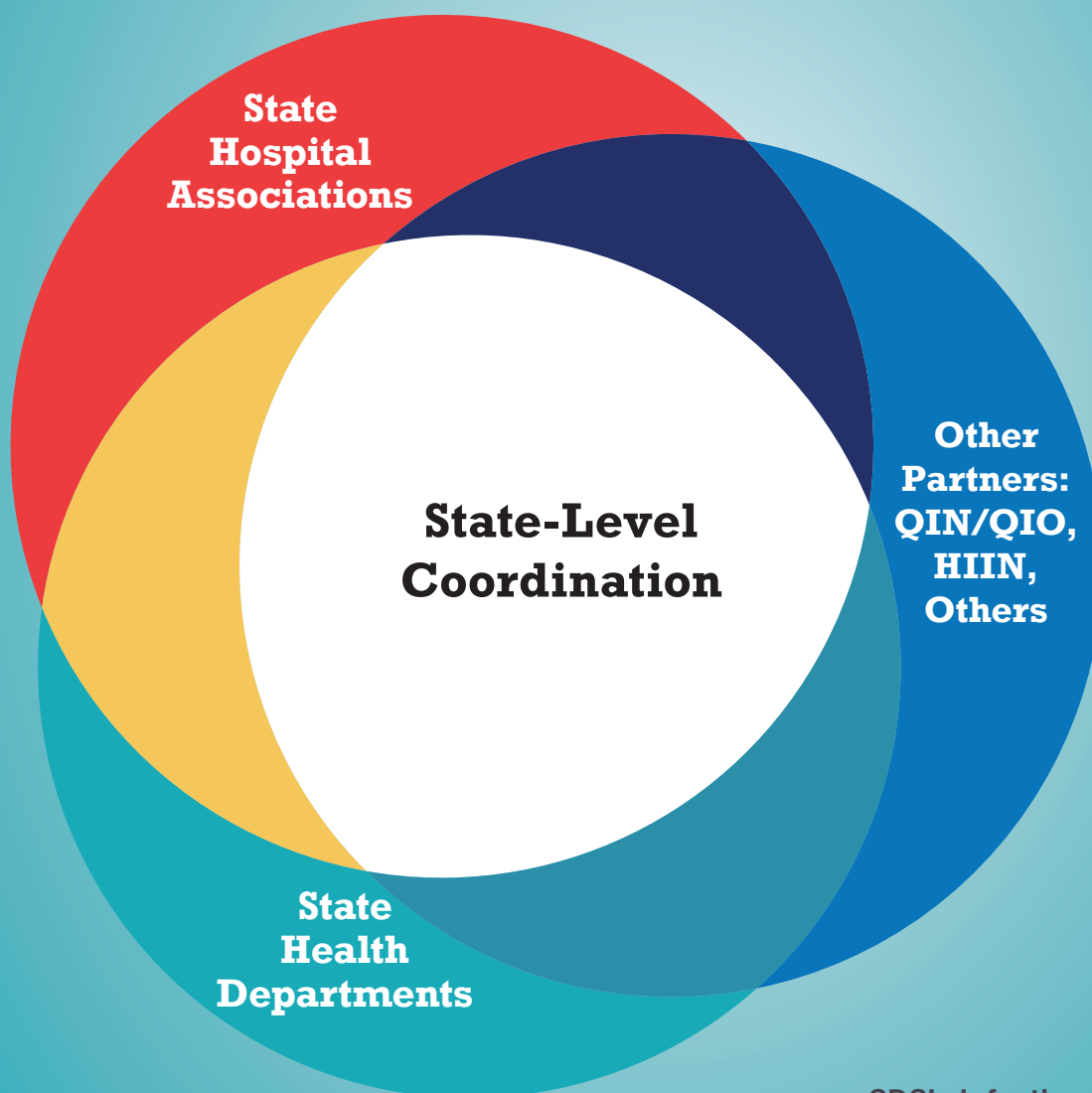


A SPECIAL

STATES TARGETING REDUCTION IN INFECTIONS VIA ENGAGEMENT (STRIVE) PROGRAM

SUPPLEMENT



INSIDE:

CDC's Infection Control Assessment
and Response Program

TAP reports and tools drive focused interventions

Q&A with the APIC faculty of the STRIVE program

CONTENTS

STATES TARGETING REDUCTION IN INFECTIONS VIA ENGAGEMENT (STRIVE) PROGRAM SUPPLEMENT

3 Welcome to APIC's States Targeting Reduction in Infections via Engagement program supplement

By Susan Dolan, RN, MS, CIC, FAPIC;
Denise M. Cardo, MD; and
Barbara Edson, RN, MBA, MHA

4 CDC's Infection Control Assessment and Response Program surveys facilities' readiness for emerging infectious diseases

No-cost, friendly surveys are available to hospital IPs
By Rachel Brand, MS

6 Infographic STRIVE: States Targeting Reduction in Infections via Engagement Program structure and curriculum

8 TAP reports and tools drive focused interventions

State hospital association and QI non-profit team up to educate IPs
By Rachel Brand, MS

11 Q&A with the APIC faculty of the STRIVE program

Kristi Felix, BA, RN, CRRN, CIC, FAPIC
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Madonna Rehabilitation Hospital
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Russell Olmsted, MPH, CIC, FAPIC
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Glossary of Terms posted online and available at: www.apic.org



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MISSION

APIC's mission is to create a safer world through prevention of infection. The association's more than 15,000 members direct infection prevention programs that save lives and improve the bottom line for hospitals and other healthcare facilities. APIC advances its mission through patient safety, implementation science, competencies and certification, advocacy, and data standardization. Visit APIC online at www.apic.org.

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Welcome to APIC's *States Targeting Reduction in Infections via Engagement* program supplement

APIC IS pleased to be a partner of the States Targeting Reduction in Infections via Engagement (STRIVE) program, funded by the Centers for Disease Control and Prevention (CDC) and facilitated by the Health Research & Educational Trust (HRET). Closely aligning with APIC's mission to create a safer world through prevention of infection, the program's purpose is to substantially reduce healthcare-associated infections (HAIs) occurring in hospitals that have persistently elevated infection rates of central line-associated bloodstream infections (CLABSIs), catheter-associated urinary tract infections (CAUTIs), *Clostridium difficile* (*C. diff*) infections, and methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia. To help achieve this goal, the program uses various CDC tools including the Targeted Assessment for Prevention (TAP) strategy, which is used to identify facilities with an excess of infections. Utilizing TAP helps healthcare facilities identify, assess, and target prevention efforts where they are most needed. It also aligns with APIC's strategic goals. Here's how:

- **Patient Safety:** TAP helps IPs target areas for improvement, allowing for gaps in infection prevention to be addressed and ultimately improving care. With more infections being prevented, there is a reduction in standardized infection ratios (SIRs), which is a statistic used to track HAIs over time at a national, state, or facility level.
- **Data Standardization:** TAP utilizes the CDC's National Healthcare Safety Network (NHSN) data to inform decisions and practice.
- **Implementation Science:** TAP helps infection preventionists (IPs) implement evidence-based strategies and looks at a "systems" approach.
- **Advocacy:** Through the use of NHSN data, TAP helps IPs target HAI reduction and meets federal HAI reduction targets using APIC-supported programs.
- **Competency:** The TAP strategy can assist IPs in building competence in leadership, tracking infections, and implementing strategies for HAI reduction.

When IPs are involved in the TAP strategy, they can help facilitate many of the benefits to preventing infections and improving safety in their hospitals. One benefit of TAP is that it serves as a tool for IPs to demonstrate leadership within their own facilities. It can also help IPs decrease Centers for Medicare & Medicaid Services (CMS) penalties by targeting interventions to problem areas/units. The TAP strategy also allows individual facilities to compare infection rates across their own units and compare progress across timeframes. Furthermore, TAP can assist IPs in developing evidence-based solutions to gaps in practice as identified through Infection Control Assessment and Response, a tool used by state health departments to assess gaps in foundational and HAI-specific infection prevention practices at the hospital level.

The program engages state/regional level key stakeholders, such as state hospital associations, Quality Innovation Network/Quality Improvement Organizations (QIN-QIOs), Hospital Improvement Innovation Networks (HIIN), and state health departments, in a unique partner infrastructure to support participating facilities in their work to improve infection rates and prevent infection.

Another aspect of the program is the development of a guide for new and existing construction on prevention of infections in the environment. This special supplement to *Prevention Strategist* provides case studies on collaboration among participating hospitals, QIN-QIOs, and state health departments; an insightful and informative interview with APIC faculty members of the STRIVE project; an infographic to explain the program's structure; and a helpful glossary of terms to introduce IPs to some new concepts utilized by the program. We hope that this special supplement provides you with actionable strategies to partner with stakeholders that will help you prevent infections. Happy reading!

Susan Dolan

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Barbara Edson

CDC's Infection Control Assessment and Response Program

surveys facilities' readiness for emerging infectious diseases

No-cost, friendly surveys are available to hospital IPs

BY RACHEL BRAND, MS

THE 2014-2015 Ebola outbreak and the problem of antibiotic resistance have directed attention to improving the nation's ability to combat infectious diseases. To help, the Centers for Disease Control and Prevention (CDC) in 2015 published new tools so that state health departments can assess current infection control practices at healthcare facilities and guide quality improvement efforts.

The Epidemiology and Laboratory Capacity Infection Control Assessment and Response (ICAR) Program, which created the surveys, offers a review of basic infection prevention practices. It also probes how well facilities have adopted evidence-based practices to prevent healthcare-associated infections (HAIs). The CDC has asked state health departments and partners to conduct voluntary, consultative ICAR visits at hospitals, long-term care facilities, dialysis centers, and outpatient facilities. The surveys are non-punitive and free, take half a day to complete, and furnish hospital infection preventionists (IPs) with a laundry list of recommendations.

"[The ICAR's purpose] is to help us better understand how prepared we are as a country to deal with all these emerging infections," explained Kathy Buechel, RN, BSN, CIC, public health nurse consultant with the Tennessee Department of Health (TDH). "We give aggregate data back to the CDC so they have a good idea how states across the country are doing."

TDH and Tennessee Hospital Association (THA) are working together to promote and conduct ICAR assessments. "Our relationship with hospitals enables us to reach a different audience than the TDH works with,"

explained Darlene Swart, BSN, MS, vice president and clinical director of the Tennessee Center for Patient Safety (TCPS).

The TCPS was established in 2007, and since its inception, staff from the state health department and the state quality innovation network have served on its advisory board. In 2011, THA was awarded an Innovation Center contract from the Centers for Medicare & Medicaid Services (CMS) to serve as a Hospital Engagement Network (HEN) to support the Partnership for Patients goals of reducing hospital-acquired conditions by 40 percent. In 2015, THA was awarded a HEN 2.0 contract to continue to improve inpatient care.

Through an analysis of National Healthcare Safety Network (NHSN) data, the TDH selected 13 Tennessee hospitals to approach for ICAR assessments. So far, nine hospital assessments have been completed.

NASHVILLE GENERAL HOSPITAL

Fabiola DeMuth, BSN, RN, CIC was new to her role as IP at the 150-bed, city-owned Nashville General Hospital when she agreed to an ICAR visit in April 2016. "I wanted to bring that expertise into the building...just to get an idea of where we were with processes," DeMuth explained.

To start, five infection prevention experts sat down with DeMuth and reviewed hospital infection prevention policies and procedures. Then they walked around the emergency room and intensive care unit. About a week later, DeMuth received a detailed report of findings and recommendations. "We are taking the whole report and breaking it apart," she said. Given

“The CDC has asked state health departments and partners to conduct voluntary, consultative ICAR visits at hospitals, long-term care facilities, dialysis centers, and outpatient facilities.”

the breadth of the findings, it could take up to a year to implement all the recommendations, but she is focusing on high priorities based on NHSN data. Some immediate changes concern hand hygiene education and the management of central venous lines.

ICAR probes a facility’s competency-based training, audit, verification, and policies related to hand hygiene. Prior to ICAR, Nashville General had two hand hygiene educational programs in place, but since, DeMuth has streamlined education into a single program for all employees. “It is my goal that everyone who works in the hospital is educated on hand hygiene,” DeMuth said.

ICAR also prompted changes in how front-line caregivers manage central venous lines. Now DeMuth and her nursing colleagues are implementing competency-based training for central line dressing changes and instituting rounding to assure that patients with central venous catheters are assessed, at least daily, for their continued need for catheters.

As DeMuth works through the recommended changes in the ICAR report, IPs from TDH and THA are serving as mentors, sharing research and providing coaching via phone calls. “I would encourage others to participate,” DeMuth said. “The expertise that the group brings is invaluable.”

Nashville General received a Gold Seal of Approval® from The Joint Commission after an unannounced visit on August 9, 2016. The evaluation included infection prevention and control.

CUMBERLAND MEDICAL CENTER

When Lisa Cutter, RN, lead IP at the 180-bed Cumberland Medical Center in Crossville, Tennessee, received the results of her January ICAR survey, she was pleased to learn that the big picture looked good. The hospital has low rates of catheter-associated urinary tract infections (CAUTI), central line-associated bloodstream infections (CLABSI), and *Clostridium difficile* infections (CDI).

But when Cutter dug into the report, she saw a large gap in competency-based training. The ICAR assessment looks into competency-based training for hand hygiene, donning and doffing personal protective equipment (PPE), insertion and maintenance of urinary catheters and central venous catheters, prevention of ventilator-associated events, preparation and administration of parenteral medications, environmental cleaning, and reprocessing of critical devices.

“We have a lot of new employees and we need to get them underway with competencies, and we may also need to refresh the skills of our veteran nursing staff,” Cutter said. “It is a big focus of the report.”

As a result of the survey findings, Cutter will be using hospital employees to “secret shop” hand hygiene practices in other units. She will also consider using nurse champions to lead in the prevention of CAUTI and CLABSI on nursing units.

“There are so many different things that the IP is responsible for, and the surveyors help break those down—and tell you where you might need help,” Cutter said.

A REGIONAL MEDICAL CENTER*

When the infection prevention manager* at one of Tennessee’s regional medical centers learned about ICAR through her region’s emergency preparedness coalition, she didn’t hesitate to participate.

“We invite outside sources in for surveys and conduct mock surveys all the time,” she said. “For us, it’s good to have a different set of eyes. Things I have gotten accustomed to being a certain way, they can see differently.”

The ICAR visit and report brought no surprises, she said. “It was very much a team approach, non-punitive, and educational.” Prior to the visit, the IP had received the ICAR checklist and performed a self-assessment. That allowed her to direct the surveyors to the ICU, the medical-surgical unit, and environmental services.

Specifically, the hospital’s infection prevention committee had been concerned that, due to staff turnover, new environmental services (EVS) staff had not been adequately trained and their competencies not verified. The committee had established a LEAN project to improve EVS training and to retain experienced EVS staff. During the ICAR survey, the IP learned that other hospitals face this challenge as well. “That’s the cool thing—when you have someone come in and do these surveys, you also get feedback on what they see in other facilities,” she said. “We are all sharing the same struggles.”

Likewise, in the ICU the committee had been working to reduce central line days in an effort to reduce the risk of CLABSI, a project whose importance was confirmed by the ICAR report. “This is not something one survey can fix,” the IP said, “but staff will give more feedback to an outside person, so we got suggestions for making processes better.”

Like other IPs, she, too, welcomed the ICAR’s emphasis on competency-based training, verification and audit for so many infection prevention-related activities. “It’s a good thing,” she said, “but it will take some thought in terms of how to implement it at our facility.”

This challenge of staff training is universal, says THA’s Swart. THA offers computer-based simulation and other resources, she said, and in the future may offer other ways to help hospitals maintain competency-based training.

All told, the medical center’s IP said the biggest benefit of taking the ICAR survey was that it added weight to the initiatives she is currently working on, reinforcing their importance with senior management. “Reach out to your health department, and if they offer a survey, take it,” she advises other IPs. “You should always be open to that, because it’s going to help you.”

* Hospital and IP wish to remain unidentified.

STRIVE: States Targeting Reduction in Infections via Engagement Program Structure and Curriculum

The STRIVE program, funded by the Centers for Disease Control and Prevention and led by the Health Research & Educational Trust of the American Hospital Association, supports short-stay and long-term acute care hospitals in their infection prevention and control efforts. This support is provided at the state level through entities that coordinate efforts. These may include:

- State hospital associations
- State health departments
- Quality innovation networks/quality improvement organizations (QIN/QIOs)
- Hospital Improvement Innovation Network (HIIN)
- Other state/regional organizations working on HAI prevention

State Hospital Associations (SHAs)

- **Coach hospitals** to use the program **educational curriculum** for implementation of best practices
- Coordinate **data submission and reporting**
- Support infection prevention efforts by **engaging hospital leadership**

State Health Departments (SHDs)

- Administer the **Infection Control Assessment and Response (ICAR) Tool**
- Support hospitals in using ICAR results to **identify gaps** in infection prevention
- Provide **consultative expertise** to improve infection prevention practices

Infection Control Assessment and Response

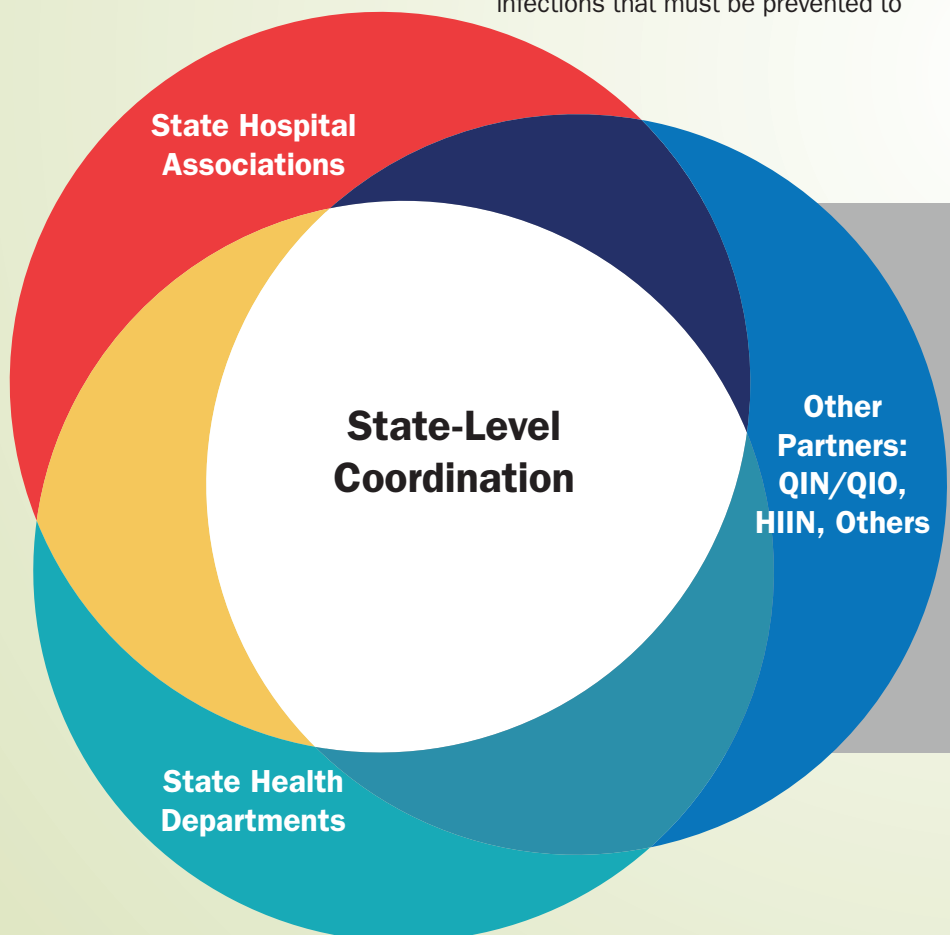
When the basic elements of an infection prevention program are practiced consistently, the risk of infection among patients and personnel is reduced. CDC developed the **Infection Control Assessment and Response (ICAR)** tools to assist health departments in assessing broad infection prevention practices across many different domains and guide quality improvement activities (e.g., by addressing identified gaps). These tools may also be used by healthcare facilities to conduct internal quality improvement assessments. The tools are available at <https://www.cdc.gov/hai/prevent/infection-control-assessment-tools.html>

Other Partners: QIN/QIO, HIIN, Others

- **Assist hospitals** with quality improvement strategies to reduce infections, i.e., Targeted Assessment for Prevention (TAP) strategy
- Support program through **coaching and resource sharing**

Targeted Assessment for Prevention

The **Targeted Assessment for Prevention (TAP)** strategy uses CDC's National Healthcare Safety Network data to inform prevention of healthcare-associated infections (HAIs). The TAP strategy allows quality improvement organizations and healthcare facilities to target specific locations with a disproportionate burden of HAIs so that gaps in infection prevention in those targeted locations can be addressed. TAP reports calculate the number of infections that must be prevented to



achieve HAI reduction goals. This allows facilities, or locations within individual facilities, to prioritize prevention efforts where they will have the most impact.

The TAP assessment captures staff awareness and perceptions of policies and practices related to HAI prevention within their facility or unit. Gaps in policies or practices or their deployment are addressed through TAP implementation tools and resources, available at <https://www.cdc.gov/hai/prevent/tap.html>.

Foundational Elements

Hospitals receive education from the national project team on foundational and HAI-specific infection prevention strategies. Eight “foundational elements” of infection prevention best practices that cut across all types of infections provide the basis for subsequent education that addresses four specific types of HAIs. All facilities begin with education on the below foundational infection prevention best practices and will move into infection-specific content, which will be delivered in a tiered approach that allows focus on high-priority interventions.



TAP reports and tools drive focused interventions

State hospital association and QI non-profit team up to educate IPs

BY RACHEL BRAND, MS

IN EARLY 2015, the Wisconsin Hospital Association (WHA) and MetaStar, Inc., with the support of the Wisconsin Division of Public Health's Healthcare-Associated Infection Prevention Program, agreed to collaborate and coordinate infection prevention efforts. Although the organizations follow slightly different metrics and work under different grants, "We realized we share a common goal that all individuals expect and deserve safe care," said DeAnn Richards, RN, CIC, infection prevention specialist at MetaStar, Inc.

By offering joint educational programs and creating a joint state plan for improvement, WHA and MetaStar, Inc. have reduced confusion in the marketplace and built on their complementary strengths. "Together, we offer the ability to have access to a subject matter expert certified in infection prevention and one certified in Just Culture," said Jill Hanson, CSSGB, the WHA's quality improvement specialist and improvement advisor. "By collaborating, we are able to reach a larger audience."

Their partnership is no accident. Through funding from the Centers for Disease Control and Prevention (CDC), the American Hospital Association's Health Research & Educational Trust (HRET) has brought together multiple organizations at the state level to improve infection prevention and coordinate efforts. Named

the States Targeting Reduction in Infections via Engagement (STRIVE) program, this work aligns the efforts of health departments, state hospital associations, and quality improvement organizations.

MetaStar, Inc. is an independent non-profit that represents Wisconsin in the Lake Superior Quality Innovation Network (Lake Superior QIN). Under its contract with the Centers for Medicare & Medicaid Services (CMS), the Lake Superior QIN is charged with achieving measurable goals around reducing central line-associated bloodstream infections (CLABSI), catheter-associated urinary tract infections (CAUTI), and *Clostridium difficile* infections (CDI). The WHA, for its part, is a member of HRET's Hospital Engagement Network and has a goal of reducing infection harm in Wisconsin by 40 percent in the areas of CLABSI, CAUTI, CDI, ventilator-associated events, and surgical site infections. In addition, WHA publicly reports infection measures at www.wicheckpoint.org.

In January 2015, the CDC introduced a way of measuring HAIs and a related improvement strategy, the Targeted Assessment for Prevention (TAP) strategy. Additionally, the national STRIVE program pulls together the state hospital associations, quality improvement organizations, and health departments to collaborate and

incorporate the TAP strategy into their quality improvement efforts.

In December 2015, MetaStar, Inc. and the WHA hosted their first TAP strategy workshop focused on CAUTI, with 25 hospital teams participating. In 2016, they hosted a TAP strategy workshop on CDI with 37 participants. Based on participant feedback, they have created a home-grown TAP strategy around antibiotic stewardship. This article describes the TAP strategy, then shows how by participating in the CDI and CAUTI workshops and implementing the related strategies, two Wisconsin hospitals are more closely tracking and responding to HAIs.

THE TAP STRATEGY

The CDC's TAP strategy is a three-step process that allows hospitals and states to identify the facilities and units with the highest absolute numbers of infections in excess of a national reduction goal. It also gives IPs tools to find gaps between current and best practices, and to devise a plan to close the gaps. The process is as follows:

- 1) **Run a NHSN TAP report.** TAP reports bring together data elements from other reports within the National Healthcare Safety Network (NHSN), such as the annual survey, rate tables, and the standardized infection ratio (SIR), to produce a new metric, the Cumulative Attributable Difference (CAD). The CAD

“The CDC’s TAP strategy is a three-step process that allows hospitals and states to identify the facilities and units with the highest absolute numbers of infections in excess of a national reduction goal.”



Jill Hanson, CSSGB, of the Wisconsin Hospital Association, coaching Janet Schlegel (L) and Elizabeth Pearson (R) of Mercy Walworth Hospital and Medical Center at a CDI TAP strategy workshop in Madison, Wisconsin on May 24, 2016. Credit: Kristin Westphal

provides an absolute number of infections that a hospital must eliminate to reach a national healthcare safety goal.¹

If a hospital has already successfully eliminated HAIs, its CAD value can be negative, indicating that the facility has surpassed national goals. A high CAD value indicates an area for improvement. Hospital IPs can rank CAD values on a unit level to find areas of the hospital that need the most attention or successful units with positive deviants.

- 2) **Conduct a TAP assessment.** After running the TAP report for a particular HAI, hospital personnel can use an assessment tool to measure whether or not staff are following best practices in six different domains, including general infrastructure (such as capacity and processes), competency-based training, audit, feedback, and patient engagement. The assessments help identify the root cause of problems, barriers to implementing best practices, and areas where staff use workarounds. “The goal is to get as many of those assessment surveys as possible filled out by front-line staff,” explained Hanson. “Then you can find out what is happening on the ground, rather than what is written in a policy manual.”
- 3) **Perform analysis and take action.** IPs combine the TAP report and unit level assessments to identify gaps that—if rectified—could potentially improve CAD values. “We don’t ask organizations to create high, lofty goals,” said Richards. “[Instead] we ask them to spread best practices from one unit to the next, or try things in the ICU, get the kinks worked out, and roll it out to med/surg or OB.” To help, workshop participants

receive a utilization tool filled with links to studies, samples, and other organizations’ tools.

“This approach has been very practical and well received by Wisconsin hospital infection preventionists,” said Hanson. “The TAP report provides a better understanding of which units could use help, while the evaluation tool helps IPs understand which best practices could potentially be put into place. Finally, these tools allow the team to evaluate and monitor success—and generate information to share with hospital leadership.” All tools used during workshops are available at www.lsqin.org/initiatives/hai.

AURORA BAYCARE MEDICAL CENTER TAKES ON CAUTI

Infection Preventionist Anne Reeths, RN, MS, CIC, of the 167-bed Aurora BayCare Medical Center in Green Bay, Wisconsin, had flagged CAUTI as an area of concern at her hospital one year before engaging in the formal TAP strategy. Her later engagement with the TAP strategy accelerated her efforts and has provided an ongoing tool for tracking CAUTI-related metrics.

In 2014, Reeths saw the CAUTI SIR climb above 1 at her facility and formed a CAUTI team to take action. Suspecting the problem arose in the ICU, the ICU nurse educator, the med/surg nurse educator and the nursing director introduced a new wash product for perineal device care in the ICU and increased the frequency of perineal care in the unit. Additionally, they began meeting monthly to review the charts of patients with CAUTI, focusing on real-time surveillance of events.

With these improvements underway, Reeths and her team attended the first MetaStar-WHA TAP



“DeAnn in Action”: DeAnn Richards, RN, CIC, infection preventionist with MetaStar, Inc., coaching Mary Saber and LyAnne Halverson of Aurora St. Luke’s Medical Center at a CDI TAP strategy workshop in Madison, Wisconsin on May 24, 2016. Credit: Kristin Westphal



Infection preventionists brainstorming at a CAUTI TAP strategy workshop on December 1, 2015 in Madison, Wisconsin. Credit: DeAnn Richards

strategy workshop for CAUTI in December 2015. At the workshop, they reviewed the facility's TAP report and learned how to run and interpret quarterly reports on their own. They then completed the TAP assessment tool. Together, attendees from 25 hospitals brainstormed how to overcome barriers to improvement. Finally, the group was given time to develop their own CAUTI plans.

For Aurora BayCare, the data confirmed the need to concentrate CAUTI prevention efforts in the ICU. Further, competency-based training, auditing, and device utilization were flagged as areas for improvement. Reeths learned that some front-line caregivers, who only occasionally inserted indwelling urinary catheters, needed to improve their skills. As a result, Reeths set a goal that in 2016, all front-line caregivers who would insert an indwelling urinary catheter would complete a competency-based training in perineal care and catheter insertion.

Prior to the workshop, Reeths' facility had been considering adopting a new urinary catheter kit. At the workshop, Reeths heard from other IPs about making the switch. "Hearing other hospitals say they had switched to this other device tray, and that it was a positive push and change, it helped the nurses support my request to Purchasing," Reeths said. "As a consequence, we changed our urinary catheter kit to one that helped our staff make sure they were inserting catheters aseptically every time."

After the workshop, the CAUTI team worked to roll out competencies for 2016. Reeths has added device utilization along with CAUTI rates and SIRs, when applicable, to her monthly reports. She recently began conducting chart reviews to ensure catheters were removed when indicated. "We already had a culture in which physicians document whether a catheter is needed every day," she said. "Now we are auditing insertions

and device utilization, asking, 'Are we getting the devices out when they are no longer medically necessary?'"

As a result of these efforts, Aurora BayCare's ICU has been CAUTI-free since May 2015, and the hospital's quarterly SIRs are consistently below 1 and trending down to zero. "TAP data was a different way of looking at things," she concludes. "It allowed me to show the hospital that even though our SIR is less than one, for some units if we can reduce infections a bit more, we can get closer to our goal of zero."

AGNESIAN HEALTHCARE USES TAP STRATEGY TO COMBAT CAUTI, CDI, AND CLABSI

"The CAUTI TAP Strategy workshop gave me a better familiarity and understanding of how a TAP report could be used within our hospitals to enhance patient care," says Kayla Ericksen, RN, BSN, infection preventionist at Agnesian HealthCare, a Fond du Lac, Wisconsin-based healthcare system that includes a 174-bed acute care hospital and two critical access hospitals. Nine months after being introduced to the TAP report, Ericksen and hospital leaders regularly use it to analyze data and review best practices, and then determine more effective ways to institute prevention methods, and to address any fluctuations in care.

Ericksen and Agnesian HealthCare colleagues attended the MetaStar-WHA TAP strategy workshop for CAUTI in December 2015. They learned that the St. Agnes Hospital CAD in 2014 was -11.0. Looking at unit-by-unit numbers, though, the team found the CAD for one particular nursing unit was 1.82 and its SIR was 2.68, pointing to the need to reduce CAUTI in that area by at least two cases.

An assessment tool was then used to compare current processes to best practices. As a result, the team determined it needed to change the

electronic medical record (EMR) to require documentation for indwelling catheters, to alert providers to discontinue catheters, and to remind nurses to review the ongoing need for catheters. They also sought to check whether providers were using appropriate indications for urine culturing. In addition, Ericksen has been educating patient care leaders about the TAP report and releasing reports every quarter.

This past May, Ericksen and members of the hospital's CDI prevention team attended a second TAP workshop on CDI. The TAP report revealed that while the CAD for 2015 was negative at two of their hospitals, a third hospital's CAD was 1.04, pointing to the need to decrease its CDI rate by one case.

Using the data, the team set a goal of reducing CDI by one case per quarter. Areas for process improvement included standardizing the process of cleaning and disinfecting shared equipment, implementing the use of the Bristol Chart to ensure that proper stool specimens were being sent for lab testing, and checking to see if the lab was rejecting stools that did not meet proper criteria for testing. Work was also done by the hospital information technology department to introduce an alert in the EMR for patients with CDI. The team also began communicating with community long-term care facilities about the frequency of their stool specimen tests and their effectiveness in diagnosing CDI. To monitor progress, Ericksen is working on creating a homegrown TAP report for each unit that will indicate the number of LAB ID hospital-onset and community-onset infections.

Recently, Ericksen started using the TAP report for CLABSI. "The TAP report gives me and those I work with a quick snapshot," she says. The data allowed team members to see device utilization and whether there had been an increase in central line days in comparison to the acuity and number of patients admitted to the ICU. In partnership with ICU nursing, patient records are being reviewed to see if devices were placed according to best practices, whether the device insertion was documented, and if the line's maintenance was documented. "It's very new," she said, "but we are looking for infection prevention processes that may need improvement."

"Our goal is to not have any infections," Ericksen says. "By having this vital documentation, we can stay on top of anything that might be trending and then respond immediately."

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Q&A with the *APIC* faculty of the *STRIVE* program

Q: HOW DOES THIS PROJECT FIT IN WITH AND HELP TO STRENGTHEN THE EFFORTS OF OTHER PROJECTS TO LOWER HAIs?

States Targeting Reduction in Infections via Engagement (STRIVE) is a Centers for Disease Control and Prevention (CDC)-supported initiative that is being coordinated by the American Hospital Association's (AHA) Health Research & Educational Trust (HRET). The program goal is to improve implementation of infection prevention and control efforts in short-term and long-term acute care hospitals with persistently elevated infection rates of *Clostridium difficile* (*C. diff*) infections, methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia, central line-associated bloodstream infections (CLABSIs), and catheter-associated urinary tract infections (CAUTIs). This will be achieved by facilitating and fostering existing state partner relationships and activities aimed at assisting hospitals in improvement for both foundational infection prevention and HAI-specific areas.

CDC is analyzing HAI data from facilities to identify those that have opportunities to improve prevention of HAIs. Working with this data, HRET engages *state hospital associations*, *Quality Innovation Network/Quality Improvement Organizations (QIN-QIOs)*, Hospital Improvement and Innovation Networks (HIINs), and *state public health agencies* in a partner infrastructure to support invited facilities in their prevention and improvement work. While aimed at improving implementation of infection prevention and control efforts in acute care and long-term acute care hospitals with a disproportionately high burden of HAIs, this initiative envisions value even more broadly to all facilities. The project builds on national work that has successfully reduced CAUTIs and CLABSIs and helps to accelerate current strategies for achieving reduction in HAIs by providing on-demand education and building on available tools and resources.

A robust educational curriculum—developed by subject matter experts from the APIC community as well as other organizations—builds on the lessons learned from prior projects such as the Agency for Healthcare Research and Quality's *On the CUSP: Stop CAUTI* initiative that found addressing socioadaptive elements (e.g., promoting culture change, identifying and empowering physician and nursing champions, and navigating institutional barriers to improvement) is critical for successful implementation of evidence-based practices. Designed to support improvements in gap areas identified through the CDC's Infection Control Assessment and Response (ICAR), a tool used by the state health departments to assess hospital infection prevention practices, the curriculum builds on eight infection prevention and control foundational elements that provide a sound framework for any HAI reduction initiative. Additionally, through a tiered approach, the curriculum framework includes strategies to improve the four targeted HAI improvement areas.

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Q: YOU NOTED CDC'S EIGHT FOUNDATIONAL ELEMENTS OF AN EFFECTIVE INFECTION PREVENTION AND CONTROL PROGRAM. CAN YOU TOUCH ON EACH OF THESE ELEMENTS AND HOW THESE INTERVENTIONS DIFFER AMONG VARIOUS CARE SETTING?

The 2015 Ebola crisis highlighted the need for improved infection prevention and identified gaps in infection prevention and control programs. Many of these gaps stemmed from a lack of attention to foundational elements such as hand hygiene, consistent use of personal protective equipment, and cleaning/disinfection of the environment of care. The foundational elements are as follows:

1. HAND HYGIENE:

This is clearly a foundation for all HAI prevention. Requirements for hand hygiene are consistent across the continuum of care. Critical to effective hand hygiene is to know how, why, and when to perform hand hygiene, understand barriers and enablers that might influence hand hygiene, choose appropriate hand hygiene products based upon the situation, and apply the correct hand hygiene techniques. In particular, this initiative acknowledges the lack of correlation between reported and observed frequency of this essential prevention strategy, and thus recognizes hand hygiene compliance as a foundational element (O'Boyle CA 2001).

2. PERSONAL PROTECTIVE EQUIPMENT (PPE):

PPE compliance applies to standard precautions as well as transmission-based precautions. Standard precautions should be followed consistently in every healthcare setting for all patient care. Implementation of transmission-based precautions may differ depending on the healthcare setting. For example, adherence to PPE donning and doffing is essential in the acute care setting for several multiple resistant organisms. On the other hand, some long-term acute care facilities may not have the physical capacity to have an airborne isolation room or they may not place the patient in isolation for all types of drug resistant organisms if body fluids can be contained. What is central to PPE, however, is that healthcare workers must know what to use for a specific task or disease and must demonstrate competency in donning and doffing PPE. The Ebola epidemic brought this to center stage, and studies show there's significant room for improvement in training and competence in donning and doffing PPE for other endemic diseases like *C. diff* (Tomas ME 2015, John A 2016). Audit and feedback are also important components of PPE compliance.

3. ANTIBIOTIC STEWARDSHIP (AS):

Improving the correct use of antibiotics is critical to infection prevention, and an important patient safety and public health issue that is being recognized as a national priority. In 2013, CDC highlighted the need to improve the correct use of antibiotics as one of four key strategies required to address the problem of antibiotic resistance in the U.S. A growing body of evidence demonstrates that hospital-based programs dedicated to the correct use of antibiotics can both optimize the treatment of infections and reduce adverse events associated with antibiotic use. Attention and focus on AS has increased exponentially with the publication of a new AS standard from The Joint Commission and recently proposed revision of the Centers for Medicare & Medicaid Services (CMS) Conditions of Participation to include AS (TJC 2016, CMS 2016). The foundational components of the 2013 CDC guidance focus on seven core elements for a successful AS program. These elements can be used in the long-term

acute care (LTACH) setting to expand AS activities. The core elements identified are:

- **Leadership:** Demonstrating and supporting commitment to safe and appropriate antibiotic use.
- **Accountability:** Appointing a single leader responsible for program outcomes. Experience with successful programs show that a physician leader is effective.
- **Drug Expertise:** Appointing a single pharmacist leader responsible for working to improve antibiotic use.
- **Action:** Implementing at least one recommended action, such as systemic evaluation of ongoing treatment need after a set period of initial treatment (i.e., "antibiotic time out" after 48 hours).
- **Tracking:** Monitoring antibiotic prescribing and resistance patterns.
- **Reporting:** Regularly reporting information on antibiotic use and resistance to doctors, nurses, and relevant staff.
- **Education:** Educating clinicians about resistance and optimal prescribing.

Although the same core elements are essential in the long-term acute care setting, implementation strategies may be different. It may be necessary to engage local and outside expertise. Local support can include medical directors and nurse directors who can take responsibility for education and auditing. Consultant pharmacists or infectious disease physicians can augment these programs as well. It may also be an option to have AS program leaders at acute care hospitals and long-term acute care hospitals work together on plans to decrease the use of antibiotics within the referral network.

4. ENVIRONMENTAL CLEANING:

Contaminated surfaces in and around the patient's environment in hospitals and LTACHs play an important role in the transmission of many organisms such as MRSA, vancomycin-resistant *Enterococcus spp.* (VRE), *C. diff*, *Acinetobacter spp.*, and norovirus (Otter JA 2013). *C. diff*, in particular, can be linked to environmental spread because the spores this bacteria produce are able to survive for a long time. As such, it is critical for infection preventionists (IPs) and environmental services (EVS) professionals to form an alliance to control *C. diff* and other multidrug-resistant organisms (MDROs). One EVS leader has stated, "Environmental cleaning and disinfection that does not include an IP is like having a chef trying to prepare meals for patients without a clinical nutritionist" (Cranmer G, 2016). Attention to environmental cleaning is essential to sound infection prevention.

Some pathogens have been found to be readily transmitted from environmental surfaces to healthcare workers' hands and from there to other patients. It's key to engage and educate EVS personnel on their critical role in keeping patients safe by minimizing environmental reservoirs in both hospitals and other healthcare settings. One challenge across the continuum of care involves availability of EVS resources. Alternate care settings may lack EVS personnel who have training and expertise for healthcare settings—often this work is contracted to more general, business occupancy EVS teams. Outsourcing of EVS poses a unique challenge to maintaining a standardized approach to infection prevention and control across the continuum of care.

5. COMPETENCY-BASED TRAINING, AUDITS, AND FEEDBACK:

As previously noted, the Ebola crisis highlighted the gaps in ensuring competency associated with the use of PPE. However, competency goes beyond the use of PPE. Competencies are the measurable or observable knowledge, skills, and behaviors that one demonstrates as part of one's job performance. For example, in healthcare it is important that healthcare personnel (HCP) demonstrate competencies required to deliver appropriate evidence-based care to their patients.

Competency is measured by both knowledge (education) and application (demonstration of the correct application of evidence-based practices). Insertion of indwelling urinary catheters is an example of a procedure that ideally would be competency-based. The resources, range of activities, and skill level of HCP may vary for this and other practices across organizations and the continuum. Although competency-based training is necessary across the continuum, the delivery of this training should ideally be customized for different healthcare settings and their respective HCPs. This may require flexible and innovative approaches to ensuring competency. For example, initial competency may be assessed during orientation, annual skills lab, or simulation exercises. Some organizations may decide to have a unit-level educator or mentor assess skills based upon the individual's job description. It is important for organizations to assess the method that best meets their individual needs.

"Audit and feedback may be defined as any summary of clinical performance of healthcare delivery over a specified time period providing information that allows healthcare workers to assess and adjust their performance" (Ivers et al. 2012). Extensive evidence demonstrates a gap between recommended evidence-based practices and the service that the patient actually receives. Timely audit and feedback can go a long way in reducing this gap.

In healthcare, evidence-based guidelines and regulatory standards drive the implementation of practices that are used to ensure safe and effective patient care. Audits are commonly conducted to measure HCP compliance with many of these practices. When implemented effectively, audits provide valuable information that can be used to identify opportunities for quality improvement.

In infection prevention, auditing creates an opportunity to provide feedback to HCP on their performance and allows for further education to reinforce and clarify key infection prevention concepts. There are many opportunities to conduct infection prevention audits such as for hand hygiene, device use, urinary catheter care, and compliance to isolation protocols. Direct observation is one method to track practices and provide real-time feedback. Auditing can take place via chart review as well.

Audit and feedback is not necessarily restricted to healthcare workers. Both direct observation methods and objective monitoring tools such as fluorescent gel or ATP Bioluminescence can provide real-time feedback to EVS personnel. The electronic health record has provided an excellent opportunity to identify compliance to key issues such as assessments or initiation of isolation. Depending on the setting and the activities performed, the audit process may vary.

6. PATIENT AND FAMILY ENGAGEMENT:

When patients are engaged in their healthcare, it can lead to measurable improvements in safety, quality, and prevention of infections (AHRQ 2013). In the acute care setting, this includes encouraging patients or families to speak up if they identify an issue (e.g., failure to follow hand hygiene) and educating patients on safe care practices (e.g., urinary catheter care or isolation precautions).

Beyond acute care, there's emerging evidence that up to one quarter of nursing home residents carry MDROs on their hands (many of whom were recently transferred from acute care). This highlights the need for residents and patients to be more aware of performing their own hand hygiene (Cao J 2016). Family members who assist patients in the acute care setting or residents in LTACHS can help promote hand hygiene practices while helping to care for the patient or resident.

Educating patients and families on infection prevention is vitally important. For example, a family member may be concerned that their loved one will fall while attempting to use the bathroom and may request a urinary catheter. Helping the patient and family member understand why the urinary catheter should be avoided is an important strategy. Healthcare providers can also engage patients and families in antimicrobial stewardship efforts by educating them on when antibiotics are needed and when they aren't, exactly how to take their antibiotics, and what could happen if they misuse antibiotics.

Regardless of the type of healthcare setting, the foundational elements focus on information sharing, shared decision-making, self-management, and partnerships with patient and families.

7. UBER-ADAPTIVE:

Although many evidence-based guidelines exist, the literature suggests that implementation of these guidelines remains suboptimal (Saint et al. 2014). In order to bridge the gap between evidence-based practice and implementation, there is a clear need to ensure that those who are involved in infection prevention act as collaborative team members who can engage people and groups to form a plan for improvement and work toward common goals. Addressing socioadaptive elements—such as promoting culture change, identifying and empowering physician and nursing champions, and navigating institutional barriers to improvement—is critical for successful implementation of HAI reduction projects.

Uber-adaptive strategies are needed in all types of healthcare settings. However, identifying champions, overcoming barriers, and promoting cultural change may vary from institution to institution and across the continuum of care. For example, a *C. diff* reduction project may involve different stakeholders or champions depending on the healthcare setting (e.g., EVS, organizational leaders, and value analysis team members). In addition, because culture is local, it is important to understand and assess the culture of each healthcare organization.

8. BUILDING A BUSINESS CASE FOR INFECTION PREVENTION:

Two compelling reasons to have a business case for infection prevention are to save lives and costs. According to the Agency for Healthcare Research and Quality, HAIs are a leading threat to patient safety, resulting in tens of thousands of lives lost and billions of dollars in healthcare costs. A report authored by R. Douglas Scott used published medical and economic literature to estimate the annual direct hospital cost of treating healthcare-associated infections (HAIs) in the U.S. and the benefits of prevention. The benefits of prevention range from \$5.7 billion to \$31.5 billion.

Building a business case for infection prevention helps to ensure sufficient resources and efforts are in place to integrate infection prevention practices across existing quality and safety improvement activities. A strong business case can help summarize the goals, impacts, and evaluation of all infection prevention initiatives and can also be used to reinforce how these efforts are part of the organization's overall commitment to patient safety and quality improvement. Connecting the infection prevention plan and goals with the organization's financial and non-financial goals can demonstrate there is a clear connection between organizational performance and a strong infection prevention program.

Q: HOW CAN HOSPITALS BENEFIT FROM HAVING A COORDINATED APPROACH TO INFECTION PREVENTION FROM THE PARTNERSHIPS WITHIN EACH STATE?

Collaboration among multiple stakeholders in the healthcare community is necessary to spread and sustain reductions in HAIs on a broad scale. Collaboration leverages the combined programmatic efforts of various stakeholders working in tandem and can align energy, resources, and enthusiasm for prevention. It can also spread the knowledge and community standards for care to ambulatory and long-term care settings (where resources may be few). State hospital associations can help engage hospital leadership and coach hospital team leads in improvement activities. State public health partners have expertise in epidemiology across care settings and provide consultative support through the Infection Control Assessment and Response (ICAR) process. Additional partners such as the QIN-QIOs and HIINs have considerable experience with implementation of collaboratives and can assist with data analysis and other frameworks for prevention. This partnered approach can both accelerate and facilitate HAI prevention efforts while avoiding duplication of efforts; it can also help direct care providers balance many competing priorities.

Q: I UNDERSTAND ANTIBIOTIC STEWARDSHIP (AS) IS ONE OF THE FOUNDATIONAL ELEMENTS. CAN YOU EXPLAIN THE ROLE OF THE INFECTION PREVENTIONIST (IP) IN AS?

AS is not the responsibility of one person, but of the entire healthcare team. As such, the IP plays an important and crucial role in AS (Moody J 2012). For example, prevention of HAIs leads to less prescribing of antibiotics (i.e., no infection → no antibiotics → no MDRO). We know that exposure to any antibiotic is the single most important risk factor for *C. diff* infection. In all settings, the IP plays an important role in the oversight and monitoring of hand hygiene as well as the compliance to standard and transmission-based precautions aimed at preventing cross-transmission of infection. In addition, the relationship with EVS personnel is another connection the IP can make—especially in selection, effective work practices, and safe use of surface disinfectants.

CDC identifies education as a core element for effective AS. The IP can assist in educating nurses, patients, and the public on appropriate antibiotic use and infection prevention practices to prevent HAIs. Also, the IP can be a valuable asset in ensuring appropriate culturing of specimens from patients and residents. Assessing a facility's *culture of culturing* would be worthwhile for the IP, clinicians, and laboratory professionals. For example, are patients being appropriately assessed before urine cultures are ordered, or do current practices reflect broad or “pan” culturing of all patients with a fever that may or may not be related to a urinary tract infection?

Helping to develop criteria and algorithms for appropriate blood or urine culturing and educating staff on guidelines can be of tremendous value to the program. For example, suspected urinary tract infection is one of the most common causes of inappropriate antibiotic prescribing in the inpatient setting. There is emerging evidence that use of antibiotics for asymptomatic bacteriuria can be successfully decreased when the care team engages physicians who treat a high proportion of inpatients—hospitalists (Hartley SE 2016). In long-term acute care hospitals, the IP must also work with patients and families to provide education about symptoms of active infection, proper use of antibiotics, and the risks that occur with overuse of antibiotics. The IP must utilize evidence-based criteria to determine and manage infections in the elderly population and engage consulting laboratory and pharmacy staff to obtain proper information about infection and antibiotic use. As the IP audits, analyzes, and reports HAI data, he/she may identify inappropriate culturing and/or detect patterns and trends associated with system issues such as failures to administer timely and/or appropriate pre-operative prophylaxis, or continued use of broad spectrum empiric therapy once culture data has been received. The IP can share this data with the AS team. Finally, IPs can provide support and guidance in evaluating or advocating for automated surveillance systems that readily detect MDROs and HAIs.

Q. HOW DOES THE TARGETED ASSESSMENT FOR PREVENTION (TAP) STRATEGY HELP A FACILITY FOCUS ON HAI PREVENTION?

The TAP strategy is a method for calculating the occurrences of HAIs that must be prevented to reach an HAI reduction goal, and identifying and prioritizing healthcare facilities or units where the largest reductions can be achieved. The TAP strategy determines a cumulative attributable difference (CAD), which is calculated by subtracting a numerical prevention target from an observed number of HAIs. The prevention target is the product of the predicted number of HAIs and a standardized infection ratio goal, which represents an HAI reduction goal. Because different units have different CADs, a facility can prioritize efforts to target locations where the greatest impact would be realized. In addition, facility assessment tools and resources have been developed to facilitate the gaps in infection prevention efforts. The CDC has compiled comprehensive TAP implementation guides for both CDI and CAUTI with examples of strategies and best practices (www.cdc.gov/hai/prevent/tap.html). Facilities can utilize these tools to identify, assess, and target prevention efforts where they are most needed.

Q. WHAT PROCESS MEASURES ARE YOU USING TO DETERMINE IMPROVEMENT?

A central component of identifying gaps in practice for this program is through the ICAR tool. This tool is used by the state health departments to assess gaps in foundational and HAI-specific infection prevention practices at the hospital level. The assessment is conducted on-site at the hospital, and through observation and discussion with hospital staff, infection prevention gaps are identified and consultative support is provided from the state health department. The results of the ICAR that are pertinent to this program will be used to determine a baseline Practice Change Assessment measure report. At the completion of the program, hospitals will be administered a post-Practice Change Assessment which will then be analyzed to see if improvement in infection prevention practices were made. These reports will be provided to IPs.

Another important measure is device utilization ratios. We know that patients who do not have a urinary catheter or a central line cannot get a device-associated infection. Program education and support will be provided to address central venous and indwelling urinary catheter insertion and maintenance practices.

Q. WHAT LESSONS HAVE YOU LEARNED FROM THIS PROJECT?

One of the most important lessons learned is related to the collective wisdom of groups working together for a common purpose. The faculty involved in this initiative is a large group of content experts representing different professional organizations, backgrounds, and areas of expertise. Each faculty member has something important to bring to the project as we learn from one another. As IPs, we are incredibly proud of the insight and critical perspective that we bring to such projects. Equally important, we are much more aware and appreciative of the need for integration and collaboration between states, QIN-QIOs, and hospitals in order to spread and sustain HAI reduction on a regional and national level. We also have a greater understanding of where there are gaps in implementation of evidence-based practices such as lack of competency-based training, audit, and feedback to ensure that evidence-based practices are integrated into the standard of care.

Perhaps this type of collaboration could work toward developing teams that include representatives from providers across the continuum of care in a community. The teams would work together to improve the communication regarding problems that can occur with infection prevention, antibiotic use, and drug resistance during transitions in care as a patient moves from facility to facility or back into the community. Providers should work together to improve communication of patient information between facilities, which will improve patient outcomes.

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Surgeries and single-use catheters help treat patients, but they can be pathways for bacteria to enter the body.

Bacteria can be spread when appropriate infection control actions are not taken.

Antibiotics save lives, but poor prescribing practices puts patients at risk.

Combine infection control actions with every patient to prevent infections in health care.

Prevent infections from catheters and after surgery. + Prevent bacteria from spreading. + Improve antibiotic use.

SOURCE: CDC Vital Signs, March 2016