SETTING SCOLIOSIS STRAIGHT
SURGEON PERFORMANCE
PROGRAM

Setting Scoliosis Straight Surgeon Performance Program Quality Improvement Registry Guidelines

A. Registry Overview

1. Purpose of the Registry: This quality improvement (QI) registry was designed to assess patient and surgeon variables and practice patterns associated with the surgical treatment of spinal deformity, and includes the following population-specific modules:

- Idiopathic Scoliosis (IS)
- Neuromuscular Scoliosis
- Spondylolisthesis
- Anterior Tethering (approach-based)

Deidentified patient-level data is submitted by participating surgeons on a quarterly basis to the Setting Scoliosis Straight central infrastructure. This QI registry aims to promote health care quality improvement by allowing clinicians to identify ways to improve treatment processes and patient outcomes by tracking surgical cases. It also serves as a source of data for outcomes and comparative effectiveness quality improvement programs.

2. Surgeon Performance Program Description: This quality improvement program is designed to assist in optimizing surgeon performance and improving patient outcomes in surgery to treat spinal deformity. Through participation in the QI registry, surgeons will receive real-time reporting thru 'dashboard reports'. Reporting contains comparative practice data that supports the identification of best practices and shared learning. Participation in this program will allow educational opportunities through program supported surgeon education events.

3. Registry Sponsor: Setting Scoliosis Straight Foundation (SSSF) is sponsoring this registry. The mission of Setting Scoliosis Straight is: "To better discoveries and advance techniques, in the treatment of spinal deformities in children and adolescents worldwide." One of our organizational strategic goals is: "To improve quality, safety and uniform outcomes for scoliosis patients by being

the leading resource globally for the standard of care and best practices for institutions and practicing surgeons". This program will function as a vital strategy to meet our goals and ultimately fulfill our mission.

4. Background and Significance: There is evidence that providing feedback improves care[12]. If surgeons track themselves on key monitors, improvements in outcomes will occur over time. By submitting data to this QI registry, a surgeon can track not only how they are doing over time, but with dashboard reporting, they are able to compare how they are doing in reference to their peers and a group mean.

This QI registry provides an ability to track easily measured outcomes and treatment approaches that are varied amongst the participating centers. This variation in treatment presents an opportunity to begin to identify best promising practices. Plan-Do-Check-Act (PDCA) cycles are well proven in improving health care processes[13]. This QI registry provides a PDCA cycle by allowing participating surgeons to continually check their outcomes and act accordingly when required. These process measures and complication reports can be opportunities for surgeons and hospitals to improve care for their patients, narrow variability, obtain best practice guidelines and reduce complications.

This mechanism of dashboard reporting surgeon performance in idiopathic scoliosis surgical treatment has been piloted through the surgeon members of a collaborative study group. This piloted QI registry effort focused on IS specifically since 2012 has allowed us to establish proven, standardized reporting mechanisms and systems, which have been translated to apply to a broader range of diagnoses.

The pilot effort has verified the following three principles regarding dashboard reporting:

- Value: maximize value by focusing on relevant, timely objectives that will directly improve treatment processes and patient outcomes
- Feasibility: keep the participant's burden as low as possible
- Sustainability: plan for change and optimize the use of all of the data.

Patient safety and patient reported outcomes are at the forefront of our effort. We are hopeful that the continuous assessment of all factors and complications of surgical treatment of spinal deformity will provide for practice variation to be defined and best practices identified.

5. Registry Management Procedures:

The Setting Scoliosis Straight Foundation's QI registry management team includes:

- Program Manager
    - The program manager is the primary liaison for the participating surgeons/sites. She provides program materials, fields related questions, and assists with agreement review processes.

- Data Manager
    - The data manager is responsible for data entry processes for participating surgeons/sites. She implements our data quality assurance plan and runs data queries for participant dashboard reports.
- Executive / Research Director
    - The research director oversees the management of this QI registry program and maintains ongoing support and funding to maintain the program.

6. Dataset: This registry collects data to be dashboarded over a period of time on patients with the same diagnosis, or patients treated with a specific treatment approach. Currently, this registry offers 3 diagnosis-specific modules for Idiopathic Scoliosis, Neuromuscular Scoliosis, and Spondylolisthesis, along with an approach-based module for Anterior Tethering procedures. Participants have the ability to choose which modules to participate in, and each module has distinct **inclusion criteria**:

- **Idiopathic Scoliosis (IS)**: Patient with idiopathic scoliosis, under 26 years of age with no prior spinal surgery, who presents with a curve large enough that a definitive fusion or non-fusion surgery is recommended and the patient and/or family is proceeding with surgical treatment.
    - ***See Page 7 for All IS Data Variables***
- **Neuromuscular Scoliosis**: Patient between the ages of 8-21 (inclusive) with spinal fusion being undertaken and the patient/family is proceeding with spinal fusion.
    - ***See Pages 8-9 for All Neuromuscular Data Variables***
- **Spondylolisthesis**: Patient under 26 years of age with isthmic and/or dysplastic spondylolisthesis (excluding degenerative spondylolisthesis).
    - ***See Page 10 for All Spondylolisthesis Data Variables***
- **Anterior Tethering Surgery (approach-based):** Patient with a diagnosis of idiopathic scoliosis, under 26 years of age, with no prior spinal surgery, who is undergoing an anterior tether procedure.
    - ***Contact SSSF for all Anterior Tethering Data Variables @ mlee@ssshsg.org***

The data is collected retrospectively from existing medical records or concurrently in the normal course of treatment on patients who meet the inclusion criteria. Additional interventions, testing or contact with the patient outside the normal course of treatment is not required.

- Subject Selection: Patients will be selected for inclusion by reviewing existing medical records and no direct interaction with the patient will be required outside of the normal course of care. There will be no discrimination or bias with respect to inclusion on the basis of sex, race, or religion. No recruitment specific to this registry will take place at any participating center.

Each participating site is responsible for establishing a data collection system. Each site will assign Registry ID numbers to each subject. Each site will maintain a list of codes and patient information, but that list will remain confidential to the site. Each site will enter data into a password protected database. Each individual surgeon at a participating site will be given a unique registry login and password, and dashboard reports are generated for each individual surgeon at the participating site.

The required dataset contains only deidentified patient level data, and no Protected Health Information is included in this registry.

1) **De-identified Data Set:** No patient identifiers will be collected. In lieu of Date of Surgery, sites will use the year and quarter the surgery occurred. In lieu of Admission Date and Discharge Date, sites will report number of hospitalization days.

The scope of the QI registry will include multiple institutions in multiple countries. This QI registry is a voluntary registry. Surgeons join the Setting Scoliosis Straight Surgeon Performance Program by agreeing to the terms of a specific contract that outlines the obligations of each party. Participants in the Surgeon Performance Program QI registry are required to sign a Registry Participation Agreement (RPA).

B. Data Management

1. Data Quality Assurance Plan:

- Consecutive Enrollment Procedures: Each participating surgeon will be required to sign an agreement prior to the initiation of participation, and commit to include a minimum of 10 consecutive cases per year for each module he/she participates in within the QI registry, to prevent against any 'cherry picking' of cases included. We will review all patients screened for inclusion in this QI registry to verify the inclusion of consecutive cases. Data can be acquired on a case by case basis and entered immediately. Data can be retrospectively collected quarterly or annually.
- Data Entry: Data entry errors will be identified through the incorporation of automated processes in the database that perform range checks, data-format checks and logical inconsistencies. Other errors which may be more difficult to identify (e.g., neglecting to document a patient's complication), will be addressed through quarterly communication with the surgeon participants to ensure all data is complete prior to report generation. Any patient file which is not confirmed complete will be left unverified and only verified data will be used in reports. Radiographs will not be evaluated for accuracy of Cobb measurements and local source documents (medical records) will not be checked for verification of the data on a routine basis. However, all data is subject to random audits conducted by SSSF as outlined in the RPA.

2. Mechanism for Data Entry and Reporting: Data will be entered by participating surgeons or clinicians electronically into our central web-based QI registry database via an institution computer. This database will be maintained in a hosting environment that meets HIPAA database hosting requirements. Following data entry and data quality verification and prior to querying for the biannual reporting, the Data Manager will ensure only deidentified data is entered and export the data to generate dashboard reports. All surgeon dashboard reports will contain only de-identified data.

C. Dashboard Reporting:

Semiannual dashboard reports are generated by SSSF using data collected through June & December, and circulated to participants in July & January, respectively. Dashboard reports contain de-identified, comparative practice data from all 'Surgeon Performance Program' participants for a given module. Surgeons are also de-identified in their dashboard reports.

We aim to improve the program annually through ongoing assessment of variables for each module to perform risk adjustment of performance measures where possible and relevant. Understanding patient factors that increase risk of an adverse event are important for the comparison of these performance metrics across surgeons and institutions.

Surgeon data comparisons will be performed locally, regionally and globally for program users.

D. Program Implementation:

Following receipt of an executed Registry Participation Agreement from a participating site or surgeon, a program implementation manual will be disseminated to the participating surgeons/sites with instructions on how to get started and discuss an optional training to be scheduled by the Data Manager.

References

1. SRS e-text book. available at: http://etext.srs.org/book/ Last accessed on 19 June 2017.

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8. Moe, JH. A critical analysis of methods of fusion for scoliosis. *J. Bone and Joint Surg*, 1958 June;40-A:529-554.

9. Suk SI, Lee CK, Kim WJ, Chung YJ, Park YB. Segmental pedicle screw fixation in the treatment of thoracic idiopathic scoliosis. *Spine (Phila Pa 1976),* 1995;20:1399–405.

10. Lenke LG., Betz RR., Bridwell KH, Harms J, Clements DH, Lowe TG. Spontaneous lumbar curve coronal correction after selective anterior or posterior thoracic fusion in adolescent idiopathic scoliosis. *Spine (Phila Pa 1976),* 1999;24:1663–72.

11. Potter BK, Kuklo TR, Lenke LG. Radiographic outcomes of anterior spinal fusion versus posterior spinal fusion with thoracic pedicle screws for treatment of Lenke Type I adolescent idiopathic scoliosis curves. *Spine (Phila Pa 1976)* 2005;30(16):1859–1866.

12. Provost LP, Murray S. The Health Care Data Guide: Learning from Data for Improvement. San Francisco: Jossey-Bass; 2011.

13. The Plan-Do-Study-Act (PDSA) cycle was originally developed by Walter A. Shewhart as the Plan-Do-Check-Act (PDCA) cycle. W. Edwards Deming modified Shewhart's cycle to PDSA, replacing "Check" with "Study." [See Deming WE. The New Economics for Industry, Government, and Education. Cambridge, MA: The MIT Press; 2000.]

SPP **Idiopathic Scoliosis** Data Variables

PRE-OPERATIVE & OPERATIVE DATA
Patient Information
Registry ID
Gender
Enrollment Inclusion Criteria
Patient with idiopathic scoliosis
Under 26 years of age
With no prior spinal surgery
With a curve large enough that a definitive fusion or non-fusion surgery is recommended, and patient and/or family is proceeding with surgical treatment
Pre-Operative Data
Height
Weight
Pre-Op Major Curve Cobb Angle
Pre-Op Major Curve Upper Level
Pre-Op Major Curve Lower Level
Pre-Op T5-T12 Kyphosis Angle
Pre-Op T12-S1 Lordosis Angle
Lenke Classification
Risser
Sanders Scale (optional)
Pre-Op Notes (optional)
Surgical Procedure
Time of Surgery (year/quarter)
First Assistant
Time of First Incision (surgical start time)
Time of Skin Closure (surgical end time)
Approach Type
Instrumentation Data
Upper Instrumented Level
Lower Instrumented Level
Total # of Anchors
Navigation Used for Anchor Placement (other than image intensifier)
Left Rod Diameter
Right Rod Diameter
Left Rod Material
Right Rod Material
Instrumentation Brand (optional)
Instrumentation Notes (optional)
Blood Data
Estimated Intraoperative Blood Loss
EBL Method Used
Blood Products Transfused
Blood Data Notes (optional)

Neuromonitoring Data
Neuromonitoring performed? (y/n)
Neuromonitoring Type (if yes)
New persistent loss of neuromonitoring at the end of the case? (y/n)
New intraop deficit identified by wake-up test? (y/n)
New neuro deficit detected in immediate postop period? (y/n)
Neuromonitoring Notes (optional)
Intra-Operative Complications Data
Complications occurring intraoperatively that prolonged length of hospitalization, caused a permanent loss of function, or required a re-operation? (y/n)
Complication Type (if yes)
Intra-Op Comps Notes (optional)

PERI-OPERATIVE DATA
Length of Hospitalization in Days
New neuro deficit detected in postop period before discharge? (y/n)
Complications occur during hospitalization that prolonged length of hospitalization, caused a permanent loss of function, or required a re-operation? (y/n)
Complication Type (if yes)
Peri-Op Notes (optional)
EARLY POST-OPERATIVE DATA
PO Major Curve Cobb Angle
PO Major Curve Upper Level
PO Major Curve Lower Level
PO T5-T12 Kyphosis Angle
PO T12-S1 Lordosis Angle
Early PO Notes (optional)

COMPLICATIONS WITHIN 90 DAYS OF SURGERY
Complications within 90 days of surgery that resulted in permanent loss of function, required re-operation or re-admission that was not previously reported? (y/n)
Complication Type (if yes)
Patient re-admitted within 90 days? (y/n)
Unplanned re-operation on the spine after discharge (y/n)
Complication Notes (optional)

SPP **Neuromuscular Scoliosis** Data Variables

PRE-OPERATIVE & OPERATIVE DATA
Patient Information
Registry ID
Gender
Enrollment Inclusion Criteria
Patient between the ages of 8-21 years (y/n)
With a spinal fusion being undertaken and the patient/family is proceeding with the spinal Fusion (y/n)
Diagnosis of (Cerebral Palsy, Myelomeningocele, Rett Syndrome, Spinal Muscular Atrophy, Other-specify)
Pre-Operative Data
Height
Weight
How is height and weight collected?
Pre-Op Major Curve Cobb Angle
Pre-Op Major Curve Upper Level
Pre-Op Major Curve Lower Level
Pre-Op Minor Curve Cobb Angle
Pre-Op Minor Curve Upper Level
Pre-Op Minor Curve Lower Level
Pre-Op Pelvic Obliquity
Pre-Op Halo Tx used: (y/n)
Duration in days (if yes)
Other traction type used? (y/n)
Traction type (if yes)
Cognitive Status – Mental Retardation:
*Gross Motor Function Classification System (Cerebral Palsy only)
Past Medical History (select from list)
Feeding Status (select from list)
Pre-Op Notes (optional)
Instrumentation Data
Upper Instrumented Level
Lower Instrumented Level
Total # of Anchors
Navigation Used for Anchor Placement (other than image intensifier) (y/n)
Left Rod Diameter
Right Rod Diameter
Left Rod Material
Right Rod Material
Instrumentation Brand (optional)
Construct Type
Instrumentation Notes (optional)

GENERAL SURGICAL DATA: **>NON-STAGED or** **>STAGE 1 and STAGE 2** ***(if the surgery was staged, variables below must be completed for both stages)***
Was surgery staged? (y/n)
If yes, provide information on Stage 1 procedure:
Time of Surgery (year/quarter)
First Assistant
Time of First Incision (surgical start time)
Time of Skin Closure (surgical end time)
Anesthesia Time
Concomitant Procedure
Approach Type
*Posterior Concomitant Procedures (only if Posterior Approach)
Spinal Cord Monitoring Used
Intra-Op Halo Tx used (y/n)
Blood Data (Non-staged or Stage 1)
Estimated Intraoperative Blood Loss
EBL Method Used
Blood Products Transfused
Neuromonitoring Data (Non-staged or Stage 1)
Neuromonitoring performed? (y/n)
Neuromonitoring Type (if yes)
New persistent loss of neuromonitoring at the end of the case? (y/n)
New intraop deficit identified by wake-up test? (y/n)
New neuro deficit detected in immediate postop period? (y/n)
Intra-Operative Complications Data (Non-staged or Stage 1)
Complications occurring intraoperatively that prolonged length of hospitalization, caused a permanent loss of function, or required a re-operation? (y/n)
Complication Type (if yes)
Surgery Notes (optional)

SPP **Neuromuscular Scoliosis** Data Variables *(continued)*

EARLY POST OPERATIVE VISIT DATA
PO Major Curve Cobb Angle
PO Major Curve Upper Level
PO Major Curve Lower Level
PO Minor Curve Cobb Angle
PO Minor Curve Upper Level
PO Minor Curve Lower Level
PO Pelvic Obliquity
Early PO Notes (optional)

PERI-OPERATIVE DATA: **>NON-STAGED or** **>STAGE 1 and STAGE 2 (*if the surgery was staged, variables below must be completed for both stages*)**
Length of Hospitalization in Days
Admitted to PICU (y/n)
Length of PICU Stay in days (if yes)
Patient Intubated (y/n)
Duration in days (if yes)
Was there a new neuro deficit detected in postop period before discharge? (y/n)
Complications occurring during hospitalization that prolonged length of hospitalization, caused a permanent loss of function*n, or required a re-operation? (y/n)
Complication Type (if yes)
Unplanned reoperation on the spine after surgery but before discharge? (y/n)

COMPLICATIONS WITHIN 90 DAYS
Complications within 90 days of surgery that resulted in permanent loss of function, required re-operation or re-admission that was not previously reported? (y/n)
Complication type (if yes)
Patient re-admitted within 90 days? (y/n)
Unplanned re-operation on the spine after discharge? (y/n)

SPP **Spondylolisthesis** Data Variables

PRE-OPERATIVE & OPERATIVE DATA
Patient Information
Registry ID
Gender
Enrollment Inclusion Criteria
Isthmic and/or dysplastic spondylolisthesis
Not degenerative
Under 26 years of age
Pre-Operative Data
Height
Weight
Reason for Surgery:
Co-morbidity:
(If the patient has either L1-S1 or S2-S4 deficit) Was there a nerve root abnormality? (y/n)
If yes, what is the level of root abnormality:
Radiographic Data
SLIP Percentage
Lumbosacral Angle
Sacral Slope
Pelvic Tilt
C7-HA (C7 plumb line in front or behind hip axis)
Surgical Procedure
Time of Surgery (year/quarter)
First Assistant
Time of First Incision (surgical start time)
Time of Skin Closure (surgical end time)
Approach Type
Instrumentation Data
Was the patient instrumented? (y/n)
If yes (specify) Upper: / Lower:
Rod Diameter: (in mm)
Rod Material:
Reduction maneuver performed? (y/n)
Type of maneuver (if yes)
Instrumentation brand (optional)
Posterior Procedures:
Anterior Procedures:
Blood Data
Estimated Intraoperative Blood Loss
EBL Method Used
Blood Products Transfused
Neuromonitoring Data
Neuromonitoring performed? (y/n)
Neuromonitoring Type (if yes)

Was there a new neuro deficit detected in immediate postop period? (y/n)
Intra-Operative Complications Data
Complications occurring intraoperatively that prolonged length of hospitalization, caused a permanent loss of function, or required a re-operation? (y/n)
Complication Type (if yes)

EARLY POST OPERATIVE DATA
*If patient has either L1-S1 or S2-S4 deficit, was there are nerve root abnormality? (y/n)
If yes, what is the level of root abnormality?
Radiographic Data
SLIP Percentage
Lumbosacral Angle
Sacral Slope
Pelvic Tilt
C7-HA (C7 plumb line in front or behind hip axis)

PERI-OPERATIVE DATA
Length of Hospitalization in Days
New neuro deficit detected in postop period before discharge? (y/n)
Neuro deficit type (if yes)?
Complications occur during hospitalization that prolonged length of hospitalization, caused a permanent loss of function, or required a re-operation? (y/n)
Complication Type (if yes)
Was there an unplanned reoperation on the spine after surgery but before discharge? (y/n)

COMPLICATIONS WITHIN 90 DAYS OF SURGERY
Complications within 90 days of surgery that resulted in permanent loss of function, required re-operation or re-admission that was not previously reported? (y/n)
Complication Type (if yes)
Patient re-admitted within 90 days? (y/n)
Unplanned re-operation on the spine after discharge? (y/n)

SPP **Anterior Tether** Data Variables

PRE-OPERATIVE AND OPERATIVE DATA (DCF #1)
Patient Information (p. 1)
Registry ID
Enrollment Inclusion Criteria (p. 1)
Patient with a diagnosis of scoliosis (y/n)
Under 26 years of age (y/n)
Undergoing an anterior tether procedure (y/n)
With no prior spinal surgery (y/n)
Pre-Operative Data (p. 2)
Gender
Height
Weight
Pre-Op Radiographic Data (p.2)
Primary Curve Cobb Angle
Secondary Curve Cobb Angle
Tethered Curve Cobb Angle
Kyphosis (T5–T12)
Lordosis (T12–S1)
Lenke Classification
Curve Type (e.g. 1–6)
Lumbar Spine Modifier (e.g. A, B, C)
Thoracic Sagittal Profile (e.g. -, N, +)
If Lenke 1A: (1A-L, 1A-R, Not Defined)
Bone Age
Risser
Sanders Scale
Was the surgery staged? (y/n)
***If yes,** fill out General Surgical Data for stage 1 & provide information on stage 1 procedure (i.e. Anterior Release, Levels release, etc.) & stage 2*

INSTRUMENTATION DATA (p. 4)
1 curve surgically managed with tether? (y/n)
If yes, Approach Type (check all that apply): Endoscopic Tether, Open Thoracic Tether, Open Thoracoabdominal (diaphragm incision) Tether, Open Retroperitoneal (below diaphragm) Tether
Instrumentation (UIV: LIV:)
• **1 cord or 2 cords?**
• **Implant Supplier:**
• **Implant System Model:**
Intra-Op Imaging: Navigation Used? (y/n)
2 Curves Surgically managed, At Least 1 with Tether? (y/n)
If yes: Thoracic Region Tethered? (y/n)
Approach Type (check all that apply): Endoscopic Tether or MIS, Open Thoracic Tether, Open Thoracoabdominal (diaphragm incision) Tether, Open Retroperitoneal (below diaphragm) Tether, ASF w/Instrumentation, PSF w/Instrumentation
Instrumentation (UIV: LIV:)
• **1 cord or 2 cords?**
• **Implant Supplier:**
• **Implant System Model:**
Intra-Op Imaging: Navigation Used? (y/n)
Thoracolumbar/Lumbar Region Tethered? (y/n)
If yes, Approach Type (check all that apply): Endoscopic Tether or MIS, Open Thoracic Tether, Open Thoracoabdominal (diaphragm incision) Tether, Open Retroperitoneal (below diaphragm) Tether, ASF w/Instrumentation, PSF w/Instrumentation
Instrumentation (UIV: LIV:) (1 cord or 2 cords) (Implant Supplier: Implant System Model:)
Intra-Op Imaging: Navigation Used (y/n)

SPP **Anterior Tether** Data Variables *(continued)*

GENERAL SURGICAL DATA (NON-STAGED or STAGE 1) (p. 5)
Age at surgery: (in years)
Time of Surgery: (year/quarter)
First Assistant: Attending, Fellow, Resident, Mid-Level(PA, NP, similar), Other:
Surgical Time (Start time: time of first incision / **End time:** time of skin closure) HH:MM
Chest Tube: (y/n)
BLOOD LOSS DATA (NON-STAGED or STAGE 1)
Estimated Intraoperative Blood Loss: (ccs)
Blood Products Transfused: (cell saver ccs, allogenic units PRBC, autologous units PRBC, no blood products given)
NEUROMONITORING DATA (NON-STAGED or STAGE 1)
Neuromonitoring performed (y/n)
If yes, check all that apply: Sensory Pathway (e.g. SSEP), Motor Pathway (e.g. TcMEP)
New persistent loss of neuromonitoring at end of case? (y/n)
New intraop deficit identified by wake-up test? (y/n)
New Neuro deficit detected in immediate postop period? (y/n)
INTRA-OP COMPLICATIONS DATA (NON-STAGED or STAGE 1)
Did any complications occur intraoperatively that prolonged length of hospitalization, caused a permanent loss of function, or required a re-operation? **(y/n)**
If yes, type (check all that apply: visual loss, death, other:)

PERI-OPERATIVE AND EARLY PO DATA (DCF #2)
EARLY PO RADIOGRAPHIC DATA
Early PO **Primary** Curve Cobb Angle (UIV:, LIV:)
Early PO **Secondary** Curve Cobb Angle (UIV:, LIV:)
Early PO **Tethered** Curve Cobb Angle (UIV:, LIV:)
Early PO Kyphosis (T5–T12)
Early PO Lordosis (T12–S1)
PA radiographs collected (y/n) (*Upload to database if YES.)
LAT radiographs collected: (y/n) (*Upload to database if YES.)
On-Table radiographs collected (optional): (y/n) (*Upload to database if YES.)
PERI-OPERATIVE DATA (STAGES 1 & 2, IF STAGED)
LENGTH OF HOSPITALIZATION **Length of Stay (days)**
NEUROMONITORING
New neuro deficit detected in postop period before discharge? (y/n)
COMPLICATIONS
Did any complications occur during the hospitalization that prolonged length of hospitalization, caused a permanent loss of function, or required a re-operation? (y/n) **If yes, type (check all that apply:** Deep Vein Thrombosis, Pulmonary Embolism, Visual Loss, Infection, Death, Other:
Was there an unplanned reoperation on the spine after surgery but before discharge? (y/n)

SPP **Anterior Tether** Data Variables *(continued)*

COMPLICATIONS WITHIN 90 DAYS PO DATA (DCF #3)
Did any complications occur within 90 Days post-op that resulted in permanent loss of function, required re-operation or re-admission, that have not been previously reported? (Y/N)
If yes, type (check all that apply): Tether Breakage, Neurological deficit onset after discharge, Deep Vein Thrombosis, Pulmonary Embolism, Visual Loss, Infection, Death, Other complications requiring readmission/reoperation (identify complication:)
Patient readmitted within 90 days? (y/n)
Unplanned re-operation on the spine after discharge? (y/n)

1 YEAR PO DATA (DCF #4)
RADIOGRAPHIC DATA
1 Year PO **Primary** Curve Cobb Angle: UIV: LIV:
1 Year PO **Secondary** Curve Cobb Angle: UIV: LIV:
1 Year PO **Tethered** Curve Cobb Angle: UIV: LIV:
1 Year PO **Kyphosis** (T5–T12)
1 Year PO **Lordosis** (T12–S1)
PA radiographs collected: (y/n) (*Upload to database if YES)
LAT radiographs collected: (y/n) (*Upload to database if YES)
On-Table radiographs collected (optional): (y/n) (*Upload to database if YES)

2 YEAR PO DATA (DCF #5)
2 Year PO **Primary** Curve Cobb Angle: UIV: LIV:
2 Year PO **Secondary** Curve Cobb Angle: UIV: LIV:
2 Year PO **Tethered** Curve Cobb Angle: UIV: LIV:
2 Year PO **Kyphosis** (T5–T12)
2 Year PO **Lordosis** (T12–S1)
PA radiographs collected: (y/n) (*Upload to database if YES)
LAT radiographs collected: (y/n) (*Upload to database if YES)
On-Table radiographs collected (optional): (y/n) (*Upload to database if YES)

COMPLICATIONS PO DATA (DCF #6)
Did any complications occur that resulted in permanent loss of function, required re-operation or re-admission, that have not been previously reported? (Y/N)
If Yes, type (check all that apply): Tether Breakage, Neurological Deficit after discharge, Deep Vein Thrombosis, Pulmonary Embolism, Visual Loss, Infection, Death, Other complications requiring readmission/reoperation (identify complication:)
Was the patient re-admitted? (y/n)
Was there an unplanned re-operation on the spine after discharge? (y/n)