

INTRODUCTION OF INSTRUMENTS IN PEDIATRIC PRACTICE

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ABSTRACT

Pediatric is a field of challenges. Children are not much able to tell their illness. Pediatrician treat the child by using clinical method as well as diagnostic tool. From over 100 years, Pediatric faculty is much develop to diagnose illness by using different instruments. In this article , different instruments are elaborated with their utility in pediatric practice. Instrument including Ambu bag, Laryngoscope ,Endotracheal tube ,Infant feeding tube, Venous cannula, Clinical thermometer , Infantometer , Tuberculin syringe , Tongue depressor are described. This article aims to provide the basic knowledge regarding common practical instruments used for them.

Key words : Adolescent ,Instruments, Laryngoscope, Pediatrics, Therapeutic

I.INTRODUCTION

Over forty percent of the indian population falls below fourteen years of age with its unique health problems, assessment approaches and interventional needs. Add another ten percent of adolescent population and the quantitative burden of pediatric health services become obvious. Performance of various diagnostic and therapeutic procedures on children is an art that can be learned only by practice and experience .During clinical examination of child including newborn to adolescent ,Instruments are useful in their health check up or medical procedure. Pediatrics is a specialization branch so here we described only specific pediatric instruments useful in daily pediatric practice.

II. EXPLANATION OF INSTRUMENTS

Concise description of pediatric instruments are as follows -

A. "Ambu Bag":

The full form of Ambu is Ambulatory Manual Breathing Unit.

The Size of Ambu bag for Neonate is 250 ml bag while size of Ambu bag for

Infant and children is 500 ml bag and size of Ambu bag for

children above 2 years of age is 700 ml bag

Parts: i) Patient outlet- to which face mask is connected

ii) One way valve – to allow escape of expiratory air

iii)Pressure limiting pop off valve

iv) Self inflating rubber bag

v) Reservoir inlet

vi) Oxygen inlet

Indication- Neonatal resuscitation,

In infant and children : Respiratory failure or arrest

“B.Laryngoscope” :

Parts- i) Handle with battery

ii) blade with light source

Blade-2 types:

- a) Straight -for <3 years children
- b) Curved- for older children

Blade size-

Zero- Preterm neonates

One- Term neonate and infant

Two- Children

Three- Adolescents

Uses-

a. Therapeutic –

- 1.Endotracheal tube placement
- 2. Suction catheter placement
- 3. Magill forceps placement for foreign body removal

b. Diagnostic-

- 1. Foreign body inhalation
- 2. Neoplasm ex. Papilloma
- 3. Infection ex. Tuberculosis, Diphtheria.

“C.Endotracheal tube”:

It is a sterile ready to use disposable translucent PVC made with radio opaque marker with adapter at proximal end. Other tubes available are red rubber endotracheal tube and cole endotracheal tube.

General Indications-

- 1. Upper respiratory tract obstruction
- 2. Mechanical ventilation
- 3. Administration of general anesthesia
- 4. During resuscitation
- 5. Intra tracheal instillation of drugs (ex. Surfactant, Adrenaline, Naloxone, Atropine, Lignocaine)

Size of endotracheal tube (inner diameter in mm) -

1.Newborn-

- a) Expected gestational age divided by 10

Table-1: Size of endotracheal tube (inner diameter in mm)

ID (mm)	Weight (kg)	Gestational age (weeks)
2.5	< 1	28
3.0	1-2	28-34
3.5	2-3	34-38
4.0	>3	>38

2. Infant- 4 mm
3. Two years- 5 mm
4. More than 2 years- age (years)/4+4= ID in mm

Types of Endotracheal tube: Un cuffed (In children under 8 years) and Cuffed.

Complications: Hypoxia, Bradycardia, Apnea, Injury, Obstruction, Pneumothorax.

“D. Infant Feeding Tube”:

It is a transparent odorless PVC made non calibrated feeding tube with coned distal end and 2 side opening .It is fitted with female lure mount for easy connection to feeding funnel or syringe.

Length – 52 cm

Sizes- FG 5,6,7,8,9,10

Uses –

Diagnostic use:

- i) Tracheoesophageal fistula
- ii) Choanal atresia
- iii) Imperforated anus
- iv) Meatal stenosis
- v) In newborn and infants- Catheterization for urine analysis
- vi) Umbilical catheterization for ABG and blood sampling

Therapeutic use:

- i) Feeding- Orogastric , Nasogastric, Jejunal
- ii) Gastric lavage
- iii) Catheterization to relieve urinary retention
- iv) Enema
- v) Drugs
- vi) Gastric compression during Oxygen therapy to prevent aspiration
- vii) Exchange transfusion

“E. Venous Cannula”:

Indication: i) Fluid administration

- ii) Blood sampling
- iii) Medications
- iv) Blood products
- v) Various diagnostic and therapeutic procedure eg. Pleural tapping

Size :

Table -2: Size of venous cannula

<i>Age group</i>	<i>Size of venous cannula</i>
<i>Newborn</i>	<i>24 G</i>

<i>Infant</i>	22 G
<i>Child</i>	20 G

Sites:

- a) Upper extremity-
 - Median antecubital vein at elbow.
 - In dorsum of hand, tributaries of the cephalic and basilica vein as well as dorsal venous arch.
- b) Lower Extremity-
 - Great Saphenous vein at ankle
 - Median marginal veins and veins of dorsal arch.

Complication:

- Thrombophlebitis
- Hematoma
- Cellulitis
- Embolism

“F. Infantometer”:

Characteristics :

- i) Acrylic infantometer for recording length /height of baby.
- ii) Sleek broad acrylic base with one sliding side as per length of baby.
- iii) Dual scale for direct reading in cm from 0 to 45 and 45 to 90 cm .
- iv) Folding sides for easy storage.
- v) Vertical model allows height measurement up to 4 feet.

“G. Clinical Thermometer”

Types : 2

- a) Axillary: For recording temperature in axilla or the oral cavity.
- b) Rectal: The oral thermometer has a stout and blunt bulb.

The clinical thermometer is calibrated over the range from 95 degree F.-110 degree F. The normal body temperature is 97.7-99.5 degree F. Nowadays, digital thermometer of various types are available.

Uses: It is used to record the body temperature in following situations- Hypothermia, Hyperthermia.

“H. Tuberculin syringe”:

It is 1 cc syringe with a white piston (Plastic syringe) or metal piston (Glass syringe).

Uses:

- i) To administer BCG Vaccine.
- ii) To administer PPD for Mantoux test.
- iii) Provocative testing- to test for allergens in bronchial asthma.
- iv) Insulin injections in diabetes mellitus.
- v) To give small doses of drugs eg. Gentamycin, Digoxin, Phenobarbitone.

“I. Tongue depressor”:

Tongue depressors are available in two shapes:

- i) L shaped device
- ii) S shaped device

They are usually made of stainless steel and can be sterilized by autoclave, but nowadays disposable tongue depressors are available.

Uses-

- i) To examine the pharynx ,oral cavity and tonsils.
- ii) To examine the gag reflex
- iii) To examine the movements of the palate and uvula
- iv) Spatula test: To test the spasm of the masseter muscles in a suspected tetanus case by trying to insert the tongue depressor in between the teeth.

III.CONCLUSION

Pediatric instruments are unique in appearance and utility so it is important for physician to know the basic introduction and utility of these instruments in factual manner. Instruments are important tool to diagnose and examine children in their health aspect.

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