

# **OPTIMAL RESOURCES FOR CHILDREN'S SURGICAL CARE**

## **I. Guidelines for Different Levels of Care**



**GICS**

**Global Initiative for Children's Surgery**

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**TABLE 4.** Optimal resources for basic surgical care. This type of care is designed to be delivered at the Health Center Level<sup>a</sup>.

<b>BASIC SURGICAL CARE</b>		
<b>SCOPE OF PRACTICE</b>		
<b>Function</b>	Screening for surgical disease Resuscitation and Triage Training of health care workers Referral to higher levels of care Community Health Education	
<b>Age of patients</b>	All ages	
<b>Anesthesia</b>	Local anesthesia for minor procedures.	
<b>Examples care provided (See Appendix 1 and 2 for a more detailed list)</b>	<b>Injuries</b>	Resuscitation with basic life support measures, suturing and dressing of simple wounds, splinting of closed, non-displaced fractures 1 <sup>st</sup> degree burns < 10% TBSA and not including face, hands, GCS Score
	<b>Congenital anomalies</b>	Screening for congenital anomalies (e.g., abdominal wall defects, hernias, anorectal and urogenital abnormalities, limb deformities, hip dysplasia, cardiac anomalies, neural tube defects and craniofacial anomalies (cleft lip/palate)
	<b>Infections</b>	Screening for surgical site infections, intra-abdominal infection, bone and joint infections. Treatment of superficial abscess with incision and drainage
	<b>Tumors</b>	Screening for tumors
	<b>Others</b>	Circumcision using a Plastibel Removal of visible foreign bodies in the ear and nose Hearing screening Vision screening
<b>OPTIMAL RESOURCES</b>		
<b>Training &amp; staffing</b>	<b>Human resources</b>	Community health workers, general practice nurses, and others
	<b>Required skills</b>	Screening: congenital anomalies, surgical diseases, surgical site infections Resuscitation and stabilization: basic life support measures including airway management, peripheral vascular access, insertion of nasogastric tube, initial burn management Care of trauma wounds: arrest of bleeding, cleaning, suturing, dressing, splinting Care of postoperative wounds: cleaning, dressing, removal of stitches Pain management: use of non-opioid analgesics
<b>Physical resources</b>	<b>Infrastructure</b>	Infrastructure to support basic services Availability of transportation to higher level of care
	<b>Equipment &amp; supplies</b>	See OReCS: Supplies, Equipment and Infrastructure Document
<b>Quality &amp; Safety</b>	Supervision and mentoring Data collection for Quality Control CME/CPD	

<sup>a</sup> Equivalent to small hospital/health center in the WHO health facility classification system (WHO Level 1).

**TABLE 5.** Optimal resources for intermediate surgical care. This type of care is designed to be delivered at First-Level Hospitals<sup>a</sup>.

<b>INTERMEDIATE SURGICAL CARE</b>		
<b>SCOPE OF PRACTICE</b>		
<b>Function</b>	24/7 emergency surgical care Diagnosis and treatment of the most common pediatric surgical conditions Training of health care workers Referral to next level of care for complex procedures	
<b>Age of patients</b>	All ages <sup>b</sup>	
<b>Anesthesia</b>	General anesthesia (ASA I+II) Referral ASA >2	
<b>Examples of care provided (see Appendix 1 and 2 for a more detailed list)</b>	<b>Injuries</b>	Resuscitation with advanced life support measures including fluid management and nutrition Trauma laparotomy Closed and open fractures Diagnosis and stabilization of neurological trauma (e.g., epidural hematoma, includes emergency burr hole if transfer not possible) Treatment of burns (<10% not involving face, hands and perineum)
	<b>Congenital anomalies</b>	Inguinal hernia repair in older children
	<b>Infections</b>	Incision and drainage of abscesses, pyomyositis and septic arthritis Appendicitis, intestinal perforation Thoracostomy tube for empyema Drainage and debridement of osteomyelitis
	<b>Tumors</b>	Excision of benign tumors
	<b>Others</b>	Intestinal obstruction (e.g., intussusception, enterolysis for adhesions) Foreign body removal from ear, nose, airway and esophagus
<b>OPTIMAL RESOURCES</b>		
<b>Training &amp; staffing</b>	<b>Human resources</b>	General doctor or non-physician surgical provider Anesthesiologist +/- anesthesia provider Perioperative and ward nursing, Physiotherapist
	<b>Required skills</b>	Basic knowledge of common childhood conditions Advanced Trauma Life Support (ATLS); Pediatric Advanced Life Support (PALS); SAFE course Antibiotic stewardship Pediatric pain management Pediatric anesthesia experience
<b>Physical resources</b>	<b>Infrastructure</b>	Operating room, recovery area, and children's ward Availability of transportation to higher level of care
	<b>Equipment &amp; supplies</b>	See OReCS: Supplies, Equipment and Infrastructure Document
<b>Quality &amp; Safety</b>	Supervision and mentoring Data collection for Quality Control CME/CPD	

<sup>a</sup> Equivalent to a district or provincial hospital in the WHO health facility classification system (WHO Level 2).

<sup>b</sup> All babies < 1 year old should be referred to higher levels of care due to increased anesthetic risk. Only exception is life-threatening emergency when transportation is not possible.

**TABLE 6.** Optimal resources for complex/advanced surgical care. This type of care is designed to be delivered at the referral hospital level. Referral hospitals include Second- and Third levels facilities, and National Children’s Hospitals<sup>a</sup>.

COMPLEX/ADVANCED SURGICAL		
SCOPE OF PRACTICE		
<b>Function</b>	Advanced diagnostic services and multidisciplinary specialized care Receive referrals from other hospital levels Training of health care workers Research and Advocacy Develop standards of care	
<b>Age of patients</b>	All ages	
<b>Anesthesia</b>	All types of anesthesia including neonatal, cardiac and neuro anesthesia	
<b>Examples of care provided (See Appendix 1 and 2 for a more detailed list)</b>	<b>Injuries</b>	All traumatic injuries referred from lower levels of care, including neurovascular injuries
	<b>Congenital anomalies</b>	All congenital anomalies referred from lower levels of care, including repair of anorectal malformations, urogenital anomalies, congenital heart disease and meningomyelocele, hydrocephalus
	<b>Infections</b>	All surgical infections referred from lower levels of care, including complex soft tissue infections, osteomyelitis, intracranial infections
	<b>Tumors</b>	All benign and malignant tumors, including abdominal and urological malignancies
	<b>Others</b>	
OPTIMAL REASOURCES		
<b>Training &amp; staffing</b>	<b>Human resources</b>	Trainees: Medical Students, Surgical Residents and Surgical Subspecialty Fellows Physician Human Resources: Pediatric Surgical Specialists: general pediatric surgery; cardiac surgery; ENT surgeon; neurosurgery, ophthalmology; oral and maxillofacial surgery; orthodontics; orthopedic surgery; plastic surgery; urology General pediatricians and pediatric specialists: Anesthesia, Critical Care, Cardiology, Oncology, Gastroenterology, Neurology, Nephrology, Radiology, and others Non-Physician Human Resources: All Support specialists and staff in relevant specialties including perfusionists, Speech pathologist, occupational/physical therapists
	<b>Required skills</b>	Appropriate skills and training necessary to provide such specialized pediatric surgical care including neonatal critical care Structured Education for Trainees (all levels) Management and administrative skills
<b>Physical resources</b>	<b>Infrastructure</b>	Dedicated space for pre-operative and post-operative evaluation Dedicated Children’s inpatient ward, ICU and NICU Endoscopy capability- EGD, colonoscopy, bronchoscopy Complete radiology capability (CT/MRI/Ultrasound/Fluoroscopy) Cardiac catheterization lab, cardiopulmonary bypass
	<b>Equipment &amp; supplies</b>	See OReCS: Supplies, Equipment and Infrastructure Document
<b>Quality &amp; Safety</b>	Supervision and mentoring; Data collection for Quality Control CME/CPD; Morbidity and Mortality Conference Trauma Conference; Tumor Board	

<sup>a</sup> Equivalent to a district/provincial hospital or referral hospital in the WHO health facility classification system (WHO Level 2 or 3)