Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Brief Report

Standardizing Strep Throat Documentation in a Pediatric Outpatient Setting During COVID-19: A Quality Improvement Pilot Project

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A B S T R A C T

Clinicians' nonadherence to the 2012 Infectious Diseases Society of America's group A streptococcal (GAS) pharyngitis guidelines leads to unnecessary in-person clinic visits, unnecessary use of bacterial testing, and inappropriate antibiotic prescriptions. Quality improvement methodology was used during nurse telephone triage at an outpatient pediatric clinic to standardize nurse documentation to align with the GAS guidelines. This pilot project's standardization resulted in improved communication among clinicians and decreased unnecessary resource and antibiotic use despite encountering barriers related to COVID-19.

Introduction

Antibiotics are often overprescribed in pediatric outpatient settings, driving resistance patterns and making infections more difficult to treat.[1] The COVID-19 virus has made managing bacterial respiratory illnesses even more challenging due to overlapping symptoms.[2] This brief report discusses the implementation of a pilot project nurse telephone triage protocol, guided by the 2012 Infectious Diseases Society of America's (IDSA) group A streptococcal (GAS) pharyngitis guidelines, in a pediatric outpatient setting.[3]

Problem Description and Available Knowledge

Although only 15–20% of childhood pharyngitis episodes are due to GAS, children continue to receive antibiotics for viral pharyngitis.[3] Because some children are colonized with GAS and may have concomitant pharyngitis, testing a patient with viral pharyngitis may lead to unnecessary antibiotic treatment.[3] To help mitigate this possibility, the IDSA guidelines recommend using a diagnostic risk-based scoring tool, the Modified Centor Score (MCS), to determine when testing is necessary for patients with sore throat (Appendix A).[3,4]

The COVID-19 pandemic brought challenges for clinicians seeking to balance appropriate use of diagnostic testing with the imperative to positively identify COVID-19 cases. Although some symptoms, such as fever, headache, and sore throat, overlap between GAS and COVID-19, sore throat is relatively infrequent in children with COVID-19, present in fewer than half of patients.[2,5,6]

In addition to the potential problems associated with overuse of diagnostic testing, COVID-19 added significant barriers to obtaining acute illness care. One method for standardizing management is through telehealth services, such as telephone triage. A nurse's scope of practice includes telephone triage, which can be leveraged to decrease variability in GAS management.[7] Despite barriers to telehealth such as level of clinician experience and altered provider reimbursement, studies have found that telephone triage of sore throat results in safe, effective care.[8,9]

Finally, using quality improvement (QI) methodology to improve compliance with national guidelines has been shown to reduce inappropriate antibiotic prescriptions and healthcare costs.[10,11] Integrating the MCS into the electronic medical record (EMR) as a clinical decision support (CDS) tool has resulted in improved clinician confidence in managing GAS and decreased use of testing resources and antibiotics.[10,11] Implementing QI methods during telephone triage was identified as beneficial to the site in which this project took place, where there was previously no standardized process for telephone triage documentation when a patient or patient's family member called about a sore throat.

Specific Aims

The aim of this practice change was to implement a standardized method for documentation of GAS symptoms during telephone triage and achieve 100% adherence to this process within 5 months. QI strategies, including academic detailing, audit and feedback, and CDS tool integration, were implemented to improve quality of care.[12]

Methods

Context

This QI pilot project took place at 1 pediatric primary care clinic in eastern North Carolina from July to December 2021. Eligible patients included those aged 0 to 21 years who called the nurse

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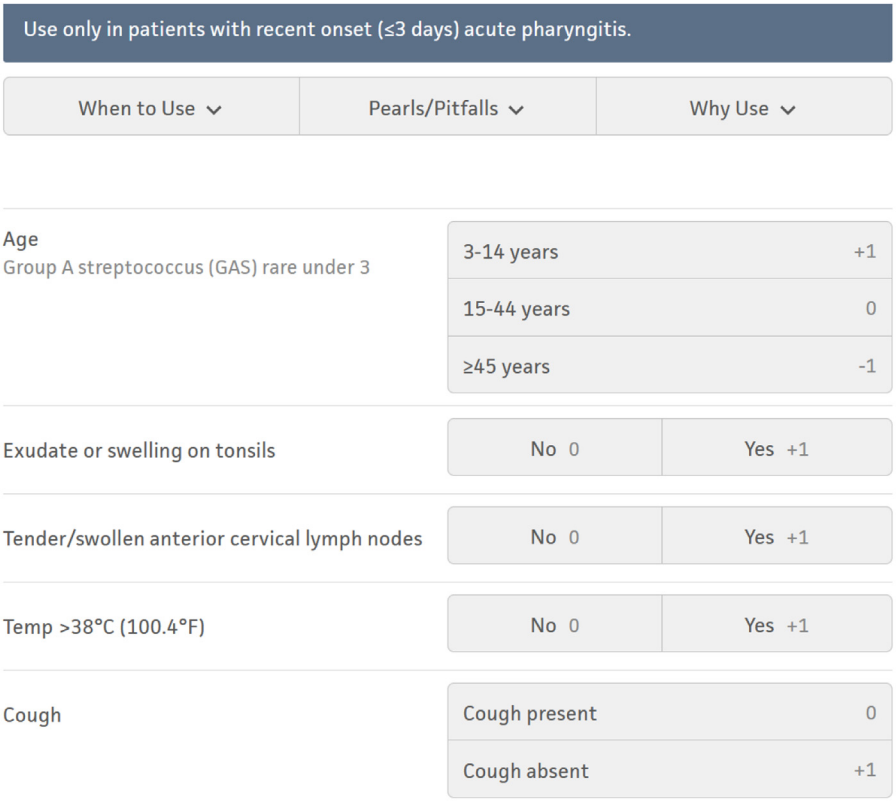
1555-4155/

Appendix A. Modified Centor Score



Source: MD Calc, 2022.[16]

triage line with a complaint of a sore throat. Patients were included in analysis if they had a telephone triage note for sore throat physically written in the triage book. The triage nurses received an average of 255 all-cause calls per month in 2021.

Interventions

The previous process for calls to telephone triage was for the nurse to write the chief complaint in a notebook and occasionally document a note in the EMR for that patient. This process was inconsistent and varied between nurses. Baseline data were collected by reviewing all notes written in the telephone triage book that mentioned "sore throat." Next, a standard work protocol (SWP), created following the Institute for Healthcare Improvement's Model for Improvement with Plan-Do-Study-Act (PDSA) cycles, was developed from the GAS guidelines and adapted to fit the clinic's workflow (Appendix B).[12] The SWP encouraged the telephone triage nurse to write a complaint of sore throat in the triage book as usual, then create a patient note in the EMR using the newly integrated CDS tool called a SmartPhrase." The SmartPhrase auto-populated the MCS, prompting the nurse to ask about each of the MCS symptoms, then produced a final score indicating whether GAS testing was necessary. Use of the SmartPhrase was audited once per week, and feedback was provided to nurses once per month.

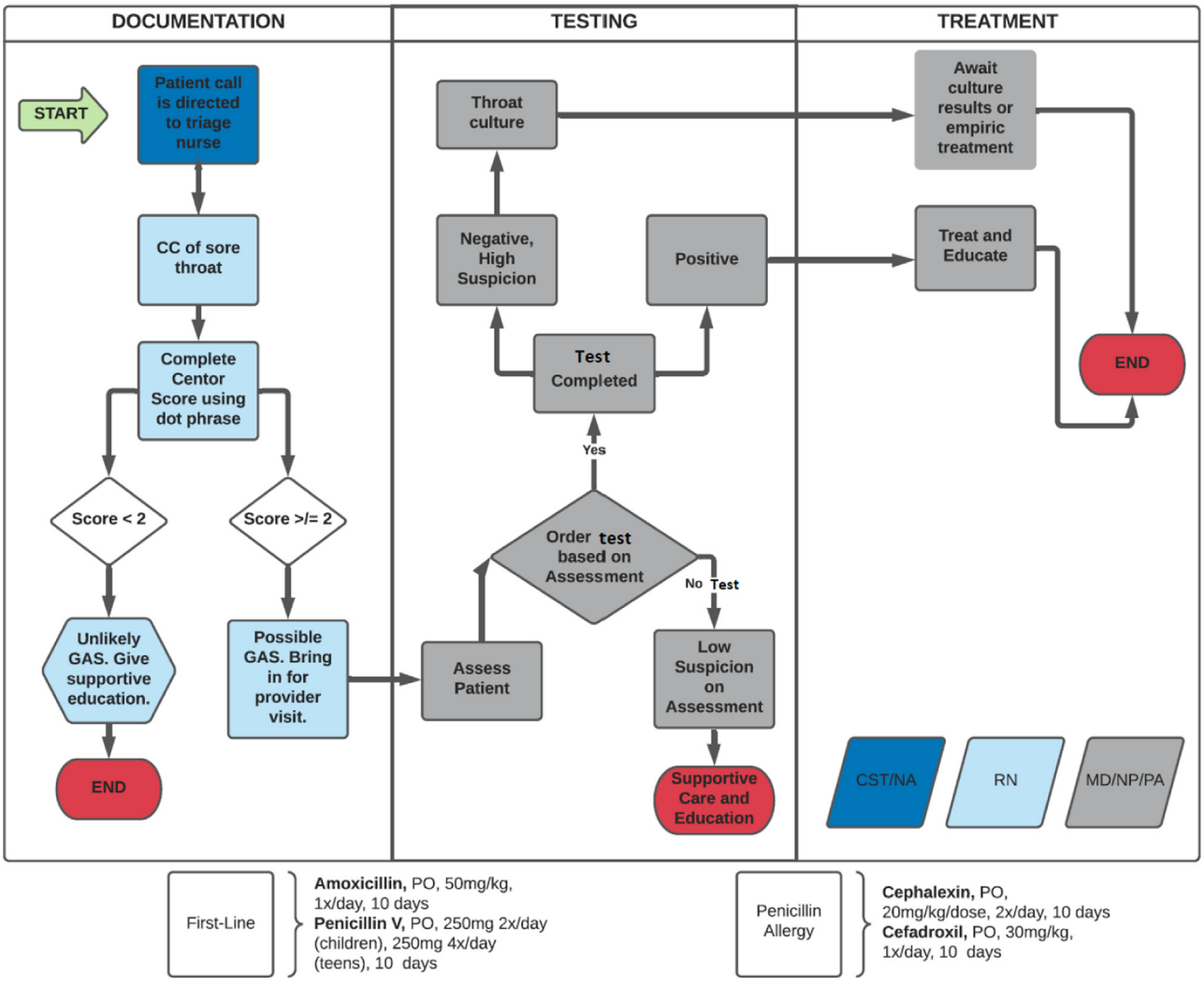
PDSA cycle 1 included academic detailing and an introduction to the SWP and SmartPhrase. Communication strategies about how to ask about each MCS symptom over the phone were discussed. During cycle 2, an educational handout about GAS and its presentation in children was distributed. In PDSA cycle 3, a literature update was presented discussing the decreased likelihood of sore throat being present with COVID-19 compared with GAS in children. It was stressed that although the low likelihood did not rule out a need for COVID-19 testing, the patient may need testing for a different illness, such as GAS, and the SmartPhrase should still be used. Additionally, a pulse-check survey was distributed to nurses requesting feedback about the project. Finally, in PDSA cycle 4, feedback from the pulse-check was integrated into the SmartPhrase. This included a comment for the nurses to schedule COVID-19 and/or GAS testing depending on patient symptoms, only after completing the SmartPhrase.

Study of Interventions

The physical triage notebook and the EMR were reviewed weekly. Two measures were 1) use of the SmartPhrase, defined as SmartPhrase documentation in the EMR when there was a complaint of sore throat written in the telephone triage book, and 2) correct scoring and guidance, defined as the correct add-up of the MCS SmartPhrase based on symptoms, and correct decision-making on whether to test based on the score. If the nurse wrote "sore throat" in the triage book and filed an EMR note using the SmartPhrase, that encounter was deemed 100% compliant. If both aspects were not completed, the encounter was not compliant. Measures of sore throat calls, use of the MCS SmartPhrase, use of testing, and use of antibiotics were analyzed using *t*-tests of proportions before and after intervention implementation (Table).

This QI project was deemed exempt by the University of North Carolina—Chapel Hill Institutional Review Board.

Appendix B. Standard Work Protocol



CC = chief complaint; CST = clinical support tech; GAS = group A streptococcal; NA = nursing assistant; NP = nurse practitioner; MD = medical doctor; PA = physician assistant; PO = by mouth; RN = registered nurse.

Results

In the baseline data collection period (January–June 2021) and the implementation period (July–December 2021), 10 patients called telephone triage with a complaint of sore throat (Table). The SmartPhrase was used 5 times throughout the implementation period. Each time the SmartPhrase was used, it was scored correctly, and follow-up instructions were given appropriately. There was no inappropriate testing or antibiotic prescriptions in either pre- or post-data. Pulse-check responses indicated that the nurses felt the SmartPhrase was or would be useful for triage.

Discussion

After implementation, the SmartPhrase was used 50% of the time, and each time it was used, it was used correctly. This means that the clinicians added up the Centor score correctly, tested only when appropriate, and prescribed antibiotics only when testing indicated. Although our aim of 100% use of documentation was not achieved and antibiotic and resource use remained unchanged at this setting, it is important to note the pilot project's clinical significance and future implications. Often, QI DNP initiatives do not have the time or data quantity to produce statistically significant results, but rather they show clinical significance by supporting best evidence and making a significant impact on patient health.[13] These data, produced in this small-scale initiative, suggest that there was a positive impact, for both patients and clinicians, of standardizing documentation in

Table
Data Results

	Pre-Implementation	Post-Implementation
Total "sore throat" calls	10 (n = 10)	10 (n = 10)
"Sore throat" in triage book	90% (n = 9)	80% (n = 8)
Smartphrase in EPIC	0% (n = 0)	50% (n = 5)
Correct MCS follow-up	0% (n = 0)	100% (n = 5)
Appropriate testing	100% (n = 10)	100% (n = 10)
Appropriate antibiotics	100% (n = 10)	100% (n = 10)

accordance with national guidelines and of the absence of any unnecessary testing or antibiotic prescriptions. This pilot project also improved the clinic's communication processes. Before implementation, there was no method for the triage nurse to communicate to the provider that patient symptoms had already been assessed. With this new tool, providers can see the triage nurse has already assessed important bacterial factors before appointments or testing and can feel confident that patients are receiving enhanced, collaborative care. Although this intervention did not have enough data to have a statistical impact on the use of GAS testing or antibiotic use, the process of documentation standardization, along with its ease of integration and use by nurses despite being implemented amid COVID-19, provided improved care delivery for patients with sore throat complaints and allowed clinicians at this site to realize the potential for future standardization of similar common pediatric complaints.

Interpretation

Similar clinically significant results have been found in recent studies. A nurse-focused QI initiative used a CDS tool to determine whether urine cultures were necessary and resulted in a significant decrease in urine culture collections. Nurses demonstrated improved decision-making skills after utilizing a new telephone triage toolkit for children with cancer.[14] In another QI study, the EMR was similarly used to create an order set for GAS; providers were educated on guidelines, and as a result, use of first-line antibiotics increased significantly in the intervention group.[15]

We successfully implemented the MCS using only telephone triage to identify pediatric patients with pharyngitis who may or may not require GAS testing. This process can be used to reduce unnecessary clinic visits and GAS testing and improve communication steps, which would likely result in more cost-effective care with fewer unnecessary antibiotic prescriptions. Similar processes that could reliably identify patients who are unlikely to benefit from a clinic visit, testing, and/or antibiotic therapy should be implemented for other infectious syndromes. A suite of such initiatives would reduce low-value care; if combined with robust telehealth services, this approach could improve access to care by eliminating the need for travel to unnecessary clinic appointments while preserving clinics' financial feasibility.

Limitations

There were a few important limitations to this initiative. The initiative took place in 1 outpatient pediatric setting with different barriers and access to resources compared with other settings. Additionally, the number of patient calls with sore throat was low, likely impacted by pandemic-related measures such as school closures, masking, and the decline in incidence of infections such as GAS. With these small numbers, it was difficult to connect PDSA cycles with specific outcomes.

Conclusions

This pilot project revealed that a short, low-cost intervention can be implemented efficiently and effectively with the result of streamlined documentation; improved nurse–provider communication; and responsible time, resource, and antibiotic use. As a result, similar initiatives can be successful amid a global pandemic with ever-changing policies and algorithms as well as outside of pandemic restrictions when policies become relatively more stable.

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