



Semiannual Newsletter

Spring/Summer 2026

President's Message



Robert Brustowicz, MD FAAP FACMQ FABQAURP CHCQM
(Boston Children's Hospital)

Dear Friends and Colleagues,

It was great catching up with so many of you in Denver.

Approaching the end of my two years as WakeUp Safe (WUS) president, I want to update WUS members on our status and future outlook. While I am not going to mention names I do want to thank WUS members for all their hard work, especially those unsung heroes who perform the chart review and analyze cases for entry into our database. Without their work, WUS would not be able to fulfill its mission as a Patient Safety Organization.

WUS's position as a leader in safety initiatives has not been as prominent recently as it has been in previous years. However, we have made significant progress in correcting this since we held our Strategic Planning sessions about three years ago. Way back in March of 2021 Axio, the company that housed our database, terminated our contract. Although we had advance notice of this event, several factors and the competitive bidding process delayed beginning work on its replacement until May of 2022.

I am now pleased to report that our improved database is up and running and we have a little over half of our member institutions regularly downloading numerator information. Several

institutions have been able to take advantage of the automatic downloading feature for our denominator information. Our plan is to begin providing member institutions with quarterly safety reports starting this month. This database is much more sophisticated than the old one, enabling users to do their own searches and prepare their own reports in between our quarterly reports.

Rebuilding our database was only one aspect of WUS' PSO activities. Our Monthly conference calls were particularly useful to members during the COVID pandemic. These calls have continued to be valuable vehicles to share information between institutions in a protected fashion. We are now in the process of applying to offer CME credit to participants. Our Program and Education Committee expanded our educational offerings. WUS offers a program following both the SPA meetings that feature expert speakers on patient safety and quality improvement. Anyone interested can now register for these workshops.

Another effort to improve our visibility was through the work of our Communications Committee. They were charged with building educational bridges with other organizations by getting articles published on pediatric patient safety by WUS members. While they succeeded in publishing numerous articles and podcasts, WUS was not recognized for promoting many of these activities. A bibliography will follow at the end of this article. Please check out these references and recognize WUS and its contributions. Including the WUS banner in future publications has been identified as an opportunity for improved visibility.

Our Research Committee has streamlined the approval process for research using the WUS database. We want to encourage all members to use this data for significant research. The Quality Improvement Committee has been working on several initiatives, including IV Safety and Hypothermia in Neonates. The Committee is in the process of placing recommendations on the WUS website.

WakeUp Safe International has mostly concentrated on our affiliation with India. However, WUS did present a virtual workshop to the College of Anaesthesiologists of East, Central, and Southern Africa (CANECSA).

WUS internal operations have been made more transparent and codified by holding regularly scheduled Executive Committee meetings, updating our Policy and Procedure document, setting up a donations tab for people wishing to make tax deductible contributions to WUS, improving our billing processes, and strengthening our collaborative efforts with the SPA Quality and Safety Committee.

So, where does that leave us today?

We now have a vibrant educational program to encourage scholars within WUS to submit publications on safety issues to other organizations, a dynamic didactic program and a database that is currently very functional. WUS is getting back to where it was before the dark day when Axio gave us the ax!

My goal now and throughout the rest of my tenure is to sustain our current progress and further strengthen the organization. I am dedicated to ensuring that, when Dr. Megha Kanjia succeeds me as president, she will inherit a thriving and fully operational WUS. This transition will help WUS continue to fulfill its mission and serve members effectively in the future. If anyone has any questions or suggestions to help improve WUS, please do not hesitate to contact either Jay Deshpande or me.

Thanks again for your continued support. And, special thanks to Jay for compiling this newsletter!

Stay well and thank you again for supporting WUS,

Bob

Report from the Executive Director



Jay Deshpande, MD MPH FAAP

Jay_Deshpande@wakeupsafe.org



Welcome 2 new member hospitals, **Children's Mercy (Kansas City)**

and **University of Rochester Golisano Children's**

Hospital! Two additional institutions are currently in the process of completing the required paperwork and should be onboard later this year.



In this edition, you will read about the wonderful work you and your colleagues are doing – making the database easier to access and use, including the *Cohort Explorer*, contributing to learning opportunities at national forums, and working on improvement projects to make care safer. The Education/Program Committee's inclusive format created additional opportunities for colleagues from non-member institutions who are interested in perioperative safety to participate.

WakeUp Safe remains financially stable. We did incur some significant one-time legal expenses because the legal teams at a few member hospitals needed to revisit the participation agreements or to understand the data use agreements within a patient safety organization. Finally, my thanks to Drs. Priti Dalal, Sally Rampersad and David Buck who comprise the **nominating committee** for the vice president/president-elect position. The electronic election ballots will go out to your institution's **Voting Members** in mid-August and will close 1 week before the October WakeUp Safe meeting.

Jay

Data Governance Committee



Gina Whitney, MD
Children's Colorado
Chair



Lance Patak, MD
Texas Children's
Co-Chair



Albert Lin, MD
Columbia-MSCHONY
Co-Chair

Data Governance Committee: Gina Whitney, Lance Patak, Albert Lin, Manon Haché (Columbia-CHONY), Sally Rampersad (Seattle Children's), Ahmar Husain (Phoenix Children's), Raj Iyer (CHOP), Allan Simpao (CHOP), Bob Brustowicz (Boston Children's), Megha Kanjia (Texas Children's), Jay Deshpande (WUS); Tsui Lab at CHOP: Rich Tsui, Sachin Grover, Eammon Tweedy.



We are delighted to welcome Dr. Ahmar Husain (Phoenix Children's) as a new member.

EXECUTIVE SUMMARY

(See the full report at the end of this Newsletter)

The WakeUp Safe Data Governance is in the process of developing a data platform to drive local improvement and collaborative work across organizations providing perioperative care to children. We have made substantial additions to the current event tracking platform. The platform will allow automated measurement and visualization of both process and outcome measures.

The **Cohort Explorer** allows users to drill down into data by patient age, surgical procedure, and other relevant variables to allow both monitoring of outcomes by local leaders and

focused work by improvement teams.

The platform will allow the development of customized project “panels” for the rapid creation of datasets that support active improvement work.

Team members can focus on the work of improving care and less on manual chart review. They also will no longer require local analytics resources to drive basic improvement work once the hospital begins to submit data.

PROGRESS TO DATE

Wake Up Safe has made substantial progress in five areas:

Hospital member management and denominator (case detail) data collection: We have recruited new members, added contacts, and met with hospitals for data collection. 12 sites are now actively extracting denominator data. This is fantastic progress.

Numerator (event) data entry: 973 new case reports from 24 sites have been entered into the database to date.

Numerator (event) data analysis: 10 hospitals are submitting both numerator (event) and denominator (case detail) data.

Denominator data: The denominator data work is proceeding, and we have partitioned metrics into several categories to ensure continued progress – operational, pre-op, anesthesia technique, intraop, post op, and event capture. Operational, pre-Op, and anesthesia technique data visualizations are now easily displayed, and intraoperative data elements should be completed within the next month or two. Operational definitions for postoperative data elements are not in the final stages of development.

WUS event reporting website: The data exploration tool is now live and operational for 3 sites that are submitting data. The test site was reviewed at our recent meeting in Denver in March 2026.

NEXT ACTIONS

Development of operational definitions to guarantee consistency in measurement and reporting. For example, using data elements, how do we determine whether or not an anesthetic is a TIVA? We are working hard to stay ahead of Rich’s team as they build. We

would like to stay aligned with other organizations (MPOG/ACS, etc.). The pediatric anesthetic operational definitions are moving slowly for many groups, so this is challenging.

Continued progress on the metric data visualizations: We are currently focused on intraoperative variables and are building operational definitions for postoperative variables.

Ensure capture of American College of Surgeons (ACS) Children's Surgery Verification (CSV) metrics within the WakeUp Safe Database. To reduce the duplication of work for organizations participating in both Wake Up Safe and the ACS CSV program, we are reviewing current ACS CSV metrics and ensuring that those can be easily captured within the framework of the WakeUp Safe Database.

Development of Improvement Project "Panels" within the data platform: Are you looking to reduce intraoperative hypotension in your spine patients and easily visualize the data over time? By narrowing the dataset to a specific patient population and using pre-developed clinical and operational measures, we are working to create the capability within the data platform to rapidly build improvement project data panels. You and your team can focus on changing clinical practices and not on time-consuming data collection. We are fortunate that we tend to focus on a finite group of outcome and process measures in our improvement work.

Adverse event and contributing factor data collection: This is where WakeUp Safe really has an opportunity to set the standard for collaborative event learning nationally. Automating the collection of event data and building local capacity for event analysis and data submission are next on the agenda after the working denominator data platform is complete.

Gina, Lance and Albert

2026 Spring Meeting Highlights



Neha Patel, MD
Shriners Pasadena
Chair



Janice Man, MD
Stanford Packard Children's
Co-Chair



Susmita Nesargi, MD
Nemours Delaware
Co-Chair

Dear WakeUp Safe Colleagues,

The spring meeting focused on educational presentations and also WakeUp Safe team quality improvement initiatives. Dr. **Lalit Bajaj**, the Chief Quality Officer at Children's Colorado, delivered a keynote address on creating effective quality improvement teams, including related topics of psychological safety, team composition, and the importance of having the right mix of content expertise, process improvement skills, and data analytics. Dr. **Dean Kurth** from Children's Hospital of Philadelphia followed with a presentation on safety science in pediatric anesthesia; Dr. Kurth explained the difference between safety and quality improvement approaches and introduced the safety triangle framework which examines faults within organizations, people, and technology as contributing causes of accidents. He also discussed the evolution of safety frameworks in healthcare, outlining four levels: *Safety 0* – focusing on individual errors, *Safety 1* – learning from adverse events to address system and process improvements, *Safety 2* – learning from positive variations in practice which can point to ways to improve, and *Safety 3* – emphasizing proactive system design and control. He advocated for the healthcare system to move beyond reactive measures toward proactive system design, particularly as new technologies like AI are implemented.

The concluding session comprised four quality improvement poster presentations. Drs. **Jacob Hartung** and **Branden Engorn** shared their work on implementing a Non-Elective Surgery Anesthesia Triage (NEST) policy at Rady Children's Hospital, which successfully improved time-to-surgery metrics for emergent cases. Dr. **Haley Amundson** (collaborating with Dr. **Kim Strupp**) presented a project on transitioning from universal to risk-based pregnancy testing protocols at Children's Colorado, which resulted in a significant reduction in unnecessary testing while maintaining patient safety. Dr. **Rishi Parikh** from Johns Hopkins All Children's (St. Petersburg, FL) presented his team's work on a targeted approach in assessing and minimizing propofol waste in the pediatric endoscopy suite. The concluding talk by Drs. **Anna Lin** and **Scott Lang** from Nemours Children's Delaware presented on their opioid reduction project in

pediatric urology robotic surgery; the speakers described their ERAS protocol implementation that included regional anesthesia, non-opioid adjuvants, and education components, which led to decreased hospital length of stay and opioid utilization.

Neha, Janice and Susmita



SPA Quality and Safety News



Priti Dalal, MD FRCA, Chair

(Penn State Health Golisano Children's Hospital)

The quality and safety committee continues various projects thanks to the dedication and hard work of our members.

It's summer already! The Society for Pediatric Anesthesia Quality and Safety Committee (SPA-QS) has been busy with multiple projects – some starting, some in progress while some are achieving completion.

The Noise in the operating room task force led by Dr. **Christy Crockett** (Vanderbilt) has been working on measuring noise levels in operating rooms across multiple institutions to analyze factors contributing to noise, with findings indicating that some noise levels exceed OSHA standards. The task force plans to create a resource hub on the SPA website featuring guidelines, educational materials, and AI-generated tools to promote quiet operating environments. They are currently working on a multi-centric project (focused on protecting patients and staff from hearing loss and staff from distractions in interest of patient safety), SPA one-pager, developing a logo and abstracts at international meetings.

The SPA-QS-Checklist subcommittee (led by Dr. **Anna Clebone**, University of Chicago and Dr. **Kim Strupp**, Children's Hospital Colorado) is doing an outstanding job of adding new checklist and revising old checklist. To date, there are 119,000 downloads on Apple and 21,000 on Android, with an uptick in downloads in recent months. Dr. **Devika Singh** and Dr. **Harshad Gurnaney** (CHOP) have been leading the checklist-based simulation scenarios, and these are now on the website. These simulation videos of **PediCrisis®** scenarios are a learning tool especially for institutions with limited simulation resources.

The SPAIN (Society for Pediatric Anesthesia Improvement Network) group led by Dr. **Joe Cravero** (Boston Children's), and Dr. **Kesavan Sadacharam** (Boston Children's) have been working ACL repairs and implementation of a best care bundle or ACL repair model for postoperative management. This will be done in a stepwise manner in building centers over time looking at changes and outcomes. There are other projects the group will be embarking on in the future including spine procedures. APEX (Adolescent Outcomes of Post-operative opioid Exposure) is a prospective longitudinal observational study of adolescents undergoing major surgery with opioid exposures. The APEX group led by Dr. **Joe Cravero** (Boston) and Dr. **Sharon Levy** is funded by a major grant from NIDA. The investigators are working on a composite outcome regarding opioid use disorder, and factors that would put patients at risk for opioid use disorder, including chronic pain problems, post-traumatic stress, use of other

medications or illicit drugs, etc. They are about two years into this project and have another year of data collection. This is tremendous amount of work so congratulations to Dr Cravero and his team!

The QS poll group (led by Dr. **Katherine Keech**, Iowa Children's) continues with their monthly poll question of the month; this is a forum for a quick survey with a single question to understand the current clinical practices. Please reach out to us if interested in submitting a poll question. Kudos to the *QS-WUS collaborative group* led by Dr. **Rahul Baijal** (Texas Children's) and Dr. **Megha Kanjia** (Texas Children's). This group continues to publish QS interest topics for the *SPA Newsletter* and the *APSF newsletter*; they have 8 SPA newsletters (Cannabis in peds, advancing QI in Peds, Sustainability, Button battery, GLP-1 agonists, Unplanned extubation, E-CPR, Sickle cell anemia), 6 APSF articles (postoperative apnea, peds perioperative medication errors, sustainability, sickle cell and mediastinal masses), 6 APSF podcasts, Open anesthesia PAINTS curriculum reviews and topics to their credit. See the bibliography below).

The SPA case guides project led by Dr. **Joe Sisk** (UNC) has been extremely busy; with currently 111 published and a lot in the works. The SPA website has direct access to the case guides without need for member login. Congratulations to Dr. Sisk and his team for a successful project. Please continue to promote the case guides.

Of note, we have two new group projects in the works – *the Preanesthesia risk assessment project* led by Dr. **Angela Lee** (Children's National). While there is not much literature on this topic, the ACS Children's Surgical Center level 1 verification program requires a formalized process/program for pre-anesthesia evaluation of children. This was identified as an area for quality improvement. There was a very enthusiastic response from members and lot of interest in joining this group. Dr. Lee has formed a collaborative group (WUS and QS) of members interested in this project and the group will have multiple focus areas.

Another *potential project is on radiation safety in pediatric anesthesia*, and this is in the works. Anyone interested in joining this group is welcome. We are always looking for enthusiastic members interested in upholding the SPA mission of pediatric quality and safety.

Best wishes, *Priti*

QS-WUS Communications Committee



Megha Kanjia, MD
Texas Children's
Chair



Rahul Baijal, MD
Texas Children's
Co-Chair

The **Communications Committee** is a collaboration with the **SPA Quality and Safety committee**. [Christina Brown, Morgan Brown, Christy Crockett, Priti Dalal, Ruchika Gupta, Grace Hsu, Cathie Jones, Katherine Keech, Rahul Koka, Emily Nasser, Vanessa Ohlbrecht, Eva Lu-Boettcher, Vanessa Ohlbrecht, Joanna Paquin, Uma Parekh, Lance Patak, Neha Patel, Vikram Patel, Shelly Pecorella, Joanna Rosing, Joe Sisk, Tracey Wester, Oscar Zamorano.]

We are very proud of these accomplishments and the work that is being done and are happy to have team members who have constructed high quality and peer reviewed work that is currently being shared around the globe.

We are very proud of these accomplishments and the work that is being done and are happy to have team members who have constructed high quality and peer reviewed work that is currently being shared around the globe.

The joint efforts provide *excellent opportunities to contribute to the field through online, print and audio media*. If you want to *join the Communications Committee*, please contact the co-chairs or Jay Deshpande (jay_deshpande@wakeupsafe.org).

WUS Bibliography

SPA Newsletter articles:

1) What are the indications for preoperative blood transfusion and children with sickle cell disease?

Dalal, Baijal, Kanjia

<https://spanews.wpengine.com/?p=438>

2) Can ECPR Provide a Rescue for Your Next Patient?

Ahn, Baijal, Kanjia, Dalal, Paquin, Trivedi

<https://spanews.wpengine.com/?p=674>

3) Importance of Mandatory Unplanned Extubation Reporting

Patak, Olbrecht

<https://spanews.wpengine.com/?p=799>

4) Tiny Button, Big Risks: Button Battery Ingestion in Children

Paquin, Chutipongnate

<https://spanews.wpengine.com/?p=887>

5) Advancing Quality and Safety in Pediatric Anesthesia

Zamorano, Kanjia, Baijal

<https://spanews.wpengine.com/?p=1288>

6) High Times, Higher Risks: Cannabis in Pediatric Perioperative Care

Zamorano, Baijal, Kanjia

<https://spanews.wpengine.com/?p=1385>

7) Risky Business: Unanticipated Consequences of High Induction Doses of Neuromuscular Blocking Agents in Neonates, Infants, and Young Children

Edwards

<https://spanews.wpengine.com/?p=1529>

Anesthesia Patient Safety Foundation Newsletter contributions:

Preoperative Transfusion and Sickle Cell Disease in the Pediatric Patient

Baijal, Dalal, Kanjia

<https://www.apsf.org/article/preoperative-transfusion-and-sickle-cell-disease-in-the-pediatric-patient/?swpmtx=1e649c5ed3a00ced1a30846aeeb49580&swpmtxnonce=7cc020de69>

Perioperative Practices for Patients of Venezuelan Ancestry

Kanjia, Morgan, Baijal

<https://www.apsf.org/article/perioperative-practices-for-patients-of-venezuelan-ancestry/>

Postoperative Apnea and Former Preterm Infant: Evolving Evidence for Management

Lu-Boettcher, Koka, Dalal, Cote

<https://www.apsf.org/article/postoperative-apnea-and-former-preterm-infant-evolving-evidence-for-management/>

Pediatric Perioperative Medication Errors

Lu-Boettcher, Koka

<https://www.apsf.org/article/pediatric-perioperative-medication-errors/>

Anesthetic Considerations for the Management of Patients with Anterior Mediastinal Mass

Raghavan, Paquin

<https://www.apsf.org/article/anesthetic-considerations-for-the-management-of-patients-with-anterior-mediastinal-mass/>

Perioperative Practices for Patients of Venezuelan Ancestry

Kanjia, Morgan, Baijal

<https://www.apsf.org/article/perioperative-practices-for-patients-of-venezuelan-ancestry/>

“In the Literature” for APSF:

Summary of "Safe Selection: A Multi-Center Analysis of Exclusion Criteria in Pediatric Ambulatory Surgery Centers"

Kanjia

<https://www.apsf.org/in-the-literature/safe-selection-a-multi-center-analysis-of-exclusion-criteria-in-pediatric-ambulatory-surgery-centers/>

Summary of "Error Traps in the Intrahospital Transport of Critically Ill and Anesthetized Children"

Baijal

<https://www.apsf.org/in-the-literature/error-traps-in-the-intrahospital-transport-of-critically-ill-and-anesthetized-children/>

APSF Podcasts:

APSF #211: **Safeguarding Pediatric Patients with Sickle Cell Disease During Anesthesia**

<https://www.youtube.com/watch?v=HPj3E3ThGtM&t=5s>

APSF #212: Managing Pediatric Patients with Sickle Cell Disease

<https://www.apsf.org/article/preoperative-transfusion-and-sickle-cell-disease-in-the-pediatric-patient/>

APSF #237 and # 238 Periop Medication Errors

<https://www.apsf.org/article/pediatric-perioperative-medication-errors/>

Sustainability in the Pediatric ORs

Semi-Annual Newsletter Spring Summer 2026

A component of the Society for Pediatric Anesthesia

APSF #273 Former Preterm infants

<https://www.apsf.org/article/postoperative-apnea-and-former-preterm-infant-evolving-evidence-for-management/>

Open Anesthesia PAINTS curriculum

- **Added additional topics:**
- Levels of Harm
- Systems Thinking (4/2026) Kanjia
 - https://www.openanesthesia.org/vodcasts/systems-thinking-and-technology-design/?search_term=kanjia&search_content_type=vodcasts
- Change Management (4/2026), Lu-Boettcher
 - https://www.openanesthesia.org/vodcasts/change-management-methods-gi-methodologies-and-framework/?search_term=Lu-bo
- Communication and teamwork (5/2026), Elliot
 - https://www.openanesthesia.org/vodcasts/communication-and-teamwork/?search_term=communication%20and%20teamwork
- From Data to Improvement: The Role of QI Collaboratives in Anesthesia
 - https://www.openanesthesia.org/vodcasts/from-data-to-improvement-the-role-of-gi-collaboratives-in-anesthesia/?search_term=Lu-bo

Quality Improvement Committee



Imelda Tjia, MD
Co-Chair
Texas Children's



Kavitha Raghavan, MBBS, FRCA
Co-Chair
St Jude Children's Research Hospital

NICU Hypothermia Prevention Task Force

Meenakshi Atteri (Arkansas Children's), **Sarah Brown** (Seattle Children's), **Robert Brustowicz** (Boston Children's), **Priti Dalal** (Penn State Golisano Children's), **Natalie Neiswinter** (Penn State Golisano Children's), **Tatyana Demidovich** (Cardinal Glennon Children's), **Alissa Doll** (Children's Health Dallas), **Jonathan Halem** (Penn State Golisano Children's), **Rebecca Isserman** (Children's Hospital of Philadelphia), **Elizabeth Jacobson** (Seattle Children's), **Katie Liu** (Children's Health Dallas), **Tessa Mandler** (Children's Hospital Colorado), **Jami Miller** (Children's Health Dallas), **Megan Nash** (Children's Hospital Colorado), **Vikram Patel** (LeBonheur Children's), **Lance Patak**

(TCH- Austin), **Marnie Robinson** (Arnold Palmer Hospital for Children), **Brent Schakett** (TCH- Houston), **Kavitha Raghavan** (St. Jude), **Thomas Shaw** (TCH- Houston), **Red Starks** (USAP), **Imelda Tjia** (TCH- Houston), **Shilpa Verma** (Seattle Children's), **Matthew Wilder** (Children's Hospital Colorado) **and Barbara Winters** (Seattle Children's).

Preventing hypothermia in neonatal patients has been a key focus for WUS, as these patients are highly susceptible to heat loss. The risk is further increased during transport and the perioperative period, when body temperature can decline rapidly.

This quality improvement collaboration began with six Wake Up Safe (WUS) member institutions in 2023 and expanded to thirteen centers currently working to identify and implement evidence-based strategies to reduce neonatal hypothermia. Through shared learning, participating institutions have implemented, evaluated, and refined interventions tailored to their local clinical environments while disseminating successful practices across the collaborative.

Drawing on recommendations from the World Health Organization (WHO), U.S. News & World Report (USNWR), institutional practices, and neonatal specialists, the WUS task force established the following temperature definitions: recommended normothermia, 36.5°C–37.5°C; acceptable temperature range, 36.0°C–36.4°C and 37.6°C–38.0°C; hyperthermia, (>38.0°C); and hypothermia, (<36.0°C).

Despite the many challenges institutions encounter in maintaining normothermia, this collaborative identified several practical lessons that may help guide future implementation and sustain improvements in perioperative temperature management.

1. All WUS institutions implemented multimodal warming bundles spanning the perioperative continuum. Preoperative interventions included thermal mattresses and transport incubators, whereas intraoperative strategies incorporated forced-air warming devices, elevated operating room ambient temperatures, warming lamps, and warmed irrigation fluids. Additionally, one institution demonstrated the effectiveness of passive warming measures, including the application of thermal hats before transport from the NICU, as a simple adjunct to minimize heat loss during patient transfer.
2. Several centers developed institution-specific checklists and transport protocols to standardize perioperative temperature management. Through collaborative learning, these tools served as models for two additional institutions, which subsequently developed and tested checklists tailored to their local workflows and practice environments.
3. Continuous perioperative rectal temperature monitoring was associated with significant and

sustained improvements in maintaining normothermia at two participating centers. In addition, one institution demonstrated the value of dual-source temperature monitoring (core and skin temperatures) to verify unexpected readings, distinguish falsely low measurements, and support appropriate temperature management decisions.

4. Four institutions described the establishment of a dedicated nursing role to oversee infant warmer management and support perioperative temperature regulation and normothermia maintenance.

5. At two participating centers, programmed electronic health record (EHR) prompts improved documentation practices and reinforced clinician adherence to perioperative patient warming strategies.

6. Across participating institutions, a consistent lesson was that sustaining perioperative normothermia requires multidisciplinary collaboration among NICU, anesthesiology, surgery, and perioperative teams, together with ongoing communication, staff education, and continuous data collection to support iterative process improvement.

The WUS QI Collaborative is currently working to share their findings with the pediatric anesthesia community to support broader implementation of effective practices and improve patient care.

PIVIE Task Force

Meenakshi Atteri (Arkansas Children's), **Nathan Blair** (Stead Family Children's), **David Buck** (Cincinnati Children's), **Priti Dalal** (Penn State Golisano Children's), **Jenny Dolan** (Johns Hopkins All Children's Hospital), **Bryce Ferry** (Arkansas Children's), **Ahmar Husain** (Phoenix Children's), **Rahul Koka** (Johns Hopkins), **Marc Mecoli** (Cincinnati Children's), **Natalie Neiswinter** (Penn State Golisano), **Kavitha Raghavan** (St Jude), **Imelda Tjia** (Texas- TCH) and **Anna Varughese** (Johns Hopkins All Children's Hospital).

The Prevention of Infiltration and Extravasation quality improvement collaborative was formed in 2023 and has grown to include seven core members. The aim of this collaborative was to identify practices that prevented patient harm associated with infiltrations or extravasation; characterize interventions that promote documentation, tracking, and reporting; implement and test interventions in alignment with the local needs; and spread the knowledge learnt to the wider pediatric anesthesia community. The overarching goal of this project was to promote the spread of practices that reduce infiltration and extravasation harm events in children having anesthesia.

A change packet consisting of evidence and practice based interventions was developed. Interventions suggested in the change packet, tailored to accommodate local needs, were tested by each institution. This flexibility allowed for evaluation of a

larger number of interventions in differing environments and better understand successes and challenges. A tracker was developed to record and follow the testing and change implementation. The project progress was presented to WUS members at 6 monthly meetings.

As a result of this collaboration, methods to measure and grade the severity of infiltration extravasation events were standardized and aligned among the collaborating institutions. Multiple institutions implemented IV checks prior to induction of anesthesia and a drop in infiltration events after implementation of double flush process prior to induction of anesthesia was demonstrated by one of the teams. A risk stratification scale was developed and regular IV checks on peripheral IVs in the high risk group during the perianesthetic period were implemented in one of the institutions. In addition, the same team successfully adopted the use of biosensors to evaluate IV sites that did not lend to direct visual assessments due to intraoperative positioning requirements and demonstrated a reduction in moderate to severe infiltration events. Programmed EMR reminders for regular IV assessments during anesthesia were adopted by three institutions and is being developed at another. The role of long peripheral intravenous (IV) catheters while placing IVs under ultrasound guidance in reducing the incidence of moderate to severe infiltrations was learnt and this change in practice was adopted by two other institutions within the collaborative. Clinical pathway, workflow, or standard operating procedure work was undertaken to standardize escalation, management, documentation, and follow-up after suspected infiltration or extravasation in three institutions. Standardized event reporting system and a peripheral IV dashboard were developed to support surveillance and proactive risk identification in one of the collaborating institutions.

An infiltration and extravasation adverse event reporting system has been developed within the WUS adverse event database, to promote further learning from the reported events. The collaborative is currently working on sharing the learning from this project with the wider pediatric anesthesia community.

PONV Prevention Task Force

Meenakshi Atteri (Arkansas Children's), **Anne Baetzel** (University of Michigan), **Ahmar Husain** (Phoenix Children's), **Kavitha Raghavan** (St Jude), **Imelda Tjia** (Texas- TCH).

As the most frequent side effect after anesthesia, postoperative nausea and vomiting is a significant reason patients experience postoperative complications such as extended PACU stays, unplanned hospital or emergency department admissions. The PONV prevention task

force aims to decrease (1) unanticipated admissions, (2) Unexpected ER/hospital visits, and (3) PACU length of stay greater than 2 hours due to PONV by 50% in patients less than 2 years old. The task force is collecting baseline incidence data for PONV of four procedures that pose high-risk for PONV: strabismus repair, adenotonsillectomies, tympanoplasties and lumbar punctures with intrathecal administration of chemotherapy. The collaborative has identified several challenges to process improvement across participating institutions that will be addressed through task force initiatives. Follow-up data will be collected after implementation of targeted change concepts to evaluate their effectiveness in reducing PONV and improving perioperative outcomes.

Interested in learning more or participating in one of these projects?

Contact Imelda Tjia or Kavitha Raghavan.

Research Committee & WUS Collaboration



Raj Iyer, MD

Children's Hospital of Philadelphia

Chair, SPA Research Committee and Chair WUS International

A new collaboration has been established since the 2025 SPA Spring Meeting between the SPA Research Committee and WakeUp Safe. The goal of this partnership is to increase the presence of pediatric anesthesiologists and other healthcare professionals interested in pediatric anesthesia and quality safety.

The abstracts submitted to the SPA-AAP Spring Meeting undergo blinded review and are scored accordingly. As Chair of the Research Committee, Dr. **Raj Iyer**, reviews the scored quality and safety abstracts and forwards them to WakeUp Safe to identify additional candidates who should be invited to present their work at the WakeUp Safe workshop held on Sunday. This collaboration is spearheaded by Dr. **Raj Iyer**, in partnership with the WakeUp Safe Education/Program Committee (Drs. **Neha Patel**, **Janice Man**, **Susmita Nesargi**) and Dr. **Priti Dalal** (Chair, SPA Quality & Safety Committee) with enthusiastic support of the WUS Executive Committee. This process has created opportunities for faculty to engage at the national level in additional educational activities, strengthening the academic profile of their CVs. The collaboration has created a broader educational experience in the WakeUp Safe workshop and engagement of more anesthesiologists who are interested in perioperative quality and safety.

Raj



**See you in San Diego for our Fall Meeting
in conjunction with SPA Annual Meeting
2026.**

Sunday, October 18, 2026.

07:30-10:30 Education Program

- Update on AQI with Dr. Randy Clark
- Fireside Chat with Dr. Peggy Mcnaull
- Adverse Event Review with WUS panel

The Education Meeting is open to all SPA members.

10:30-12:30 WUS Business Meeting

Location: Hilton San Diego Bayfront Hotel

REGISTER TODAY!



WakeUp Safe Database

Update July 2026

EXECUTIVE SUMMARY

Wake Up Safe Data Governance is in the process of developing a data platform to drive local improvement and collaborative work across organizations providing perioperative care to children. We have made substantial additions to the current event tracking platform.

- The platform will allow automated measurement and visualization of both process and outcome measures.
- The cohort explorer allows users to drill down into data by patient age, surgical procedure, and other relevant variables to allow both monitoring of outcomes by local leaders and focused work by improvement teams.
- Platform will allow the development of customized project “panels” for the rapid creation of datasets that support active improvement work.
- Team members can focus on the work of improving care and less on manual chart review. They also will no longer require local analytics resources to drive basic improvement work once the hospital begins to submit data.

PROGRESS TO DATE

Wake Up Safe has made substantial progress in five areas:

1. **Hospital member management and denominator (case detail) data collection:** We have recruited new members, added contacts, and met with hospitals for data collection. 12 sites are now actively extracting denominator data. This is fantastic progress.
2. **Numerator (event) data entry: 973 new case reports from 24 sites have been entered into the database to date.**
3. **Numerator (event) data analysis:** 10 hospitals are submitting both numerator (event) and denominator (case detail) data.
4. **Denominator data:** The denominator data work is proceeding, and we have partitioned metrics into several categories to ensure continued progress – operational, pre-op, anesthesia technique, intraop, post op, and event capture. Operational, pre-Op, and anesthesia technique data visualizations are now easily displayed, and intraoperative

data elements should be completed within the next month or two. Operational definitions for postoperative data elements are not in the final stages of development.

5. **WUS event reporting website:** The data exploration tool is now live and operational for 3 sites that are submitting data. The test site was reviewed at our recent meeting in Denver in March 2026.

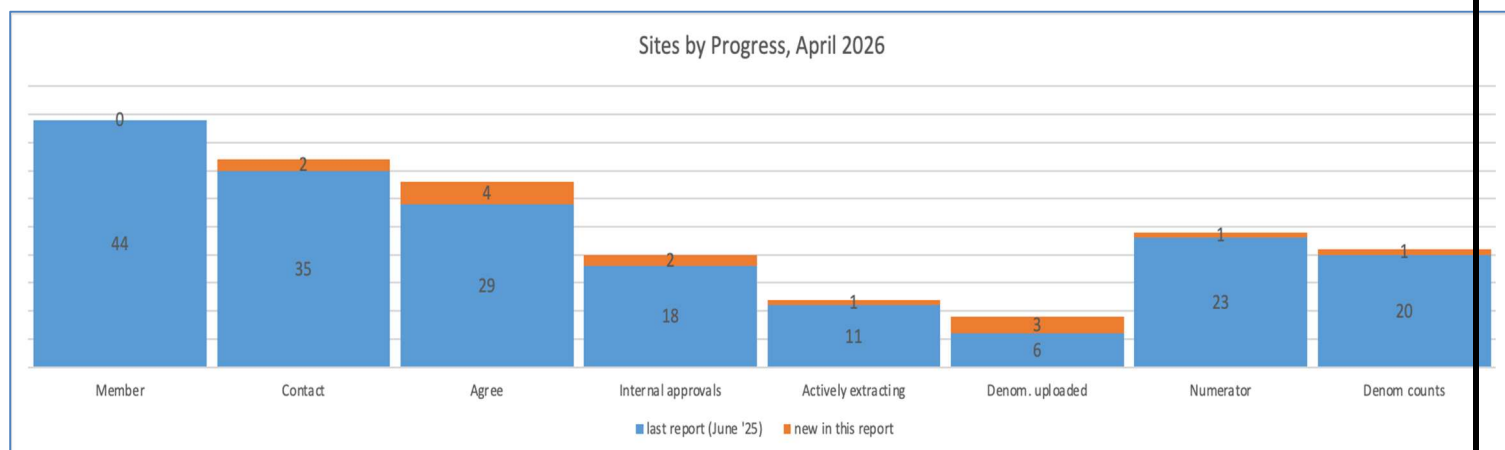
NEXT ACTIONS

1. **Development of operational definitions to guarantee consistency in measurement and reporting.** For example, using data elements, how do we determine whether or not an anesthetic is a TIVA? We are working hard to stay ahead of Rich's team as they build. We would like to stay aligned with other organizations (MPOG/ACS, etc.). The pediatric anesthetic operational definitions are moving slowly for many groups, so this is challenging.
2. **Continued progress on the metric data visualizations.** We are currently focused on intraoperative variables and are building operational definitions for postoperative variables.
3. **Ensure capture of American College of Surgeons (ACS) Children's Surgery Verification (CSV) metrics within the WakeUp Safe Database.** To reduce the duplication of work for organizations participating in both Wake Up Safe and the ACS CSV program, we are reviewing current ACS CSV metrics and ensuring that those can be easily captured within the framework of the WakeUp Safe Database.
4. **Development of Improvement Project "Panels" within the data platform.** Are you looking to reduce intraoperative hypotension in your spine patients and easily visualize the data over time? By narrowing the dataset to a specific patient population and using pre-developed clinical and operational measures, we are working to create the capability within the data platform to rapidly build improvement project data panels. You and your team can focus on changing clinical practices and not on time-consuming data collection. We are fortunate that we tend to focus on a finite group of outcome and process measures in our improvement work.
5. **Adverse event and contributing factor data collection.** This is where Wake Up Safe really has an opportunity to set the standard for collaborative event learning nationally. Automating the collection of event data and building local capacity for event analysis and data submission are next on the agenda after the working denominator data platform is complete.

THE DETAILS

Section Name	Variable	In test system	In prod system
Filters	Campus	✓	✓
Filters	Service	✓	✓
Filters	Case type – HCUP-CCS categories	✓	✓
Filters	Date range of procedure	✓	✓
Filters	Patient age	✓	✓
Filters	IP vs. OP/observation	✓	✓
Stratifications	ASA score	✓	✓
Stratifications	Difficult airway	✓	✓
Operational data	Case counts by month	✓	✓
Operational data	Total minutes (WIWO)	✓	✓
Operational data	Actual anesthesia duration minutes	✓	✓
Operational data	Actual procedure duration minutes	✓	✓
Operational data	Pre-op minutes	✓	✓
Operational data	PACU Phase I minutes	✓	✓
Operational data	PACU Phase II minutes	✓	✓
Operational data	Cleanup minutes	✓	✓
Preop	Preop BZD administered	✓	
Preop	Preop NSAID administered	✓	
Preop	Preop Acetaminophen administered	✓	
Preop	Preop Opioids administered	✓	
Preop	Preop <u>Gabapentinoids</u> administered	✓	
Preop	Preop Albuterol administered	✓	
Anesthesia Technique	Spinal block performed	✓	
Anesthesia Technique	Epidural block performed	✓	
Anesthesia Technique	Peripheral nerve block performed	✓	

Denominator Data Submission – Current State



Adverse Event Data Submission – Current State

- 24 member hospitals are currently submitting events manually.
- Variability in hospitals' thresholds for submission may make comparisons across institutions difficult. Operational definition development should help move this forward.
- Data over time for individual hospitals is much more likely to provide useful information.

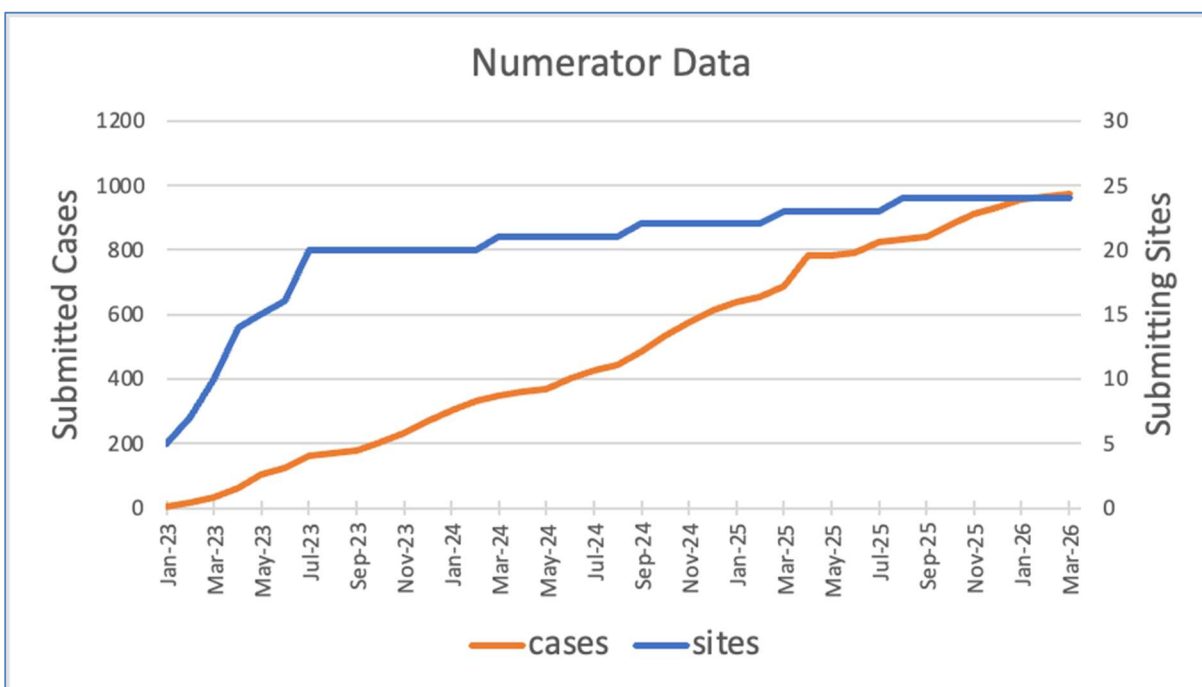


Figure 2. Numerator (case) data reporting progress from Jan. 2023 to March 2026. A total of 9773 cases were reported from 24 member hospitals.

Data Analysis – Current State

ALL EVENT RATES

In addition to the real-time numerator summary available on WUS event reporting site, we performed numerator (event) data analyses: 1) event rate run chart in conjunction with the denominator data based on reported events along with their types, and 2) the apparent causes across the 9 event types. Figure 3 shows a monthly overall event rate (from all 9 event types) run chart with 3-sigma control limits from the WUS network compared to a single hospital's monthly rate to the network rate. Figure 4 shows a variant of this control chart, limited to a specific event type (cardiac events).

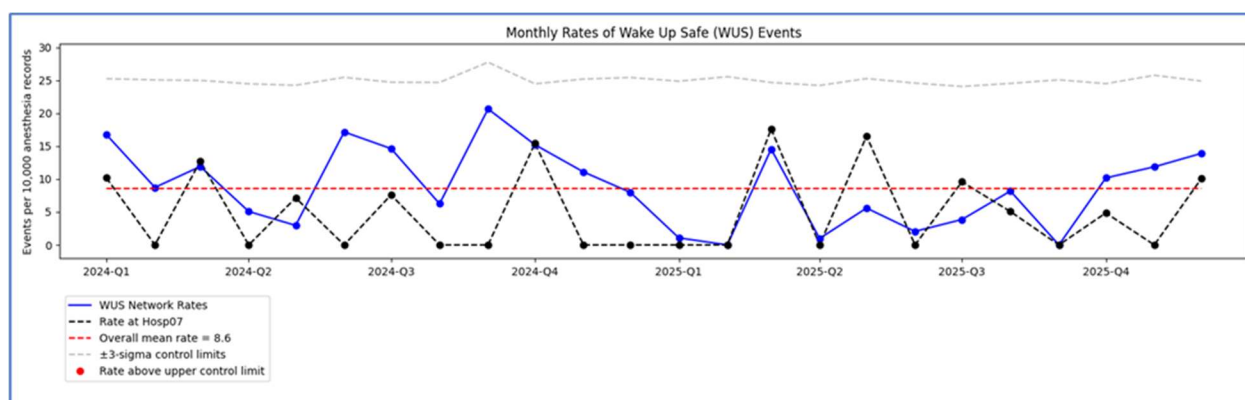


Figure 3: A 3-sigma control chart for monthly WUS network event rate per 10,000 anesthesia records during the period Jan. 1, 2024, to December 31, 2025. The run chart for an individual hospital's event rate (Hosp07 in a black dashed line) is overlaid.

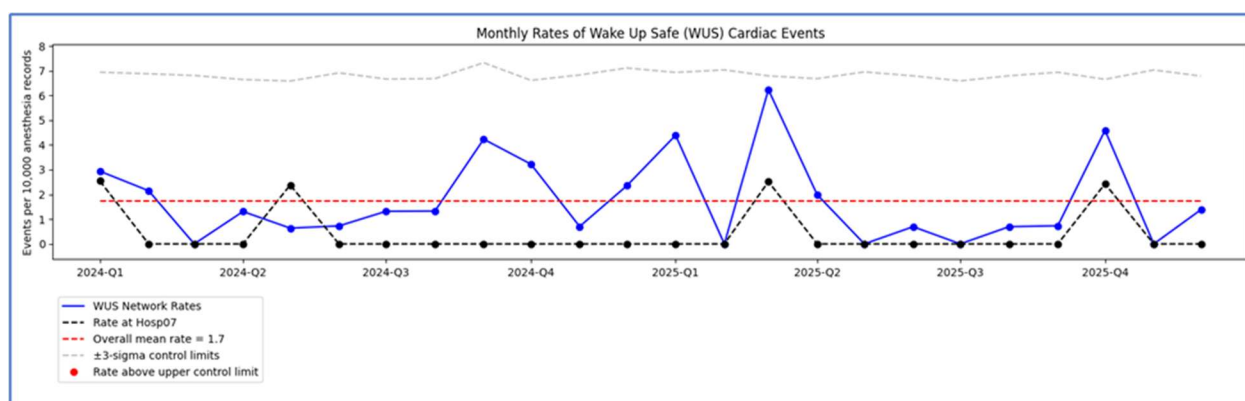


Figure 4. A 3-sigma control chart for monthly WUS network cardiac event rate per 10,000 anesthesia records during the period Jan. 1, 2024, to December 31, 2025. The run chart for an individual hospital's cardiac event rate (Hosp07) is overlaid.

ANALYSIS OF EVENT TYPES

We compared the distributions of reported event types and apparent causes between Jan 1, 2024, and March 31, 2026.

Figure 5 shows a treemap plot comparing the counts of event types, and the apparent causes reported within each event type. Most events reported in the database do not have contributing factors for events defined in the submission.

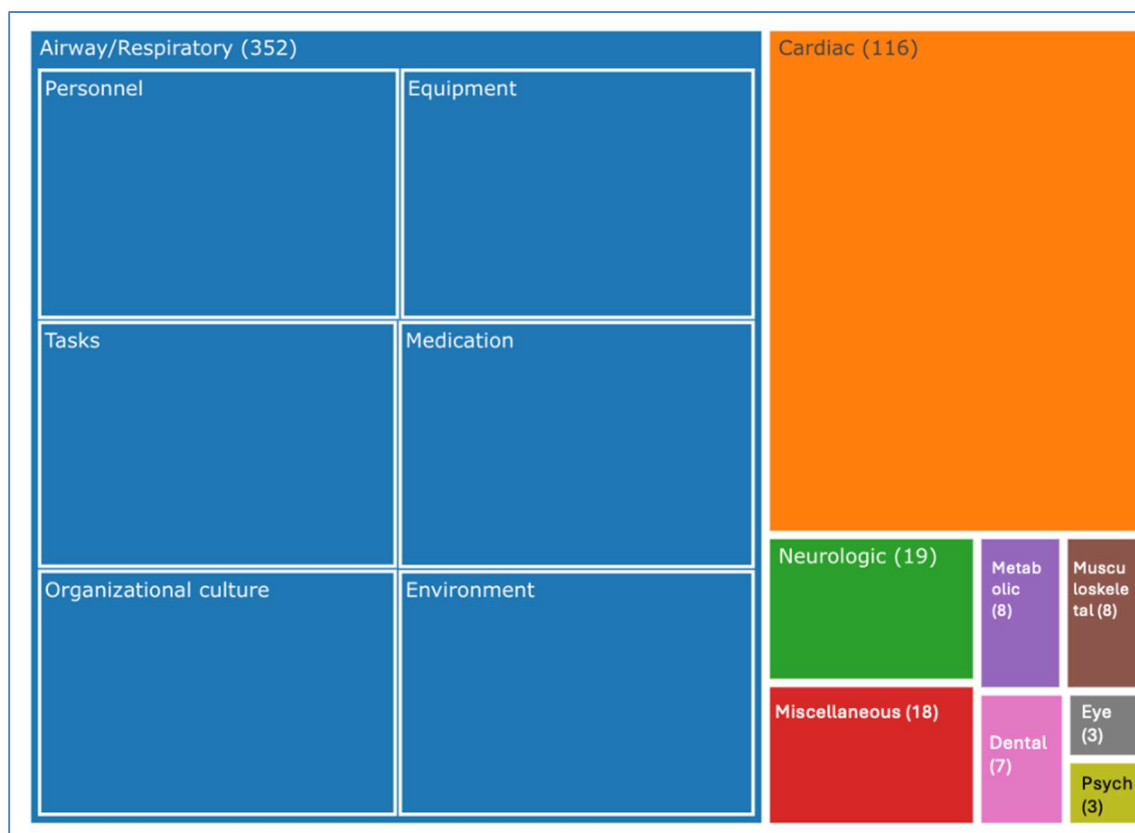


Figure 5. A treemap comparing the distributions of event types and apparent causes during the period Jan. 1, 2024 to Mar. 31, 2026. Main divisions correspond to event types; subdivisions correspond to apparent causes.

DENOMINATOR DATA ANALYSIS PROGRESS

Since the initial release of the dashboard based on semi-synthetic data in 2025 Q4, we have made substantial progress, including 1) releasing the enhanced dashboard to three member hospitals in 2026 Q1 that provide allow visualization of both numerator and denominator data, 2) augmenting outcome variables to cover operational and pre-op phase of care data. The enhanced dashboard includes the numerator dashboard, the denominator dashboard (also known as the **Cohort Explorer**), and the data reporting status dashboard. **Figures 6A** and **6B** show the screenshots of the dashboard demo webpage. We released semi-synthetic numerator and denominator databases and demonstrated at the WUS/SPA Spring meeting in Denver, CO, in March 2026. The demonstration dashboard site using the semi-synthetic data is available at <https://sample-report.wusreport.com/>.

CHOP, UPMC, and Dayton Children's are the three hospitals that can now view the enhanced dashboard with their own numerator and denominator data. This number will increase as more hospitals provide denominator and numerator data.

We recently added six outcome variables to the Cohort Explorer (**Figure 7B**), including administration of benzodiazepines (BZD), non-steroidal anti-inflammatory drugs (NSAIDs), acetaminophen, opioids, gabapentinoids, and albuterol.

COHORT EXPLORER DATA VISUALIZATION

Note that given the substantially high costs of commercial data visualization software (e.g., Tableau), the database team invested substantial effort to develop a home-grown system to reach similar analytical functionality and display flexibility and improve the user experience and stakeholder value. Below is the current denominator dashboard with data visualization capability.



Figure 7A. A screenshot of the Denominator data dashboard with the Cohort Explorer functionality showing 6 operational outcome variables (on the right panel). The left panel on the screen shows the “Cohort Selection” section which can be used to filter results based on date range, age group, case type (e.g., tonsillectomy and/or adenoidectomy, myringotomy, etc.), campus, service (e.g., otolaryngology, urology, cardiology, etc.), and the inpatient flag. The right panel shows different options of output variables (e.g., case counts/month, WIWO minutes, Turnover time, Pre-Op minutes, etc.), 4 chart types (run chart, grouped bar, box plot, and statistical process control chart), and options for stratification (e.g., ASA score, difficult airway, etc.). The center panel shows the time series charts based on the user’s selected options.

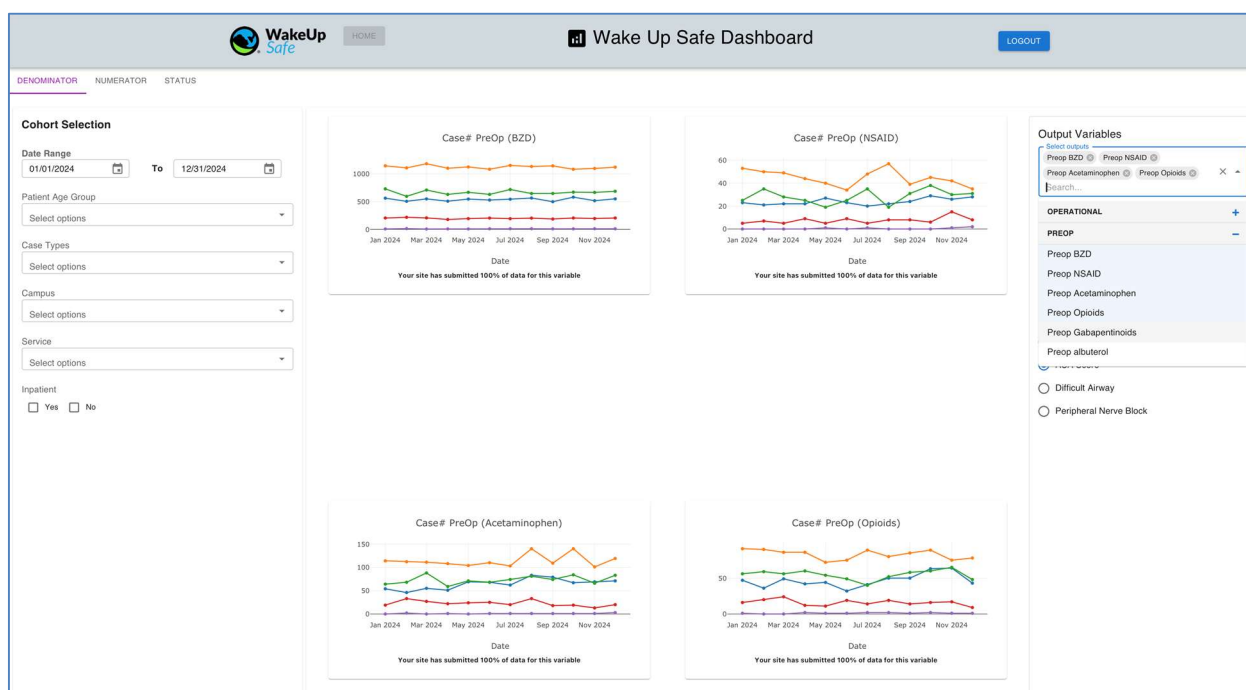


Figure 7B. A screenshot of the Denominator data dashboard with the Cohort Explorer functionality showing 6 preoperative variables (on the right panel): benzodiazepines (BZD), non-steroidal anti-inflammatory drugs (NSAIDs), acetaminophen, opioids, gabapentinoids, and albuterol.