Summary:
33 nurse initiated protocols (NIP) have been developed since 2001. These NIPs provide guidance to non-physician providers for initiating interventions prior to a patient being seen by a physician.

Category:
- A: Arrival
- C: Clinician Initial Evaluation & Throughput

Key Words:
- Sepsis
- Triage
- Pediatric
- Medication
- Diagnostic Testing

Tools Provided:
- N/A

Clinical Areas Affected:
- Emergency Department
- Inpatient Units

Hospital: Children's Healthcare of Atlanta
Location: Egleston and Scottish Rite campus
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Hospital Metrics:
- Annual ED Volume: 154,000
- Hospital Beds: 520
- Ownership: Not-For-Profit
- Trauma Level: Egleston, 1, Scottish Rite, 2
- Teaching Status: Yes

Staff Involved:
- Administrators
- ED Staff
- IT Staff
- Nurses
- Pharmacists
- Physicians
- Technicians
Innovation
Our primary objective for nurse-initiated protocols is to improve timeliness of care, with a strong emphasis on our high-risk populations’ time to administration of analgesic medication for SCD pain and antibiotic for SCD fever and immune-compromised oncology patients with fever. Nurse-initiated protocols at our center are an innovative example of collaboration between physicians and nursing staff to bring evidence based approaches in patient care to a new horizon.

Many children's hospitals across the country rely on evidence based pathways to standardize the care for a variety of clinical conditions. Most pathway recommendations are initiated when a physician orders a test or intervention - this can create inadvertent delays. For conditions where pathway recommendations can be broadly applied to most patients with that condition, an opportunity exists to initiate such recommendations even before a physician sees the patient.

At Children's Healthcare of Atlanta's 2 tertiary EDs with a combined annual census of over 150,000 patients, 33 nurse initiated protocols (NIP) have been developed since 2001. These NIPs provide guidance to non-physician providers for initiating interventions prior to a patient being seen by a physician. Developed with multidisciplinary collaboration between physicians, nurses and other providers, NIPs undergo a rigorous process of approval as well periodic review and update by medical and nursing leadership.

Innovation Implementation
Nurse-initiated protocols are researched and developed by our shared governance Clinical Practice council. This council is comprised of Emergency Medical Directors, is to research national best practice and current evidence that supports prompt delivery of care for patients presenting to our emergency department.

While waiting to be seen by a physician, NIPs allow care for specific patients to be expedited by non-physician providers following strict protocols pre-approved by physician leadership. All 3 NIPs we report show reduction in time to intervention for patients in whom NIP was utilized. Increasing ED volumes and wait times are an ongoing national healthcare problem. NIPs improve timeliness and positively impact quality of care for these high-risk patients by adapting evidence-based approaches for use by non-physician providers. This unique strategy is a targeted application of Georgia's Nurse Practice Act which allows all registered nurses (not just advanced practice nurses) to perform certain delegated interventions under the direction of physicians.

Since these protocols are initiated by nurses upon patient arrival, prior to a physician seeing the patient, we review medical records of all patients in whom NIP was initiated. We assess for appropriateness of NIP use (based on inclusion and exclusion criteria), completeness of NIP use (so a nurse does not selectively apply the NIP). Regular un-blinded feedback is provided to individual nursing staff when an NIP is inappropriately applied; group data is shared with hospital leadership on a monthly basis via a monthly quality score card.

Timeline
It did not take us long to implement these protocols once approved through our Clinical Practice council. Once the protocols were approved we then began extensive staff and physician education via monthly staff meetings, daily shift huddles, weekly newsletters and educational emails. It took approximately 2 weeks for our IT department to build, test and validate the order sets that supported the protocols. Our focus over the past year has been to streamline processes that would further support the utilization of these protocols. Such as the development of a protected assessment nurse role, standardization of medications, development of a quality score card and un-blinded results for nurses who did not meet the door to drug goal of 60 minutes.

Results
SCD and Pain: Administration of analgesic medication to patients with SCD presenting with pain was one of earliest NIPs in 2003.
Door-to-analgesic time of 113 min prior to NIP initiation was significantly higher than our goal of 60 min; this decreased to 91 min in 2004 and further to 30 min when analgesic medication was changed to acetaminophen and codeine.

The analgesic was later replaced with acetaminophen and hydrocodone in 2007. Door to analgesia times remained stable despite a major ED renovation from 2007-08 and heavy volume influx caused by the H1N1 pandemic in 2009.

In late 2009, a simple QI initiative to rapidly flag patients with any high risk condition was implemented. This allowed nursing staff to very quickly identify NIP-eligible patients and get protocols started, well before a physician saw the patient, resulting in further improvement in door-to-drug time. During the entire time, nursing staff were receiving education on NIPs to initiate them consistently.

In 2010, nursing staff decided to post un-blinded results for those not meeting the goals- this resulted in further reduction in door-to-analgesic times.

In 2011, the entire ED got a new EMR, but door-to-analgesic times were maintained. Fig 1 shows the impact on timeliness of analgesic administration in patients with SCD and pain. Door-to-drug times improved from 113 min at baseline in 2003 to 29 min in 2012 (reduction of 84 min or 74%). This has been sustained since 2005 at well below our goal of 60 minutes. SCD and Fever: Door-to-antibiotic times decreased from 103 min at baseline in 2003 to 59 min in 2005 when the NIP was first initiated.

In 2007, hematologists decided to add urinalysis as a routine test and between 2007-2008, the EDs underwent a major renovation; this likely negatively impacted many processes. In 2009, a simple QI initiative to rapidly flag patients with any high risk condition allowed nursing staff to very quickly identify NIP-eligible patients and get protocols started. This resulted in improvement in door-to-drug times. In 2010, un-blinded posting of names of nurses who were not meeting door-to-drug goals may have resulted in further reduction in door-to-drug times. Door-to-antibiotic times have shown continuous improvement since 2008 despite the H1N1 pandemic and a new EMR system. Fig 2 shows the impact on timeliness of antibiotic administration in patients with SCD and fever. Door-to-drug times improved from 103 min at baseline in 2003 to 45 min in 2012 (reduction of 58 min or 56%). This is well below our goal of 60 minutes and has been sustained for the last 3 years.

Immune-compromised Oncology Patients and Fever: This NIP was first initiated in 2003 at which time the protocol allowed nurses to obtain only blood tests (blood count and blood culture) for these patients prior to physician orders. Door-to-antibiotic time hovered between 100-120 min until 2009 when the NIP was optimized to include administration of a standardized antibiotic. This resulted in a dramatic drop in door-to-antibiotic times to 56 min, for the first time meeting our goal of 60 min.

A triage process to rapidly identify high risk patients as well as posting of un-blinded data on nurses who were not meeting time goals helped to maintain door-to-antibiotic times despite the 2009 H1N1 pandemic and a new EMR in 2011. Fig 3 shows the impact on timeliness of antibiotic administration in oncology patients who are potentially immune-compromised and have fever. Door-to-antibiotic times improved from 116 min at baseline in 2003 to 46 min in 2012 (reduction of 70 min or 60%). This is well below our goal of 60 minutes and has been sustained for the last 4 years.

Cost/Benefit Analysis
The basic cost for implementing NIPs is associated with the non-productive salary dollars of the nurses who attend the Clinical Practice council meeting. This is a minimal cost as compared to the charges that would be incurred as a result of a child deteriorating due to delays in care.

Advice and Lessons Learned
1. Stakeholder buy-in is imperative to the development and utilization of nurse-initiated protocols.
2. Monthly feedback to the emergency physician and nursing staff is imperative.
3. Ensure the role of the assessment is nurse is protected.

Sustainability
Stakeholder buy-in was imperative in the development and sustainability of the NIPs. Partnerships such as with our pharmacy colleagues were needed to standardize the ordering, retrieval and administration of the medications for our high-risk patients. This partnership allowed pharmacy to identify a process to pre-mix medications and place them in our medication pyxis daily as part of their roundings. This benefits our nurses and patients by ensuring safe and timely medication administration.