IRB Template for Pediatric Sedation Research Consortium Project

The following information is intended to be used as an example and resource for your IRB submission that is required to participate in the Pediatric Sedation Research Consortium (PSRC) project. Please adapt this information as needed to suit the requirements of your local IRB. Not all of the details included may be required by your IRB. Additional supporting documents referenced here may be found in the Research: PSRC Resources section of the SPS website. If you have any questions, contact the Research Committee Chair and/or Vice Chair.

General Information

The purpose of this submission is to obtain a "Not Human Subjects Research" Determination

There is no central IRB. Your local IRB will be the IRB of record.

This is a multicenter study. Columbia University (New York, NY) is the Lead Institution. Columbia University is serving as the Data Coordinating Center.

The purpose of this submission is to seek expedited review, as per the federal categories referenced in 45CFR46.110, based on Category 5 (Research involving materials that have been collected, or will be collected solely for nonresearch purposes).

The risk of harm to which subjects will be exposed as a result of this research is no more than minimal.

There is no external funding or support that is applied for or awarded for this project.

Study Purpose and Rationale

The purpose is to maintain a registry to better understand the manner in which pediatric sedation is delivered at various institutions throughout the United States, so that the efficacy of varying sedation methods and incidence of serious adverse events can be evaluated and best practice guidelines for providing sedation for children can be developed. We plan to accomplish these aims through the Pediatric Sedation Research Consortium (PSRC).

Every year millions of children around the world are given sedation for diagnostic and therapeutic procedures. These procedures are performed both in the hospital setting and in physician and dental offices around the country. The personnel that provide the sedation vary from briefly trained nursing personnel to experienced pediatric anesthesiologists. The sedative drugs used, techniques employed, and safety standards vary greatly from one location to another, and even within any given institution. The care provided depends on the individuals providing sedation, the time of day the sedation is being delivered, and the area within the hospital where the sedation is being given. In essence, practitioners who are attempting to achieve the same result – that of a calm, generally still child for a procedure – use widely varying techniques and medications to produce these conditions. Few areas of medical practice remain as non-standardized as pediatric sedation practice.

Hospitals and dental practices struggle with the logistical concerns of how to provide adequate service for all pediatric patients who require sedation/anesthesia. Requests for high quality sedation services have increased as the public becomes more aware of new pain management techniques for children. Unfortunately, sedation services are required in widely varying locations within an institution. In addition, pediatric sedation may be required at any time of the day or night. Expert sedation providers are simply not available to provide this service given these requirements and case load. The result of this mismatch of supply and demand for sedation service has been a myriad of different sedation protocols and drug combinations in various hospitals and offices (even departments). Possibly most concerning has been the lack of communication between various specialties that provide sedation for children. For example, pediatric emergency medicine physicians do not always involve pediatric anesthesiologists when developing protocols for sedation in the emergency department. Similarly, research in pediatric sedation produced by dentists is almost never read or appreciated by radiologists trying to accomplish the same result. Our challenge with this study is to search beyond the preconceived

notions, “turf battles”, and ignorance that exists between various specialists in order to explore the current state of this art in medicine.

Another challenge is the lack of standardization in how sedation is provided to children. The reported efficacy of different strategies is mixed. The major goals of pediatric procedural sedation are to provide anxiety relief, pain control, and (usually) a still child. The rate of failure to achieve these goals has been reported by various investigators to be as low as 2-3% (2,3,4) and by others to be 10-20%. (5-9) When sedation fails, procedures are procedures are performed on children who are crying, struggling and requiring significant restraint. Theroux et al. described the common practice of suturing children who have lacerations without sedation using local anesthesia and papoose boards (9). As expected, adding sedation dramatically reduced crying and struggling and increased parental satisfaction. Similarly, inadequate preoperative sedation has clearly been linked to stress in children and their families surrounding surgical procedures (10). Aside from psychological trauma, diagnostic procedure quality has been documented to suffer when movement is not controlled, often requiring a procedure to be rescheduled with an anesthesiology team providing the sedation. Multiple centers, report an ~15% cancellation rate for radiological procedures (MRIs, CT scans, etc.) in children due to excessive movement (5-7).

The safety of pediatric sedation is also problematic. Sedation safety relates to how often a sedative drug produces an unwanted side effect, or toxicity. The most serious complication of pediatric procedural sedation, death, is secondary to the respiratory depressant side effect of sedative medications. The incidence of death during pediatric sedation is low but it is associated with a prevalent situation (millions of children receive sedation annually) (11). A study by Coté et. al. evaluated almost one hundred incidents of death or permanent neurological injury associated with pediatric sedation over a 10-year period. (12). His analysis reveals that the overwhelming majority of these deaths was preventable and due to operator error—thus labeled “sedation errors”. Most of the deaths could be related to the known respiratory depressant side effects of the sedative medication used. Expert consensus that respiratory depression caused by sedative drugs should not lead to death catalyzed the American Academy of Pediatrics (AAP), the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), and the American Society of Anesthesiology to issue practice guidelines for sedation. (13-15)

Unfortunately, even clinicians adhering to current practice guidelines for pediatric procedural sedation appear to be at risk of causing iatrogenic injuries. One center implemented the AAP guidelines for pediatric sedation, and then prospectively followed 1140 children (age 2.96 + - 3.7 years) sedated for procedures by non-anesthesiologists using a quality assurance tool. Approximately 13% of the children received inadequate sedation. They also reported a 5.3% incidence of respiratory events including one in which a child stopped breathing (5).

The Pediatric Sedation Research Consortium (PSRC) is the only large, multicenter, registry in the world to explore these details and address these challenges of pediatric sedation practice on this scale. Created in 2003 starting with 35 institutions, the PSRC has since grown to over 50 institutions and has collected over 600,000 unique pediatric sedation events. The PSRC continues to collect data to address the gaps in knowledge in which sedation studies otherwise available in the literature typically report sample sizes involving several hundred patients – and most often in a retrospective manner. This goal of the PSRC registry is to allow prospective data from a number of large institutions to be shared in order to produce data with the power required to make true estimates of the efficacy, efficiency, and safety of pediatric sedation practice. Information collected includes patient demographics, procedures, medications, interventions, and events involved in pediatric sedation at the member institutions. Outcomes followed will include (but not be limited to): 1) medications and adjunctive strategies used to perform sedations in a child, 2) interventions performed during a sedation, whether it be pre-emptive or in response to a change in clinical status (e.g. administration of supplemental oxygen), and 3) clinically meaningful events that occur during the course of the sedation (eg. hypoxia, inadequate depth of sedation).

Data from this registry has been invaluable in developing new paradigms for pediatric sedation delivery. Its ongoing conduct continues to provide estimations of the effectiveness or safety of a growing number of drugs or techniques in varied and comprehensive populations on a large scale. Such information fills a significant gap in knowledge and continues to help direct the future development of best practice parameters and future investigation into sedation medications and techniques.

References

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Study Design

This registry is a prospective survey of pediatric sedation practice involving a collection of data from member institutions of the Pediatric Sedation Research Consortium (PSRC). The survey does not have a set endpoint, but rather, will collect data until a member institution decides to opt out of the consortium.

Study Procedures

Sedation will be provided as per routine practice at all participating institutions. The study procedures are only observational. There will not be any prospective assignment of patients to one or more interventions. Participation in this registry will not influence or change how sedation is performed at the institutions.

At the time of sedation, or after a sedation is completed, a data sheet on a web-based interface will be completed. The variables that are collected can be found in the attachment titled, "**[xxx]**". Screenshots presenting examples of the web-based interface can be found in the attachment titled, "**[xxx]**".

Data will be reported to the data coordinating center (DCC) in a confidential manner over the web-based collection tool. The storage of this data will occur at the Statistical Analysis Center (SAC) in the Department of Biostatistics, Mailman School of Public Health, Columbia University.

No information that would directly identify the patient will be available for retrieval once it has been transmitted to the DCC. All investigators from all member institutions will be unable to link the data in the dataset back to an individual patient. There is no linking code. Each site is permitted to track the patient data that they submit, but the information provided to each site by the DCC upon such requests will be sent back in a de-identified format and will not include any information that can be linked back to an individual patient, including no date of procedure for any individual patients.

Statistical Procedures

Frequencies and descriptive statistics will be used to describe characteristics of patients enrolled, procedures performed, sedation practice variables (eg. types of monitoring, location of sedation), medications, interventions, and associated events as described in the attachment titled, **[xxx]**". Data can be viewed for each individual site on its own, in comparison to other hospitals in its peer group (ie. similar size, number of beds, type of hospital), or in comparison to all participating sites in the consortium. Comparisons of interest will be conducted using the appropriate tests for variables being analyzed (eg. continuous, ordinal or categorical).

Privacy & Data Security

Data/research records will be maintained or stored using electronic methods on a system.

The study does not involve the receipt or collection of sensitive data.

A Certificate of Confidentiality has not been requested for this research.

Electronic data will be stored at the Statistical Analysis Center (SAC) in the Department of Biostatistics, Mailman School of Public Health, Columbia University (CUMC System ID 4750). The SAC has computer resources in two locations: in their offices in the Department of Biostatistics on the campus of Columbia University Medical Center, and in a secure computer co-location facility in downtown Manhattan. The co-location facility, New York Internet Company (NYI), provides a high-security, high-uptime data infrastructure, including multiple-redundant power supply and internet access. In addition, SAC servers hosted at NYI are protected by a both hardware and software firewalls and continual process monitoring. NYI provides 24x 7x365 on-site staff for routine issues, and the SAC has an ongoing maintenance contract with Technology Campus Inc., to provide advanced technical assistance when needed. All servers hosted at NYI are regularly backed up to both tape and hard-drive, and copies are taken off-site.

The computers on the CUMC campus reside behind the campus firewall, and employ software firewalls as well. These computers are backed up daily to removable hard drives, which are regularly stored off-site. All databases are encrypted at rest, and access is solely via authenticated logins by specifically authorized users. Web sites and other internet-based communications run on Internet Information Services v.8. All web-based communication is encrypted using 256-bit encryption certificates.

Data systems have been certified by Columbia University Medical Center IT as secure for the storage of both research and patient care data. As part of this certification, the systems are audited regularly for security and regulatory compliance. Certification is based on HiTrust standards (https://hitrustalliance.net/benefits-hitrust-certification/).

Procedures

This project is not a clinical trial.

Data will be obtained from member institutions of the Pediatric Sedation Research Consortium. A list of these institutions can be found in the “PSRC Resources” section of the SPS website as a PDF, and can be attached to your protocol as an attachment.

The intent for us of the materials is to create a repository.

The purpose of the repository is to collect clinically meaningful information related to the practice of pediatric sedation in a large cohort of multiple centers across the United States. The PSRC is the only existing large-scale repository that collects this type of information for benchmarking sedation practice on a national level. It is also the only multicenter collaborative that is able to collect the number of cases required to evaluate infrequent but clinically significant serious adverse events or interventions related to variations in sedation practice across the country in a diverse cohort of practitioners and settings.

An Honest Broker system will not be utilized.

Data from the repository will be disseminated for future use by researchers through a process overseen by a Research Committee that is comprised of a Chair, Vice-Chair, and committee members who are representative of geography, specialty, type of practice, and profession. All requests for data to conduct research must follow a standardized procedure which includes a formal written submission for review by the committee. The submission undergoes an iterative review process until the submission is either approved or denied, as determined by the research committee.

All institutional members will have access to the data in a basic summary format that describes the frequency of variables collected (eg. procedure performed, types of sedatives administered). They will be able to see these frequencies for their own site, a summary of frequencies from their peer group sites (ie. peer group sites will not be reported individually, their frequencies will only be reported in summary), and frequencies across all sites. Access to any greater level of detail of data will need to first undergo a review by the Research Committee as described above.

Recruitment & Consent

We will not obtain information or biospecimens for purposes of screening or determining eligibility.

A waiver of all elements of informed consent (45 CFR 46.116) is requested. Waiver of consent is applicable to the study in its entirety. This study qualifies for a waiver or alteration of consent as the following criteria are met in this study:

1. The research involves no more than minimal risk to the subjects:
   This project involves the collection of a limited data set of information on a large group of patients from external institutions. No CUIMC patients will be recruited. There will be no change in care delivered and there will be no transmission of patient-identifiable information.

2. The waiver or alteration will not adversely affect the rights and welfare of the subjects:
   This is a limited data set, in which patient identity is protected for all patients involved.

3. The research could not practicably be carried out without the waiver or alteration:
   In order to have a valid data set, we require as close to 100% data collection on a large group of sedation patients. Since the inception of the PSRC in 2003, the number of cases collected by members of the consortium has grown to over 50,000 per year across more than 50 sites. The need to obtain informed consent in a large and varied membership of sedation practitioners with differing resources and capacity would greatly impede the ability for the consortium to collect a valid data set which is not patient-identifiable.

4. Whenever appropriate, the subjects will be provided with additional pertinent information after participation:
   Given the nature of the registery, the information is not linked in any way to the patient, and collection of this data does not impact or change the care provided to patients, sites involved in the PSRC registry project have typically not had any additional pertinent information to provide.

Research Question(s)/Hypothesis(es)

We aim to describe the various aspects of pediatric sedation performed by clinicians in a large cohort of multiple centers across the United States. These aspects we aim to describe include the demographics of patients being sedated; the types of procedures being performed; the types of clinicians performing sedations; the locations where sedations are being performed; the types of monitoring being used; the types of sedatives being administered; and any interventions or events (eg. hypoxia) associated with sedations.

Scientific Abstract

Pediatric sedation is administered with great variation among different institutions across the country. This variation is due, in part, to the lack of evidence that can guide best practice for optimal efficacy and minimizing adverse events. Given the rare occurrence of serious adverse events and the large number of permutations in sedation practice (e.g. drugs, patient characteristics, provider and location), larger numbers are required in order to properly evaluate the practice of sedation in children, and to develop best practice protocols. This can be accomplished by collecting data from a consortium of multiple institutions, so that multicenter studies can be conducted to determine the incidence of adverse events, and to evaluate the efficacy and safety of different sedation practices. The purpose of this submission is to receive permission to serve as the lead site and data coordinating center for the Pediatric Sedation Research Consortium (PSRC), which is comprised of 60 institutions that contribute data to achieve these goals

Lay Abstract

Pediatric sedation services vary greatly in the manner that they are delivered throughout North America and overseas. We wish to understand the manner in which pediatric sedation is delivered at various institutions throughout the United States. By doing so, we will be able to better understand the drugs that are used for pediatric sedation, the efficacy of sedation methods, the efficiency of pediatric sedation service, and the incidence of critical care events in pediatric sedation as it is delivered in a wide variety of venues. This can be achieved by collecting data related to pediatric sedations from a consortium of multiple institutions and depositing it into a central registry, and then analyzing de-identified data for either quality improvement or research purposes. The purpose of this submission is to receive permission to serve as the lead

site and data coordinating center for the Pediatric Sedation Research Consortium (PSRC), which is comprised of 60 institutions that contribute data to achieve these goals.

Potential Risks

Participating in the study will not affect or change the care that a patient receives.

Potential Benefits

There are no direct benefits to the patient.

Alternatives

Participating in the study will not affect or change the care that a patient receives.

Data and Safety Monitoring

Data will be locally monitored by the site principal investigator at each site. They will regularly conduct two audits: first, they will reconcile the number of sedations performed with the number of sedations entered into the database. Any discrepancies will be reported to the lead site and a root-cause analysis will be performed. Second, the site principal investigator will conduct a regular data audit of charts to ensure that data has been entered accurately. Any discrepancies will be first addressed by the site principal investigator locally. Any problems that persist will be reported to the lead site for evaluation and review.

Subjects

This study does not involve screening/assessment procedures to determine subject eligibility.

This study does not have one or more components that apply to a subset of the overall study population.

Children and minors will be enrolled.

Pregnant women/fetuses/neonates/prisoners will not be targeted for enrollment.

Study population justification: This database is specifically interested in sedation practice in children, who are an important population to study in distinction from adults due to differences in anatomy, physiology, and pathophysiology. The target subject accrual at all sites and this site have been listed as "9999999" because all sites will be contributing data on an ongoing basis, until a site decides there is a reason that they no longer wish to be part of the consortium

This study does not involve compensation or reimbursement to subjects.

This study is considered No More Than Minimal Risk (45 CFR 46.404/21 CFR 50.51; i.e., ‘Section 404’). The risks of the research are minimal because the data being collected will not affect or change the care being provided.

This research has not been categorized as 45 CFR 46.406 (‘Section 406’) or 45 CFR 46.407 (‘Section 407’).

Some or all of subjects are expected to be capable of providing assent. This is because the study will include patients across the entire range of pediatric ages (from birth onwards), which will include patients who may be old enough to provide assent and others who are not old enough.

A waiver of assent for children who are capable of providing assent is requested (See Recruitment & Consent section for justifications for each criteria).

No parental permission will be obtained because the involvement of children in this research meets the criteria for a complete waiver of consent (45 CFR 46.116(d)), which is requested in the “Recruitment & Consent” section.