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Nurse Initiated Standing Orders: A Process Improvement at an Emergency Department in Interior Alaska

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Ch. 1 Introduction

I. Specific Aims

Emergency Departments (ED) are a valuable and limited public health resource. In addition to treating acute medical emergencies, EDs bridge the gaps in urgent care and primary care accessibility, operating twenty-four hours a day, seven days a week, providing care regardless of an individual's ability to pay. EDs across the country operate at or above capacity regularly, and overcrowding is projected to increase due to decreased facilities and available inpatient beds (Di Somma, 2015; Retezar, 2011; Sobolewski, 2022). Innovative measures are necessary to increase patient throughput and decrease length of stay (LOS) while maintaining quality care (Douma, 2016; Rosmulder, 2010). ED nurse initiated standing orders (NISOs), also known as nurse driven protocols, standing orders, order sets, standardized procedures, triage protocols, etc., initiated by registered nurses (RN) prior to a medical assessment by an Emergency Department Physician (MD), Nurse Practitioner (NP), or Physician's Assistant (PA), are an effective mechanism to improve LOS (American College of Emergency Physicians, 2015; Chan, 2005; Douma, 2016; Retezar, 2010).

This program aims to decrease the LOS at a Level IV Trauma Center in interior Alaska by enhancing an existing NISO policy. Secondary aims include increasing nursing autonomy and improvement of the ED patient experience.

II. Significance

Standardized nursing protocol orders have played a role in medical care in the United States for over seventy years (Tabershaw, 1947). Many of the same legal and ethical questions and concerns addressed in a 1940s American Journal of Public Health article on *Functions of*

Standing Orders for the Nurses in Industry remain. Despite the legal and ethical complexities, nursing protocol orders are utilized in various forms throughout the country in facilities ranging from rural tribal clinics in remote Alaska to academic medical centers in major metropolitan cities.

The existing NISO at Fairbanks Memorial Hospital (FMH) is limited in scope and utilized infrequently. The current policy provides specific treatments designed to address a singular issue instead of a holistic approach. It is conservative, addressing some patient care needs with minimal impact on LOS. Past attempts at developing a more robust policy faced significant barriers to implementation. A combination of unique circumstances created an opportunity to revise the current NISO policy into a more comprehensive program. This paper delineates the improvement of nurse initiated standing orders in the FMH ED.

Ch. 2 Background and Literature Review

I. Description of the Health Problem

a. Emergency Departments

The CDC defines an Emergency Department as "a hospital facility that is staffed twenty-four hours a day, seven days a week, and provides unscheduled outpatient services to patients whose condition requires immediate care" (Centers for Disease Control, 2022, p. 1). All EDs are licensed to provide basic emergency care. Certain EDs have advanced capabilities and earn specialty designations for trauma, stroke, and burn care. EDs can be standalone facilities or part of a hospital system, affiliated with academic institutions, or located in rural areas designated as a critical-access facility.

b. ED Overcrowding

Emergency Department overcrowding is a national issue with significant health consequences. As Kelen et al. state, "The impact of ED crowding on morbidity, mortality, medical error, staff burnout, and excessive cost is well documented but remains largely underappreciated" (2021, p. 1). The American College of Emergency Physicians (ACEP) defines ED overcrowding as when "the identified need for emergency services exceeds available resources for patient care in the ED, hospital, or both" (American College of Emergency Physicians, 2019, p. 1). Definitions put forward by international researchers observing the phenomena outside the United States include the term "access block" and "a situation in which the demand for emergency services exceeds the ability of physicians and nurses to provide quality care within a reasonable time" (Savioli, 2022, p. 2; Sinclair, 2007, p. 1). The reasons for overcrowding are multifactorial, each with its own complexities and internal factors. The primary cause of ED overcrowding is inpatient bed availability (McKenna, 2019; Sartini, 2022). Secondary causes include staffing shortages, primary care accessibility, process inefficiency, the uninsured, and the unpredictability of emergency care (American College of Emergency Physicians, 2016; Di Somma, 2015; McKenna, 2019; Sartini, 2022). As Sartini et al. state, "Although many factors contribute to overcrowding, the latter [character of overcrowding] depends essentially on three factors: the incoming volume of patients (input), the time to process and treat patients (throughput), and the volume of patients leaving the ED (output) (2022, p. 1).

Kelen et al., in their article *Emergency Department Overcrowding: The Canary of the Hospital System*, identify inpatient bed available as the primary reason for emergency

department boarding of admitted patients. However, their argument focuses not on "input, throughput, and output," but what they call the "root cause," namely "misaligned health care economics and financial pressures on hospitals" (2021, p. 2) The authors suggest that inpatient bed availability is secondary to financial disincentives influencing policy and procedure. Thus, institutional policies significantly affect ED overcrowding more than internal ED policies. They argue that elective surgeries and admissions generate more revenue and are often prioritized over ED admissions. They present several evidence-based practices, with their corresponding pros and cons, as suggested solutions for a complex problem. These include aligning patient discharges to patient demand, a "bed czar" with authority to provide agnostic bed allocation, temporary boarding on inpatient hallways, and opening unstaffed beds (p. 13). These interventions occur at the institutional level and require hospital and departmental leadership buy-in with potentially significant culture change. Their interventions are evidence-based and highly effective but face the most significant institutional barriers to change.

Emergency Departments and hospital administrators have developed ED-specific policies that improve efficiency within the ED. The ACEP Emergency Practice Committee created recommendations for ED overcrowding titled *Emergency Department Overcrowding: High Impact Solutions*. This 2016 document details the United States' progression towards an increasingly fragile medical system and its challenges. The proposed high-impact solutions incorporate big-picture solutions involving hospital administration and changes in policy and procedure. ED-specific recommendations are geared towards improving the efficiency of input, throughput, and output. Two recommendations include placing a licensed independent provider (LIP) such as an MD, NP, or PA in triage to initiate care from triage. Smaller institutions

may opt to develop NISOs. These predetermined order sets designated by an MD are initiated by an RN based on the chief complaint or other specified indication (Tabershaw, 1947). These allow RNs to function as an LIP in triage, initiating medication administration, diagnostic imaging, and laboratory orders prior to patient assessment by a LIP.

Macro-level interventions proposed by Sartini et al. in their article *Overcrowding in Emergency Department: Causes, Consequences, and Solutions—A Narrative Review* include simplifying the admission process, developing a 'full capacity' or 'surge' hospital action plan to identify patients for early discharge, and freeing up bed availability (2022, p. 9). Early and weekend discharges are encouraged; however, Kelen et al. noted that financial incentives are heavily intertwined with admitted patients and require a culture change from the top down to make meaningful improvements.

McKenna et al., in their article on *Emergency department and hospital crowding: causes, consequences, and cures,* addressed this issue by balancing elective admissions throughout the week, correlating surgical schedules with ED admission needs and hospital discharges. They identified elective admissions as "vary[ing] by a factor of 3 during the week", creating predictable mini surges in hospital capacity (2019, p. 3). Boston University developed a plan to distribute surgical admissions evenly across the week and found that "ambulance diversion decreased; LOS decreased by 45 minutes; waiting room time decreased by 20 minutes; canceled procedures dropped by 99.5%; and ICU and step-down unit variability decreased by 55%, all while seeing more patients than the year prior" (p. 3) This intervention served to improve care metrics while increasing capacity and maintaining revenue.

c. Consequences of Overcrowding

ED and hospital overcrowding have considerable adverse consequences.

Results of crowding identified by ACEP include:

- Treatment of patients in areas not designated for treatment, such as hallways, results in patients and families losing privacy.
- Treatment of boarded patients, including mental health and ICU patients, by ED nurses.
- Increased morbidity and mortality for both boarded and ED patients.
- Increased disability in older patients who are discharged to facilities rather than admitted.
- Increased length of stay for admitted patients.
- Decreased patient satisfaction for hospitalized and ED patients.
- Diminished ED staff satisfaction and employee engagement.
- Significant delay in evaluation and treatment of emergency patients.
- Patients leaving prior to completion of medical treatment.
- Increased ambulance diversion time.
- Increased stress for behavioral health patients due to a lack of facilities or privacy that are a necessary component of emergency psychiatric care.
- Increased costs for care delivery.
- Reputation damage for the entire institution.

(American College of Emergency Physicians, 2019, p. 1)

d. Input, Throughput, and Output

Input Delays have been shown to be caused by the following factors:

- Patient Registration
- ED lobby triage saturation
- Ambulance influx with complex or resource-dependent patients
- ED lobby bedding process (staff deployment limitations)

Throughput Delays have been shown to be caused by the following factors:

- Diagnostic Testing
    - Awaiting assessment and order input by LIP
    - Diagnostic Imaging
        - Awaiting Laboratory Tests (Kidney Function, Pregnancy Status)
        - Awaiting IV Access (Computed Tomography Scans (CT), MRI)
        - Diagnostic Imaging staffing availability (X-Ray, Ultrasound, MRI, CT)
    - Laboratory Testing
        - Obtaining specimens
            - RN availability
            - Phlebotomist availability
            - Patients with challenging venous access
        - Awaiting patient-provided specimens (Urine Analysis, Stool, etc.)
        - Time-specific laboratory studies for trending results required for discharge or admission decision (Troponin, Tylenol Level, etc.)
    - Awaiting official Interpretation of diagnostic imaging by Radiologist

- Specialist availability for consultation by ED Physician

Output Delays have been shown to be caused by the following factors:

- ED Discharge
    - Awaiting ED patient discharge orders (Physician availability)
    - Awaiting patient education and discharge instructions (RN availability)
    - Patient transportation home (friend/family, public transportation, non-emergent ambulance)
- Hospital Admission
    - ED MD awaiting Hospitalist/Intensivist/Specialist consult
    - Awaiting admission orders by Hospitalist/Intensivist/Specialist
    - Bed assignment by Nursing Administrator
    - Hospital Bed Availability
        - Capacity
            - Hospital and specialty unit capacity
            - RN Staffing
        - Room cleaned and ready
    - RN to RN admission handoff process
    - Patient transport to inpatient bed (RN, ED Tech, Transporter)

e. Triage and ESI

The concept of triage is attributed to the Chief Surgeon in Napoléon's Imperial Guard, who developed a system to improve the survival rates of soldiers during the Napoleonic wars (Robertson-Steel, 2006). On the battlefield and in a hospital, patient triage is designed to

categorize and organize patients according to severity. The goal of triage is to provide timely care to those in greatest need based on their clinical status and prognosis in balance with available resources (Ciottone, 2015). Triage systems vary across the globe in their scope and purpose. Bazyar et al. identified twenty disaster and mass casualty triage systems with START and Jump-START used most in the United States (2019). The principal system for ED triage within the United States is the Emergency Severity Index (ESI) (McHugh, 2011).

The original concept for ESI was developed and implemented in 2000 by an interdisciplinary group of emergency professionals (Gilboy, 2020). As defined by the Emergency Nurses Association (ENA) ESI handbook:

> "The Emergency Severity Index (ESI) is a tool for ED triage. The ESI triage algorithm yields rapid, reproducible, and clinically relevant stratification of patients into five groups, from level 1 (most urgent) to level 5 (least urgent). The ESI provides a method for categorizing ED patients by acuity and resource needs." (p. preface)

ESI provides for triage based on resources required for patient treatment and the severity of illness. To create a consistent and reproducible triage system for adult and pediatric populations, ESI developed a standardized approach to triage using four decision points.

A. Does this patient require immediate lifesaving intervention?

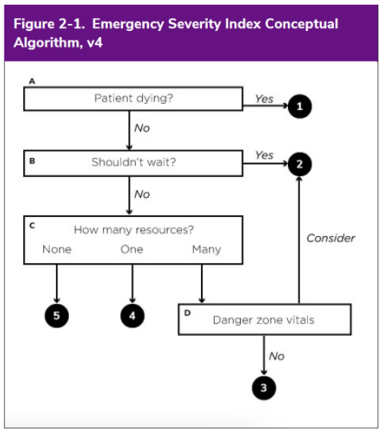
B. Is this a patient who should not wait?

C. How many resources will this patient need?

D. What are the patient's vital signs?

Each patient presenting to the hospital is assessed using this approach in a systematic matter using defined criteria resulting in an appropriate ESI level: 1: lifesaving interventions necessary; 2: high-risk patients; 3: two or more resources predicted; 4: one resource predicted; 5: zero resources predicted. Common examples of an ESI-defined resource are laboratory specimens (Blood, Urine, etc.), 12-lead EKG, X-ray, CT scan, laceration repair, and intravenous or intramuscular medications (Gilboy, 2020).

Figure 2-1 from the ESI handbook provides a visual algorithm for this process:



Examples of ESI levels with associated chief complaints:

ESI 1: Gunshot wound to the chest with hypotension and difficulty breathing

ESI 2: Chest pain with a history of a coronary artery bypass graft

ESI 3: Right lower quadrant abdominal pain

ESI 4: Wrist injury after a trip and fall

ESI 5: Suture Removal

f. Nursing Practice

Nurses are licensed medical professionals. Nursing practice is authorized by a state board of nursing and utilization of the Nurse Practice Act (California Board of Registered

Nursing, n.d.). However, nurses are not licensed to practice independent medicine; instead, RNs function under the direction of a physician (Tabershaw, 1947). Traditionally, these directions or "orders" are specified by a physician through written or verbal communication concurrently with or after the physician has physically assessed the patient. NISOs are unique as they are implemented before a physician's assessment (American College of Emergency Physicians, 2015). As defined by the article on *Functions of Standing Orders for Nurses in Industry*:

> "A standing order may be defined as an order for some form of treatment, medication, or procedure to be carried out by a nurse in the absence of a doctor. To be valid, it must be written, signed by a doctor, and applicable to a specific patient or situation. Such orders are of particular value in a hospital where they provide for standardized procedure, expedite care and treatment of patients in the temporary absence of the doctor. If carefully examined, standing orders in recognized hospitals will be found to consist only of the usual techniques which a nurse is qualified to perform in those situations which require neither diagnosis nor prescription." (Tabershaw, 1947, p. 1430)

ACEP and the ENA support and endorse standardized nursing protocol orders. They define such orders as "a set of pre-approved orders that include a specifically defined patient population and clinical scenario(s) in which these orders may be carried out by nursing staff without any additional physician, nurse practitioner, or physician assistant input, approval, or order, either written or verbal" (American College of Emergency Physicians, 2015, p. 1). Standardized nursing protocol orders are supported by the Centers for Medicare and Medicaid Services (CMS), and multiple State Boards of Nursing (Arkansas State Board of Nursing, 2020;

California Board of Registered Nursing, 1995; Centers for Medicare and Medicaid Services, 2008; North Carolina Public Health, 2022; Texas Board of Nursing, 2021; Washington Department of Health, 2021).

II. Literature Review

A literature review and internet search provided various information concerning standing orders. Evidenced-based research on the topic is limited. Most studies are retrospective and no randomized studies were found. Clearly, more research is needed. However, when paired with position papers and endorsements by established and well-respected public, private, state, and federal agencies, a proof of concept is established.

a. Related Research

Multiple studies with physicians or midlevel providers initiating patient orders in triage demonstrated statistically significant decreases in LOS (Chan, 2005; Choi, 2006; Han, 2008; Holroyd, 2007). A large retrospective study of 20,000 ED visits with a matched propensity score (time of day, heart rate, blood pressure, respiratory rate, and temperature) resulted in a 37-minute reduction of time spent occupying an ED bed, an 18% improvement (Russ, 2010). Comparable results were reported in the above-referenced studies.

The benefits of nurse-initiated pain protocols for early administration of analgesics in pediatric and adult EDs are well documented. Multiple studies demonstrate statistically significant decreases in time of administration of pain medications by oral, intra-nasal, and intra-venous routes safely and effectively. (Barksdale, 2016; Campbell, 2004; Dewhirst, 2017; Sobolewski, 2022).

b. Comprehensive Nurse Initiated Standing Orders

Evidence-based studies on comprehensive nurse initiated standing orders are limited. A 2010 comparative Dutch study by Rosmulder et al. of 600 patients at a Level 1 Trauma Center found that standing orders initiated by the triage nurse were correct 93% of the time with an 8% increase in diagnostic investigations. After patient assessment, the attending ER MD assessed the quality of the triage orders. The orders requested by the RN were complete for 39 of 42 patients (93%). In addition, an independent assessment by two traumatologists and two radiologists concluded that the quality of X-ray orders by the triage RN was maintained, with scores at least equal to that of the ED physician. Average LOS was reduced by fourteen minutes (14%), and LOS for patients requiring diagnostic testing was reduced by twenty-seven minutes (18%). The study concluded, “Advanced triage improves patient flow in the emergency department without affecting the quality of care” (p. 6).

In a 2011 retrospective nested cohort of 15,000 patients by Retezar et al., triage nurses utilized nursing judgment to implement complete, partial, or no standing orders for patients who were not expected to be assessed by an LIP within a “reasonable time.” Only patients who waited longer than fifteen minutes for room placement met the inclusion criteria. Of the triaged patients, 25% received complete triage order sets, 56% received partial order sets, and 19% received orders in the room by the LIP. Patients who received NISOs were more likely to arrive during busy periods and were more acutely ill. Among all chief complaints, the unadjusted median LOS was reduced from 282 minutes to 230 minutes (18%); after adjusting for patient, clinical, and temporal factors, a 16% reduction was found. The authors concluded, “this study demonstrated a substantial reduction in ED treatment time in patients who received a partial or full triage standing order set" (p. 97).

In 2016, Hwang et al. performed a study on patients presenting to an academic Level 1 Trauma Center with the chief complaint of chest pain. The criteria for implementing this order set were patients "unable to be seen in a timely fashion." The study used 15 minutes from triage to room or room to provider assessment as inclusion criteria. In patients where all diagnostic testing was complete prior to physician assessment, a reduction in the median provider evaluation to disposition time of 26 minutes (16.9%) was found. Diagnostic testing was completed prior to initial physician assessment in 94 out of 149 (63.1%) patients. The authors concluded that "implementation of standing orders expedites disposition time," and while NISOs are not "sufficient for a complete diagnostic assessment," appropriately designed standing orders require few additional orders (p. 5).

A literature review of 23 studies by Marie-Claude Lacroix and Roxane Borgès Da Silva recommends that more robust studies are needed but the literature shows NISOs can have positive effects on the quality of care provided to the patient through the reduction of time to initiation of care and diagnostic testing (2018).

c. Policy Guidance

An internet search produced a multitude of policies and guidance on standing orders and their development. The Institute for Safe Medication Practices states that standardized order sets have the potential to "integrate and coordinate care by communicating best practices through multiple disciplines, levels of care, and services" (2010, p. 1). However, their *Guidelines for Standard Order Sets* caution that if "standardized order sets are not carefully designed, reviewed, and maintained to reflect best practices and ensure clear communication, they may actually contribute to errors" (p. 1).

An American Academy of Family Physicians article titled *Developing Standing Orders to Help Your Team Work to the Highest Level,* emphasized several critical points for developing standing orders. The article endorses the benefit of standing orders to relieve physicians of some clinical tasks so they can focus on acute care and more complex decision-making. The article also cautions that standing orders should be carefully designed and supervised with regular revision to reduce the chances of errors (Leubner, 2018).

The Centers for Medicare and Medicaid Services Center for Clinical Standards and Quality/Survey & Certification Group, in their March 2013 memorandum, have specific requirements for NISOs. They state, "Drugs and biologicals may be prepared and administered on the orders contained in pre-printed and electronic standing orders, order sets, and protocols (collectively referred to as "standing orders" in our guidance) only if the standing orders meet the requirements of the medical records CoP" (p. 4). In addition, they provide requirements for standing orders criteria, "Standing orders may be used only if the hospital: ensures the orders are reviewed and approved by the medical staff and the hospital nursing and pharmacy leadership; demonstrates the orders are consistent with nationally recognized and evidence-based guidelines; ensures periodic review to determine their continuing usefulness and safety; and ensures that the orders are dated, timed and authenticated promptly" (p. 4).

Position statements by the California Board of Registered Nursing on *An Explanation of the Scope of RN Practice Including Standardized Procedures*, and the Arkansas State Board of Nursing on the *Role of the Licensed Nurse in Nurse Driven Standing Orders Working in Hospitals that have Adopted and are Subject to the Center for Medicare and Medicaid Conditions of Participation* guide the requirements and scope of standing orders. The state of Alaska adopted

a decision-making framework developed by the Tri-Council for Nursing titled *Scope of Nursing Practice Decision-Making Framework*, which guides employers and nurses in decision-making for all aspects of nursing including development and utilization of nursing protocol orders.

In addition to the potential benefit of rapidly initiated patient care, increasing nursing autonomy demonstrates benefits in job satisfaction and perceived competency as well as better preparing nurses to function independently as would be required in a limited resource environment, a multi-casualty incident, or during crisis standards of care (Barto, 2019; Campbell, 2004; Leodoro, 2021; Said, 2019; Yan, 2015; Yin, 2012).

III. Project Facility

Fairbanks Memorial Hospital (FMH) is a community owned and operated 152-bed facility in the interior of Alaska offering twenty-seven specialties. A level IV Trauma, STEMI, and Primary Stroke Center, FMH receives referrals from critical access hospitals and clinics across the state and serves as the receiving hospital for multiple volunteer and professional ground and air ambulances. In addition to serving the greater Fairbanks area, service members from four US military bases utilize FMH for emergency care, as it is the only ER in interior Alaska.

The FMH Emergency Department is a 27-bed unit with laboratory, X-ray, CT, MRI, and ultrasound capabilities supported by Intensive Care, Telemetry, Medical, Surgical, Pediatrics, Behavioral Health, and Obstetrics floors, including a Neonatal Intensive Care Unit. The ED is staffed by a maximum of two physicians and a physician assistant. However, from 3 am to 9am, there may be a sole physician on duty. This thoroughly limits the availability of a provider to assess patients rapidly.

The Golden Heart Emergency Physicians contracts with FMH to provide physician and physician assistant services in the ED. The physicians are board-certified in Emergency Medicine and have provided emergency care in Fairbanks for over ten years (Golden Heart Emergency Physicians, 2023).

The experience level of FMH ED RNs varies significantly. ED staff include new graduate RNs with less than a year of nursing experience, transition RNs with non-ED nursing experience, traveling RNs with at least three years of ED experience, and senior staff RNs with twenty-plus years of experience. New graduate and transition RNs complete an ENA-designed ED residency program with preceptorship before independent practice. All new graduate RNs complete an extensive ESI training course developed by the ENA, and staff complete an ESI refresher course as part of their annual training. The FMH ED experiences a moderate amount of RN turnover due to normal attrition, the short-term nature of travel contracts, and the transient nature of staff with military spouses.

Ch. 3 Methods

I. Needs Assessment

In 2011, CMS established the Medicare and Medicaid Electronic Health Record (EHR) Incentive Programs to encourage hospitals to adopt electronic charting for medical care. FMH utilizes Cerner as its EHR for patient care documentation. A great benefit of EHR is interoperability and improved access to accurate data. FMH census data from 2018 to 2022 demonstrated a 1.6% increase in total visits from 35,952 to 36,553. However, higher acuity patients designated by an ESI 3, 2, or 1 increased by 9%, 49.4%, and 60.7% during the same period. The LOS for ESI 1 went from an average of 273 minutes for 2018-2020 to 624 minutes

for 2021 and 2022. The average LOS for ESI 3 increased BY 17% (219 vs 257 minutes) for 2021 and 2022 as compared to 2018-2020.

The COVID-19 pandemic changed the nature of health care nationwide. Annual ED visits decreased nationwide secondary to the public's fear of contracting COVID while in the Emergency Department (Ghaderi, 2022). FMH saw 30,388 and 33,695 patients in 2020 and 2021, down from 35,952 in 2018 and 35,551 in 2019. However, during this time, increased patient acuity and surges due to new COVID-19 strains created spikes in the daily census, significantly stressing the healthcare system nationwide and at FMH.

In addition, FMH had a planned remodel of the emergency department, which was delayed due to the pandemic. Completing the remodel necessitated closing sections of patient care areas one month at a time over ten months, further decreasing ED capacity.
The increasing frequency and duration of overcrowding with extended lobby wait times and the planned remodel of the ED renewed discussions on the benefits and potential necessity of revising the current NISOs.

II. Program Description

ACEP and the ENA endorse and support NISOs that evaluate and treat time-sensitive conditions, provide for patient comfort, initiate early testing and treatment, and improve the patient care experience (American College of Emergency Physicians, 2015). They state that NISOs must include a specifically defined patient population and clinical scenario.

a. Order Development

The initial development of the revised standing orders was organic and began with informal discussions between ED providers ED RNs with experience utilizing NISOs at other

facilities. These discussions were partly prompted by consistent ED overcrowding secondary to the SARS-COVID-2 Delta variant. This, in conjunction with concerns voiced by senior nurses over the loss of patient treatment rooms during the ED renovation, prompted further discussions between ED leadership and the Physicians. A newly appointed ED Chief of Staff granted official approval for development after a literature review and evaluation of standing orders currently in use in EDs in Alaska and Washington.

b. Existing NISO

The existing standing orders at FMH were created for individual scenarios. The orders are singular and consequently limited in their scope. For example, a patient who presents to triage with nausea, vomiting, and abdominal pain will require a urine analysis, pregnancy test if they are a female of childbearing age, Zofran for nausea and vomiting, and a saline lock with a blood draw. There are provisions for each of these in the current standing order; however, they require four separate orders to be placed and lack orders for laboratory testing. Upon LIP assessment, these patients regularly receive laboratory testing, the results of which can influence imaging requirements. This creates further delays in care. Review of existing NISOs demonstrated limited benefit to patients, low utilization, and minimal impact on LOS.

c. Emergency Services Index

To define a specific patient population while allowing for greater nursing autonomy, the Emergency Service Index (ESI) and chief complaint were identified as a foundation for revised NISOs that meet CMS requirements.

As previously stated, the ENA ESI handbook defines ESI as "…a tool for use in emergency department (ED) triage. The ESI triage algorithm yields rapid, reproducible, and clinically

relevant stratification of patients into five groups, from level 1 (most urgent) to level 5 (least urgent). The ESI provides a method for categorizing ED patients by acuity and resource needs." (p. preface)

Each patient presenting to the FMH ED is triaged with the ESI system and assigned an ESI level and chief complaint (CC) from predetermined options that cover complaints common to emergency medicine. ESI is a standardized approach that allows for classification based on required resources (ex. X-rays, laboratory testing, or IV medications) and acuity (ex. danger zone vital signs, mental status changes, emergency medications or medical management, high-risk chief complaints). This allows for a specific clinical scenario, acuity, and population. For example, CC: Abdominal Pain, ESI: 2. ESI is a nationally recognized, standardized, and validated system that is currently a mandatory component of ED triage at FMH (McHugh, 2012). This provides for a NISOs system that is standardized and validated, utilized by RNs across the nation, and meets the requirements of CMS.

III. Literature and Data Review

An in-depth literature review and internet search provided proof of concept and addressed the legal and ethical concerns voiced by the ED Physicians, who granted consent to proceed as a group. Additionally, the literature provided developmental guidance for NISOs including specific practices to create and maintain safe and effective standing orders.

a. Literature Methods

A literature and internet search were performed. Relevant topics of interest included emergency department overcrowding, ED wait times and length of service, development of standing orders, nurse-initiated protocols, nursing process, and strategies for refining patient

flow. The literature databases PubMed and CINAHL were searched using the following concept chart:

Concepts	Keywords	PubMed	CINAHL
Emergency Department	Emergency Department, Emergency Services	"Emergency Service, Hospital"[Mesh]	(MM "Emergency Service")
Standing Orders	Nurse Initiated Orders, Protocol Orders, Standardized protocols, standardized procedures, order sets, standing orders, standardized nursing protocol orders or triage protocols	"Standing Orders"[Mesh]	(MM "Nursing Orders") OR (MM "Nursing Protocols")

The search results encompassed multiple disciplines and included policy statements by established and recognized professional organizations and government entities. As the research progressed, additional topics and keywords were discovered; this corresponded with a proportional increase in the scope of knowledge. This increased scope of knowledge refined the topic and enhanced the quality of results.

b. FMH Data

FMH ED census data is available through the Cerner EHR historical department dashboard. In addition, FMH utilizes the dashboard monitoring system, which provides real-time ED census in greater detail. The two Cerner-based dashboards provide current and historical data on lobby wait times and hourly patient census with subcategories of acuity levels (ESI 1-5), LOS, and ED status. These systems will provide baseline data and allow for process assessment and improvement using specific patient markers.

IV. NISO Development

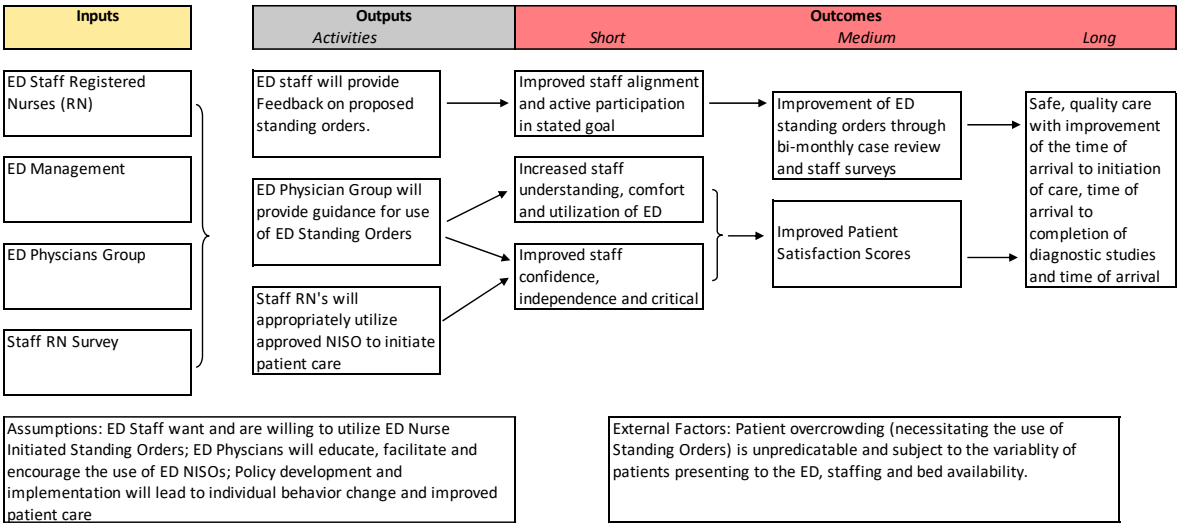
A small working group was established. A nurse champion spearheaded the project with significant guidance and input from ED leadership, the Chair and Vice Chair of the FMH ED, and a select group of senior nurses with experience utilizing standing orders at other facilities.

A voluntary staff survey was developed, approved by ED leadership, and distributed to ED RNs in electronic and paper formats. The study aimed to gauge comfort with the existing NISO, brainstorm ideas for improvement, and identify barriers and concerns for implementing a significantly expanded NISO.

The NISO protocol was synthesized by the chair of the FMH ED and the nurse champion using survey suggestions with physician and leadership input. Development focused on the unique needs of emergency medicine in Fairbanks, Alaska. The working group proofed the first draft, corrections and suggestions were integrated, and the draft NISO was distributed via electronic and paper format to the ED staff RNs and physicians for review and comment. Feedback was evaluated by the working group and ED Leadership. Changes were integrated and the final draft was forwarded to the ED Committee for approval. Upon approval by the ED Committee, the NISO policy was submitted for final approval from the pharmacy and organizational leadership committees.

V. Logic Model

Program: **Emergency Department (ED) Nurse Initiated Standing Orders (NISO) Logic Model**
Situation: ED overcrowding leads to patient care delays, increased morbidity and mortality, decreased patient and staff satisfaction, and increased risk of medical errors. Nurse initiated standing orders are one method to improve the efficiency of patient care, improve staff and patient satisfaction, and can be implemented safely and without detrimental effect to the quality and safety of care.



Chapter 4: Results

I. Implementation Plan

a. Phase I

Phase I began with approval from the ED Chief of staff to revise the existing NISO policy. This phase started with an in-depth literature review and the development and distribution a staff survey with significant guidance from ED leadership. The survey questions may be found in appendix (A).

b. Phase II

Phase II included assessment of survey results, further research, development of the first draft, and distribution to the ED staff for review.

Surveys were sent to all ED RNs electronically via e-mail with fourteen days to respond. Of the seventy staff members surveyed, twelve core staff and two traveling RNs responded (20%). Answers to survey question #4, "If you could add three new nursing standing orders to the care sets, what would they be?" were used to inform further investigation into best practices and development of the care sets. The survey results were assessed for common themes, which included the ability to order hematological studies, diagnostic imaging (X-ray/CT), pain medications, respiratory swabs for COVID-19 testing, and bundled order sets for trauma and sepsis. Several respondents included requests for orders currently available under the existing NISOs. All four other survey questions were designed to assess barriers to implementation and the educational needs of the ED staff.

The ED Chief of Staff and the nurse champion developed the core NISOs with revision and refinement provided by the working group and ED leadership. The NISO first draft was approved by ED leadership and distributed to ED RNs via hard copies placed in the break room, central nursing station, and pre-shift meeting room. Electronic reminders were sent via e-mail, with two weeks allocated for response. Feedback was received via verbal suggestions, e-mail, and written revisions on hard copies of the draft returned to ED management. Recommendations were reviewed by ED leadership and the working group and presented to the chair and vice chair of the FMH ED for revision.

c. Phase III

Phase III involved final revision, approval, and transcription into an approved hospital format. The final draft was presented to the ED department committee for endorsement and, upon approval, submitted for organizational authorization through two committees headed by the FMH pharmacy and executive leadership.

Ch. 4 Results

Emergency Department Initial Evaluation/Treatment
Scope: Emergency Department

Purpose:
A: To expedite patient care for those presenting to the Emergency Department (ED) for medical and/or psychiatric care.

B. Registered Nurses, Licensed Practical Nurses, and Licensed Vocational Nurses may provide the care, treatment, or services outlined below in accordance with FHP policy 11695 “Provider Orders – Standing Orders Development and Approval Policy” and as allowed by state law.

Definition of Terms

A. Adult patient – patients 18 years of age or greater
B. Pediatric Patient – patients less than 18 years of age
C. Child-bearing age – females who are 10-50 years of age
D. Fever - Temperature greater than 38 degrees Centigrade (100.4 Fahrenheit)
E. Immunocompromised – active or history of any cancer or transplant
F. Immunosuppression – currently on or recently (within the past 6 months) having taken steroids, chemotherapy, or transplant medications
G. Respiratory distress – includes one or more of the following:
    1. Wheezing
    2. Retractions
    3. Nasal flaring
    4. Grunting
    5. Tripoding
    6. Cyanosis
    7. Diminished or absent breath sounds in any lung field
H. Chest pain – one or more of the following
    1. Chest discomfort described as pressure, heaviness, squeezing, fullness, or pain.
    2. Associated discomfort/pain in one or both arms, shoulder, back, neck, jaw, or abdomen.
    3. Shortness of breath occurring with or before chest discomfort

4. Associated symptoms of diaphoresis, nausea, lightheadedness, fainting, and/or pale, clammy skin.
5. Considerations for gender, age and co-morbid condition-altered presentations
    a. Women – unusual fatigue, breathlessness, dizziness, nausea, vomiting
    b. Diabetics – shortness of breath, nausea/vomiting, and/or abdominal pain.
    c. Elderly – syncope, dizziness, nausea, shortness of breath, indigestion, and/or an acute onset of confusion
    d. Pediatrics – acute chest pain and a cardiac history (e.g. hypercholesteremia, congenital heart disease, or a family history of early heart disease)

I. Neurological deficits – one or more of the following:
    1. Sudden numbness or weakness of the face, arm, or leg – especially on one side of the body.
    2. Sudden confusion, trouble speaking or understanding.
    3. Sudden trouble seeing in one or both eyes.
    4. Sudden trouble walking, dizziness, loss of balance or coordination.
    5. Sudden, severe headache with no known cause.
J. Psychiatric Complaints – suicidal ideation/attempt, homicidal ideation/attempt, depression, anxiety, or altered behavior related to schizophrenia, bipolar, manic-depressive, hallucinations, and /or assaultive behavior.

Policy

A. In defined circumstances, the ED RN will utilize the appropriate Nurse Initiated Standing Order (NISO) to initiate diagnostic testing and interventions for patients following a nursing assessment.
B. Pregnancy tests when indicated by the condition on all females of childbearing age.
C. Circumstances for utilization of NISOs
    1. Patient Population: Adult and pediatric ED patients
    2. Patient conditions/criteria: A NISO may be utilized when there is a potential delay in medical evaluation and initiation of care

Procedure

A. Assess the ED patient through history taking and physical assessment according to standards of nursing practice.
B. Determine if there is a potential for delay in evaluation by the ED Licensed Independent Provider (LIP). If a delay is anticipated, or immediate evaluation by the ED LIP is not possible, initiate diagnostic testing and interventions by utilizing the appropriate NISO.
C. Assess patient for contraindications to medication(s). If there are contraindications, consult with the ED LIP.
D. NISO protocols are valid prior to ED LIP patient assessment.
    - Additional treatment(s) require a LIP order.

Documentation

A. Orders placed in Cerner must use the designated care set – “CPOE ED Standing Orders” and be marked as “Cosign Required”.

General Orders

Procedures

INDICATIONS	ORDERS
Complaints of: · Chest Pain · Shortness of Air · Syncope · Suspected dysrhythmia	· RT Electrocardiogram STAT
· Vomiting · Allergic reaction · Hypotension · Altered level of consciousness	· IV peripheral saline lock and draw (all lab tubes except red top)
Adult oxygen saturation <92%	· Keep Oxygen saturation greater than 90% for adults · Administer Oxygen by NC/NRB Mask as tolerated. If patient has COPD, rate should NOT exceed 4L/min.
Adults unable to provide an ordered clean catch urine specimen on their own (e.g. limited mobility/physical/mental capacity)	· Straight Cath for specimen
Temperature less than 35.6 Celsius (96°F)	· Hyperthermia Blanket (warming blanket)
Wound Care	· Irrigate with 1000 mL normal saline
Remove wound binding for healed wound	· May remove sutures, staples, or Steri-strips from affected area

Medications

INDICATIONS	ORDERS
Suspected COPD/Emphysema/Asthma	· Give Albuterol-ipratropium (DuoNeb) 3mL, INH, once
Pediatric Fever > 100.4°F (>38°C)	· Give acetaminophen (Children's Tylenol) 15mg/kg, PO, once, if no contraindications (allergy, previous Tylenol in last 4 hours) AND/OR · Give ibuprofen (Motrin Children's) 10mg/kg, PO once, if no contraindications (allergy, previous ibuprofen in last 6 hours)
Adult Fever > 100.4°F (>38°C)	· Give acetaminophen 975mg, PO, once, if no contraindications (allergy, previous Tylenol in last 4 hours) AND · Give ibuprofen 400 mg, PO, once, if no contraindications (allergy, previous ibuprofen in last 6 hours)
Males requiring catheterization	· Give lidocaine topical (Lidocaine 2% Uro-Jet) 1 app, TOP, once · Utilize 2% lidocaine Jelly per protocol for catheterization unless contraindicated by allergy
Wound pain	· Apply lidocaine viscous 2% topical (XYLOCAINE) 1 app, TOP, once · May be applied to wounds less than 5cm (Adults) and 2cm (Pediatrics) for 15 minutes
Pediatric open wound	· Give EPINEPHrine/lidocaine/tetracaine topical (L.E.T. TOPICAL syringe) 3mL: GEL, TOP, once if no allergy to Lidocaine, Tetracaine, Amide or Ester type anesthetic · Apply up to 3mL to open wound for 20-30 minutes · Do not apply to digits, nose, genitals, or ears
Pediatric IV Start ordered	· Give lidocaine (J-TIP buffered lidocaine 0.9% syringe) 0.25 mL, device, SQ, once · Give SQ via needleless syringe as directed
Pediatric IV Start ordered	· Give lidocaine-prilocaine topical (EMLA) 1 app, TOP, once, to numb IV insertion site
Pediatric IV Start ordered	· Give lidocaine topical (LMX 4 TOPICAL cream) 1g, TOP, to numb IV insertion site · May use up to 1 gm on children older than 3 months, 2.5 gm for children older than 12 months, and up to 5 gm for Adults

INDICATIONS	ORDERS
Pediatric Vomiting - Patients weighing 16-30kg	· Give ondansetron (Zofran ODT) 2mg, Tab, PO once · Place one-half of a 4mg ODT tab to equal 2mg on top of tongue
Pediatric Vomiting - Patients weighing greater than 30kg	· Give ondansetron (Zofran ODT) 4mg, Tab, PO once · Place ODT tab on top of the tongue
Adult Vomiting	· Give ondansetron (Zofran ODT) 8mg, Tab, PO once for adults
Adult Vomiting with IV start	· Give ondansetron (Zofran) 8mg, solution, IVP, once · Note - administer over 60 seconds or more
Pediatric Oxygen saturation less than 92%	· Titrate flow to keep oxygen saturation greater than 92% · For infants and children, may use nasal cannula or mask as tolerated or blow-by if not tolerating other devices
Croupy Cough	· RT Cool Mist via blow-by at 15L/min
Symptomatic eye pain	· Give proparacaine ophthalmic (Alcaine) 2 drops, OPHTH, once

Laboratory Studies

INDICATIONS	ORDERS
Suspected Hypo or Hyperglycemia (e.g. Weakness, Syncope, Altered LOC)	· Blood glucose monitoring (Accu-Chek), Stat

ESI and Chief Complaint:

- **Abdominal Pain**
- **Flank Pain**
- **Vomiting**
- **Diarrhea**

Adult

ESI 2/3

- Cardiac Monitor
- Peripheral IV Saline Lock
- CBC with differential
- CMP
- Lipase
Lactate if >65 years old
- Clean Catch UA
Urine/Serum HCG if female 18-50 years of age
ECG 12-Lead if age greater than 50
- NPO

ESI 4

- Clean Catch UA
Urine HCG if female 18-50 years of age
- NPO

Pediatric

ESI 2

- Cardiac Monitor
- Peripheral IV Saline Lock
- CBC with differential
- CMP
- Lipase
- Clean Catch UA
Urine/Serum HCG if female 10-17 years of age
- NPO

ESI 3/4

- Clean Catch UA
Urine HCG if female 10-17 years of age
- NPO

Fall - Suspected Hip Fracture (age greater than 65)

ESI 2/3

- Place order for X-ray of affected hip
    - # XR Hip Left with or without Pelvis 2 or 3 view
    - # XR Hip Right with or without Pelvis 2 or 3 view
- Peripheral IV Saline Lock
- CBC with Differential
- CMP
- PT/INR
- PTT
- EKG

Type and Screen

- Clean Catch UA

Behavioral Health Concerns

ESI 2

- Clean Catch UA
- Toxicology Screen Urine

Urine HCG if female 10-50 years of age

Chest Pain (Suspected Cardiac)

Adult

ESI 2

- Cardiac Monitor
- Oxygen to maintain O2 saturation more than 92%
- ECG 12-Lead with EDMD review within 10 minutes of arrival
- Insert peripheral IV saline lock
- CBC with Differential
- CMP
- PT/INR if on anticoagulants
- Troponin
- NPO

ASA 324mg (4x81mg chewable) PO if no contraindications [allergy, received ASA within 24 hours, suspected aortic dissection]

- XR Chest 1 view

Urine/Serum HCG if female 10-50 years of age

ESI 3

- Patients aged 40+:
    - # ECG 12-Lead with EDMD review within 10 minutes of arrival
- XR Chest 1 view

Urine/Serum HCG if female 10-50 years of age

Consult LIP for further orders

Palpitations/Suspected Dysrhythmia

ESI 2

- Cardiac Monitor
- ECG 12-Lead with EDMD review within 10 minutes of arrival
- Insert Peripheral IV saline lock
- CBC with differential
- CMP
- Magnesium
- Phosphorus
- PT/INR, if on anticoagulant
- # Urine/Serum HCG for females between 10-50 years of age

Hyperglycemia/Hypoglycemia

ESI 2/3

- Cardiac Monitor
- Insert peripheral IV saline lock
- POCT glucose

For blood glucose greater than 250:

- CBC with diff
- CMP
- Beta-hydroxybutyrate
- Venus Blood Gas
- Clean Catch UA
- Suspected DKA: Perform iSTAT

Adults

For blood glucose less than 70:

- Consider 4-8 oz juice PO, if patient able to independently administer
- Give 1 amp (25g/50mL) of 50% Dextrose IV
- Recheck POCT glucose 30 minutes after Dextrose administration
- CBC with diff
- CMP
- Clean Catch UA

Pediatrics

For blood glucose less than 60:

- Pediatric patients weighing less than 50kg – Give D10W 2mL/kg, IVP, over 10 minutes
- Pediatric patients weighing 50kg or greater – Give 1 amp (25g/50mL) of 50% Dextrose IVP
- Recheck POCT glucose 30 minutes after Dextrose administration

Alcohol Withdrawal

ESI 2/3

- Cardiac Monitor
- Insert Peripheral IV Saline Lock
- CBC with Differential
- CMP
- Magnesium
- Ethanol
- Toxicology Screen Urine
- Clean Catch UA
- # Urine/Serum HCG if female 10-50 years of age
- POCT Glucose
- Document CIWA
- Consult LIP for CIWA Order Set

ESI 4

- Toxicology Screen Urine
- # Urine HCG if female 10-50 years old
- Document CIWA

Nosebleed

ESI 2/3

- Apply direct pressure or nasal clamp for active bleeding
- Notify LIP if unable to rapidly control bleeding
- Cardiac Monitor
- Insert Peripheral IV Saline Lock
- CBC with differential
- CMP
- # PT/INR if on anticoagulants
- # Type and Screen
- Bring ENT cart bedside

Extremity Trauma

ESI 2/3/4

- Stabilize injured part with a temporary splint
- Utilize Pain Med SO
- Insert peripheral IV saline lock for obvious fractures and/or dislocations
- Consult LIP for additional orders
- NPO
- Log roll off backboard with c-spine stabilization

Order Xray to affected joint or extremity

XR Shoulder Left >=2 view
XR Shoulder Right >=2 view
XR Humerus Left
XR Humerus Right
XR Elbow Left 3 or 4 view
XR Elbow Right 3 or 4 view
XR Foot Left 3 view
XR Foot Right 3 view
XR Ankle Left 3 view
XR Ankle Right 3 view
XR Tibia Fibula Left
XR Tibia Fibula Right
XR Femur Left 2 view
XR Femur Right 2 view
XR Pelvis
XR Hand Left 3 view
XR Hand Right 3 view
XR Wrist Left 3 or 4 view
XR Wrist Right 3 or 4 view
XR Forearm Left 2 view
XR Forearm Right 2 view

Female Genito-Urinary

ESI 2/3

• Clean Catch UA

• HCG urine/serum if female 10-50 years of age

If pregnant:

- Peripheral IV saline lock
- CBC with Differential
- CMP
- Type and Screen (for Rh type determination)
- Beta Quantitative HCG if less than 16 weeks or date unknown
- If greater than 16 weeks pregnant document fetal heart tones

• For MAP less than 65 or HR greater than 110:

Give Sodium Chloride 0.9% 1000mL, IV bolus

• Consult LIP for additional orders

• NPO

ESI 4

• Clean Catch UA

HCG urine for 10-50 years of age

If pregnant:

- Type and Screen (for Rh type determination)

Beta Quantitative HCG if less than 16 weeks or date unknown

• If greater than 16 weeks pregnant document fetal heart tones

Male Genito-Urinary

ESI 2 (Includes all testicular pain):

- For urinary retention: Perform bladder scan and insert foley catheter for post void residual greater than 150mL
- Clean Catch UA
- NPO
- Consult LIP for additional orders:

US Scrotum (Sudden onset testicular pain within the last 6 hours)

GI Bleed

ESI 2/3

- Evidence of active bleeding (hematemesis/blood in stool) with SBP<90 or MAP<60:
    # Give Sodium Chloride 0.9% 1000mL, IV bolus and notify LIP
- Insert large bore peripheral IV saline lock x 2
- CBC with differential
- CMP
- PT/INR

Type and Screen

- NPO
- Consult LIP for additional orders

Overdose (Intentional/Accidental)

ESI 2/3

- Cardiac Monitor
- Oxygen via NC to maintain O2 saturation greater than 92%
    - Notify LIP for oxygen requirements greater than 6 LPM
- ETCO2 monitoring for GCS less than 12 or requiring supplemental oxygen
- If intentional: remove patient belongings and place in secure area
- Insert peripheral IV saline lock
- CBC with differential
- CMP
- Ethanol
- Acetaminophen & Salicylate levels

    Additional drug levels depending on ingestion:

    # Lithium
    # Dilantin
    # Depakote

HCG urine or serum if female 10-50 years of age

- EKG 12-Lead
- Toxicology Screen Urine
- Contact Poison Control
- Consult LIP for further orders

Pain Protocol

Goal: Safely and efficiently provide adequate pain relief to patients who are in acute pain.

Exclusion Criteria

- Allergy to medications listed below
- History of renal failure (Ibuprofen)
- History of liver failure (acetaminophen)
- Pregnancy (Ibuprofen)
- Patient presenting with altered mental status
- Patient received Tylenol in last 4 hours
- Patient received Ibuprofen in last 6 hours

Protocol

- RN identifies patient at triage
- Medical history, allergies and weight documented
- Patient report of pain documented using age appropriate scale (based on 1 - 10)

Dose

Adults

- Administer Acetaminophen 1000 mg PO once

  AND/OR

- Administer Ibuprofen 600mg PO once

Pediatrics

- Give acetaminophen (Children's Tylenol) 15mg/kg, PO, once

  AND/OR

- Give ibuprofen (Motrin Children's) 10mg/kg, PO once (age 7 months and greater)

Shortness of Breath – Adult

ESI 2

– If sepsis suspected, notify LIP and initiate Sepsis SO

- Cardiac Monitor
- Oxygen to maintain O2 saturation more than 92%.
  - Page Respiratory Therapist if unable to maintain O2 saturation more than 92%
- Insert peripheral IV saline lock
- CBC with differential
- CMP

PT/INR if on anticoagulant

BNP if history of CHF

- Chest Xray 1 view

ECG 12-lead for patient over age 40

- Initiate HHN: Albuterol-Ipratropium (DuoNeb) 3mL, INH, once (suspected COPD/Emphysema/Asthma)
- Consult LIP for additional orders

For Severe Respiratory Distress (Respiratory rate greater than 28 bpm, 3- 4 word sentences, accessory muscle use, diminished, tight, wheezes or coarse breath sounds, or the need for high flow oxygen):

- Notify LIP
- Respiratory Therapist to evaluate and treat
- Respiratory Therapist may start Albuterol up to 15mg over 60 minutes, discontinue for development of new cardiac arrhythmias or HR greater than 140 bpm or relief of symptoms.

ESI 3

- ECG 12-Lead for age greater than 40

Initiate HHN: Albuterol-Ipratropium (DuoNeb) 3mL, INH, once (suspected COPD/Emphysema/Asthma)

- Consult LIP for lab and x-ray orders

Shortness of Breath - Pediatrics (greater than 8 weeks)
ESI 2

- Cardiac Monitor
- Oxygen to maintain O2 saturation more than 92%.
  - Page Respiratory Therapist if unable to maintain O2 saturation more than 92% & notify LIP
- Insert peripheral IV saline lock
- Initiate Cool Mist
- Document Pediatric Respiratory Severity Score
- Consult ED LIP for additional orders
  - Consider: Albuterol/Duo Neb/Racemic Epinephrine

Seizure
ESI 2

- Cardiac Monitor
- NPO
- Oxygen to maintain O2 saturation greater than 92%.
- Pad side rails x 2
- ECG 12-Lead if more than 50 years old and HR>100
- Insert peripheral IV saline lock
- POCT glucose
- CBC with differential
- CMP

HCG urine/serum if female 10-50 years of age

- Ethanol
- Urine Toxicology
- Drug level appropriate to medication(s) patient currently taking:
  - # Dilantin
  - # Phenobarbital
  - # Tegretol
  - # Depakote (Valproic Acid)

• Recurrent seizures (more than 1 seizure today):

- Consult LIP for anticonvulsant order

Stroke Symptoms

ESI 1 / 2

- Overhead Page: Stroke Alert
- Notify physician immediately
- Follow Stoke packet instructions
- Perform and document NIH Stroke Scale
- Cardiac Monitor
- POCT Glucose
- Perform bedside swallow screen prior to any PO intake
- Administer Oxygen to maintain O2 saturation greater than 92%
- ECG 12-Lead
- NPO
- Insert large bore peripheral IV saline lock x 2
- CBC with differential
- CMP
- PT/INR
- Type and Screen
- Clean Catch UA

Urine/Serum HCG if female between 10-50 years of age

- Chest Xray 1 view
- **For CT orders, consult LIP and select appropriate order:**
    - # CT Head w/o contrast, Acute Stroke
    - # CT Angio Head/Neck, Acute Stroke
    - # CT Brain perfusion, Acute Stroke

Syncope

ESI 2

- ECG 12-Lead with EDMD review within 10 minutes of arrival
- Insert peripheral IV saline lock
- CBC with differential
- CMP

PT/INR if on anticoagulant

BNP if history of CHF

- Portable CXR
- Clean catch UA

Urine/Serum HCG for females 10-50 years of age

- POCT Glucose
- Consult LIP for additional orders

ESI 3

- ECG 12-Lead with EDMD to review within 10 minutes of arrival.
- POCT Glucose

Suspected Adult Sepsis

ESI 2

- Known or suspected Infection **OR** recent Surgery/Procedure **OR** Altered Mental Status

  AND one of the following:
  - Temperature greater than 100.4°F or less than 96.8°F (>38°C or <36°C)
  - Systolic BP less than 90 mmHg
  - Respiratory rate greater than 20

Request IMMEDIATE LIP evaluation and place Sepsis Management Order:

- Activate "Sepsis Alert"
- Cardiac Monitor
- Oxygen to maintain O2 saturation more than 92%.
- Insert large bore Peripheral IV saline lock x 2
- CBC with Differential
- CMP
- PT/INR
- Lactic Acid
- Blood cultures X 2
- Clean Catch UA
- Urine/Serum HCG for females between 10-50 years of age
- COVID, FLU & RSV swab
- Chest Xray 1 view
- Consult LIP for antibiotic order within one hour

Trauma

ESI 1/2

- Cardiac Monitor
- Oxygen to maintain O2 saturation more the 92%
- Insert large bore peripheral IV saline lock x 2
- CBC with Differential
- CMP
- PT/INR
- Lactic Acid
- Type and Screen
- Clean Catch UA
- Toxicology Screen Urine
- Urine/Serum HCG for females 10-50 years of age
- XR Chest 1 view
- XR Pelvis

Ch. 5 Discussion

Education is the most essential aspect of any process improvement. NISOs encompass a significant responsibility and subsequent risk to the patient, RNs, MDs, and FMH as an organization. Initial education will be provided to the ED leadership, charge nurses, and team leads by the Chair of the FMH ED at a monthly ED Team Lead meeting. Feedback and questions from the initial training will be incorporated into the general staff training at a quarterly staff meeting. In addition to the in-person training, all ED RNs will complete two online trainings. The first online training is an ENA ESI Triage refresher training that is part of annual staff training. This will serve as a review of ESI criteria, provide for accurate classification of patients presenting to the ED, and lead to appropriate NISO administration. The second course is a guide for NISOs created by ED management which will include key points for the use of NISO, with knowledge checks and a staff acknowledgment of understanding. Before going live with the updated NISO, just-in-time reminders with training points will be provided during the staff huddle, which occurs daily at shift start for both day and night shifts. These will be available for reference in hard copy format in the daily huddle book located in the central nurses' station.

I. Expected Outcomes

a. Decreased LOS

The primary goal of the NISO process improvement is decreased LOS. ED crowding and LOS longer than 6 hours are associated with adverse clinical outcomes and an increase in mortality, including 31% of sentinel events (Moskop, 2009). NISOs provide several benefits that improve LOS. The first is the early initiation of diagnostic testing. Retezar et al. found that among patients who did not receive NISOs, only 2% failed to receive orders equivalent to the full or

partial NISOs for the given chief complaint. It is expected that a well-designed NISO will limit over and under-ordering while initiating testing earlier in the ED process.

b. Expedited Patient Care

The second benefit is the early initiation of time-sensitive treatments and medications. This includes aspirin for cardiac chest pain, activation of the cardiac catheterization lab for heart attacks based on EKG results, and early identification and treatment of sepsis. NISOs have demonstrated a reduction in medication administration time for pain, allowing for greater patient comfort during provider assessment and treatment (Lynch, 2001). Rapid treatment provides improved patient care while allowing LIPs to determine the need for additional testing more quickly (Hwang, 2016). Rosmulder et al. state, "the improvement [in LOS] was primarily achieved in patients who required additional diagnostic investigations," with their average LOS decreasing by 27 minutes, an 18% improvement (2010, p. 2).

c. Improved Patient Satisfaction

Improved patient satisfaction is a secondary goal of this process improvement. The two most common reasons given by patients who leave the hospital prior to discharge are wait times and unmet expectations (Marco, 2021). NISOs are utilized most often during periods of increased wait times. Initiation of NISOs allows for the ED process to continue while patients wait for an ED bed and assessment by an LIP. Waiting patients can have diagnostic imaging completed and read by a radiologist, blood work, and other laboratory testing processed and resulted, permitting patient care to continue, even while they wait. This allows the provider to initiate additional testing upon first assessment of the patient. Pain is the most common reason patients present to the ED (Downey, 2010). NISOs for pain have significantly reduced analgesia

administration time (Barksdale, 2016; Finn, 2012; Patil, 2017; Sepahvand, 2019). In addition, as Downey and Zun state, “A reduction in perceived pain levels directly relates to several indicators of customer service. Notably, patients who experienced pain relief during their stay in the ED had significant increases in distress relief, rapport with their doctor, and intent to comply with given instructions (Downey, 2010).

d. RN autonomy

This intervention’s final goal is to increase the autonomy of FMH ED RNs. An advisory opinion on standing orders by the Washington Department of Health Nursing Quality Assurance Commission states,

> “Nurses are accountable and responsible for the care they provide regardless of whether they carry out a medical regimen using standing orders, verbal orders, or written orders. The use of electronic health records does not take away the requirement for critical thinking and clinical judgment. Nurses must have the training, skills, knowledge, and ability to carry out medical regimens regardless of the way the orders are communicated.” (2014, p. 1)

Promoting nursing knowledge and autonomy has been shown to improve job satisfaction and promote critical thinking (Barto, 2019). Empowering nurses to make decisions through training and knowledge increases competence and confidence, promotes a collaborative environment, and develops ownership of the process (Yan, 2015; Yin, 2012). Most importantly, developing critical thinking and judgment teaches nurses to think outside the box, a necessary skill during events where the system is overwhelmed and resource availability for critical decision-making is not readily accessible, requiring front-line RNs to make decisions usually reserved for LIPs.

II. Strengths and Limitations

a. Limits of Development

Survey response was limited, with a 20% survey return rate. In addition, many FMH ED RNs have not worked at facilities outside FMH. Consequently, their exposure to a robust NISO protocol is limited, potentially lessoning ideas for new protocols. Physician engagement in the development of the protocols was limited to the Chair and Vice Chair of the FMH ED, as no other physicians expressed interest in the development and revision process.

The revised NISO protocol is a significant process change from the existing protocols. Consequently, several revised protocols were intentionally conservative. This author suspects this is partly due to the revised NISOs being a substantial practice change and physician concern for patient harm with inappropriate application. This concern may be secondary to the transitory status of FMH ED RNs and the relatively limited years of nursing experience. However, this author believes it is the duty of the ED MDs and experienced RNs to facilitate the necessary education and training to resolve any deficits in knowledge or training for the care of patients addressed in the NISOs policy.

Academic research on the development of standing orders is limited. There are no randomized controlled trials for NISO in triage. There is a significant amount of guidance on the requirements for NISO from reputable public and private entities; however, there were limited examples of comprehensive NISOs. Additionally, policy guidance frequently referred to development of the protocols using nationally recognized evidence-based guidelines and recommendations. In preparation for the presentation of the revised NISOs to FMH organizational leadership, ED leadership asked for evidence-based guidelines and

recommendations to provide the basis for the revised NISOs. An additional internet and journal search provided evidence-based guidelines for NISOs specific to Foley Catheter removal, medication refills for primary care, and vaccine administration, such as the Influenza vaccine, but no ED-specific guidance. The American College of Emergency Physicians provides specific guidance for unusual circumstances ED physicians may encounter; however, no guidance was found on the standard of care for the common chief complaints utilized by NISOs. The guidance provided by ACEP often contained the phrase "at the discretion of the treating physician", demonstrating the subjective nature of emergency medicine. This question was presented to the Chair and Vice Chair of the FMH ED. No specific guidelines were identified. Instead, the consensus was that emergency medicine is not practiced using precise guidelines, but a somewhat ambiguous concept of the "standard of care," perhaps more appropriately termed "reasonable practice" (Cooke, 2017; Sullivan, 2016, Vanderpool, 2021). The standard of care is generally understood to be "that which a reasonably competent and skilled physician would administer under the same or similar circumstances" (Sullivan, 2016, p. 2).

b. Limitations of Implementation

Historical use of existing standing orders at FMH has been variable. This is partly due to a knowledge deficit among the RNs on the existence and scope of NISOs at FMH, and the intermittent necessity for orders based on ED census and lobby wait times. Fairbanks experiences significant fluctuations in population, as some 600,000 tourists visit nearby Denali National Park during the short summer season (National parks Service, n.d.). Additionally, an increase in outdoor activities during the warmer months leads to an increase in visits due to trauma. Inconsistent use of NISOs during the winter months may lead to decreased utilization

during increased census or lobby wait times. In addition, RNs have voiced varying levels of comfort with using the orders. One common reason given for hesitancy is physician resistance to NISOs, and the subsequent negative interpersonal experience.

Developing buy-in from the MDs and RNs who will implement the NISOs may be challenging. The most common concern voiced in the employee survey was negative experiences with ED physicians. The second most common concern was an increased workload for the Triage RN. The current system of ordering NISOs could be improved significantly. In addition, there is a general feeling that the responsibility for carrying out the orders on patients waiting in the lobby, such as medication administration and specimen collection, will fall on the Triage RN, further increasing their workload.

In addition to the ED staff, achieving significant benefits from NISOs will require buy-in from the laboratory and diagnostic imaging departments. Potential solutions for initiating NISOs placed by the triage RN include utilizing a phlebotomist to draw blood on patients waiting in the lobby. Currently, there are no phlebotomists assigned to the FMH ED; ED Techs, Paramedics, or RNs obtain all laboratory studies. Historically, diagnostic imaging staff have hesitated to initiate imaging studies on patients waiting in the lobby. The workaround for this has been placing lobby patients in a family waiting area inside the ED. However, this is inefficient, and it is only sometimes feasible for the triage RN to facilitate.

c. Limits of Evaluation

Evaluation has the potential to be hindered by two variables. The limited survey response and buy-in by ED RNs may result in limited use and feedback on NISOs. The general sentiment among ED RNs is variable. ER RNs who have seen NISOs utilized effectively and

appreciate their potential benefit will champion their usage and improvement. RNs who do not buy into the revised NISOs may be concerned about added professional responsibility and potential liability in initiating NISO independently from an LIP assessment. RNs concerned about increased workload may not initiate usage when the opportunity arises, with or without appropriate assistive personnel for the care of ED lobby patients.

The second limiting factor involves data inconsistency. ESI classifies behavioral health patients as level 2 high-risk. Behavioral health patients at FMH can spend significant amounts of time awaiting an inpatient bed, potentially artificially increasing LOS. It is not unusual for a pediatric behavior health patient in Alaska to await an inpatient bed for days to weeks, depending on their specific circumstances. Alternatively, some behavioral health patients are discharged upon initial assessment by the ED MD, leading to artificially short LOS. The data on FMH ED LOS and ESI levels for the last five years did not account for these variables. As ESI Level 2 patients presenting for chief complaints other than behavioral health are prime candidates for NISOs, accounting for these variables would be necessary to assess improvements in LOS accurately.

d. Strengths of Development

FMH is a standalone facility that is community-owned and operated. The community nature of FMH is one of its greatest strengths; the potential to make changes quickly and efficiently is excellent. In addition, the voice of those providing direct patient care carries greater weight, as the degree of separation between organizational leadership and those wanting to facilitate change is small.

While research data on general NISO implementation and benefits is limited, multiple RNs and MDs have significant experience with robust and progressive NISOs at other facilities. They will serve as champions for the project. The sentiment for well-designed and implemented NISOs at FMH is optimistic. Several trials performed by the nurse champion using verbal orders from the ER MD for patients waiting in the lobby received positive feedback from patients, RNs providing direct patient care, and LIPs working at the time. In addition, a significant number of related studies provide a foundation for the effectiveness of orders placed in triage by LIPs or RNs.

Lastly, the FMH ED has experienced a change in physician leadership, with several long-standing MDs retiring or retiring soon. As such, there is potential for significant culture change as younger doctors present new ideas and influence the culture of care.

III. Evaluation and Sustainability Plan

Feedback and education are critical with any new process, but especially with one that increases the scope and responsibility of an employee. As Dr. Leubner and Wild state in their article *Developing Your Standing Orders to Help Your Team Work to the Highest Level* "Standing orders should be carefully designed and supervised and regularly revised to reduce the chances for errors" (2018, p. 14). ACEP mimics this sentiment stating, "If standardized protocols are utilized, robust education and continuous quality improvement programs should be in place" (2015, p. 2). To achieve this end, during the first two months, all use of standing orders will be reviewed by ED leadership bi-monthly to determine appropriate use and any deficits in training. A review of the NISO process will occur during the first two ED Committee meetings following the initiation of the revised NISO, with annual review and revision. An MD must authenticate all

NISO orders, any concerns or comments will be forwarded to the ED Chief of Staff or ED leadership. Any shortfalls in education or training will be addressed through the daily huddle or provided in person by team leaders. The ED RN staff currently complete an online ESI review as part of their annual education requirements, which will be reassigned just prior to initiation of the revised NISO policy. In addition, a concise review of the NISO protocol will be developed by ED leadership and added as an addendum to the annual ESI training.

IV. Recommendations

Unfortunately, there are no published examples or templates for developing NISOs. There is much guidance on what items must be present for an NISO to provide the necessary guidance and direction for safe and consistent patient care. These include the specific conditions and pre-defined clinical criteria for usage of NISOs, as well as the process for authentication by an LIP. The literature states, and this author agrees, that it is not necessary to reinvent the wheel. Facilities within a parent organization may have an NISO protocol that can be used as a template for developing orders specific to the unique requirements of a facility and the patient population they serve. Utilizing recognized and standardized criteria familiar to the staff, such as the chief complaint and ESI level, may facilitate understanding and consistent results. Ultimately, the composition of the NISO will be determined by the needs of the facility and the expectations of the physicians authorizing their use. An ED with well-educated and experienced staff who have developed a collaborative working relationship with the physician group may allow for progressive protocols with the expectation that RNs will initiate the appropriate protocol upon their initial patient assessment. Facilities where the core staff is

relatively new or significant turnover occurs may opt for protocols that are more conservative in their scope. This reduces risk, but potential benefits to the patient may be lost.

Identifying a nurse champion and respected patient care team members who have an in-depth understanding of the process and real-world experience with the potential benefits of NISOs will go a long way towards creating and implementing a successful NISO process. Ultimately, the success or failure of a robust NISO is dependent on the buy-in from the RNs initiating the orders and the subsequent patient care. Their investment in the process is often a direct result of the education and support afforded by the ED physicians. ED physicians must enable and empower a culture of care where excellence is the expectation and collaboration is encouraged. When this occurs, the result should be efficient, quality care and a healthy environment for patients and staff.

Appendix A

Standing Orders Survey

The physician group is revisiting nurse initiated standing orders. There is potential to expand the scope of the standing orders to include additional medications, laboratory orders and radiology orders to include X-rays.

The exact structure of the standing orders is yet to be determined but may include modifiable order sets based on the chief complaint and ESI level.

As this will be a nurse driven initiative, integrating suggestions and concerns from our nurses will improve the development process.

1. Are you:
    a. Core Staff
    b. Traveler

2. Do you currently feel comfortable initiating standing orders in triage or as the primary nurse?
    a. Yes
    b. No
    c. Depends on the provider working that day

3. What education from the physician group and nurse leaders would improve your ability and comfort with initiating standing orders?

4. If you could add 3 new standing orders, what would they be?

5. If we make our standing orders more robust, what barriers to implementation do you foresee?

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