

Pediatric COVID/COLDS Scoring Tool: Safe Surgical Outcome

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Background:

Akron Children's Hospital is one of the largest integrated children's health care delivery systems in the country. We see patients from all 50 states and over 15 countries and perform approximately 20,000 surgical cases annually across multiple campuses in northeast Ohio. The Perioperative Surgical Home (known as the PSH) prepares over 11,000 patients annually for elective surgical care. PSH staff consists of clerical, medical assistants, registered nurses, child life specialists, and nurse practitioners. The goals of the PSH is a one stop perioperative preparation which medically optimizes children for surgery following perioperative best practice guidelines. The COLDS scoring tool is used to compliment current algorithms and clinical evaluation to assist clinicians with a more standardized decision. The original intent for the use of the COLDS scoring tool was to determine the risk of perioperative respiratory adverse events (PRAEs) such as laryngospasms and bronchospasms for a child with a respiratory illness presenting for surgery. This tool was used to determine if surgery should be cancelled or to proceed with the procedure, modifications to anesthetic technique, and any additional post-operative monitoring needs. The COVID-19 pandemic presented a new set of challenges for patients, providers, and healthcare systems. During the pandemic our organization stopped all elective surgeries. When the organization decided to proceed with elective surgeries, there became a need to provide a tool that would determine a safe return to the OR through standardized evaluation, triage, and perioperative decision making for a patient testing positive for COVID-19 prior to surgery. Using QI processes, our PSH team modified our existing COLDS tool to a novel COVID-COLDS tool. The COLDS tool has successfully been used since 2018.

Objectives:

- Need for objective tool to help determine patient's safety and readiness for surgery and prevent cancellation procedures
 - Respiratory illnesses common to children
 - Major reason for cancellation day of surgery
- The COVID-19 pandemic stopped all elective surgeries at our organization. When returning to full OR case capacity, the PSH team was tasked with identifying patients that had been prepared for surgery prior to closure and determine how to proceed with remobilization of the organization's OR.
 - Return to full OR capacity
 - Ensure patient safety
 - Ensure staff safety
- There was a need for reliable evaluation, triage, and safe rescheduling of surgery for patients who currently or previously had COVID-19. The existing COLDS tool was modified to a COVID/COLDS tool.

COLDS Scoring Tool

| ACH Modified COLDS Scoring for URI Patients | | | |
|---|---------------------|---|--|
| Category | 1 | 2 | 5 |
| Current signs and symptoms | none | Mild: Parent confirms URI AND/OR 2 of the following symptoms: 1) non-purulent rhinorrhea 2) nasal congestion 3) sore or scratchy throat 4) sneezing 5) low fever <101 F (38.3C) 6) dry cough | Moderate/Severe: -Purulent nasal drainage -wet and productive cough (chest cold) -abnormal lung sounds -lethargy -toxic appearance -high fever >101F (38.3C) |
| Onset of symptoms | > 4 weeks | 2-4 weeks | <2 weeks |
| Lung disease | none | Mild: -Hx of RSV within past 6 mo -mild intermittent asthma -BPD in > 12 mo old -loud snoring -passive smoking | Moderate/Severe: -moderate persistent asthma or worse -BPD in <12 mo old -OSA -Pulmonary hypertension |
| Device for airway management | none or facemask | LMA | ETT |
| Surgery type | other including BMT | T&A -NLD probing -dental -flexible bronchoscopy | -cleft palate and maxillofacial surgery -rigid bronchoscopy -major surgeries: PSF, cardiac, craniotomy, intrathoracic, upper abdominal and those lasting >2 hours |
| Total Score | | | |

| ACH COLDS scoring interpretation | |
|----------------------------------|---|
| <12 | Likely ok to proceed with surgery. Screener may instruct patient there is low chance of reschedule if symptoms remain stable or improve, but is always a possibility pending day of surgery evaluation. |
| 13-18 | Recommend Elective Surgery be postponed a minimum of 4 weeks from symptom onset during Coronavirus Epidemic |
| >19 | Recommend Elective Surgery be postponed a minimum of 4 weeks from symptom onset during Coronavirus Epidemic |

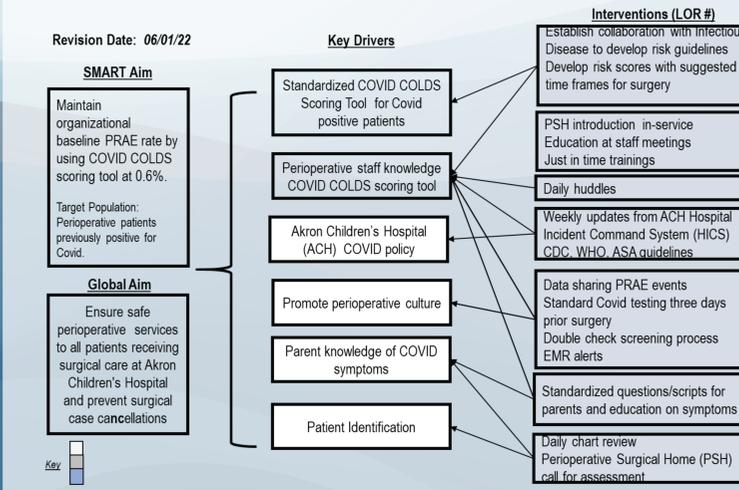
| ACH Modified COLDS Scoring for COVID (+) Patients | | | |
|---|--|---|---|
| Category | 1 | 2 | 5 |
| Current signs and symptoms | This does not apply for prior COVID (+) patient 20/1 day's screening | Mild/Moderate COVID -not hospitalized for COVID -fever <101F -dry cough -non-purulent rhinorrhea -mild nasal congestion -sore or scratchy throat -sneezing | **Severe COVID** -Primary ICU admission for COVID -Primary hospitalization for COVID -Required supplemental oxygen -Diagnosed with pneumonia -Diagnosed with multi-system inflammatory syndrome (MIS-C) -Ongoing shortness of breath or dyspnea -Ongoing wet and/or productive cough -Ongoing abnormal lung sounds -Ongoing severe lethargy or toxic appearance -Persistent fevers -New cardiac symptoms |
| Onset of symptoms (time from positive test) | > 4 weeks | 2-4 weeks | <2 weeks |
| Lung disease | none | Mild: -Hx of RSV within past 6 mo -mild intermittent asthma -BPD in > 12 mo old -loud snoring -passive smoking | Moderate/Severe: -moderate persistent asthma or worse -BPD in <12 mo old -OSA -Pulmonary hypertension |
| Device for airway management | none or facemask | LMA | ETT |
| Surgery type | other including BMT | T&A -NLD probing -dental -flexible bronchoscopy | -cleft palate and maxillofacial surgery -rigid bronchoscopy -major surgeries: PSF, cardiac, craniotomy, intrathoracic, upper abdominal and those lasting >2 hours |
| Total Score | | | |

| ACH Modified COLDS scoring for COVID (+) patients interpretation | |
|--|---|
| ICU Hospitalization for COVID | reschedule 12 weeks from (+) COVID test |
| Primary Hospitalization for COVID | reschedule 8 weeks from (+) COVID test |
| YES to any symptoms in **SEVERE COVID** section | reschedule 6 weeks from (+) COVID test |
| MILD/MODERATE COVID and >19 | reschedule 6 weeks from (+) COVID test |
| MILD/MODERATE COVID and <18 | reschedule 4 weeks from (+) COVID test |

- Five categories to score
- Each category is scored 1,2, or 5
- There is no possible score of 0 as no patient receiving anesthesia ever has zero risk for PRAE
- Scores are totaled and used to guide triage and perioperative decision making
- RED-YELLOW-GREEN Light approach: RED for patients at highest risk and consider cancel/reschedule, YELLOW to carefully weigh the risks/benefits, and GREEN likely reasonable to proceed
- The tool allows quick modification of individual category components and the scheduling recommendations, to best align with national guidelines, organizational experience and needs experienced throughout the pandemic

Process of Implementation:

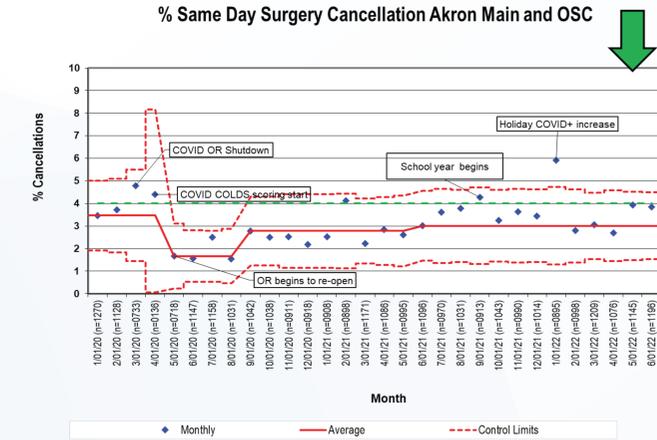
Because the COLDS scoring tool had been successful in identifying patient with respiratory illness at risk for anesthesia and surgery, it was felt that the COLDS scoring tool could be modified to help identify safe return to the OR for COVID positive patients. The PSH team worked with organizational infection control leaders to modify the existing COLDS tool. Using QI processes (process mapping, KDD, and PDSA cycles), the existing best practice COLDS scoring tool, was modified to assist with evaluation, triage, and return to OR after COVID-19 illness. The tool was optimized to meet the changing COVID-19 guidelines, clinical, and patient/family needs. Staff education focused on progressive knowledge of COVID signs and symptoms, testing workflow, and adaptations of the COVID/COLD scoring tool and how it would be used. Another important part of education was which device (ETT, mask, etc.) would most likely be used by anesthesia for the procedure. Surgery patients were tested for COVID-19 72-hours prior to surgery. Patients testing positive, were cancelled and received a phone call 20 days from positive test. Using the modified tool, the COVID/COLD score was obtained, and rescheduling of surgery was determined.



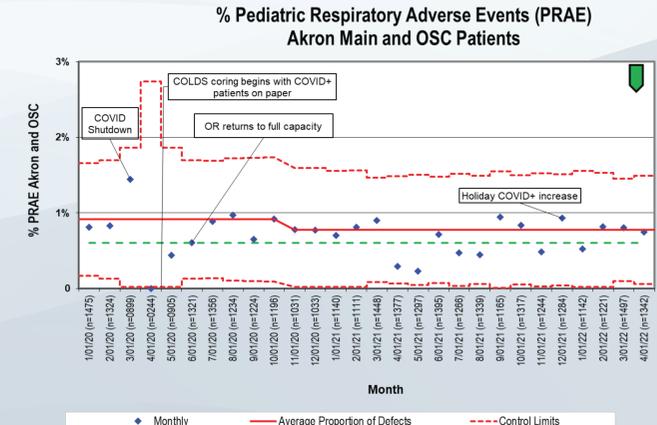
Statement of Successful Practice:

The implementation of the COVID/COLDS tool allowed us to safely determine surgical date, without increased OR cancellation rate and without increased rate of perioperative respiratory adverse events.

Findings



- Cancellations were a key metric
- Minimizing day of surgery cancellations allows the organization to better contain costs
- COVID -COLDS tool was successful in establishing a high level of efficiency for successful return to OR of COVID positive patients enhancing organizational value by maximizing perioperative resources.



- Perioperative Respiratory Adverse Events (PRAEs) intersect quality and safety
- PRAEs did not increase when using our COVID-COLDS tool and process

Implications for Advancing the Practice of Perianesthesia Nursing:

Healthcare professionals can use existing best practice tools and modify them to meet novel population health needs of patients and healthcare organizations. The benefits of having a fully integrated perioperative care system also helps in adapting best practice clinical tools in a timely and efficient manner.

References

- Lee LK, et al. Perioperative respiratory adverse event risk assessment in children with upper respiratory tract infection: Validation of the COLDS score. *Pediatric Anesthesia* 2018;28:1007-1014
- Lee BJ, August DA. COLDS: A heuristic preanesthetic risk score for children with upper respiratory tract infection. *Pediatric Anesthesia* 2014;24:349-350