Implementation of Nurse Driven Clinical Decision Support to Improve Primary Care Management of Sore Throat

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Problem:

- Up to 50% of antibiotic prescriptions for acute respiratory infections (ARIs) are inappropriate contributing to antibiotic resistance
- Underutilization of clinical prediction rules and poor uptake of provider-oriented clinical decision support (CDS) has contributed to antibiotic overuse for sore throat.

Objectives:

1. Adapt a CDS designed for physicians for use by Registered Nurses (RNs) to evaluate and treat patients with sore throat.
2. Demonstrate the feasibility of using the CDS during RN visits to evaluate and treat patients with sore throat.

Intervention:

Workflow: (Figure 1)
- Telephone triage protocol to determine if appropriate for nurse visit.
- Chief complaint of sore throat triggers alert directing RN to a risk calculator using Centor strep throat criteria. (Figure 2)
- Risk calculator directs RNs to orderset based on risk level
  1. Low risk - patient education only
  2. Intermediate risk - strep testing
  3. High risk – antibiotics or testing (Figure 3)
- RNs could transition to provider visit if uncomfortable evaluating a patient.

RN training:
- 10min online training on sore throat evaluation.
- 45min in-person training on physical examination and CDS use.

Figure 1. RN Sore Throat Triage and Visit Workflow

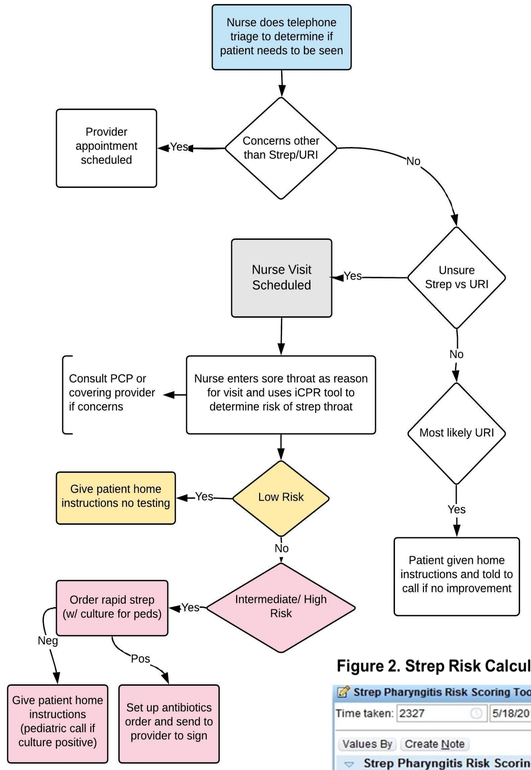
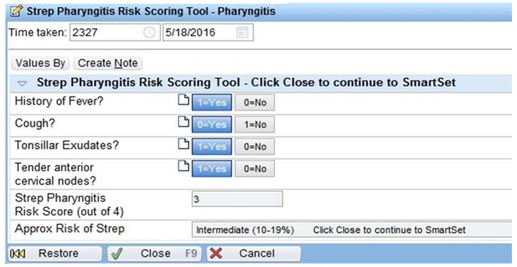


Figure 2. Strep Risk Calculator



Methods

Study Design:
12-week, mixed methods, pilot study to assess the feasibility of patient evaluation and management during an RN-only visit with assistance from the CDS tool.

Participants:
- 4 RNs at a family medicine clinic in a Midwest academic healthcare system
- RNs had 2 to 24 years of experience

Outcomes:
- Electronic health record data
  - Number of phone triage calls and nurse visits
  - CDS use
  - Antibiotic and test ordering per CDS recommendations
- Self-administered survey
  - RN self-efficacy pre- and 8 weeks post-training
- Themes from semi-structured face-to-face interviews

Findings:

- 162 patient triage calls for sore throat (Figure 3)
- 115 (71%) resulted in nurse visit or no clinic visit
- RNs completed risk calculator 99% (76/77) of visits.
- 2 RN-only visits (<3%) converted to provider visit due to patient complexity.
- RNs followed recommendations in all cases except ordering antibiotics in 1 high-risk patient with a negative rapid strep.
- RN confidence in their ability to evaluate and treat a patient with sore throat was high at baseline and increased 8 weeks after implementation. (Figure 4)

Figure 3. Type of visit

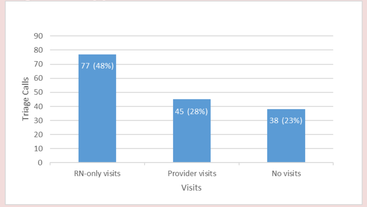
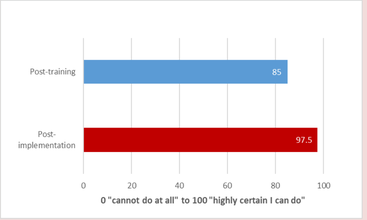


Figure 4. RN confidence in evaluation and treatment



RN Interview Themes

Tool Characteristics		
Simple and easy to understand	"Everything, honestly, you know. It's, just like everything is blown in. I don't have to think about which medication, and it's clear, you know…"	"I think everything is really clearly stated in the smart set."
Impacted practice	"…it saves office visits. [and] It saves unnecessary swabbing of kids and adults…"	"It allows you to do the hands-on assessment"
Use for patient education	"Well, I always use it when I'm justifying why not swabbing"	"I think it's helpful for them to see, especially for non-swabbing, for them to see the rationale behind it. So, yeah, I definitely use it."

RN Impact		
Confidence	"I really like using the tool. I felt like it gave me the confidence, kind of stepped me through the process in a really clear, concise fashion"	"I have a better sense of assessing for strep throat"
Satisfaction & Fulfillment	"it's so satisfying for the RNs. They feel like they're using their skills and being able to help out and that means a lot…"	"It allows us to work out to our nursing practice. There's no reason we can't prescribe the antibiotics and do the assessments, so it should be continued."
Increase patient interaction	"I like it because I feel like I have more interaction with the patients rather than just having them come in, swab them, and having them leave."	"It gets you out, from out in front of that computer and lets you have a little more contact, which is nice."

Patient Impact		
Increase health literacy	"…I think it really helped being able to show them the risk score…"	"I tell them like the percentage of their risk, like whether they're low or high or medium in the percentage. I think they find that interesting."
Reduce unnecessary provider visits	"They [patient] can get in with a nurse a lot quicker in the timeframe that they want rather than waiting for a physician to come in and be seen."	"I think they [patient] appreciate it. Because nobody wants to come to the doctor unnecessarily…"
Appreciation/ Satisfaction	"It just seems like they really appreciate it, and it seems to be going really well."	"I think it would be a good thing to continue. I think our patients like it, so I think it's good for patient satisfaction."

Key Lessons:

- RNs were able to appropriately triage sore throat patients.
- RNs used the CDS consistently and appropriately treated patients.
- RNs were confident in their ability to evaluate and treat patients.
- Using the tool improved RN satisfaction.
- RNs felt the tool decreased provider clinic visits and over-testing while also improving patient satisfaction.
- Implementation of an RN-driven CDS tool shows promise to reduce inappropriate antibiotic prescribing and represents a potential model for expanding RN practice using CDS.

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