Initiating, Developing, Structuring and Quality Improvement Aspects of a Pediatric Neurosurgery Program

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Quality Improvement Objectives for Pediatric Neurosurgery

- The Intraoperative care.
- The Preoperative care.
- The Postoperative care.
- The Comprehensive long term management of the child with a neurosurgical condition
- Management of parents and caretakers
- Transitioning the adolescent to an adult medical home
PLAN OF BATTLE

- Identify Community Resources.
- Identify Lack of Resources.
- Formulate a 5 year Work Template.
- Communicate with Professional Resources.
- Communicate with Administrative Resources.
- Access Venues of Financial Support
A comprehensive health care delivery system requires a sequential series of steps that provides a care strategy that starts with the initial contact of the child and caretakers, and maintains a longitudinal flow through diagnosis, medical/surgical management, rehabilitation, recovery and long term care.

Such a system can only be made by a coherent organizational structure and dedicated professionally trained personnel.
CENTER DEVELOPMENT

- PHASE 1.
  CREATING A CLINICAL PROGRAM
  September 2003 – June 2010
  Chief, Pediatric Neurosurgery Center

- PHASE 2.
  PROGRAM DEVELOPMENT & QUALITY IMPROVEMENT
  July 2010 – 2014
  Director of Development of the Center
AN INTERDISCIPLINARY AND INTER-INSTITUTIONAL VENUE

- UNIVERSITY OF FLORIDA.
- MAYO CLINIC.
- NEMOURS CHILDRENS CLINIC.
- WOLFSON CHILDRENS HOSPITAL
- BAPTIST HEALTH OF NORTHEAST FLORIDA.
PHASE 1
Creating a Clinical Program

- INITIATING AN OPERATIVE SERVICE
- INITIATING AN INPATIENT SERVICE
- INITIATING AN OUTPATIENT SERVICE
- CREATING SUPPORT SERVICES
- CREATING CLINICAL PROGRAMS
- MAXIMIZING COMMUNITY RESOURCES
- EDUCATING PHYSICIANS AND ALLIED HEALTH PERSONNEL
PROFESSIONAL RESOURCES

CHILD WITH A NEUROSURGICAL CONDITION

- PEDIATRIC NEUROSURGEONS
- PEDIATRIC NEUROLOGY/EPILEPTOLOGY
- PICU FACULTY NEONATOLOGY FACULTY
- PEDIATRIC ANESTHESIOLOGY
- NEURORADIOLOGY
- OPERATING ROOM STAFF
- PEDIATRIC PHYSICAL MEDICINE REHABILITATION
- PEDIATRIC EMERGENCY MEDICINE
- PEDIATRIC NEUROSURGERY OFFICE STAFF
- PEDIATRIC NEUROSURGERY ALLIED HEALTH
INPATIENT HEALTH CARE FACILITIES

CHILD WITH A NEUROSURGICAL CONDITION

- PICU
- NICU
- OPERATING ROOM ENVIRONMENT
- PEDIATRIC REHABILITATION UNIT
- NEUROPHYSIOLOGY MONITORING
- NEURO IMAGING CAPABILITIES
- PEDIATRIC EMERGENCY DEPARTMENT

CHILDREN'S HEALTHCARE FACILITY
Child with a Neurosurgical Condition

ENTRY POINT

Office/Clinic

Neuro Imaging

PICU

NICU

Operative Intervention/Procedure

Intermediate Care/Acute Rehabilitation

Physical Medicine & Rehabilitation Unit

Comprehensive Clinics

Radiosurgery

Proton/Linac Therapy

OncoLOGY Chemotherapy

Community Re-entry
Entry Point/Initial Contact

- **Patient Service Representatives:**
  - Intake
  - Registration

- **Patient Service Coordinators:**
  - Scheduling of Imaging and Diagnostic Procedures.

- **Patient Surgery Schedulers:**
  - Surgery and Related Procedures.
Evaluation by Health Care Personnel

- History and Physical Examination by Neurosurgery ARNP/Physician Assistant.
- “Focused” Examination by Pediatric Neurosurgeon.
- Requesting of Additional Diagnostic Procedures, Consultations and/or Operative Scheduling.
Diagnostic Neurophysiology

- Electroencephalography (EEG)
- Video Monitoring EEG
- Electromyography/Nerve Conduction Laboratory
- Baclofen Trial Facility
- Continuous Epilepsy Monitoring Facility
Neurodiagnostic Technologies

- Cranial/Spinal Ultrasonography
- Radiography
- Cranial/Spinal Computed Tomography
- Cranial/Spinal Magnetic Resonance Imaging (MRI)
- Functional MRI/Tractography/Spectroscopy
- Cranial/Spinal Angiography
- Positron Emission Tomography
- Single Photon Emission Computed Tomography
- Magnetoencephalography (MEG)*

(*) to be developed.
Operating Environment

- Operating Facility with Capacity and Support Systems
- Neurophysiology Monitoring
- Neuronavigational Equipment
- Operating Microscope with Neuronavigational Attachments
- Neuroendoscopy Technology
- Intraoperative Ultrasonography
- Intraoperative Computed Tomography
- Intraoperative Magnetic Resonance
- Intraoperative Angiography
- Surgical Laser Systems
Immediate Postoperative Management

- Post Anesthesia Care Unit (Recovery Room)
- Neonatal Intensive Care Unit
- Pediatric Intensive Care Unit
- Intermediate Care /Acute Rehabilitation Area
- Non Acute Inpatient Care Areas
Postoperative Management
Support Systems

- Non Acute Inpatient Care Areas
- Continuous Epilepsy Surgery Recovery Area
- Inpatient Physical Medicine/Rehabilitation Area
- Outpatient Physical Medicine and Rehabilitation Facilities
Outpatient Neurosurgery Care
Areas for Longitudinal Multidisciplinary Management

- Brain Tumor Clinic
- Craniofacial Clinic
- Neurosciences Clinic
- Spasticity Clinic
- Spinal Defects Clinic
NEUROSURGERY PROGRAMS

- Brachial Plexus Injury Program
- Craniofacial Program
- Epilepsy Program
- Fetal Diagnosis/Therapy Center Program
- Nervous System Tumor Program
- Spasticity Program
- Spinal Defects Program
- Telemedicine Program (State of Georgia – Children’s Medical Services)
Central Nervous System Tumor Management Programs

- Pediatric Oncology/Chemotherapy Regimes (Nemours Children’s Clinic)
- Radiosurgery: Gamma Knife Surgery – Novalis™ (Baptist Health)
- LINAC Radiation Therapy (Baptist Health)
- Proton Beam Therapy (University of Florida)
PHASE 2
Program Development & Quality Improvement

CME JOURNAL CLUB QI MONTHLY SESSIONS
CORRECT AND/OR ENHANCE PROGRAMS
QUALITY IMPROVEMENT MONTHLY SESSIONS
Program Development
Ongoing Education/Quality Improvement

QI/CME LOOP

Identify Knowledge Gap of Team Member

Equipment “Failure”/or Technical Issue

Adverse Event Identification

QUALITY IMPROVEMENT SESSION

CME/JOURNAL CLUB SESSION

DOCUMENT ACTION TAKEN IN QI PROCESS
PROGRAM DEVELOPMENT: A CONTINUING EXPERIENCE

- CENTER FACULTY ENHANCEMENT
  - Faculty Recruitment
  - Fellowship Application and Program

- TRAINING AND EDUCATION
  - Neurosurgery Residents
  - Neurology Residents and Fellows
  - Allied Health Personnel

- PROGRAM ENHANCEMENT VENUES
  - Center Pharmacology Venue
  - Center Bibliography Venue
PROGRAM DEVELOPMENT
Clinical Research/Education

- CLINICAL RESEARCH FOR QI ISSUES
- CLINICAL RESEARCH FOR RESIDENT AND FELLOWSHIP TRAINING
- CLINICAL RESEARCH AS A VENUE FOR INTERDISCIPLINARY WORK
- CLINICAL RESEARCH AND RESOURCE UTILIZATION
PROGRAM DEVELOPMENT:
RECRUITING COMMUNITY AND INSTITUTIONAL SUPPORT

- PROGRAM FINANCIAL SUPPORT
- PATIENT CARE FINANCIAL SUPPORT
- OPERATING ENVIRONMENT FINANCIAL SUPPORT
- FINANCIAL SUPPORT FOR CLINICAL PROGRAMS
What I Have Learned

- By involving the Physician Assistant and the Nurse Practitioners in the QI and CME monthly sessions, a better “team” venue and ongoing interaction with the physicians has been realized.

- Involving these “Physician Extenders” in education, clinical research, preparation of manuscripts and presentations in scientific meetings, a spirit of “providing better” patient care seems to have evolved.
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