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Concise Communication

Finding the path of least resistance: Locally adapting the MITIGATE toolkit in emergency departments and urgent care centers

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Abstract

The MITIGATE toolkit was developed to assist urgent care and emergency departments in the development of antimicrobial stewardship programs. At the University of Washington, we adopted the MITIGATE toolkit in 10 urgent care centers, 9 primary care clinics, and 1 emergency department. We encountered and overcame challenges: a complex data build, choosing feasible outcomes to measure, issues with accurate coding, and maintaining positive stewardship relationships. Herein, we discuss solutions to challenges we encountered to provide guidance for those considering using this toolkit.

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Outpatient antimicrobial stewardship is needed because most unnecessary antibiotics are prescribed in urgent care, emergency departments (EDs), and primary care settings.[1,2] In the state of Washington, an estimated 40% of all antibiotics are prescribed unnecessarily.[3] The Multifaceted Intervention to Improve Prescribing for Acute Respiratory Infection for Adult and Children in Emergency Department and Urgent Care Settings (MITIGATE) toolkit, published by May et al,[4] aims to reduce inappropriate antibiotic prescribing for viral respiratory tract infections (RTIs) in outpatient settings, focusing on EDs and urgent care clinics. The toolkit guides institutions through 6 evidence-based interventions: (1) identifying a program champion, (2) providing patient education, (3) providing prescriber education, (4) posting public commitments to reduce unnecessary antibiotic prescribing, (5) providing specific antibiotic prescribing feedback to departments and (6) comparing clinicians to their peers to reduce unnecessary antibiotic prescribing.[4] We commend this clear and direct stewardship resource that focuses on viral RTIs, the most common diagnosis leading to unnecessary prescribing.[5] At the University of Washington health system, we began tracking antibiotic prescribing among patients with coughs among 5 urgent care clinics in 2014. In 2017, we partnered with Qualis, as part of the Centers for Medicare and Medicaid services to broaden antibiotic prescribing tracking and trends with criteria developed by the Washington State Choosing Wisely Task Force.[6] In 2019, we expanded our efforts and implemented the MITIGATE toolkit, first as a pilot program in 6 urgent cares clinics, then we extended it to 4 more urgent care clinics, 1 ED, and 9 primary care clinics. Herein, we describe 4 key challenges and our solutions, which may be beneficial to other institutions in the process of initiating outpatient antimicrobial stewardship (Fig. 1).

Challenge 1: Collecting and reporting complex data

To identify patients, the MITIGATE toolkit utilizes 214 diagnosis codes from the *International Classification of Disease, Tenth Revision* (ICD-10). This is a unique aspect of this toolkit compared to other tracking tools, because diagnoses for which antibiotics are always inappropriate are clearly identified, and confounders like comorbidities and other antibiotic appropriate conditions are specifically excluded. Coding the data this way allows a clear goal prescribing rate of zero rather than a shifting goal that accounts for diagnoses and patients in which antibiotics are sometimes appropriate. There are 24 inclusion codes for viral RTIs and 190 exclusion codes. The list of exclusion codes includes both antibiotic-appropriate RTIs as well as antibiotic-appropriate concomitant non-RTIs, such as urinary tract infection which obscure appropriateness of antibiotic therapy. Our first challenge was validating the accuracy of the baseline dataset. Overall, 214 diagnosis codes underestimated the full scope of the data since many ICD-10 codes are stems with multiple subdiagnoses. Among the clinics from which we already had a report using diagnostic codes from Choosing Wisely, modifying these reports to comply with the MITIGATE criteria took ~4 weeks including validation. Among

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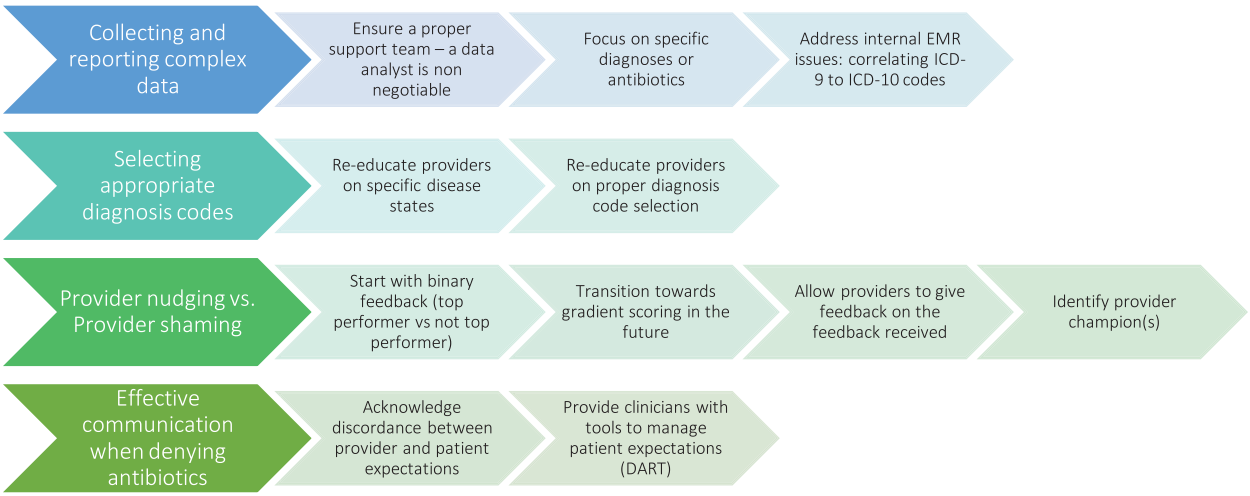

Fig. 1. MITIGATE toolkit challenges and solutions.

the centers with no prior reporting infrastructure for antibiotic prescribing and RTIs, the process took 8 months, despite having a dedicated data scientist. Challenges included duplication of patients, misidentification of inclusion and exclusion codes, and incorrect association of an antibiotic prescription with its corresponding visit diagnosis. We faced additional technical challenges related to the current use of multiple systems during the transition to a single centralized electronic medical record (EMR). ICD-10 is the language of the MITIGATE toolkit, and although we use ICD-10 codes for billing, our historical data are stored in a warehouse system using ICD-9 as the standard. For any other system with this type of historical archive, it is important to realize that ICD-9 codes do not directly translate into ICD-10 codes; they need to be carefully validated. Technical support for coding a complex data set is essential, and resources should be explored prior to beginning stewardship interventions of this scale, including an evaluation of existing resources that may be available to support such a project. This is a rate-limiting step to implementing the MITIGATE toolkit. Institutions with less robust data analytic support can prioritize the 4 other components of the toolkit and can consider tailoring the inclusion of select indications or antibiotics such as focusing on one specific disease state (eg, bronchitis) or a specific antibiotic (eg, azithromycin) as a starting point. Building a report targeting 1 or 2 key diagnoses will allow a more efficient implementation process. The remaining aspects of the report can be built later on, and, hopefully, with more resources after initial success is demonstrated. We consider robust technical support a worthy investment for any healthcare setting due to the growing needs and requirements of data tracking and reporting set by the CDC core elements of outpatient stewardship.

Challenge 2: Accurate charting in the EMR

A key strength of the MITIGATE toolkit is its use of objective diagnosis codes to define necessary and unnecessary antibiotic use. Once the database is built, individual chart review is not required for intervention. A reliable program hinges on accurate data entry at the point of care. Unfortunately, this is not always the case. We found several occurrences of both nonspecific and inaccurate diagnosis selection by providers. For example, a number of providers conflated various presentations of acute otitis media as one diagnosis. Suppurative otitis media is considered an appropriate indication for antibiotics while nonsuppurative otitis media, otitis media with effusion, and serious otitis media are considered antibiotic-inappropriate diagnoses. This issue identified within the data created an opportunity for targeted provider education to improve diagnosis and management of otitis media. Another provider coded all patients with a sore throat as having pharyngitis. Since pharyngitis is a potentially antibiotic-appropriate diagnosis, these patients were excluded from the monthly data pull for this provider. This reduced the total cases of antibiotic avoidance and prevented this provider from being a top performer. Ongoing reassessment of the data beyond measuring rate of inappropriate antibiotic prescribing made our overall outpatient ASP more robust because we provided more targeted education and tailored interventions individually.[4]

Challenge 3: Nudging versus shaming

A variety of quality improvement strategies such as general reminders, provider and patient education, and peer comparison data have shown a positive impact on changing provider behavior.[7–10] Meeker et al[8] conducted a randomized clinical trial demonstrating a 20% reduction in inappropriate prescribing through this type of provider nudging. Systematically evaluating the impact of the MITIGATE toolkit, Yadav et al[9] found less significant results, likely due to starting with a lower baseline of providers prescribing inappropriately. Cummings et al[10] also used the MITIGATE toolkit within rural urgent-care centers and demonstrated successful use of provider feedback and peer comparison. MITIGATE utilizes objective feedback on rates of inappropriate antibiotic use for viral RTIs in comparing the prescribing habits of providers to their peers. Prescribers are identified as "top performers" if they are in the top 10% relative to their cohort. The remaining 90% are identified as "not top performers." We found that providing constructive feedback while maintaining positive relationships is a delicate balance. In many of our urgent care clinics, the top 10% had an unnecessary antibiotic prescribing rate of 0%. Therefore, prescribers writing for only 1 unnecessary antibiotic course per month received feedback that they were "not top performers." Ambulatory providers, especially those in urgent care and the ED, are working quickly to see many patients, often without a prior relationship with that patient. This can result in a habit of erring on the side of caution and increased antibiotic utilization.

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When we tell these providers they are "not top performers" without context or education, it can convey the message of poor clinical judgement. The benefit of starting with binary feedback proposed by MITIGATE identifies providers who are consistently prescribing unnecessary antibiotics. Once binary feedback is implemented successfully, developing strategies to provide prescribers with more personalized feedback will help providers buy-in into a validated intervention. We found physician champions to be extremely valuable in these situations, especially if they also receive the same feedback e-mails. In addition, maintaining an open dialogue with providers who are interested in the peer comparison allowed us to optimize the intersection between data and education to tailor our antimicrobial stewardship tools and support. Incongruencies between the data and prescribers' perception or intention led us to change practice on a provider-by-provider basis. We eventually developed tailored benchmarking strategies that established a rate of acceptable inappropriate prescribing for RTIs. For our urgent care clinics, that rate was 1%. A benchmark can be institution specific or even clinic specific (eg, ED versus primary care). Regardless of the value, we echo the sentiments of the MITIGATE toolkit that the use of feedback is a tool to engage providers in understanding appropriate antibiotic prescribing.[4] The overarching message delivered should be educational and perceived as nonpunitive.

Challenge 4: Maintaining positive patient-provider relationships when denying antibiotics

The MITIGATE toolkit provides clear steps to avoid unnecessary antibiotics for viral RTIs, but resources on effective patient communication are needed. Many clinicians feel pressured to prescribe unnecessarily due to perceived expectations and concerns for patient satisfaction.[11–13] However, data evaluating trends in patient satisfaction have been mixed, suggesting a mismatch between patient and provider expectations.[11] As part of our prescribing education, we provided communication guidance using a validated method: the Dialogue Around Respiratory Illness Treatment (DART).[14] DART focuses on 4 evidence-based communication strategies to successfully manage patient expectations: reviewing physical findings, delivering a clear diagnosis, utilizing positive treatment recommendations, and providing a contingency plan. Utilizing effective communication strategies can ease discussion and improve quality of patient care without compromising stewardship efforts.

MITIGATE is an effective and adaptable tool to reduce unnecessary antibiotic prescribing.[9] In our implementation, inappropriate antibiotic prescribing decreased by nearly one-half, from 12% across urgent care, ED, and primary care in the preintervention period to 7% in the intervention period.[15] The principles outlined in this toolkit can be tailored to various outpatient settings outside emergency care and urgent care centers. Anticipating and addressing key challenges from the MITIGATE toolkit up front can facilitate successful and sustainable stewardship interventions. Focusing on the education elements of the toolkit and using a graded approach to building the data set makes this toolkit approachable for institutions without substantial IT resources. Ultimately, the pay-off of data-driven education and targeted intervention is highly impactful in a variety of ambulatory settings.

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