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Antibiotic Stewardship Requires Hospitalwide Commitment

Hospitals can play an important role in addressing one of the most urgent public health problems today: the misuse and overuse of antimicrobials. An effective antibiotic stewardship program requires significant commitment from top executive levels down to the bedside.

Antimicrobial stewardship promotes the appropriate use of antibiotics and other antimicrobials. The goal is to reduce microbial resistance and simultaneously improve patient outcomes by decreasing the spread of infections caused by multidrug-resistant organisms, says **Linda Greene**, RN, MPS, CIC, FAPIC, president of the Association for Professionals in Infection Control and Epidemiology (APIC) in Arlington, VA, and manager of the infection prevention program at University of Rochester

Highland Hospital in Rochester, NY.

Antibiotic resistance is a major public health threat. It is estimated that in the United States, antibiotic-resistant bacteria infect 2 million people annually, says **Katherine Fleming-Dutra**, MD, medical officer with the Office of Antibiotic Stewardship at the federal

CDC in Atlanta. At least 23,000 people die as a result.

“Antibiotic use is a major driver of antibiotic resistance, and antibiotic stewardship is the effort to measure and improve antibiotic use. The goal of antibiotic stewardship is to combat antibiotic

resistance and to improve healthcare quality and patient safety,” Fleming-Dutra says. “Improving antibiotic use through antibiotic stewardship can lead to decreased antibiotic resistance and prevent avoidable antibiotic adverse events, such

IT IS ESTIMATED THAT IN THE UNITED STATES, ANTIBIOTIC-RESISTANT BACTERIA INFECT 2 MILLION PEOPLE ANNUALLY.



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as allergic reactions and *Clostridium difficile* infections, [which are] sometimes deadly diarrheal infections. Effective antibiotic stewardship can also help decrease healthcare costs.”

Antimicrobial-resistant organisms are associated with longer, more expensive hospital stays and poor outcomes, including increased risk of death. (*APIC offers a number of resources for antibiotic stewardship online at: <http://bit.ly/2ylAyyV>.*)

CDC and CMS Team Up

Improving antibiotic prescribing and use is part of the CDC's comprehensive approach to combat antibiotic resistance. (*See the story on page 135 for CDC resources on antibiotic stewardship.*) The CDC also works closely with the Centers for Medicare & Medicaid Services (CMS) to promote the principles of antibiotic stewardship by providing direct technical assistance in hospitals nationwide to implement these programs within their acute care institutions.

For instance, as of September 2017, the Hospital Improvement Innovation Networks (HIINs) recruited more than 4,040 hospitals nationwide, working with them to improve the quality of care provided to patients. An essential element of their work is targeted at the implementation and strengthening of antibiotic stewardship programs based on the CDC's Core Elements for Hospital Antibiotic Stewardship Programs, Fleming-Dutra says.

“Technical assistance is provided to these hospitals at a local level through engagement with a wide array of clinical staff inclusive of quality improvement specialists, infection preventionists, and

pharmacists, as well as hospital leadership to reduce overall patient harm,” Fleming-Dutra says. “This includes directed assistance to reduce infections associated with antibiotic misuse and/or overuse, like *Clostridium difficile* and other multidrug-resistant organisms. The HIINs work to assist the hospitals in overcoming challenges by utilizing and spreading best practices that contribute to the achievement of the triple aim.”

Hospitals Can Improve Stewardship

Infection control professionals have been promoting antibiotic stewardship for years, but hospitals have not always adopted it with the same passion, Greene says. Fleming-Dutra notes that the CDC recommends all acute care hospitals implement antibiotic stewardship programs in response to the urgent need to improve antibiotic use. CDC's Core Elements of Hospital Antibiotic Stewardship Programs outlines the components needed for an effective hospital antibiotic stewardship program.

That's where quality professionals can help, Greene says.

“This is a major initiative, but when you think about quality, costs, and potential threats in a potential hospital or healthcare organization, you have some very significant issues that compete for attention and resources,” Greene says. “The proper and judicious use of antibiotics is an issue that requires attention because it can affect patients and overall quality of care in far-reaching ways.”

The current hospital quality assurance and performance improvement (QAPI) conditions of participation require that the

hospital's governing body (or organized group or individual who assumes full legal authority and responsibility for operations of the hospital), medical staff, and administrative officials are responsible and accountable for the QAPI program. Fleming-Dutra notes that the proposed infection control and antibiotic stewardship conditions of participation would require the hospital to:

- appoint a qualified infection control professional as the leader of the infection control program and a qualified medical professional as the leader of the antibiotic stewardship program;
- ensure that these leaders meet specific responsibilities for their respective programs;
- ensure that systems are in place and are operational for the tracking of all infection surveillance, prevention and control, and antibiotic use activities in order to demonstrate the implementation, success, and sustainability of such activities;
- ensure that all hospital-acquired infections and other infectious diseases identified by the infection prevention and control program as well as antibiotic use issues identified by the antibiotic stewardship program are addressed in collaboration with hospital QAPI leadership.

Quality and Patient Safety Issue

The primary concern is that overuse of antibiotics encourages the mutation of drug-resistant organisms, the “superbugs” that can be hard to treat in any single patient and difficult to eradicate once they take hold in a hospital or unit.

“We also know that antibiotics

are associated with severe diarrheal diseases like *Clostridium difficile*, which is a huge issue nationwide and which is part of public reporting,” Greene says. “When you look at this from a quality and compliance perspective, especially with value-

based purchasing and the data that is involved there, prevention of *C. difficile* is a very important concern.”

The costs associated with antibiotic use also are of concern, she notes.

“When you put all those

CDC Offers Extensive Resources on Antibiotic Stewardship

The federal CDC in Atlanta offers a set of key principles to guide efforts to improve antibiotic use and, therefore, advance patient safety and improve outcomes.

The CDC released Core Elements of Hospital Antibiotic Stewardship Programs in 2014, Core Elements of Antibiotic Stewardship for Nursing Homes in 2015, Core Elements of Outpatient Antibiotic Stewardship in 2016, and Implementation of Antibiotic Stewardship Core Elements at Small and Critical Access Hospitals in 2017.

CDC tracks implementation of antibiotic stewardship programs meeting all Core Elements in hospitals, and the results can be found in CDC's Antibiotic Resistance Patient Safety Atlas at: <https://gis.cdc.gov/grasp/PSA/STMapView.html>.

The following are links to the Core Elements:

- <https://www.cdc.gov/antibiotic-use/healthcare/implementation/core-elements.html>
- <https://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html>
- <https://www.cdc.gov/antibiotic-use/community/improving-prescribing/core-elements/core-outpatient-stewardship.html>
- <https://www.cdc.gov/antibiotic-use/healthcare/implementation/core-elements.html>

The CDC recommends that hospitals use the Core Elements of Hospital Antibiotic Stewardship Programs to identify the key components needed for a successful antibiotic stewardship program.

Additionally, hospitals may find the National Quality Partners Playbook: Antibiotic Stewardship in Acute Care helpful as it provides practical strategies for hospitals with different levels of resources to meet each core element: <http://bit.ly/2zqby7f>.

More information about CDC's efforts to combat antibiotic resistance can be found at: <https://www.cdc.gov/drugresistance/index.html>.

More information about *Clostridium difficile* infections can be found at: https://www.cdc.gov/HAI/organisms/cdiff/Cdiff_infect.html. ■

things together, it is a quality and patient safety issue that is extremely important,” Greene says. “Unfortunately, over the years this concern has been effectively siloed. Pharmacy and infection control professionals have been working on this for years and there has been an effort to restrict some of the big-gun antibiotics so that they would be used only when truly necessary, requiring infectious disease approval in some cases. Other organizations have required a review of charts by infectious disease specialists to look for opportunities to discontinue or avoid antibiotics with some patients.”

Those efforts have been ongoing for years now, but they often were loosely put together and did not cross all boundaries of a hospital, Greene says. The next step is to encourage hospitals to develop organizationwide programs rather than efforts residing only in infectious disease or infection control, she says.

Bedside Nurses Play Major Role

The basis of antibiotic stewardship is providing the right dose of the right antibiotic at the right time, but Greene says that involves much more than just the pharmacist or physician writing the prescription.

“The bedside nurse, for instance, is a big part of that program, and people didn’t really think about that recently,” she says. “If I’m the first person assessing that patient and I don’t get the right information regarding their history or allergies, that could make a difference in what the doctor orders. Or, if I’m not timing my antibiotics appropriately and I lose IV access, or if the nurse sends cultures when they’re not necessary because there are no clinical

symptoms, the bedside nurse can have a significant impact on antibiotic use.”

Unnecessary cultures are a good example of how a well-meaning nurse or physician can increase the use of antibiotics with no benefit to the patient, Greene explains. Everyone has organisms living on the skin but not necessarily causing infection, but sending a culture to the microbiology lab can produce a report that tells the doctor the patient has a high concentration of staph. The doctor then prescribes an antibiotic, trying to be prudent and respond to admonitions about infection control.

“There are so many things that even the bedside nurse does that have not been appreciated as an important part of this stewardship,” Greene says. “A good antibiotic stewardship program ties all this together in the realization that this is not one person’s role. It’s everyone’s role to make sure we are doing the best for patients from admissions through discharge.”

Need C-suite Support

A hospitalwide antimicrobial stewardship program will require leadership support from the C-suite on down, Greene says. There must be administrative support for appropriate laboratory staff, for instance, and there must be accountability across all parts of the organization.

There also must be a designated leader for the effort, Greene says. That usually will be a pharmacist or physician who champions the effort across all departments and who can be the focal point for questions and problems that may arise, she says.

That leader will be the one to push specific initiatives such as evaluating how often you order antibiotics or the adoption of an antibiotic timeout.

(See the story on p. 137 for more on antibiotic timeouts.) This leader also will spearhead reporting, data tracking, and accountability.

“Quality professionals play an important role because they often are very influential in helping an organization set goals and come up with scorecards or quality goals,” Greene says. “At my own organization and most others, there is someone from the quality improvement department on these antibiotic stewardship boards because they have that high-level view of the organization and know how to drive efforts toward a stated goal.”

Education is another area in which quality professionals can play an important role, Greene says. This can be a particular concern with hospitals that see a lot of turnover with interns, residents, and other clinicians, she says. That is why it is important to have much of the antibiotic stewardship program hardwired into the system so that resources and policies are consistent as people come and go, Greene says.

The electronic medical record can be used to keep antibiotic stewardship consistent, with prompts and data entry requirements, for instance. Ongoing education also is key, Greene says.

Measure Outcomes With Antibiograms

Measuring progress and results is another area where quality professionals can contribute, Greene says. The CDC offers an antibiotic use module and an antibiotic resistance module that can be useful, but Greene notes that they require electronic data capture with an automated infection surveillance system.

“You can pull information out of those modules, like days of use and daily dosages — the things that will give you a good perspective,” she says. “If you’re using an inordinate amount of the medications intended only for the sickest patients, you might stop and look at that to figure out why. A key element of antibiotic stewardship is using the most narrow spectrum coverage that is effective. You don’t want a ‘gorilla-cillin’ when a regular penicillin will do.”

CDC recommends that hospitals track and report antibiotic use and outcomes, such as *C. diff* infections and antibiotic resistance, to measure the effect of interventions to improve antibiotic use, Fleming-Dutra says.

At the national level, CDC tracks antibiotic use and progress in implementation of antibiotic stewardship. *(More information can be found in CDC’s Antibiotic Use in the United States, 2017: Progress and Opportunities, available online at: <http://bit.ly/2husPnF>.)*

Measuring outcomes is critical, particularly in the form of an antibiogram, a periodic summary of antimicrobial susceptibilities of local bacterial isolates submitted to the hospital’s clinical microbiology laboratory.

Antibiograms are used to assess local susceptibility rates and in monitoring resistance trends over time within an institution, Greene explains. They also can be used to compare susceptibility rates across institutions and track resistance trends.

“The antibiogram tells you specifically about your institution’s experience, such as your resistance to drug A from certain organisms, or your rates for diarrheal disease, whether they are going up or going down,” Greene says.

Antibiotic Timeouts Boost Clinicians’ Confidence

An antibiotic timeout program can improve provider confidence in making decisions to de-escalate antimicrobial therapy in ambiguous circumstances, according to recent research. The timeout gives clinicians confidence to stop the medication when they otherwise would probably seek authorization for continuation from an antimicrobial steward.

The research, led by Christopher Graber, MD, at the Veterans Administration Greater Los Angeles Healthcare System, found that antibiotic timeouts can promote critical thinking and more attention to reviewing whether continuation of antibiotics is warranted.

The timeout program consisted of an electronic antimicrobial dashboard that aggregated infection-relevant clinical data, a templated note in the electronic medical record that included a structured review of antibiotic indications and provided automatic approval of continuation of therapy when indicated, and an educational and social marketing campaign.

After six months, vancomycin was discontinued by day five in 64% of courses where a timeout was performed on day four, compared to 48% a year before the intervention. Piperacillin-tazobactam was discontinued by day five in 67%, versus 62% a year earlier.

“We sought to steer providers toward desired behavior by giving them the necessary tools to act as self-stewards and thereby respect their autonomy, rather than to explicitly restrict their actions,” the authors wrote. “The results of the analyses assessing intentions to use the template suggest that the overall approach of using a template to prompt individual assessment was acceptable to clinicians. This self-stewardship approach may also be valuable for hospitals that have limited resources to devote to stewardship.”

The full study is available online at: <http://bit.ly/2m3V7KO>. ■

Gap Analysis Is Useful

Greene also recommends conducting a gap analysis with the following questions: Do I have someone responsible for antibiotic stewardship? Is leadership giving me the resources for this? Do I monitor in real-time, and measure outcomes?

“It is always good to know where you stand at the moment. If you’re wondering whether you’re really devoting the right effort to antibiotic stewardship, do that kind of gap analysis and see what you’re currently doing and where you might put more emphasis,” she says. “It’s possible that

you have much of this in place already, but it’s just not organized under one umbrella and maybe you don’t have one person who is bringing it all together and taking responsibility.” ■

SOURCES

- Katherine Fleming-Dutra, MD, Medical Officer, Office of Antibiotic Stewardship, Centers for Disease Control and Prevention, Atlanta. Phone: (800) 232-4636.
- Linda Greene, RN, MPS, CIC, FAPIC, President, Association for Professionals in Infection Control and Epidemiology, Arlington, VA. Phone: (202) 789-1890.

Improve ED Quality and Efficiency by Looking Outside the ED

Crowded and inefficient EDs are a perennial concern for hospitals, and it's becoming more clear than ever before that there is a direct effect on quality of care and patient safety. Particular strategies are known to work, but some hospitals still can't fix their ED problems.

The more important lesson is that fixing ED issues requires looking beyond the confines of the ED.

When surveyed about a set of interventions proven to improve ED operations, hospitals in 2015 had on average adopted only half of them, according to research by **Jesse Pines**, MD, MBA, professor of emergency medicine, health policy, and management at the George Washington University School of Public Health in Washington, DC. (*An abstract of the study is available online at: <http://bit.ly/2z9Q7Jr>.*)

The inclusion of ED throughput in the Medicare Star Ratings has driven more attention to the issue in recent years, Pines says.

"There are a number of reasons hospitals are not addressing throughput in the emergency department as effectively as they could be, even though there are strategies out there that they could implement," Pines says. "Some are more difficult than others because the emergency department is a complex environment in which to do quality improvement. There are so many interactions with other parts of the hospital that having an efficient emergency department requires not only that it perform well, but that hospital services such as laboratory, admitting, [and] bed management... perform well."

It is not uncommon for a hospital

to look at all areas that need attention and realize that fixing the ED is too complex and requires too much effort in disparate areas, Pines says. Hospital leaders may opt instead to address the low-hanging fruit that can yield faster and more concrete results, he says.

Demonstrate Quality Commitment

Research has indicated that certain ED interventions work, but more important is a commitment to quality improvement, he says. That commitment hinges on four criteria, he says.

"The first is a dynamic leader in the emergency department, either a physician or a nurse who is committed to making improving the flow of the emergency department their passion," he says. "The second is an administration that invests resources and makes improving the emergency department a priority. Without those two, any intervention is going to be unsuccessful."

Next comes the availability of data and the ability to analyze it, Pines says. The fourth criterion is long-term commitment.

"Some hospitals are looking for a silver bullet, like adding more ED beds, and they hope that doing that one thing will solve their problems," Pines says. "A lot of studies have shown that is not always effective and often is a very expensive short-term fix. Unless you fix the broader problems across the hospital that affect the ED, you're just going to stack more patients in the ED without really improving care or efficiency."

Interventions for boarding can be particularly challenging because they must involve all the other inpatient services, which are themselves complex organizations, Pines says.

If those four criteria are met, a hospital can look to interventions that have been proven to improve the functioning of an emergency department. Some of those interventions include streamlining the triage process, providing express service for some patients who do not need complex care, improving transitions from the ED to inpatient units, and using software to anticipate patient volume.

Anticipate Roadblocks

But whatever intervention is attempted, some challenges are inevitable, Pines says. With so many ED issues related to the function of other hospital departments, many interventions can be stymied by what happens, or doesn't happen, elsewhere.

"Generally, the more services involved or the more people who have to come to the table to agree to something, the harder it is to do," Pines says. "Non-participation by other service lines can be a real barrier. They may feel like they are functioning just fine, so to address the issues you have in the ED you have to convince [them] that they need to make it a priority to improve."

Another challenge is deciding what intervention to address first. Pines suggests looking at the research indicating the potential interventions and remembering that there is not

likely to be any one intervention that will solve your problems. Study your own data to determine the primary problems in your ED and look for interventions that might work together to address root causes, he suggests.

Data Analysis Is Key

No matter what interventions you use, make measurement and data analysis fundamental parts of the program, Pines says.

“Quality improvement is about trying things and measuring progress over time, working your way through different interventions in a stepwise way,” he says. “You may have success in an area and move on to the next intervention, but you still need to measure that first intervention to see if the improvement is holding up. They may have slipped back to the old way of doing things and you’ve lost your gains with that intervention.”

Remember that ED performance is about more than efficiency and cost control, Pines says. Multiple studies have demonstrated that quality of care suffers in overcrowded and inefficient EDs, he says.

“There is a clear quality rationale that says if you address crowding, quality will improve,” Pines says.

Clear Link With Quality

Numerous quality measures can be affected by ED overcrowding and other ED issues, says **Benjamin Sun**, MD, MPP, FACEP, professor with tenure in the Department of Emergency Medicine at Oregon Health and Science University in Portland, and director of its emergency medicine research fellowship. He has conducted

extensive research on ED crowding and its relationship to quality.

“There is very consistent literature showing that the higher the level of ED crowding, the worse a hospital performs on other process measures like time to pain medication for broken bones, antibiotics for pneumonia, and patient satisfaction,” he says. “More importantly, there is literature showing a correlation between ED crowding and mortality.”

Sun’s most recent research identified four key strategies to reduce overcrowding in EDs, concluding that an engaged executive should be combined with a data-driven approach and coordination across the hospital at all levels. (*An abstract of the study is available online at: <http://bit.ly/2zb8r4J>.*)

The study identified groups of hospitals categorized as low-, high-, or highest-improving in terms of lengths of stay and boarding times (the length of time an admitted patient must wait for an inpatient bed), as measured through statistics provided by 2,619 U.S. hospitals to CMS. The authors picked a representative sample of four hospitals in each of the three categories of performance, then systematically interviewed a broad range of stakeholders including nurses, ED directors, directors of inpatient services, chief medical officers, and other executive officers.

Previous research by Sun and his colleagues indicated that there is a great deal of variation among hospitals on the Medicare ED crowding metrics, but Sun says some of that is attributable to factors beyond an individual hospital’s control, such as community demographics and size. But even after adjusting for those factors, there still was significant variation.

“We found that there are some hospitals that have figured out how to do a good job, and other places that still have poor performance,” Sun says. “That led to our most recent research where we identified the factors that define high-performing hospitals, and they are factors that are within the control of the hospital.”

No Single Strategy Works Best

Sun says he and his colleagues were hoping to identify specific forms of intervention that are most effective, but those were elusive.

“To our surprise, we didn’t find that any specific form of intervention ... tied to a higher performance level. We were hoping there would be evidence that if you would only do X, Y, and Z interventions, your problems would go away,” Sun says. “We didn’t see that. We found that across all levels of performance, they were using the same words and doing essentially the same things. They all had a provider in triage, used lean quality improvement methods, and [employed] other common interventions.”

So, particular interventions were not the discriminating factors. Instead, they identified four broader approaches that were common to those hospitals best addressing the efficiency of the ED and performance on quality measures:

- **Involvement of executive leadership.** Executive leaders in high-performing hospitals identified hospital crowding as a top priority complete with clear goals and resources to achieve those goals. “In contrast, low-performing hospital executive leadership did not prioritize crowding initiatives,

despite acknowledging the causes,” the authors wrote. “Emergency department leadership often felt isolated in their struggle with significant boarding and lengths of stay.”

• **Hospitalwide coordinated strategies.** High-performing hospitals performed as a cohesive system across departments to alleviate crowding, in contrast to low-performing hospitals that operated in silos. For example, one executive at a high-performing hospital developed strategies for improving bed turnaround times on inpatient rooms. “Instead of waiting for the room to go from dirty to clean and then to book transportation for a patient to come, we started doing things in parallel so that we would cut down on waiting time,” the executive wrote in the report.

• **Data-driven management.** High-performing hospitals gathered and used data to adjust operations in real time, provided immediate feedback to key personnel, and predicted patterns of flow in the ED and hospital, matching resources to meet expected demand. “In contrast, at low-performing hospitals, data were most often available only retrospectively, and, if the data were used, they were discussed by executive leadership at monthly or

quarterly meetings,” the authors wrote.

• **Performance accountability.** High-performing hospitals held staff accountable and problems were addressed immediately to reduce crowding.

Leaders More Receptive

One good finding from that research is that hospital leaders have come a long way in the past 10 or 15 years, acknowledging that ED crowding is not just a function of how the ED itself operates, but driven mostly by inpatient crowding and inefficiencies throughout the hospital. That was not common wisdom until recent years, Sun says.

“You have to have hospital leadership make ED crowding top priority, and they have to understand that it requires more than just telling the ED director to fix it. Having your hospital leadership understand the breadth of the problem is a big first step in improving the metrics,” Sun says. “That facilitates addressing cross-department initiatives, which is key to making any improvements with this problem.”

One hospital executive at a top-performing hospital told the researchers that they used ED crowding as a global metric of hospital efficiency

overall, Sun recalls. Any problems with the lab, environmental, surgical, or intensive care services would eventually manifest in the form of ED overcrowding, he said.

Sun, an emergency physician, recalls working in a 20-bed hospital with an inpatient boarding challenge, and on some days every ED bed was occupied by someone waiting for an inpatient bed. No matter how efficient he and the ED staff were, they could not free up ED beds until inpatients were available.

“We were scrounging for anywhere to treat a patient — in the hallways, closets, anywhere we could put them,” Sun says. “It illustrates that when you have a very severe boarding problem, just focusing on the ED operations is addressing only a tiny part of the whole issue.” ■

SOURCES

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ACOs Yield Quality Lessons for Hospitals, May Expand

Medicare accountable care organizations (ACOs) have yielded valuable lessons about value-based care and positioned some hospitals to be competitive in the future, with the most recent results showing participants improving

quality and reaping financial rewards. One of the most promising has been cut off to new applicants, but could become available again in the future.

Most of the participants in the Next Generation and Pioneer ACO models earned payments in the most

recent reporting period — 11 out of 18 health systems participating in Next Generation in 2016, and six out of eight in the Pioneer model.

Seven Next Generation ACOs lost money and three dropped out in 2016 due to financial targets,

saying they could not reach the value-based targets that would earn payments. *(The latest CMS data on ACOs is available online at: <http://bit.ly/2zbDeOY>.)*

For Next Generation ACOs, the financial rewards ranged from a low of \$272,140 for Steward Health Care Network in Massachusetts, to a high of \$12 million for Baroma Health Partners in California.

The largest losses in the Next Generation ACOs were reported by LifePrint ACO in Delaware, a subsidiary of UnitedHealth Group, which owed \$6.1 million, followed by OSF HealthCare in Illinois and MemorialCare Regional ACO in California, which both lost \$5 million.

Next Generation ACO Grew

Twenty-eight new ACOs joined the Next Generation program, making a total of 44 health systems taking part in the largest advanced ACO program in Medicare's history. Next Generation builds on the Medicare Pioneer ACO model, which was in its final program year in 2016.

Eight health systems took part in Pioneer in 2016, with six reporting financial savings. Banner Health Network in Arizona led the pack with the highest reward at \$10.9 million, meeting its benchmark of \$504 million for 42,040 beneficiaries with an actual expenditure of \$489 million.

None of the Pioneer ACOs owed money, but Monarch HealthCare in California and Partners HealthCare in Massachusetts just broke even. However, they reported quality scores of 90.25% and 94.51%, higher than some of the other health systems that earned money.

The Michigan Pioneer ACO had a lower quality score of 88.93% and still earned \$7.4 million. Michigan performed better than its benchmark expenditure of \$232 million for its 14,319 beneficiaries, with actual expenditures of \$220 million.

Rewards for Quality and Value

The ACO models are Medicare Shared Savings Programs (MSSPs) that encourage coordinated care and higher quality. Doctors, hospitals, and other healthcare providers and suppliers coordinate to provide high-quality care at lower costs, thereby saving money for Medicare. ACOs are patient-centered, explains **Chris Dawe**, vice president for payer partnerships at Evolent Health in Arlington, VA, which provides technical and management support to ACO participants.

ACOs provide a way for healthcare organizations to gather better information about their patients' medical histories and improve relationships with patients' other providers, he explains. Provider participation in ACOs is voluntary, and participating patients experience no change in their Medicare benefits.

An ACO that delivers high-quality care and reduces Medicare costs will share in the savings it achieves for the Medicare program. *(More information on the Next Generation ACO model is available online at: <http://bit.ly/1YfzOws>.)*

Next Gen Model Successful

The latest results demonstrate the value of an ACO model and

particularly the Next Generation approach, Dawe says. Hospitals cannot sign up for the Next Generation ACO now but might be able to join in the future, he says.

"The lesson would be the superiority of the model and that it is a truly viable platform for hospitals to start moving in this direction and transform care. It is a competitive threat for any hospital that is sitting there with a physician network and trying to grow that network, but doesn't have a way to bring physicians the type of upside benefit that comes with the Next Gen model. If you are one of those hospitals, unfortunately CMS doesn't have a solution for you because Track 3 can work in some instances, but just doesn't have the firepower of Next Gen."

Dawe cites the example of Deaconess Health System, which has six facilities in Evansville, IN, and participated in MSSP Track 1 starting in 2012. It joined the Next Generation ACO in 2016 with the intention of deploying physician-led, evidence-based clinical programs and new technology to improve the quality and care experience for Medicare beneficiaries.

They also needed to build a risk adjustment program to identify beneficiaries with undocumented conditions and support providers to improve documentation and coding accuracy, Dawe says.

Deaconess established financial incentives linked to performance, leadership training for physicians who typically spend 100% of their time practicing medicine, and a physician engagement strategy that included a governing board composed of practicing providers, Dawe says.

The health system also used new technology to extract data from disparate systems, such as claims data from payers, clinical data out

of the electronic medical record, and patient-completed data. The data were combined into a data warehouse. Predictive analytics were employed retrospectively and prospectively to risk-stratify the population to help determine the appropriate care path for high-risk patients.

Data were shared with participating practices and providers on the care continuum, and Deaconess implemented a population health program to identify patients susceptible to future, avoidable conditions. The sickest patients receive dedicated care advisors to manage them for six months.

Deaconess used natural language processing technology to identify documentation gaps, ensure medical record accuracy, and drive care-gap closure. Physician practices received lists of suspect conditions for upcoming office visits and coder decision support tools to improve billing accuracy.

Deaconess anticipates a savings of more than \$7 million over 2016, which represents 80% of total shared savings, Dawe says.

More Demand for ACOs

Demand is increasing as providers look at avenues to get physicians out

of the Merit-based Incentive Payment System (MIPS) and into Medicare Access and CHIP Reauthorization Act (MACRA) bonuses, Dawe says. It is unfortunate that an ACO option is closing off at the same time MACRA is gaining appeal with healthcare providers, he says. Interest in the Next Generation model should not come as a surprise, he says, because in addition to qualifying as an Advanced Alternative Payment Model (APM) under MACRA, the program also offers deal terms that surpass most other ACO contracts.

Dawe says these components of the Next Generation model make it superior to MSSP Track 1, Track 1+, and Track 3:

- **Financial terms:** Participants keep up to 100% of the upside savings.
- **Risk adjustment:** The benchmark can be adjusted up to +3% to accurately depict risk profile.
- **Prospective attribution:** Early identification helps manage the attributed population.
- **Benchmark timing:** Benchmarks are received prior to the start of the plan year.
- **Network and beneficiary incentives:** There are CMS waivers, supplemental benefits, and financial incentives for beneficiaries.
- **MACRA:** The Next Generation ACO satisfies MACRA requirements

for an Advanced APM and provides a safe harbor for punitive pay-for-performance programs. Participants receive the 5% Advanced APM bonus in addition to access to shared savings for successful ACOs, which creates a compelling platform for network expansion.

The good results coming just after the closing of applications for the Next Generation ACO will leave some hospitals frustrated, and ideally CMS should have at least one option each year for providers who want to voluntarily accept full downside risk, Dawe says.

“The Next Gen model will yield a tremendous amount of data over the next two or three years and we are confident that it will show a continuous improvement in quality and the ability to save Medicare money,” Dawe says. “We’re hoping they will be able to move it into a permanent option like how Pioneer became Track 3. Even though they’re not accepting new applications now, we’re hoping the new data will result in them opening it up permanently.” ■

SOURCE

- Chris Dawe, Vice President, Payer Partnerships, Evolent Health, Arlington, VA. Phone: (571) 389-6000.

Hospitals Improve Sharply in Leapfrog Group Safety Grades

Hospitals in some states continue to show dramatic improvements in the Fall 2017 Leapfrog Hospital Safety Grades, with Rhode Island achieving first place after being 50th in 2012. Other states ranked near the bottom five years ago are now at the top.

The Leapfrog Group’s biannual state rankings assign letter grades to general acute care hospitals in the United States, and states are ranked according to their percentage of “A” hospitals. There have been significant improvements in five states since the inception of the Safety

Grades in 2012. (*More information on the Leapfrog rankings is available online at: <http://bit.ly/2mBmMSK>.)*

Oregon, Rhode Island, Hawaii, Wisconsin, and Idaho showed the most improvement over the five-year period since the inception of

the Hospital Safety Grade. The most dramatic improvement came from Rhode Island, which was ranked 50th in 2012 and currently ranks first. Other states with significant improvement include Oregon, going from 48th in 2012 to eighth, Hawaii from 36th to third, Wisconsin from 44th to sixth, and Idaho from 19th to fourth.

The improvements indicate that transparency has a positive effect on patient safety, Leapfrog CEO Leah Binder said in a statement accompanying the results.

Maryland, previously not graded

due to an exemption from reporting key safety metrics at the national level, recently appeared in the rankings for the first time. Maryland now ranks fourth from the bottom. Of the 44 hospitals graded in Maryland, just one, Howard County General Hospital in Columbia, earned an “A.”

Leapfrog reported the following additional findings:

- Of the 2,632 hospitals graded, 832 earned an “A,” 662 a “B,” 964 a “C,” 159 a “D,” and 15 an “F.”
- Hospitals with “F” grades are located in California, Florida, Illinois,

Maryland, Mississippi, New York, and Washington, DC.

• Fifty-nine hospitals nationwide have achieved an “A” in every scoring update since the launch of the Safety Grade in spring 2012.

• The five states with the highest percentage of “A” hospitals this fall are Rhode Island, Maine, Hawaii, Idaho, and Virginia.

• North Dakota, Delaware, Maryland, New York, and Washington, DC, have the lowest percentage of “A” hospitals. ■

Healthgrades Analysis Shows Quality, Safety Link

Thousands of lives could be saved every year if all hospitals performed at a similar level to those rated as five-star facilities, according to a new Healthgrades 2018 analysis of top hospitals.

Healthgrades, which provides an online resource on the performance of physicians and hospitals, analyzed the performance of 4,500 short-term acute care hospitals nationwide, evaluating hospital performance connected to 34 common conditions and procedures.

Its analysis concludes that significant variation in health outcomes continue to exist among hospitals nationwide. (*More information on the Healthgrades rankings is available online at: <http://bit.ly/2m9kwP7>.*)

The data indicate that patients treated at hospitals receiving a five-star rating have a lower risk of dying and a lower risk of experiencing one or more complications during a hospital stay than if they were treated at hospitals receiving a one-star rating in that procedure or condition.

From 2014-2016, if all hospitals as a group performed similarly to hospitals receiving five stars as a group, on average, 219,568 lives could potentially have been saved and 164,454 complications could potentially have been avoided, Healthgrades reports.

Patients also have varying relative risk for complications and mortality with common surgeries. The choice of hospital, however, can have a significant effect on this risk.

Patients undergoing surgery in hospitals rated five stars will have a lower risk of experiencing a complication or dying than if they were treated in a hospital rated as one star for that same procedure, according to the Healthgrades data.

Hospitals close to each other can have significant differences in complication and mortality rates for the same condition or procedure, notes **Brad Bowman**, MD, Healthgrades chief medical officer.

“Many consumers believe that hospital quality is standardized, though the reality is that clinical

quality and outcomes at hospitals vary widely across the country,” Bowman said in a statement accompanying the data. “We observed that communities are healthier when they have access to high-quality hospitals, so while many consumers only think about their local hospitals in times of emergencies, there really is long-term benefit to the health of the population when access to top-notch hospitals is high.” ■

COMING IN FUTURE MONTHS

- Communication and Resolution Programs
- Debriefing for Critical Events
- Pro Tips for Improved Handoffs
- Improving Your Data Analytics



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CE QUESTIONS

1. What has been one impediment to antibiotic stewardship in past years, according to Linda Greene, RN, MPS, CIC, FAPIC, president of the Association for Professionals in Infection Control and Epidemiology (APIC) in Arlington, VA, and manager of the infection prevention program at University of Rochester Highland Hospital in Rochester, NY?

- a. This concern has been effectively siloed, with pharmacy and infection control professionals involved the most.
- b. Hospital leaders have refused to address the issue.
- c. Federal regulations prevented many effective interventions.
- d. CMS denied funding for intervention efforts.

2. How does Greene say unnecessary cultures ordered at the bedside can lead to overuse of antibiotics?

- a. Bedside cultures often result in the wrong antibiotic being prescribed.
- b. Bedside cultures can provide inadequate samples for analysis.
- c. Everyone has organisms living on the skin but not necessarily causing infection, and sending a culture to the microbiology lab can produce a report citing high concentrations.
- d. Electronic medical record order sets often automatically prompt an antibiotic prescription if a bedside culture is ordered.

3. What does Jesse Pines, MD, MBA, professor of emergency medicine, health policy, and management at the George Washington University School of Public Health in Washington, DC, say about adding more beds to an overcrowded emergency department?

- a. It often is just an expensive short-term fix that does not address the real cause of overcrowding.
- b. It usually is the best and most cost-efficient solution.
- c. It often solves the problem in the emergency department, but might create other problems elsewhere in the hospital.
- d. It rarely is attempted because of the expense.

4. What was one conclusion regarding emergency department overcrowding in research by Benjamin Sun, MD, MPP, FACEP, professor with tenure in the Department of Emergency Medicine at Oregon Health and Science University in Portland and director of its emergency medicine research fellowship?

- a. There was no specific form of intervention tied to a higher performance level.
- b. There were several specific forms of intervention tied to higher performance levels.
- c. The amount of money spent on the issue was directly related to improvement.
- d. Physician engagement in problem-solving always led to poor results.

CE OBJECTIVES

Upon completion of this educational activity, participants should be able to:

1. Identify a particular clinical, legal, or educational issue related to quality improvement and performance outcomes.
2. Describe how clinical, legal, or educational issues related to quality improvement and performance outcomes affect nurses, healthcare workers, hospitals, or the healthcare industry in general.
3. Cite solutions to the problems associated with quality improvement and performance outcomes based on guidelines from relevant authorities and/or independent recommendations from clinicians at individual institutions.