

Grant Goals for 2023

The requested grant from the foundation will support the salaries of a full time research assistant, a part time research technician, and statistician services. This in turn will allow the pediatric surgery division to continue its research mission in 2023. Our research program helps us not only study and report on our clinical work but allows us to enhance our knowledge and understanding of clinical problems and treatment outcomes. This in return helps us provide the best, and most advanced care to our pediatric patients. The pediatric surgery research team has routinely presented work at local and national conferences and published findings in academic journals.

The research directions for 2023 are divided in five general areas of interest:

- Burn Research Program (BRP)
- Trauma Research Program (TRP)
- Children's Hospital Intestinal Rehabilitation Program (CHIRP)
- Surgery and Critical Care (SCC)
- Educational Research

Burn Research Program (BRP):

Our BRP studies focus on a variety of injury types and on all aspects and stages of burn care from injury to recovery. There are several areas of interest that are currently being researched for quality improvement and better patient outcomes.

- **Factors affecting length of stay in burn patients:** In 2022 we collected the data from 1000 charts and analyzed all factors influencing timely discharge from the hospital of burn patients. This allowed us understanding of these factors and intervening when possible to reduce length of stay for our burn patients. We presented our data at the Michigan Chapter of the American College of Surgeons meeting. We plan to submit a manuscript for publication in 2023
- **Ophthalmologic complications in burn patients:** This is a new study in collaboration with the ophthalmology department looking specifically at ophthalmologic complications in burn patients. We have completed data collection and submitted an abstract to the ABA meeting in the spring. A manuscript is being prepared as well, with plans to submit for publication in 2023.
- **Silvadene versus Xeroform dressing changes in partial thickness scald burns:** This study is currently underway looking at time to healing and need for skin grafting when using silvadene versus xeroform as primary dressing for partial thickness burns.

- **Use of Xeroform for partial thickness burns and advantages in the pediatric patient:** This is a descriptive study presented at the ABA meeting and will plan to write a manuscript for publication in 2023.

Trauma Research Program (TRP):

- **Dog Bites:** A multicomponent study of dog bite injuries continues. We have examined a cohort of patients over several years with the aim is to implement standards of management and reduce incidence of complications and length of stay in these patients. We have completed the data collection and presented our findings this year at the Michigan Chapter of the American College of Surgeons meeting and will be presenting the same at the national Pediatric Trauma Society meeting. We will be submitting our data for publications in 2023.
- **Factor affecting length of stay in the trauma patients:** This is a very large currently ongoing study looking at trauma patients with different injuries and their admission to different surgical specialties. We plan to analyze subgroups in this cohort in 2023 and look for opportunities to reduce morbidity and LOS in these patients.

Children's Hospital Intestinal Rehabilitation Program (CHIRP):

- **Intestinal Rehabilitation Assessment:** The effects of the implementation of the multidisciplinary program at our institution have yet to be examined. There is a need to analyze patient outcomes and the variables associated with intestinal failure, surgical therapies and treatment. A database was created using data from the clinic and inpatient hospital admissions and surgical procedures, so that it is compiled in a standardized way and easy to extract. We will continue to update this data base on a regular basis. In 2023, we plan to look at the effect of changing our management algorithm for central line sepsis for the intestinal failure patients on the length of stay in the hospital. We also plan to look at differences in parental adjustment score between neonatal and pediatric intestinal failure and long term rehabilitation potential for these patients and outcomes.

Surgery and Critical Care (SCC):

- **Outcomes of patients undergoing ECMO cannulation after cardiac arrest and while receiving CPR:** This study will look at survival to hospital discharge and long term neurologic outcome in children who require Extra Corporeal Membrane Oxygenation (ECMO) support after in hospital cardiac arrest and while undergoing CPR. The study

will look at length of time of CPR, time to ECMO initiation, ECMO run length and whether those factors can predict outcomes. We are currently preparing a manuscript for this study and plan to submit for publication in 2023.

- **Use of daily Echocardiography in ECMO patients to assess cannula position and reduce the need of daily chest drays:** This study has been approved to start and we plan to start enrolling patients and collecting data in 2022. The study will continue to enroll patients in 2023.
- **ECMO anticoagulation and its complication:** This study looks at anticoagulation strategy at the time of ECMO initiation and its bleeding or thrombosis complications. We have looked at the data this year and have submitted an abstract for presentation at the Extra Corporeal Life Support Organization (ELSO) meeting as well as the Society of Critical Care Medicine (SCCM) meeting. We hope to complete a manuscript for publication in 2023.
- **Length of stay study:** We have IRB approval to undertake a study exploring factors affecting length of stay in admitted patients both to the surgical and medical services and to all specialties. Data collection is almost now completed and we plan to start analyzing the data in 2023 looking for variability in LOS among patient groups and opportunities to improve on it.

Educational Research:

Pediatric surgical fellow candidates: This study aims to validate and implement a psychometric tool to characterize past and current fellows and their performance in order to direct future fellow training and surgical education. We utilized this tool a fifth time this year to prepare the rank order list for our fellow match. We plan to continue utilizing this tool in the coming year. At some point we plan analyze the characteristics of past and current fellows and report on how the tool can be used to match the best candidate into the program that fits their personality and ensures they thrive during their training.