011: Therapeutic Thursdays: Updates to the CDC Core Elements of Hospital Antibiotic Stewardship Programs

Episode Transcription

Speaker 1: Welcome to the ASHP Official Podcast, your guide to issues related to medication use, public health, and the profession of pharmacy.

Anna Legreid D.: Thank you for joining us for therapeutic Thursday's podcast. This podcast provides an opportunity to listen in as members and experts sit down to discuss what's new and ongoing in the world of therapeutics. We are joined today by experts from the Center for Disease, Control, and Prevention, and this topic is very timely given the recently revised CDC Core Elements of Hospital Antibiotic Stewardship Programs. My name is Anna Legreid Dopp, and I will be your host for the ASHP Therapeutic Thursday podcast. With me today are Dr. Srinivasan, Captain, US Public Health Service, Associate Director for Healthcare-Associated Infection Prevention Programs within the Division of Healthcare Quality Promotion at the CDC, and Dr. Melinda Neuhauser, pharmacist and acute care lead, Office of Antibiotic Stewardship, within the Division of Healthcare Quality Promotion, also at the CDC. Thank you for joining us today, Arjun and Melinda. Let's get started talking about today's topic, updates to the CDC Core Elements of Hospital Antibiotic Stewardship Programs, and I'll start off by saying that the conclusions in this talk are the speakers' and do not necessarily represent those of the CDC.

So Arjun, the CDC released the Core Elements of Hospital Antibiotic Stewardship Programs in 2014, and they've been an invaluable resource for pharmacists and antimicrobial stewardship programs across the country and even throughout the world. Can you remind listeners what led to the development and dissemination of this resource?

Arjun S.: Yeah, you bet, Anna, and it's such a pleasure to be with you here today, and want to thank ASHP for giving us the opportunity to join you. The Core Elements really arose from a kind of confluence of circumstances that were all happening in the 2013 time frame. You know, 2013 was a big year at CDC, because it's the first year that we issued the National Threats Reports for antibiotic resistance in the United States, and that report which was just recently updated in 2019 did for the first time ever really highlight the huge burden of antibiotic resistance in the United States. You know, in 2013, we estimated that there were about two million resistant infections every year in the United States. Now in 2019 with better numbers, we know that that estimate is probably actually

closer to three million. It's about 2.8 million infections caused by antibiotic resistant organisms in the United States, and about 36 thousand people every year die from those infections.

So, the problem of antibiotic resistance then led to this discussion of, well, what can we do? How can we address this huge public health and patient safety crisis? And everybody recognized from the beginning that one of the important things we needed to do was to improve the way that we used antibiotics, and what people began to understand is that by improving the way we used antibiotics through antibiotic stewardship, not only would we impact the growing problem of antibiotic resistance, but just as importantly and maybe even more importantly, we would be helping take better care of our patients. There's a recognition that antibiotic stewardship programs, there's lots of literature demonstrating that these programs, what they're all about fundamentally is improving the way we take care of patients, and then they have these incredibly beneficial other impacts, one of which is of course to improve antibiotic resistance and reduce rates of antibiotic resistance.

So in 2014, CDC actually issued a call for all hospitals in the United States to have an antibiotic stewardship program, and at the time we knew that only about 41% of hospitals in the U.S. actually had kind of a really fully developed antibiotic stewardship program. So the challenge then became though, how do you have a framework for an antibiotic stewardship program that any hospital can have? There were some good guidance at the time from a number of different professional organizations on antibiotic stewardship programs, but it was really developed and most useful for larger and academic hospitals, and when we were talking about all hospitals, we really meant all hospitals, and so we needed a framework that could be flexible enough to be adapted to any hospital, so from five beds to 500 beds, we needed it to be relevant in all of those settings.

And so we worked with experts in the field of antibiotic stewardship to try to understand what were the programs and practices and structures that were associated with success of a stewardship program, irrespective of how big your hospital is, and that's where the Core Elements arose from. It was an attempt to develop this flexible framework that can be adaptable and implemented in any

hospital so that we could reach this goal of every hospital in the United States having a fully fledged and robust antibiotic stewardship program.

Anna Legreid D.: Thank you. It's so critical that you gave thought to the application of this across all institutional sizes, regardless of how many beds.

Arjun S.: Yeah. Absolutely, you know, and I think sometimes the smaller hospitals don't get served as fully in some of the things that we do. You know, most of the research and a lot of the guidance, the research is done in larger hospitals. Then the guidance that's based on that research is directed at larger hospitals. But we know that the reality is that the average hospital in the United States is a smaller, community-based hospital, and so guidance that's not relevant to those settings is not really relevant to the whole country.

Anna Legreid D.: Right. Well, this next question is for Melinda. What has the experience with the Core Elements been over the past five years?

Melinda N.: Thanks for that question. They have been extremely popular. The Core Elements and Companion Core Elements, Implementation Playbook, developed by, in partnership with National Quality Forum, have been downloaded more than 60 thousand times in more than 100 countries. We know the implementation of the core elements has grown. In 2014, 41% of hospitals reported that, self-reported, that they had all seven elements in place, and then in 2018, that has grown to 85%. And based on the discussion we were just having, the implementation gains have been especially impressive in these small hospitals, which was a critical gap of the Core Elements that was intended to address. In 2014, only about 20% of the critical access hospitals, so those are the smallest of the U.S. hospitals, had stewardship programs with all seven core elements, and by 2018, that increased threefold to 75%.

We also recognize that the field of stewardship has advanced a lot since 2014. There's been many published literature. [inaudible 00:07:31] published the Implementation Guidelines for Stewardship. There's been [inaudible 00:07:37] of best practices, and we've learned a lot. And so based on these new data and all these great suggestions, we decided to update the Core Elements, and we just released that during Antibiotic Awareness Week, which was in November 2019.

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Anna Legreid D.: We've often talked about how the Core Elements has been such a landmark resource available, and it really does show the benefit of having policy help advance practice and then have practice feedback and refine the policy, and having you explain the data that you've been watching and garnering over the last five years since your release of the first version has informed the re-release and the update here in the new version.

Well, now that you have shared the history and the impact of the Core Elements, can you explain what led to the revision efforts for the update that was released during the 2019 U.S. Antibiotic Awareness Week and explain the objective for the updated version?

Arjun S.: Yeah, I'd be happy to. There's a number of factors I think that led us to do an update of the Core Elements document at this moment in time, and one of them Melinda just touched on, and that is the growth of the field of antibiotic stewardship, and just one statistic that I think summarizes that really nicely, in 2014 if you look in PubMed, there were about 500 articles that were published on the topic of antibiotic stewardship, and last year, 2018, that number was over 1100, right? So a doubling in the volume of data that's being produced, the literature that's being produced, for antibiotic stewardship. Given that, we know that there's a lot more information and there's a lot more evidence based upon which to make recommendations, so that was something that we absolutely wanted to capture in the new update of the Core Elements.

The other big area that we wanted to reflect and highlight was the growth in the reporting of antibiotic use to CDC's National Healthcare Safety Network antibiotic use option. In 2014 when we issued the first version of the Core Elements, there were about 60 hospitals in the whole country that were submitting their data into the antibiotic use option. And so we really didn't yet have any experience with reporting and analyzing data and reporting out on the risk-adjusted benchmark measures of antibiotic use. In fact, that standardized antimicrobial administration ratio that is the benchmark measure of antibiotic use that we're using wasn't even developed quite yet in 2014.

Fast forward to today in 2019 where we are currently, and there are more than 1500 hospitals who have reported data into the antibiotic use option of NHSN,

and we now do have this pretty well-developed standardized antimicrobial administration ratio. It's been revised even and re-released in 2019. So we have a lot more experience with monitoring and benchmarking antibiotic use, and so we wanted to capture that as well in an update. And finally, you know, as you were alluding to, Anna, the Core Elements have become a foundational document for the development of relatively new accreditation standards for antibiotic stewardship programs. So both the joint commission and DNV GL now have accreditation standards for antibiotic stewardship programs in hospitals, and both of those accreditation standards really reflect and point to the Core Elements as a foundation of this standard, and then of course in September of 2019, the Center for Medicare and Medicaid Services issued a final rule of the conditions of participation for acute care and critical access hospitals, and that revised condition of participation now does require all hospitals, both acute care and critical access hospitals, all of them now must have an antibiotic stewardship program in order to be in compliance with the CMS conditions of participation, and again, the CMS conditions of participation point to these Core Elements as the kind of foundational guiding principles for how you would structure the stewardship program.

So we felt that given the importance of the Core Elements in this new kind of regulatory framework for antibiotic stewardship, it's really important that we took this opportunity to update them to make sure that they are as useful as possible.

Anna Legreid D.: That's great. Thank you. Melinda, let's talk about pharmacists a little bit. What are some of the key messages and updates that you feel pharmacists practicing in acute care settings should know about the updated Core Elements?

Melinda N.: Yes. So pharmacists [inaudible 00:12:24], we know we're central to the success of stewardship programs in the U.S. Through the NHSN hospital survey that has been connected since 2014 specifically for stewardship questions, we know in 2018, 59% of hospitals reported that they had a pharmacist as a co leader of the program, as well as 26% had a program that was only led by a pharmacist. You can see hear that pharmacists really have a major role in being a leader, a co leader of the stewardship program. And then we also know that the majority of the day-to-day activities of frontline worker

stewardship is also done by pharmacists, and we really try to reflect this in the updated Core Elements, specifically for the accountability, the second Core Elements, the updated accountability. We emphasize the co leadership with a physician and pharmacist, and now the accountability Core Elements states, "to appoint a leader or co leaders such as a physician and pharmacist responsible for the program management and the outcomes." And then we also changed the third Core Elements, which was previously drug expertise, and we changed that wording to pharmacy expertise to really empower and engage all pharmacists to be involved in stewardship. And so I think when everyone reads the updated Core Elements, you're going to see more messaging of all pharmacists getting involved in stewardship.

Anna Legreid D.: Thank you. That is great, to see that enhanced leadership and accountability spelled out within the revised version. So clearly it's exciting to see that that expanded content is there, but what are some other key changes that you feel people that are listening should know about? And this question is directed to both of you.

Arjun S.: Yeah. I'll start. A couple that I want to highlight, one is the first one, the leadership commitment, and I think the concept of the key need for leadership support was there in the first version, the original version of the Core Elements, and it continues to be fundamentally important for antibiotic stewardship programs, and we have in the 2019 revision really tried to emphasize and reemphasize the importance of hospital leadership getting the resources allocated for the antibiotic stewardship program. And, you know, this includes both making sure that the leaders of the program have the dedicated time that they need in order to run the program, and it's also making sure that there is support from other parts of the hospital that need to be engaged, for example, in microbiology, in information technology, that those other critical partners for antibiotic stewardship are also helping the stewardship program, allocating resources that might be necessary so that there is great collaboration in the stewardship program is really well supported across the board. We've actually said that one good way to do this is to make sure that there's a champion on the senior executive team of the hospital, so the Chief Executive Officer or the Chief Medical Officer of Chief Financial Officer, but one of those C-suite folks serves as a champion for the stewardship program and meets with the leaders of the

program regularly to understand what their needs are, what resources are necessary, and then really plays an active role in helping make sure that they have those resources available.

The other area that we emphasized is the need for leadership to help make outreach and engagement with bedside nurses, so engaging that Chief Nursing Officer and senior nursing leadership to understand where there might be opportunities to improve the engagement of bedside nurses in antibiotic stewardship in hospitals, and this is again something that's evolved over the last five years. You know, initially bedside nurses were not emphasized and we didn't do a lot to engage them in antibiotic stewardship efforts, and I think that was a major mistake. We know that nurses are incredibly important partners in quality improvement, and they administer every dose of antibiotics that's given in an acute care hospital. So we think that there are a number of different roles that nurses can play in helping us improve antibiotic use, and so we've really flagged that and emphasized the need to engage nursing leadership.

And the other section that I'll say a little bit about, and then would love to turn it over to Melinda to say more, but this is the action section, and this section has undergone a lot of revision. There's a lot of new evidence and new recommendations that have been made in the action section, and I think the big change that I would cover is this outlining of some priority actions for implementation. We know that there are two key interventions that are really the best established and most evidence-based interventions for hospital antibiotic stewardship programs, and those are prospective audit and feedback, and that refers to the practice of the stewardship program reviewing courses of therapy and then giving feedback to providers on how they could improve the antibiotics that the patient is on or even making a suggestion that the antibiotics might need to be stopped. The other intervention that we flag as a priority intervention is called preauthorization, and that refers to the practice of having prescribers get permission from an approver, either the stewardship program or someone who's trained to make these approvals, before an antibiotic can be used, and we highlight both of those because they are now flagged in implementation guidelines as the most important interventions for stewardship programs to implement, and so we have pulled those two out as the priority items for action in the 2019 revision of the Core Elements, and we did also add a third priority for

implementation in the action section, and that's the development of hospital specific treatment guidelines, and the reason we chose to flag that as a priority intervention is that we know that those guidelines are so fundamentally important for the effectiveness of both prospective audit and feedback and preauthorization, because both of those interventions can be measured against the guidelines. You can use your treatment guidelines to make decisions about what can be approved and what shouldn't be approved for empiric use of antibiotics. You can also use those guidelines when you're doing those follow-ups with prospective audit and feedback to say, you know, "Hey, you're prescribing therapy for pneumonia that's not in keeping with our treatment guidelines, and so can we change that therapy so that it is in accordance with our guidelines?" And so that's some of the major changes that came about in the action section, and let me turn it over to Melinda to talk a little bit more about some of the other changes that you'll see in this action section in the Core Elements in 2019. Melinda?

Melinda N.: The action section also highlights the effectiveness of focusing stewardship interventions on three infections, community-acquired pneumonia, urinary tract infection, and skin and soft tissue infection. These three infections account for more than half of all the antibiotics used in hospitals, and we know that there are important stewardship opportunities in all three of these infections, one of which is focusing on improving the duration of antibiotic therapy, especially at discharge. And this is another area where pharmacy engagement is proving to be especially powerful. We funded through a broad agency agreement Henry Ford Healthcare System last year, and the project was a pharmacy-led discharge stewardship, and their materials should be posted relatively soon on their website, and we will have a link to their website on our main implementation resources.

And we just actually updated the main implementation resources, so if you haven't seen that, definitely when you're looking at the Core Elements also look at our updated website, because we have links internal and external to many of the Core Elements for additional resources, and going back to Arjun's discussion on the nursing implementation, we also have an external link to John Hopkins, and they also were funded through a broad agency agreement on bedside

nursing stewardship interventions, and their material is posted on a John Hopkins website.

Another important update to highlight is the emphasis of reporting into NHSN, National Healthcare Safety Network, antimicrobial use option. Arjun already talked about the increasing submission to the AU option, and I just wanted to highlight that hospitals are really able to use the AU option to guide and track stewardship interventions, and for those listeners that may not be as familiar with the AU option, we also have a link on our website to the module. There's lots of training materials, as well as we launched what we call the AU case examples, and these are four real world experiences from hospitals that have either used the AU or the risk adjustment benchmark to really identify and then track their interventions. And I really like these case examples, because they go from the beginning of analyzing their data and then speaking with the key stakeholders and the approval process and their baseline data, as well as tracking the intervention over time.

Anna Legreid D.: Thank you for this great explanation, both of you. You've provided really important outline for a framework that clearly can drive change, starting with the importance of leadership, the importance of interprofessional collaboration, and then the key point of driving action, helping with those steps of implementation for people that maybe don't know what immediate next steps to take, and as you said, Melinda, those case examples really help show those real world examples to share toward others, so they're seeking to try to do the same thing.

Well, if we change gears just a little bit, you've been very busy for the last number of months, but in addition to working on revising the Core Elements, the CDC also recently released six informational posters related to optimal antimicrobial use as it relates to pharmacists. So there was posters that are aimed at pharmacists to optimize antimicrobial use, and ASHP was proud to partner with the CDC and the Society of Infectious Disease Pharmacists to co-brand the posters, and those posters are five ways hospital pharmacists can be antibiotics aware, verifying penicillin allergy, avoiding duplicate of anaerobic coverage, reassessing antibiotic therapy, avoiding asymptomatic bacteria, and using the

shortest effective antibiotic duration. Melinda, can you give some insight into the creation of the posters and the application that you've envisioned for them.

Melinda N.: Absolutely. To my knowledge, these are the first resources dedicated to pharmacists for improving antibiotic use, and what's neat about it is for all hospital pharmacists to be involved in antibiotic stewardship, not just the ID-trained pharmacist or the lead stewardship pharmacist, but pharmacists involved in many different aspects of patient care, such as reviewing pharmacy orders or rounding on internal medicines team or being involved in discharge prescriptions. And the posters are very actionable, with concrete examples that pharmacists commonly encounter in the hospital setting. For example, the first one, verify penicillin allergy, highlights that pharmacists can ask questions to evaluate a patient is truly penicillin-allergic, and this could be the pharmacist directly asking the questions or working with the nurse or the physician to understand really more details than maybe what is just in the electronic health record.

And then they can also review the electronic health record for previous prescription history. We know that a patient may say they're allergic to penicillin, but not realize that they've been, received other beta lactams. And then depending on the findings, then you can discuss this with the ordering provider to see if there's a more appropriate antibiotic. There's really so many different potential applications of these posters, and it's really up to the creativity of the pharmacist at that site and the needs of the facility. Anna, have you heard of any uses of these posters, or how has ASHP been promoting this? And we were really excited to be able to co-brand both with ASHP and SIDP.

Anna Legreid D.: Right, that was exciting, and we communicated them with numbers last week pretty extensively over all of our social media channels and our communication newsletters, and I'll put a call out to those that are listening to please share back, share what you plan to do or what you have done with the posters, so that we can better understand how they're being used to amplify the methods. As you said, it's important to not only bolster efforts to implement and enhance antibiotic, antimicrobial stewardship programs, but also just to raise core competencies across the profession overall to improve antibiotic and antimicrobial use, so. For those listening, we'll put a challenge out there to please

share back, whether it's through our Connect forum or through Twitter. We'll be watching for some of those examples.

Melinda N.: That sounds great.

Anna Legreid D.: Well, we have one more question to sort of wrap things up, and it's directed back to Arjun. We're looking forward to having you at our mid-year clinical meeting, and that meeting we're going to be honoring you with the ASHP Board of Directors Award of Honor, which recognizes individuals outside of the pharmacy discipline who have made extraordinary national or worldwide contributions to the health field. And this year, you were selected to be recognized for this award because of being a national recognized citizen leader, patient advocate, and research scientist, and for being a champion of improving antibiotic prescribing and involving pharmacists on those inter-professional efforts within antimicrobial stewardship programs. So, congratulations on that honor and thank you for all your contributions. My question for you is, as you think about the Core Elements, what would you define success with the release of the revisions?

Arjun S.: Well, thank you, Anna, and I just want to thank ASHP so much for this award. It is such an amazing honor. I was really just blown away by it, and I think it's just a reflection of the tremendous collaboration that CDC and ASHP have had over the last several years, many years, really, in working collaboratively to improve the use of antibiotics. And, you know, we all recognize that this doesn't' happen without pharmacists being front and center in this effort, and you guys have been really so critical in helping us understand the best ways to engage the large pharmacy community through your incredible member network. And so I'm going to be so honored to accept that award, but recognize that it's not just me. There are so many people who were involved, and it really is I think the award most accurately reflects the incredible relationship between CDC and ASHP.

And, you know, for me, success, you know, I love the theme for this year's mid-year. It's bigger and brighter, and I would have said that if we have a bigger role for pharmacists in antibiotic stewardship, that the future of patient safety is brighter, and that's really how I would classify the Core Elements and our efforts

in antibiotic stewardship. Fundamentally, this is all about helping us take better care of patients every time we have somebody in the hospital, every time we need to use antibiotics, and the more input that we have from pharmacists and the more guidance that pharmacists can provide in ways that we can improve antibiotic use, the better we'll do at delivering care and the safer all of our patients will be.

Anna Legreid D.: Thank you, Arjun. That is a very impactful point to end on. So at this time I'll thank Arjun and Melinda so much for joining us today to discuss on this Therapeutic Thursday. We enjoyed learning more about the revised CDC Core Elements of Hospital Antibiotic Stewardship Programs, and on the antimicrobial antibiotic posters. Join us here every Thursday where we will be talking with ASHP member contact matter experts on a variety of clinical topics.

Speaker 1: Thank you for listening to ASHP Official, the voice of pharmacists advancing healthcare. Be sure to visit ASHP.org/podcast to discover more great episodes, access show notes, and download the episode transcript. If you loved the episode and want to hear more, be sure to subscribe, rate, or leave a review. Join us next time on ASHP Official.