

Age	Wt (Kg)	CVC Size	Min. Vein Diameter	CVC length (Int. Jugular)	CVC length (Femoral)	Art Line (Radial)	Min. Artery Diameter	Chest Drain (Air/serous Fluid)	Chest Drain (Pus)	NGT/Urinary Catheter
0-12mo	0-10Kg	4F / 4.5F	0.26cm / 0.3cm	5cm / 6cm	6cm	24G	0.13cm +/- 0.03	8F – 10F	10F - 14F	6F / 8F
18mo	11Kg	4.5F / 5F	0.3cm / 0.34cm	6cm / 8cm	6cm / 8cm	24G	0.13cm +/- 0.03	8F - 10F	10F – 14F	8F
2years	12Kg	5F / 5.5F	0.34cm / 0.38cm	8cm	12cm - 13cm	22G / 2F leaderflex	0.16cm +/- 0.02	8F - 10F	12F– 18F	8F
3years	14Kg	5F / 5.5F	0.34cm / 0.38cm	8cm	12cm - 13cm	22G / 2F leaderflex	0.16cm +/- 0.02	8F - 10F	12F – 18F	10F
4years	16Kg	5F / 5.5F	0.34cm / 0.38cm	8cm	12cm - 13cm	22G / 2F leaderflex	0.16cm +/- 0.02	8F – 14F	18F – 24F	10F
5years	18Kg	5F / 5.5F	0.34cm / 0.38cm	8cm	12cm - 13cm	22G / 2F leaderflex	0.16cm +/- 0.02	8F – 14F	18F – 24F	10F
6years	21Kg	5.5F – 7.5F	0.38cm – 0,5cm	8cm - 10cm	12cm - 13cm	20G / 3F leadercath	0.17cm +/- 0.02	8F – 14F	18F – 24F	10F
7years	23Kg	5.5F – 7.5F	0.38cm – 0.5cm	8cm - 10cm	12cm - 13cm	20G / 3F leadercath	0.17cm +/- 0.02	8F – 14F	18F – 24F	12F
8years	25Kg	5.5F – 7.5F	0.38cm – 0.5cm	8cm - 10cm	13cm – 16cm	20G / 3F leadercath	0.17cm +/- 0.02	8F – 14F	18F – 24F	12F
9years	28Kg	5.5F – 7.5F	0.38cm – 0.5cm	8cm - 10cm	13cm – 16cm	20G / 3F leadercath	0.18cm +/- 0.03	8F – 14F	18F – 24F	12F
10years	31Kg	5.5F – 7.5F	0.38cm – 0.5cm	10cm – 13cm	13cm – 16cm	20G / 3F leadercath	0.18cm +/- 0.03	12F – 14F	18F – 24F	12F
11years	35Kg	5.5F – 7.5F	0.38cm – 0.5cm	10cm – 13cm	13cm – 16cm	20G / 3F leadercath	0.18cm +/- 0.03	12F – 14F	18F – 24F	12F
12years	43Kg	7F – 9F*	0.46cm – 0.6cm	10cm – 13cm	13cm – 16cm	20G / 3F leadercath	0.2cm +/- 0.02	16F – 18F	20F – 32F	14F
13years	45Kg	7F – 9F*	0.46cm – 0.6cm	10cm – 13cm	13cm – 16cm	20G / 3F leadercath	0.2cm +/- 0.02	14F – 18F	20F – 32F	14F
14years	50Kg	7F – 9F*	0.46cm – 0.6cm	10cm – 13cm	13cm – 16cm	20G / 3F leadercath	0.22cm +/- 0.03	14F – 18F	20F – 32F	14F
15years	70Kg	7F – 9F*	0.46cm – 0.6cm	13cm - 16cm	13cm – 16cm	20G / 3F leadercath	0.22cm / 0.03cm	14F – 18F	20F - 32F	14F

*CVC's >7.5F typically not required in children unless >3 lumens needed. External measurement before insertion is recommended to ensure correct length is chosen for individual child and vein being accessed. A general rule of thumb is to insert the smallest catheter that will perform the role required of it. **Choice of catheter lies with the medically responsible clinician and all Int. Jugular CVCs should have correct placement confirmed on CXR.**

Type of Catheter	Formula	Example sizes 4yr old	Unit
Endotracheal Tube (Uncuffed)	$ETT = (Age/4) + 4$	5	mm
ETT Suction catheter	= ETT size x 2	10	F
NG / Urinary catheter	= ETT size x 2	10	F
ETT Insertion Depth (from incisor) <i>Position should always be confirmed on CXR</i>	= ETT size x 3	15	cm
Chest tube (max size e.g. trauma)	= ETT size x 4	20	F

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Author:	Dr Cathy Gibbons, Dr Dominika Karlicka
Approved by:	Dr Cathy Gibbons - Consultant paediatric Intensivist Dr Heike Bruell – Consultant paediatric Intensivist CHI/NASCCRS Dr Siobhan Whelan – Consultant Paediatric Intensivist CHI Dr Dermot Doherty – CCRS Clinical Director & Consultant Paediatric Anaesthesiologist & Intensivist
Related Documents:	

The Irish Paediatric Acute Transport Service (IPATS) in conjunction has produced this pragmatic support tool to assist nurses, doctors and ambulance staff in the care of critically ill children.

This guideline represents the views of IPATS and was produced after careful consideration of available evidence in conjunction with clinical expertise and experience. The guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient

Further reading / Resources

1. Correlating paediatric length to weight: Graves, Lara & Chayen, Gilad & Peat, Jennifer & O'Leary, Fenton. (2013). A comparison of actual to estimated weights in Australian children attending a tertiary children's' hospital, using the original and updated APLS, Luscombe and Owens, Best Guess formulae and the Broselow tape. Resuscitation. 85. 10.1016/j.resuscitation.2013.11.024.
2. Paediatric formula for RIJ insertion depth for CVC's: Andropoulos DB, Bent ST, Skjonsby B, Stayer SA. The optimal length of insertion of central venous catheters for pediatric patients. Anesth Analg. 2001 Oct;93(4):883-6. doi: 10.1097/00000539-200110000-00016. PMID: 11574350.
<https://pubmed.ncbi.nlm.nih.gov/11574350>
3. TEE correlation with formula for RIJ CVC insertion depth: Yoon SZ, Shin TJ, Kim HS, Lee J, Kim CS, Kim SD, Park CD. Depth of a central venous catheter tip: length of insertion guideline for pediatric patients. Acta Anaesthesiol Scand. 2006 Mar;50(3):355-7. doi: 10.1111/j.1399-6576.2006.00951.x. PMID: 16480470. <https://pubmed.ncbi.nlm.nih.gov/16480470/>
4. Optimal insertion length for femoral CVC in children: Shinohara Y, Arai T, Yamasita M. The optimal insertion length of central venous catheter via the femoral route for open-heart surgery in infants and children. Paediatr Anaesth. 2005 Feb;15(2):122-4. doi: 10.1111/j.1460-9592.2005.01380.x. PMID: 15675928. <https://pubmed.ncbi.nlm.nih.gov/15675928/>
5. Starship Children's hospital Auckland – Guide to CVC insertion and choice of catheter: <https://starship.org.nz/guidelines/central-venous-access-in-picu/>
6. Paediatric pearls – paediatric tube size guide by the international emergency medicine education project: <https://iem-student.org/2019/07/24/pediatric-tube-sizes-infographic/>
7. Children's Hospital of Philadelphia guide on CVC insertion and length. <https://www.chop.edu/clinical-pathway/iv-access-improvement-project-guidelines-choosing-catheter-sizes>
8. Prospective study of sonographic radial artery diameters: <https://www.ahajournals.org/doi/10.1161/CIRCINTERVENTIONS.120.009251>