Contents

1.	Airway Management 1 Normal Pediatric Airway 1		
	Pediatric Airway Devices and Associated Equipment 2 Face Masks 3		
	Airways 6		
	Airway Devices 11		
	Supraglottic Devices 11 Infraglottic Devices 25		
	Special Types of ETT 27		
	Tracheostomy Tubes (TT) 35		
	Alternatives to Conventional Rigid Laryngoscopy in Children 35		
	Special Airway Techniques 46		
	Flexible Fiberoptic Intubation (FFI) 46		
	Retrograde Intubation 48		
	Cricothyrotomy 49		
	Tracheostomy 51		
	Difficult Airway 51 Common Causes of Difficult Airway 52		
	Management Strategies 52		
	Difficult Airway Cart for Pediatrics 54		
2	Vascular Access		
	Venous Access 57		
	Peripheral Venous Access 57		
	Central Venous Access 60		
	Choice of Veins 60		
	Internal Jugular Vein Cannulation 61		
	Subclavian Vein Cannulation 65		
	External Jugular Vein Cannulation 67		
	Femoral Vein Cannulation 68		
	Peripherally Inserted Central Catheter (PICC) Placement 71		
	Umbilical Venous Catheterization (UVC) 74		
	Peripheral Venous Cutdown 77 Arterial Cannulation 78		
	Indications 78		
	Sites 78		
	Equipment 78		
	Technique 78		
	Setting Up Transducer for Continuous Pressure Monitoring 83		
	Care of the Arterial Line 84		
	Removing the Arterial Line 84		
	Intraosseous Vascular Access 84		
	Indication 84		
	Access Sites 84		
	Procedure 84		
	Potential Complications 86 Effectiveness of IO Versus IV Access 86		
_			
3.	Pain Management89		
	Assessment of Pain 89		
	Physiological Parameters 89		

```
Behavioral Measures 91
   Composite Measures 91
   Self Report 91
Management of Postoperative Pain 91
Topical Analgesia 93
   Eutectic Mixture of Local Anesthetics (EMLA) 93
Wound Irrigation 94
Wound Infiltration 94
Regional Analgesia Techniques 94
   Common Principles for a Safe and Effective Block 95
Neuraxial Block 95
   Physiology and Drug Pharmacokinetics in the Pediatric Age Group 96
Epidural Analgesia 96
   Current Trend of Adjuvants Used in Epidural Space 96
   Single-shot Caudal Epidural 97
   Threading a Caudal Epidural Catheter to Lumbar/Thoracic Space 98
   Lumbar Epidural Block 98
   Thoracic Epidural Analgesia 101
Subarachnoid Block 102
   Indications 102
   Technique 102
   Dosage 102
   Clinical Pearls for Safety and Effectiveness of Subarachnoid Block 103
   Adverse Effects 104
   Combined Spinal Epidural Analgesia 104
   Contraindications for Neuraxial Block 104
Infraorbital Nerve Block 104
   Anatomy 104
   Indications 104
   Techniques 104
   Complications 104
Brachial Plexus Block 106
   Axillary Approach 106
   Indications 106
   Technique 106
   Dosage 106
Intercostal Block 106
   Indications 106
   Key Anatomy 106
   Technique 108
   Dosage 108
Paravertebral Block 108
   Indications 108
   Technique 108
   Formula 108
   Dosage 108
   Complications 109
Ilioinguinal and Iliohypogastric Nerve Block (ILIH) 110
   Indications 110
   Anatomy 110
   Technique 110
   Advantage 110
   Disadvantages 110
Transversus Abdominis Plane Block (TAP Block) 110
   Indications 110
   Anatomy 111
   Technique 111
   Dose 111
   Complications 112
```

	Penile Block 112
	Indications 112
	Anatomy 112 Technique 112
	Dosage 112
	Key Points for a Safe and Effective Block 114
	Other Methods 114
	Femoral Nerve Block 114
	Indications 114
	Anatomy 114 Technique 114
	Dosage 114
	Psoas Compartment Block (PCB) 115
	Indications 115
	Anatomy 115
	Technique 116
	Advantages 116
	Complications 116 Fascia Iliaca Compartment Block 116
	Technique 116
	Dose 117
	Complication 117
	Sciatic Nerve Block 118
	Indications 118
	Drug 118
	Technique 118 Posterior Approach 118
	Popliteal Fossa Block 118
	Dose 118
1	Procedural Sedation and Analgesia121
→.	Objective 121
	Levels of Sedation 121
	Minimal Sedation (Anxiolysis) 121
	Moderate Sedation/Analgesia (Conscious Sedation) 122
	Deep Sedation/Analgesia 122
	General Anesthesia 122
	General Anesthesia 122 Preparation for Sedation 122
	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122
	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122 Documentation 122
	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122
	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122 Documentation 122 Choice of Drugs 122 Clinical Pearls for Procedural Sedation 123 Recommended Guidelines for Safe Sedation 124
	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122 Documentation 122 Choice of Drugs 122 Clinical Pearls for Procedural Sedation 123
5.	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122 Documentation 122 Choice of Drugs 122 Clinical Pearls for Procedural Sedation 123 Recommended Guidelines for Safe Sedation 124 Recommended Discharge Criteria 124
5.	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122 Documentation 122 Choice of Drugs 122 Clinical Pearls for Procedural Sedation 123 Recommended Guidelines for Safe Sedation 124 Recommended Discharge Criteria 124
5.	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122 Documentation 122 Choice of Drugs 122 Clinical Pearls for Procedural Sedation 123 Recommended Guidelines for Safe Sedation 124 Recommended Discharge Criteria 124 Pediatric Cardiopulmonary Resuscitation 125 Prevention of Cardiopulmonary Arrest 126 BLS Sequence 126
5.	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122 Documentation 122 Choice of Drugs 122 Clinical Pearls for Procedural Sedation 123 Recommended Guidelines for Safe Sedation 124 Recommended Discharge Criteria 124 Pediatric Cardiopulmonary Resuscitation Prevention of Cardiopulmonary Arrest 126 BLS Sequence 126 Rationale for this Change 126
5.	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122 Documentation 122 Choice of Drugs 122 Clinical Pearls for Procedural Sedation 123 Recommended Guidelines for Safe Sedation 124 Recommended Discharge Criteria 124 Pediatric Cardiopulmonary Resuscitation 125 Prevention of Cardiopulmonary Arrest 126 BLS Sequence 126 Rationale for this Change 126 Maneuvers Related to CPR 127
5.	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122 Documentation 122 Choice of Drugs 122 Clinical Pearls for Procedural Sedation 123 Recommended Guidelines for Safe Sedation 124 Recommended Discharge Criteria 124 Pediatric Cardiopulmonary Resuscitation Prevention of Cardiopulmonary Arrest 126 BLS Sequence 126 Rationale for this Change 126 Maneuvers Related to CPR 127 High-quality Chest Compressions 127
5.	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122 Documentation 122 Choice of Drugs 122 Clinical Pearls for Procedural Sedation 123 Recommended Guidelines for Safe Sedation 124 Recommended Discharge Criteria 124 Pediatric Cardiopulmonary Resuscitation Prevention of Cardiopulmonary Arrest 126 BLS Sequence 126 Rationale for this Change 126 Maneuvers Related to CPR 127 High-quality Chest Compressions 127 Open Airway and Give Ventilation 129
5.	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122 Documentation 122 Choice of Drugs 122 Clinical Pearls for Procedural Sedation 123 Recommended Guidelines for Safe Sedation 124 Recommended Discharge Criteria 124 Pediatric Cardiopulmonary Resuscitation Prevention of Cardiopulmonary Arrest 126 BLS Sequence 126 Rationale for this Change 126 Maneuvers Related to CPR 127 High-quality Chest Compressions 127
5.	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122 Documentation 122 Choice of Drugs 122 Clinical Pearls for Procedural Sedation 123 Recommended Guidelines for Safe Sedation 124 Recommended Discharge Criteria 124 Pediatric Cardiopulmonary Resuscitation 125 Prevention of Cardiopulmonary Arrest 126 BLS Sequence 126 Rationale for this Change 126 Maneuvers Related to CPR 127 High-quality Chest Compressions 127 Open Airway and Give Ventilation 129 Breathing Adjuncts 130
5.	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122 Documentation 122 Choice of Drugs 122 Clinical Pearls for Procedural Sedation 123 Recommended Guidelines for Safe Sedation 124 Recommended Discharge Criteria 124 Pediatric Cardiopulmonary Resuscitation 125 Prevention of Cardiopulmonary Arrest 126 BLS Sequence 126 Rationale for this Change 126 Maneuvers Related to CPR 127 High-quality Chest Compressions 127 Open Airway and Give Ventilation 129 Breathing Adjuncts 130 Defibrillation 131 Integration of Defibrillation Sequence with Resuscitation Sequence 132 BLS Sequence for Lay Rescuer 133
5.	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122 Documentation 122 Choice of Drugs 122 Clinical Pearls for Procedural Sedation 123 Recommended Guidelines for Safe Sedation 124 Recommended Discharge Criteria 124 Pediatric Cardiopulmonary Resuscitation
5.	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122 Documentation 122 Choice of Drugs 122 Clinical Pearls for Procedural Sedation 123 Recommended Guidelines for Safe Sedation 124 Recommended Discharge Criteria 124 Pediatric Cardiopulmonary Resuscitation
5.	General Anesthesia 122 Preparation for Sedation 122 Pre-sedation Assessment 122 Documentation 122 Choice of Drugs 122 Clinical Pearls for Procedural Sedation 123 Recommended Guidelines for Safe Sedation 124 Recommended Discharge Criteria 124 Pediatric Cardiopulmonary Resuscitation

xvi Atlas of Practical Neonatal and Pediatric Procedures

	nergency Fluids and Medications 137 Vascular Access 137	
	Endotracheal Route 137	
	Fluids 137	
	Medications 137	
Pos	st-resuscitation Stabilization 139	
. 0.	Objectives 139	
	Approach 140	
Ма	ajor Changes Introduced in 2010 CPR Guidelines 141	
	reign Body Airway Obstruction (FBAO) 142	
	Diagnosis 142	
	Management 142	
6. Ne	eonatal Resuscitation14	.5
	eps of Resuscitation 145	
•	Initial Steps in Stabilization 147	
	Positive Pressure Ventilation 149	
	Positive Pressure ventilation 149	
	Chest Compressions 151 Volume Expansion 152	
Pos	Chest Compressions 151	
Pos	Chest Compressions 151 Volume Expansion 152	

157