



We Want To Take You Higher

Better Sites for Intraosseous Access in Kids

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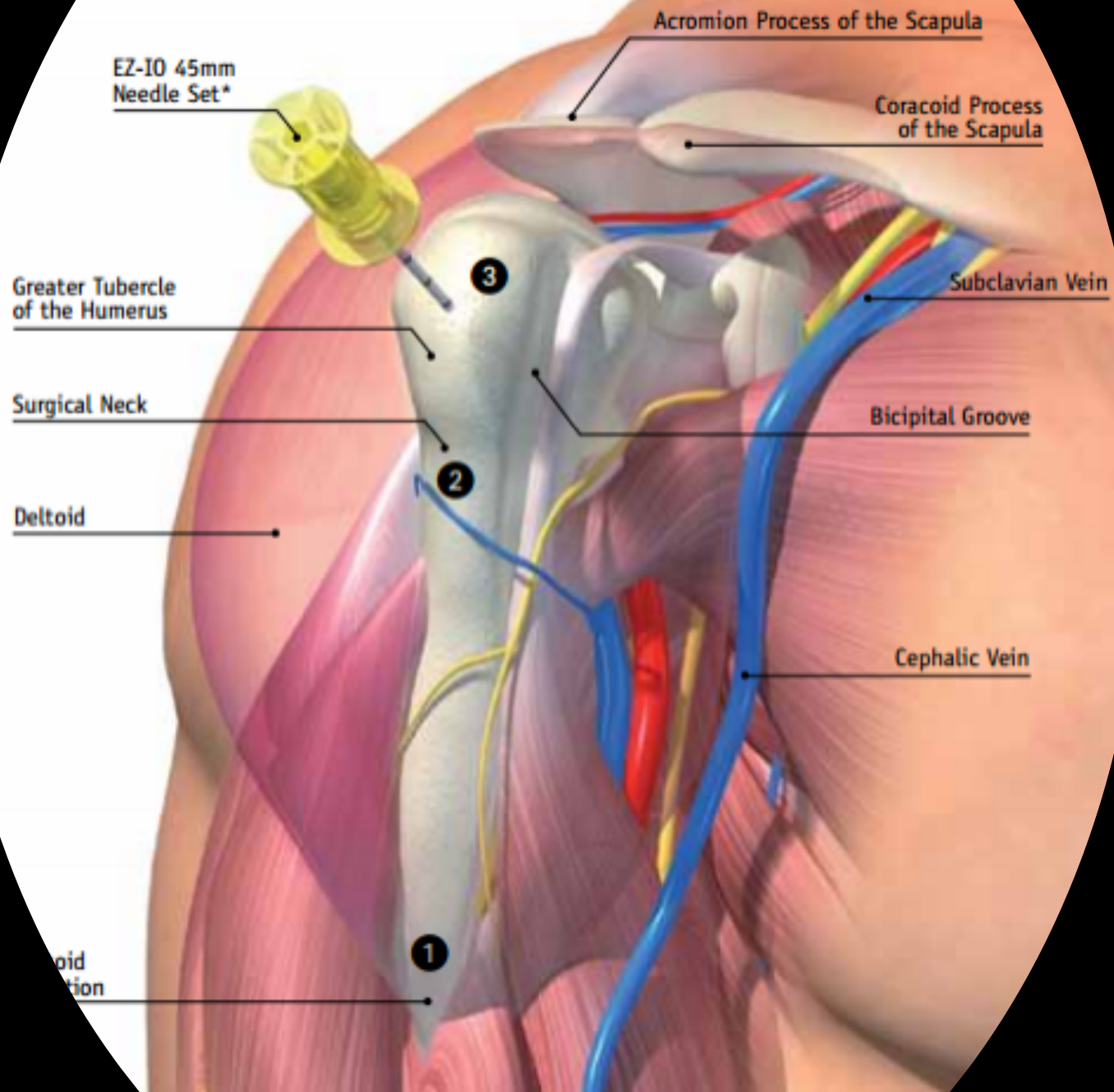
Disclosures

- Founder & Chief Medical Officer
Handtevy - Pediatric Emergency Standards, Inc.

Questions

- What is the track record of the proximal tibial IO in pediatrics?
- Is there an alternative site that can improve clinical use?

– EZ-IO Proximal Humerus Insertion Site



Fuse at 6 years



6 months



18 months



2nd year



5th year



9th-10th year



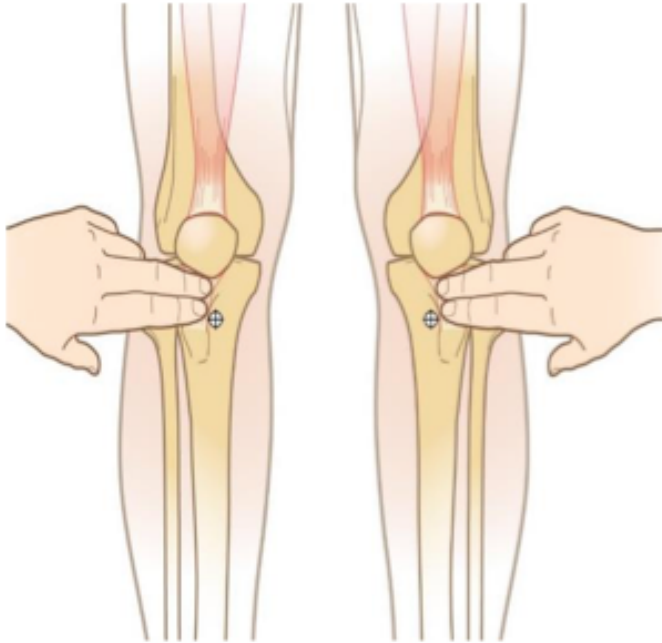
12th year

Unites with
shaft at
20th year

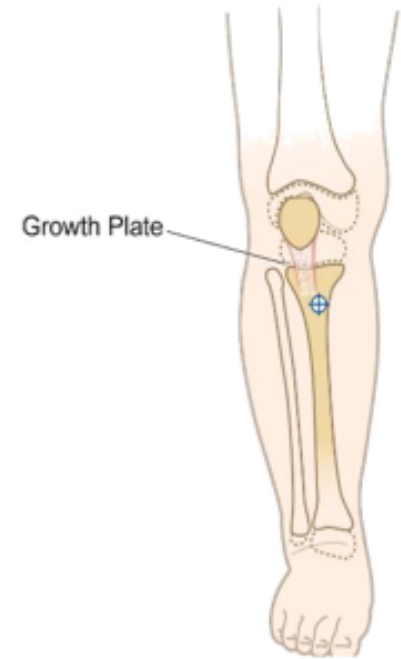
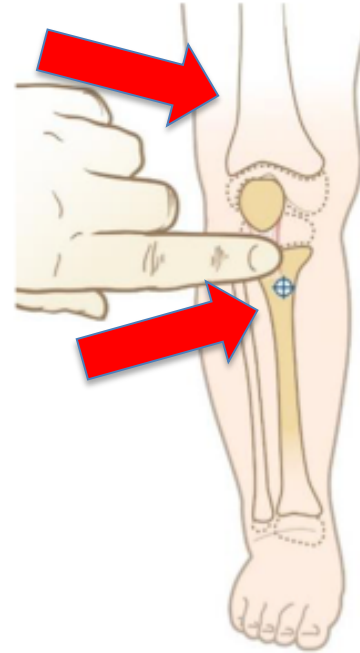
Humeral Head Insertion Site Selection

- Humeral Head fully ossified during 9-10th YR
- Consider IO at this age

Adult



Infant/Child



Proximal Tibia *Landmarks*



ELSEVIER

Available online at www.sciencedirect.com

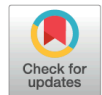
Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation



Clinical paper

Intraosseous needles in pediatric cadavers: Rate of malposition



Daniel Maxien^{a,e,}, Stefan Wirth^{a,d}, Oliver Peschel^c, Alexander Sterzik^f,
Sonja Kirchhoff^g, Uwe Kreimeier^b, Maximilian F. Reiser^a, Fabian G. Mück^d*

September 2019

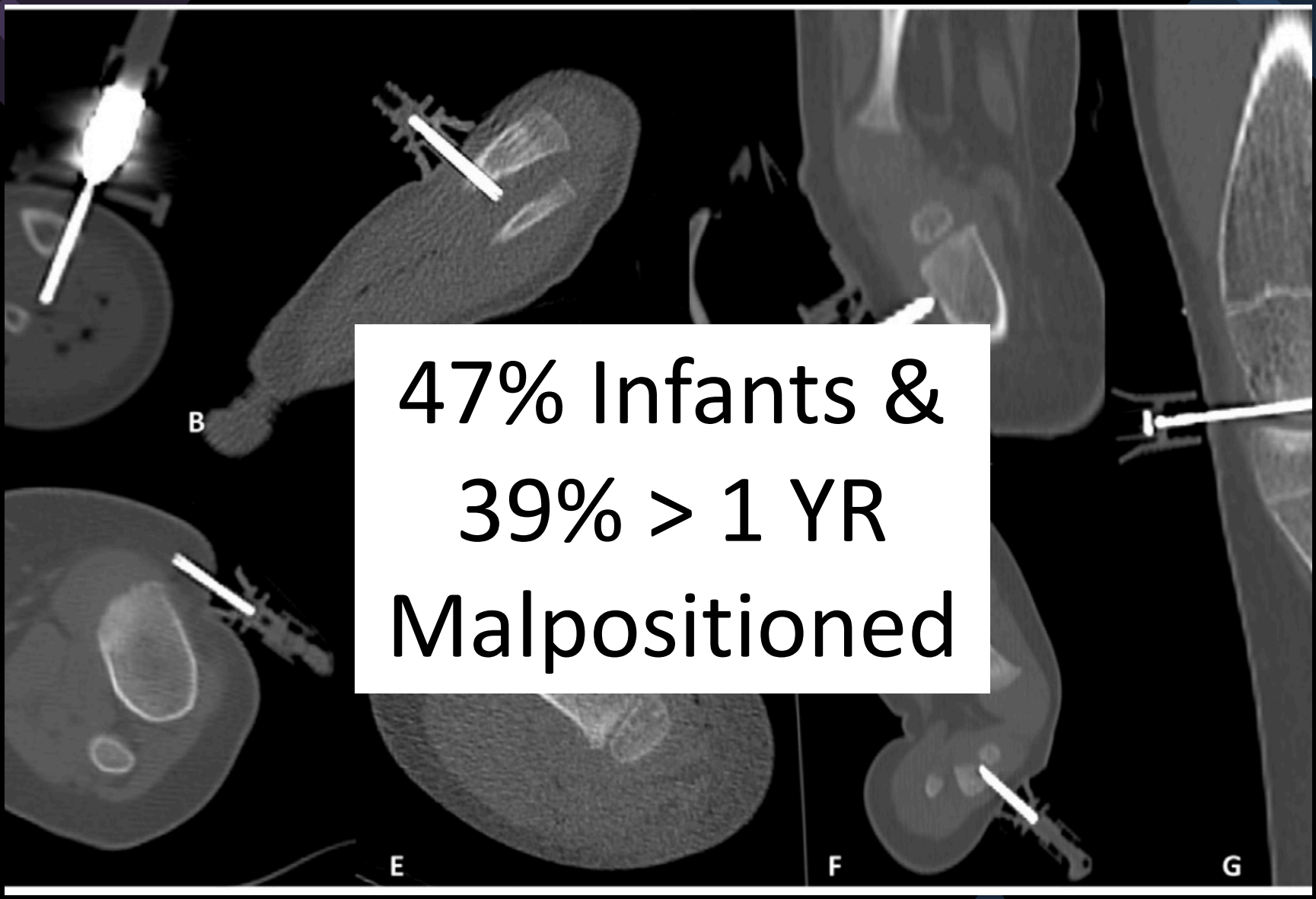
Table 2 – Infant cadavers (age <1 year).

	All IO devices		EZ-IO		Manual devices	
	n Cases	%	n Cases	%	n Cases	%
Cadavers	22		16 ^b		7 ^b	
ION ^a	34		25		9	
Number of cadavers with at least one malpositioned ION	14	64	11	69	4	44
Number of malpositioned ION	16	47	12	48	4	44
Number of malpositioned ION perforating the bone on both sides	5	31	4	33	1	25
Cadavers without a correctly placed ION	7	32	5	31	1	11
Cadavers with two ION	10	45	8 ^b	50	3 ^b	33
Cadavers with three ION	1	5	1	6	0	0

^a Intraosseous needle.^b One cadaver with one EZ-IO and one manual device.**Table 3 – Child cadavers (age ≥1 year).**

	All IO devices		EZ-IO		Manual devices	
	n Cases	%	n Cases	%	n Cases	%
Cadavers	16		14		2	
ION ^a	23		22		2	
Number of subjects with at least one malpositioned ION	8	50	7	50	1	50
Number of malpositioned ION	9	39	8	38	1	50
Number of malpositioned ION perforating the proximal and distal cortical bone	1	11	1	13	0	0
Cadavers without a correctly placed ION	3	19	2	14	1	50
Cadavers with two ION	5	31	5	31	0	0
Cadavers with three ION	1	6	1	6	0	0

^a Intraosseous needle.



47% Infants &
39% > 1 YR
Malpositioned

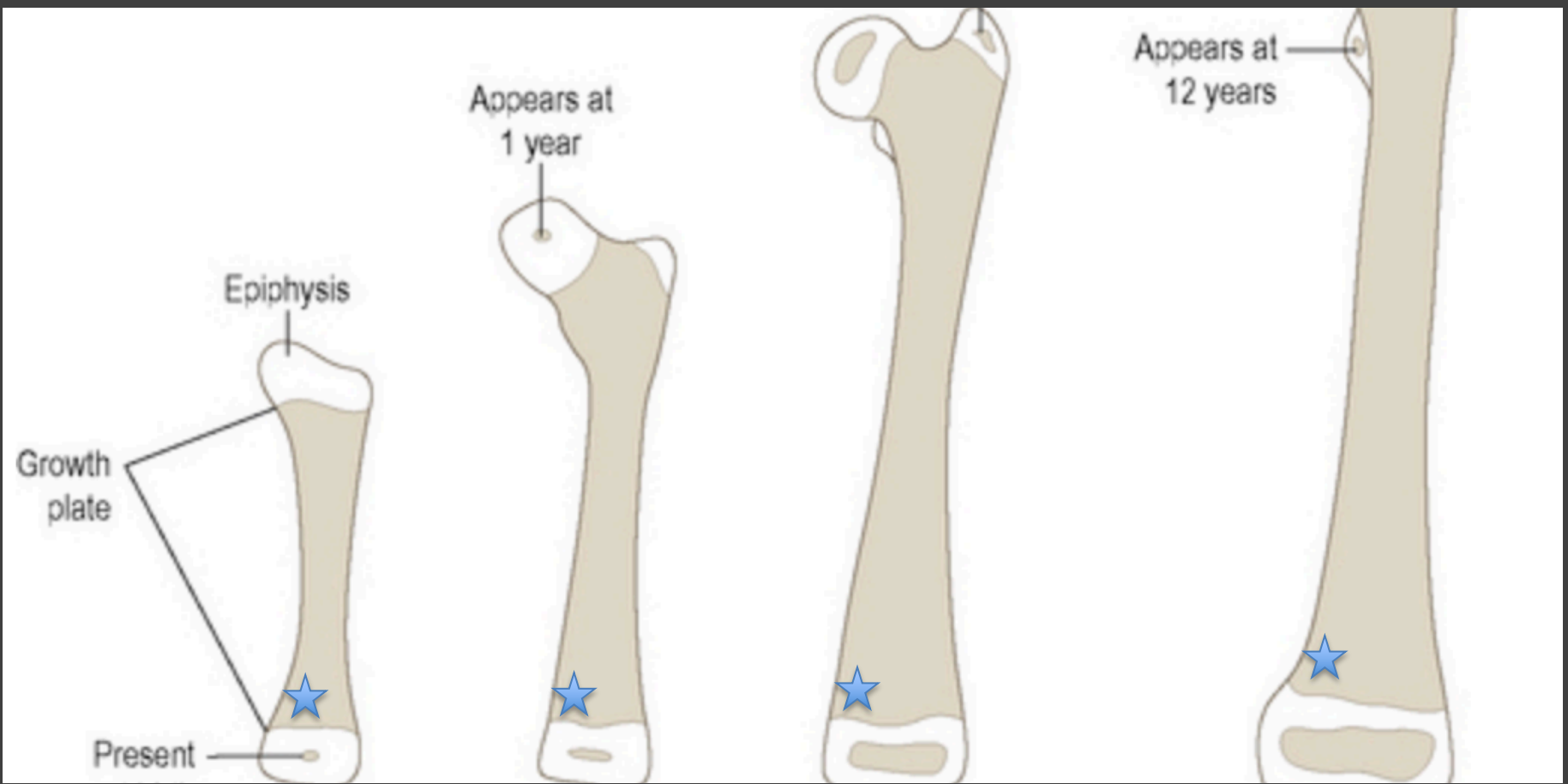


EZ-IO

Distal Femur Site Identification

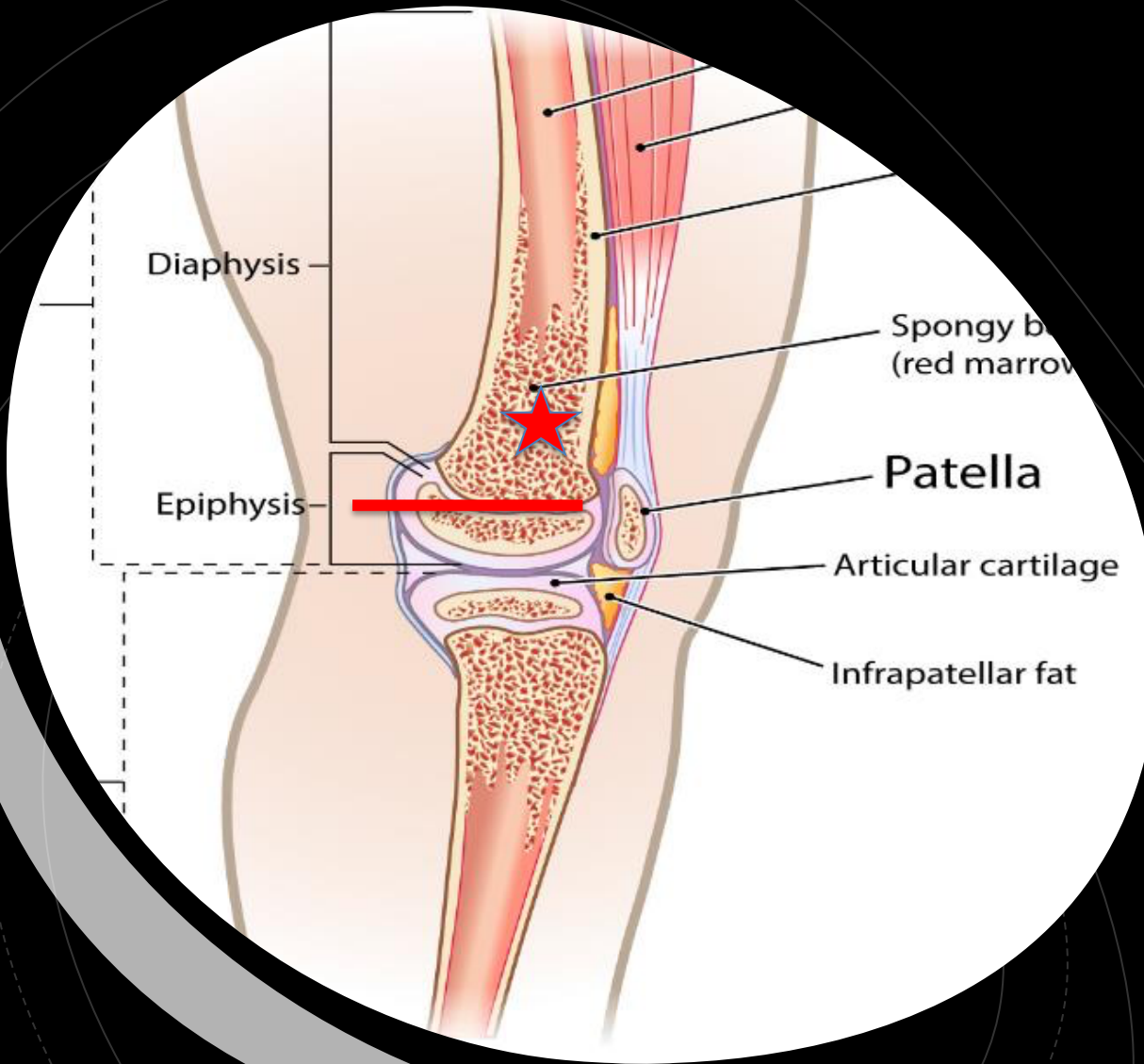
- Out-stretched leg
- Palpate the patella
- The insertion site is just proximal to the patella (maximum 1cm) and approximately 1-2 cm medial to midline.





Distal Femur *Pediatric* *Landmarks*

- The insertion site proximal to the patella (maximum 1cm) and 1-2 cm **medial** to midline
- No risk to the growth plate



Distal Femur *Pediatric* *Landmarks*



Distal Femur *Clinical Pearls*

- Recommended Site in the unconscious patient (arrest)
- Is too painful in the awake patient compared to the proximal tibia
- Do not use pink (15 mm) needle



25 mm

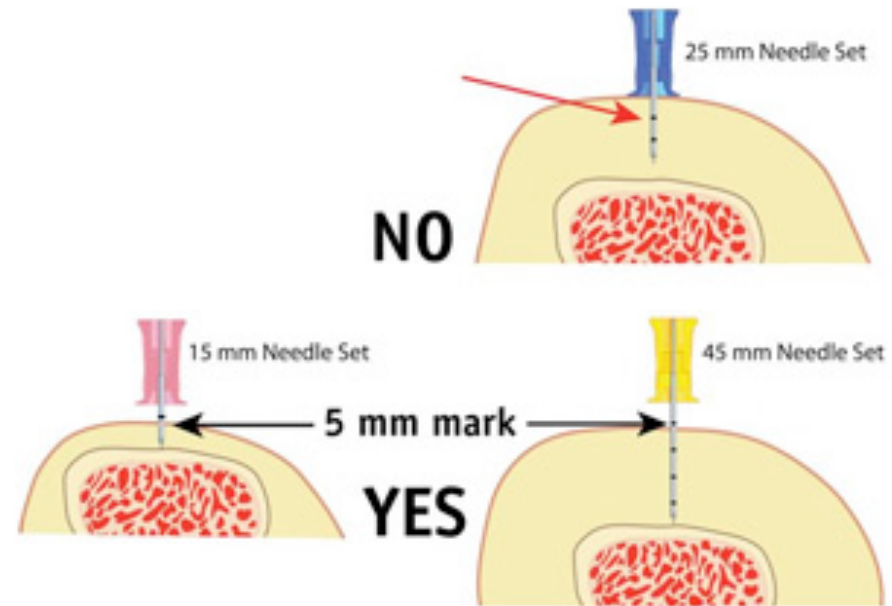
Needle selection
is based on
patient weight,
anatomy and
tissue depth
overlying the
insertion site



45 mm

**EZ-IO[®] Needle Set
Selection**

Correct Placement



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