



Presentation Menu

Walk-in Slide

Full Presentation

Access

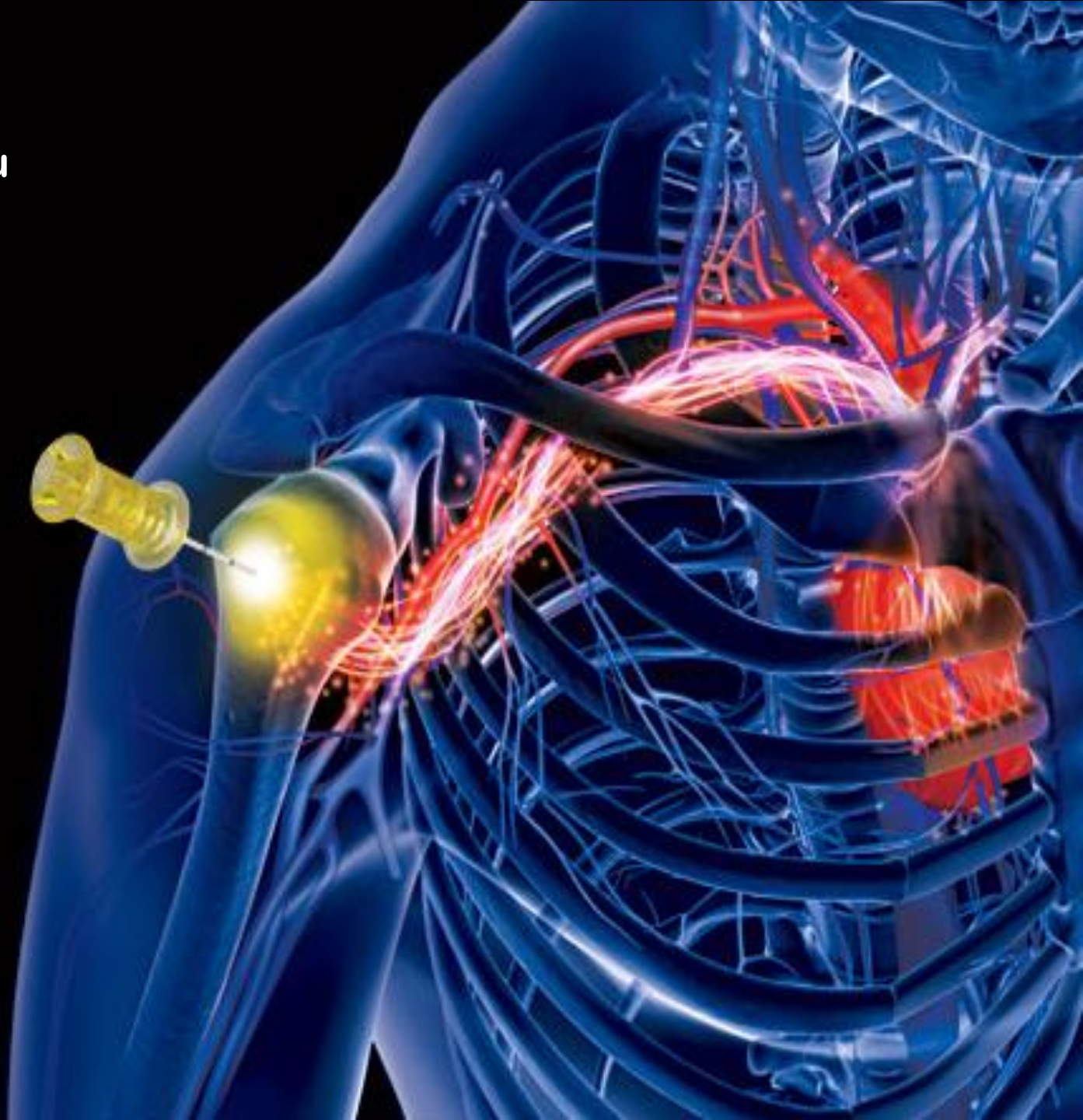
Site

Needle

Flush

Comfort

Monitor



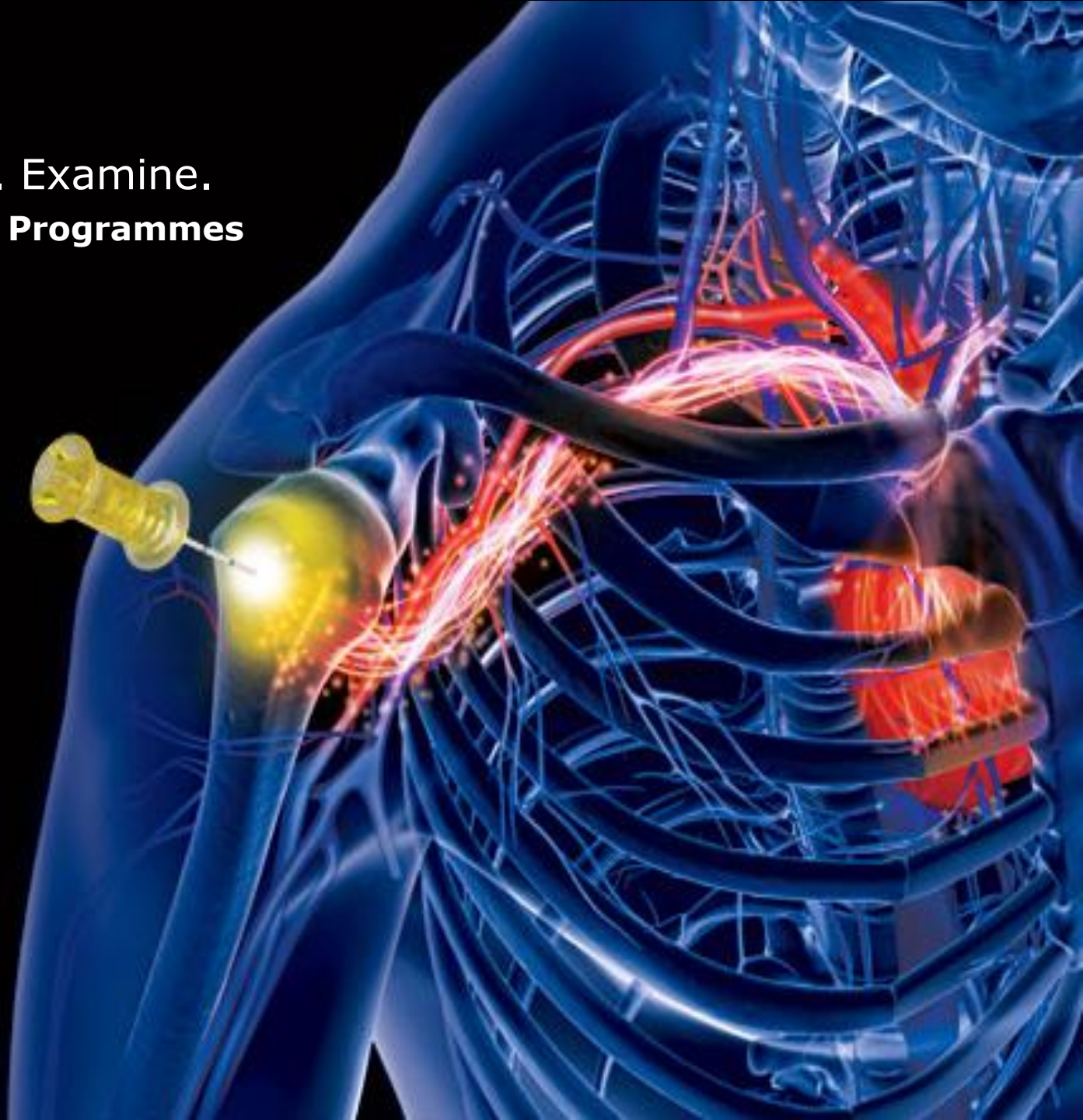
Removing the EZ-IO catheter

Clinical Support



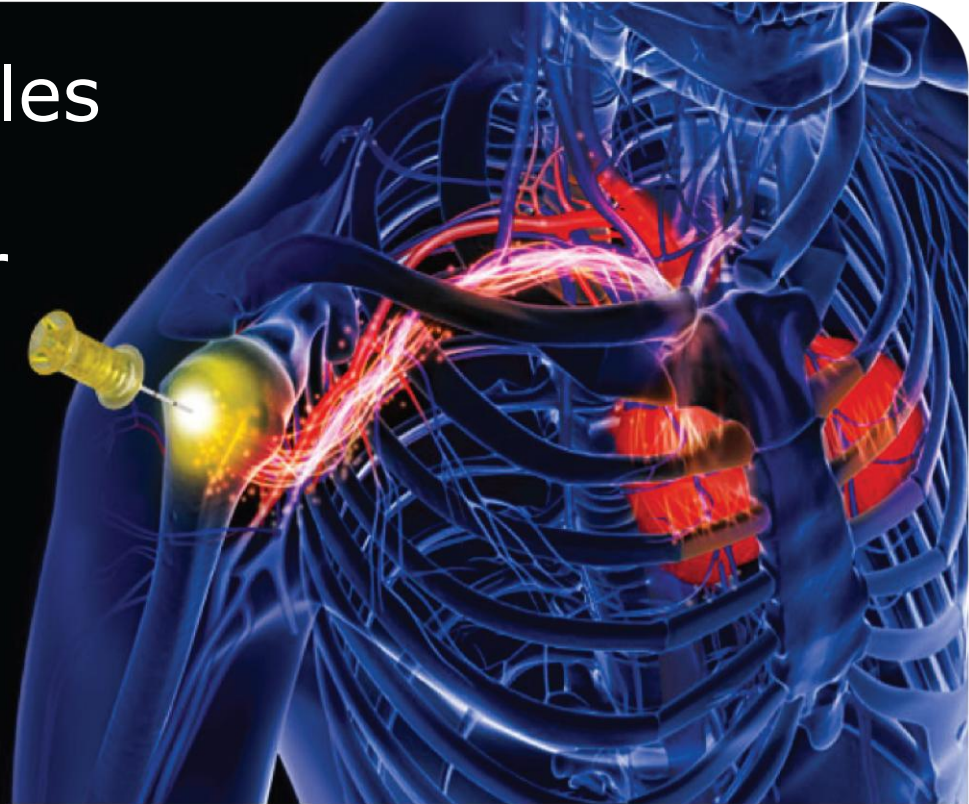
Explore. Discover. Examine.
Vidacare Workshop Programmes

www.vidacare.com

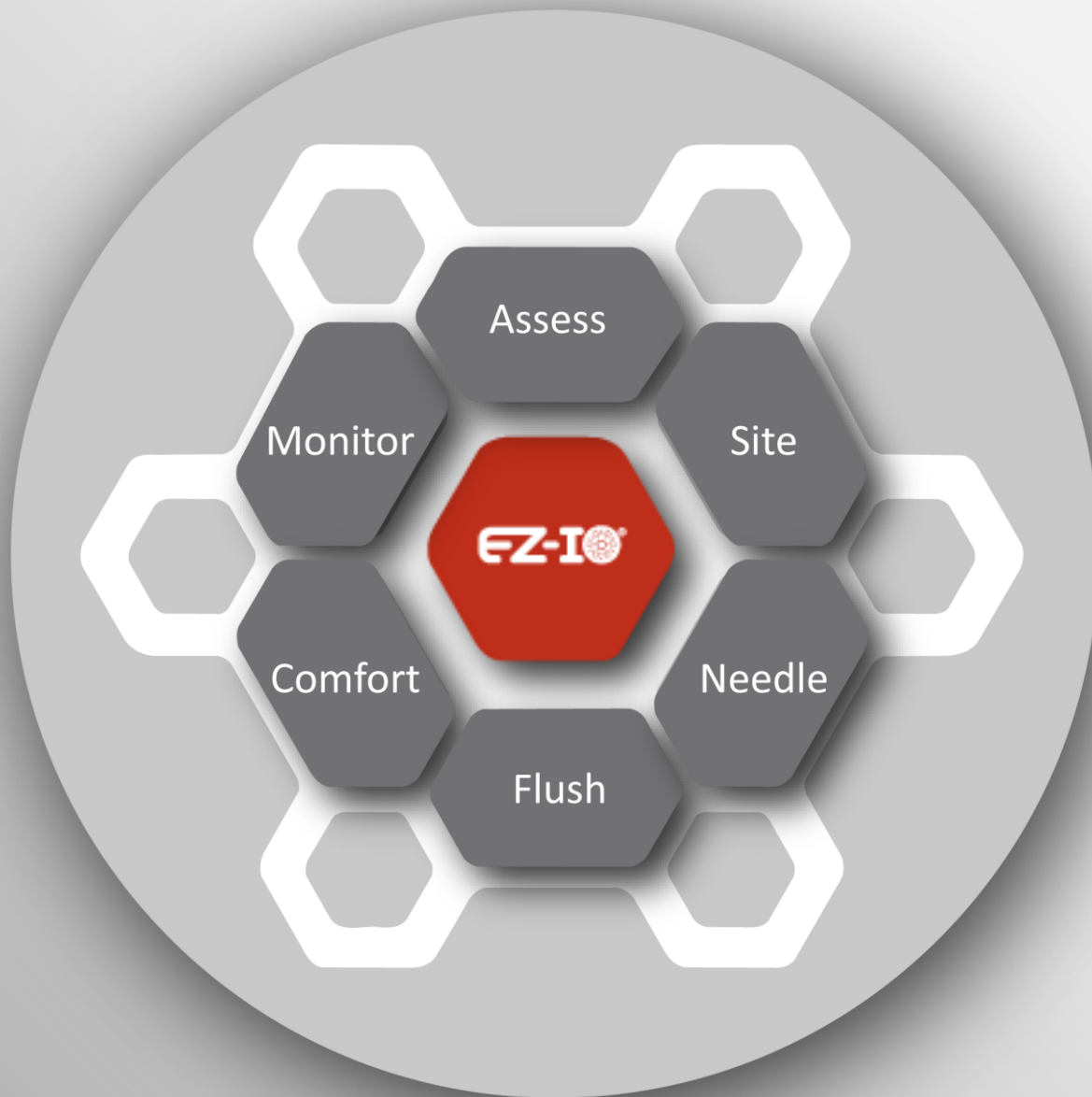


Explore. Discover. Examine.

EZ-IO® Clinical Principles to Successful Intraosseous Vascular Access



Expand Your Skills. Develop Your Practice



menu



menu

What to consider



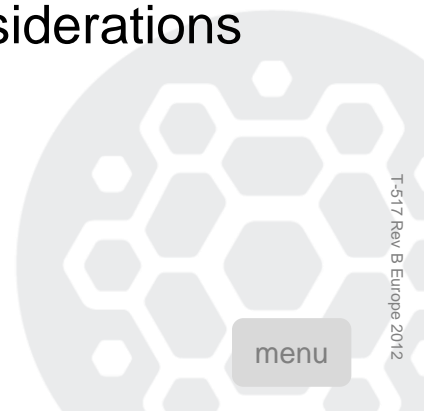
When to use
EZ-IO



Rule out
contra indications



Other
considerations

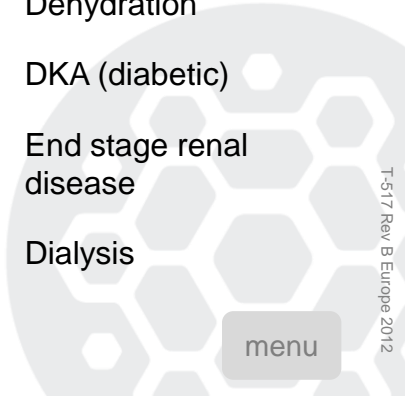




When to use IO

When you need to give medications or fluids immediately

Trauma	Cardiac	Neurological	Respiratory	Systemic
Paediatric & adult shock trauma	Cardiac arrest	Status epilepticus	All respiratory emergencies	Haemophiliac crisis
Burns	Arrhythmia	Stroke		Sickle Cell crisis
Drug overdose	Myocardial infarction	Coma		Dehydration
Rapid sequence intubation	Congestive heart failure	Head Injury		DKA (diabetic)
Post partum haemorrhage	Chest pain			End stage renal disease
				Dialysis





When to use IO

When IV access is difficult or impossible

Pre & Post
Surgery

Anaesthesia

IV Fluid
Therapy

Obesity

Young & Old



Most Peripheral
IV Drugs



72 Hour
Placement



Rule out contra-indications



Prosthesis



Trauma to
bone



No
Anatomical
Landmarks



Local Infection



Recent IO
in same bone
(48 hrs)



Other considerations prior to IO

Patient needs

Volume replacement

Patient status

Pain receptiveness

Age

Physique

Trauma to limbs

Accessibility

Position of limbs

Accessibility to IO site

Ability to stabilise IO

site

Post Insertion

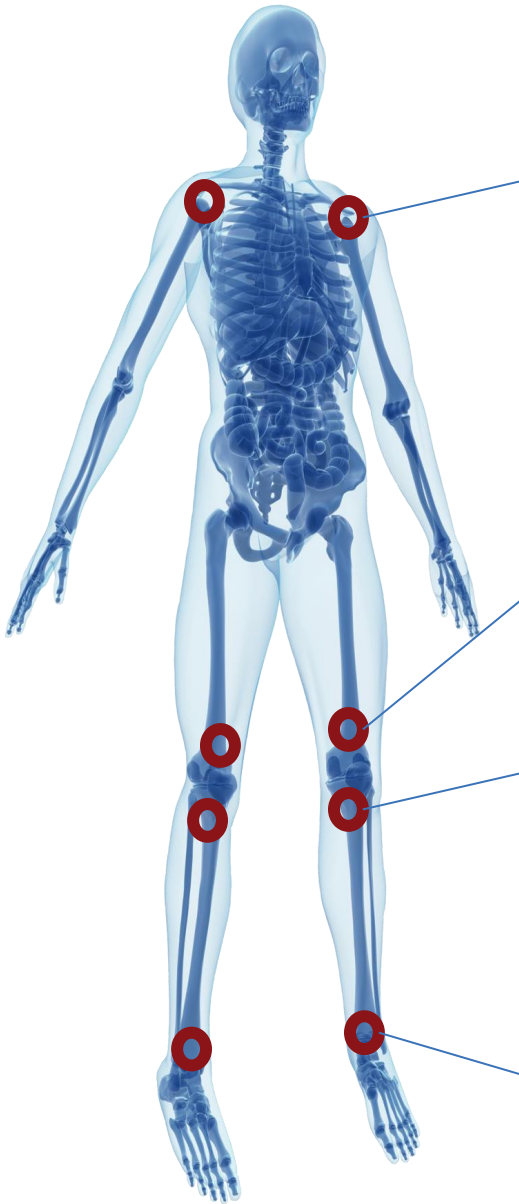
Ability to monitor IO
site

Ability to maintain
patient safety



menu

4 Sites, 8 Targets



Proximal Humerus

Preferred site for adults
Optimal site for high flow and quick drug uptake
Awake, responsive patients
Less painful

Distal Femur (in Europe only)

Best under 6 years

Proximal Tibia

Unresponsive
Unfamiliarity with other sites
Unable to landmark other sites

Distal Tibia

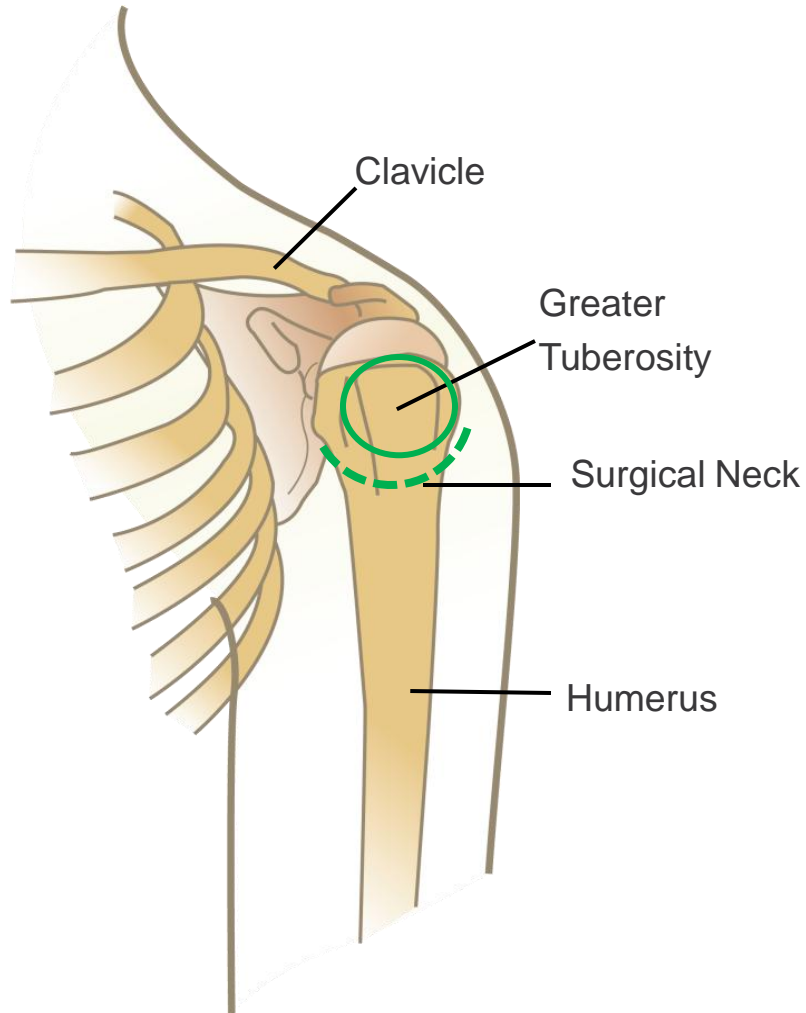
Larger patient
Unable to access other sites

Site selection

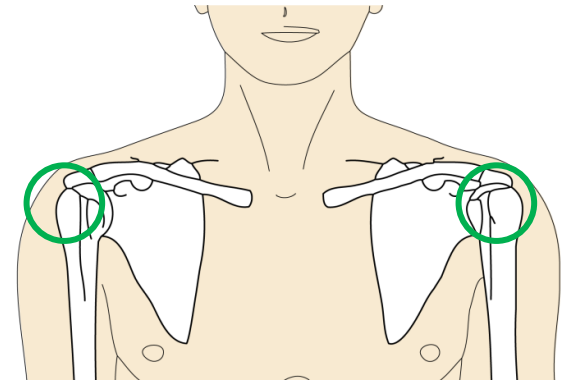
Dependent upon:

- No previous IO in 48 hours
- Absence of contraindications
- Accessibility
- Ability to secure & monitor

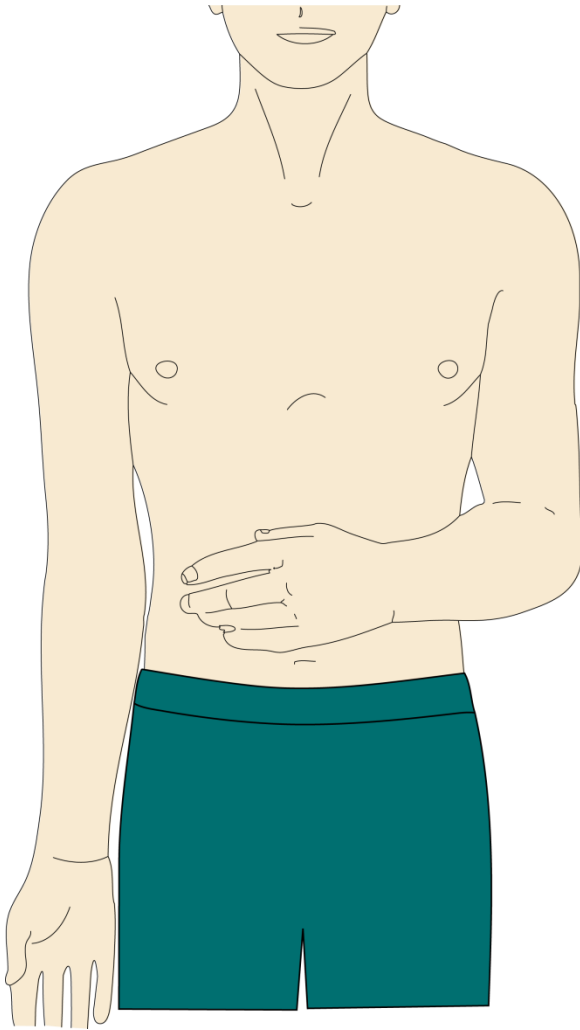
Proximal humerus



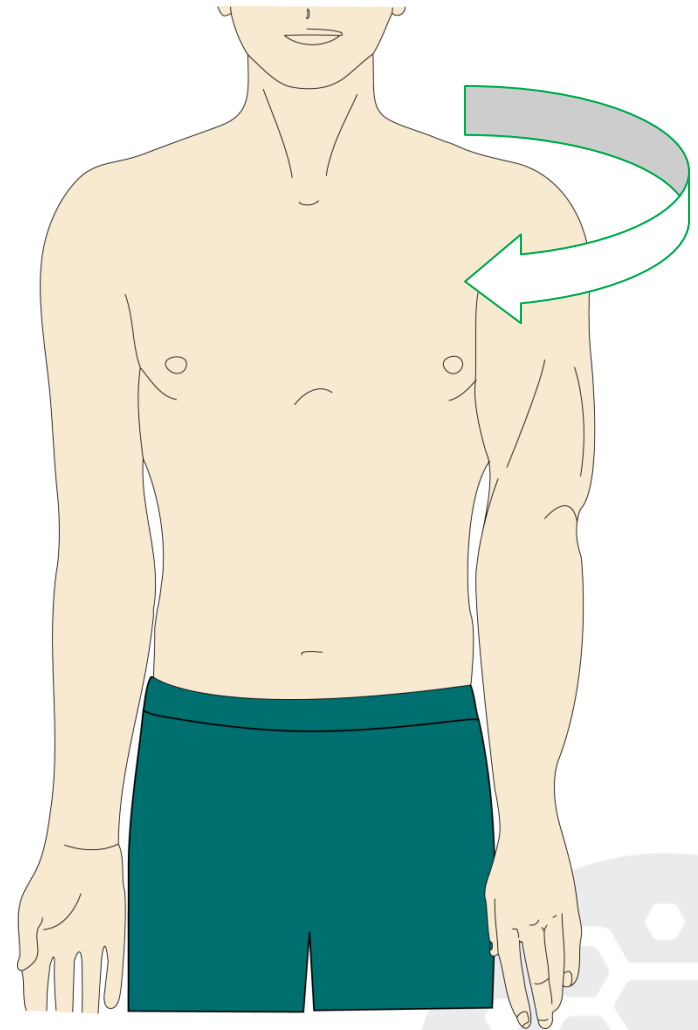
Proximal Humerus insertion site



Alternately

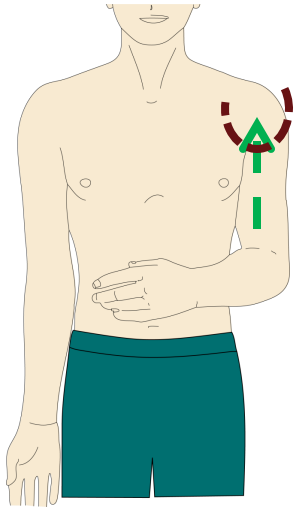


Hand on Umbilicus

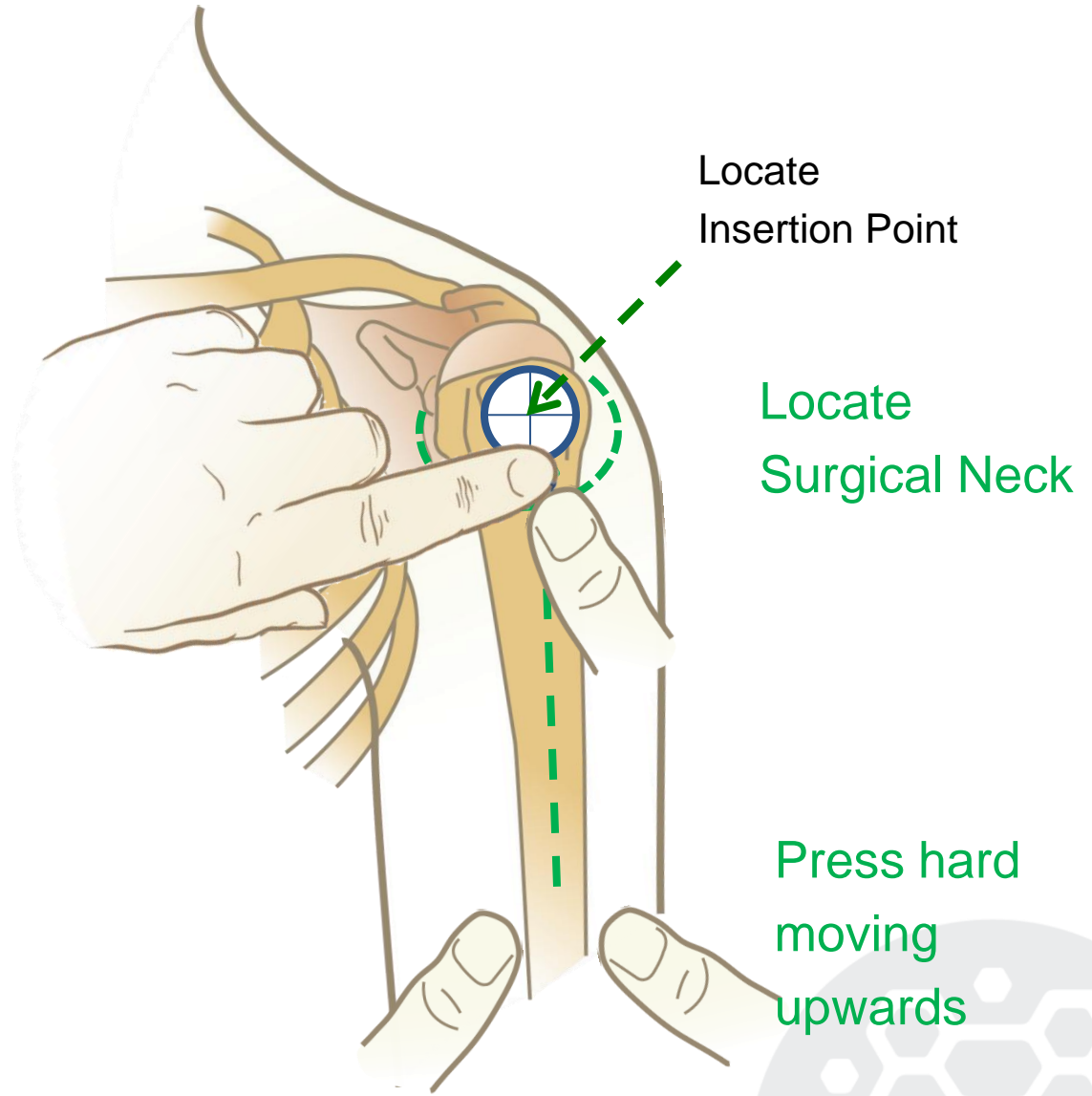


Rotate arm inwards

Site | Proximal humerus



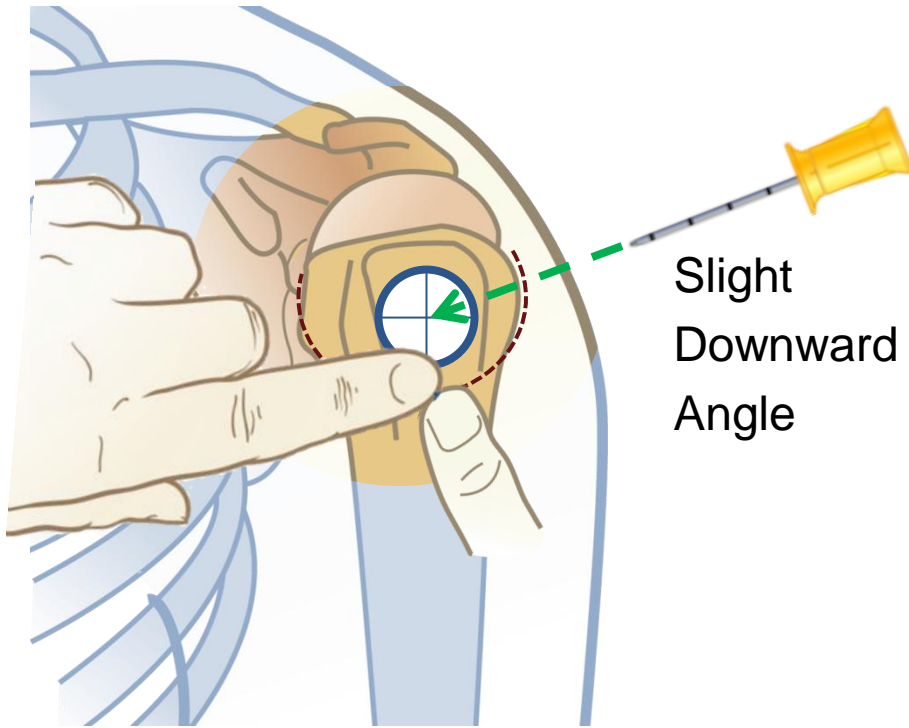
Locate
Proximal Humerus



Locate
Insertion Point

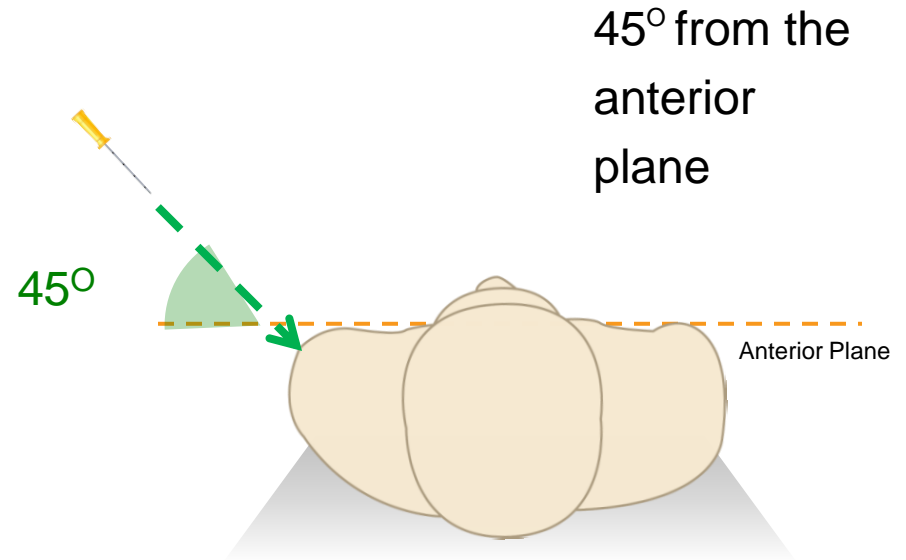
Locate
Surgical Neck

Press hard
moving
upwards



Slight
Downward
Angle

Angle of needle insertion



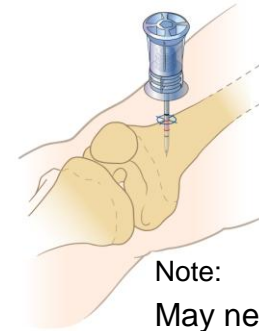
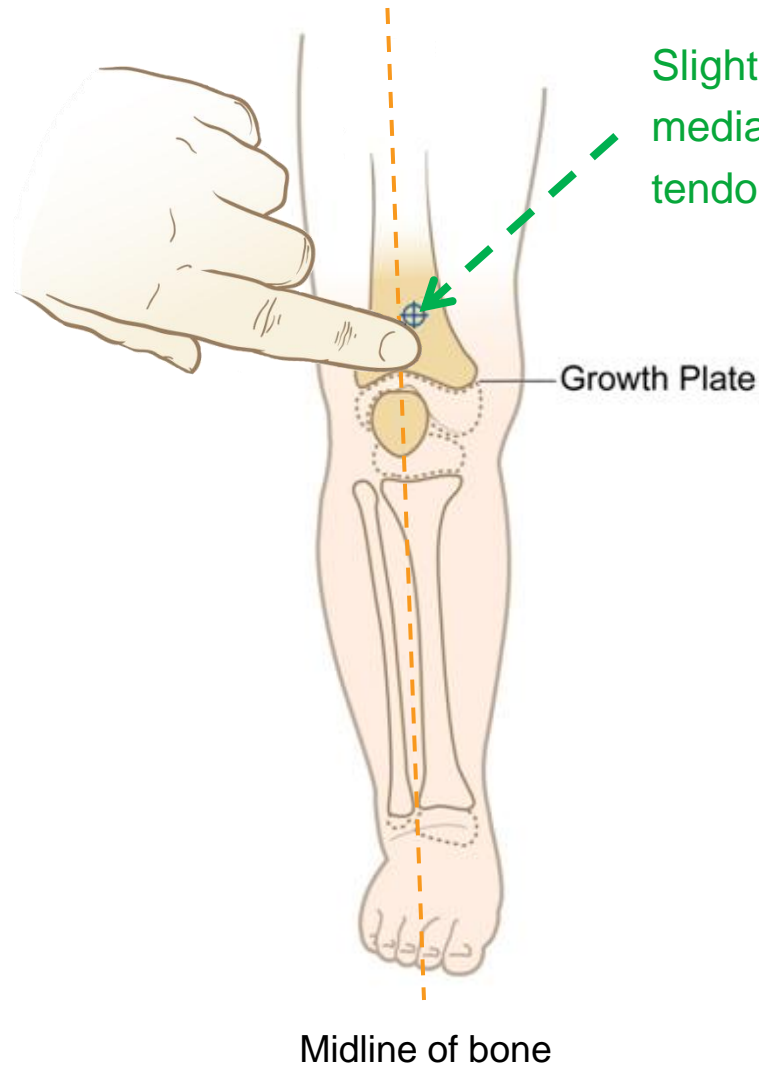
Identify insertion point

Additional Guidance

- 45mm needle recommend for adults
- Advance 1 to 2cm after 'pop'
- Use EZ-IO Stabilizer

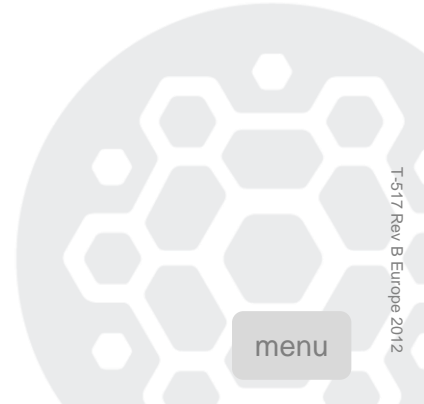
Distal femur

In Europe only

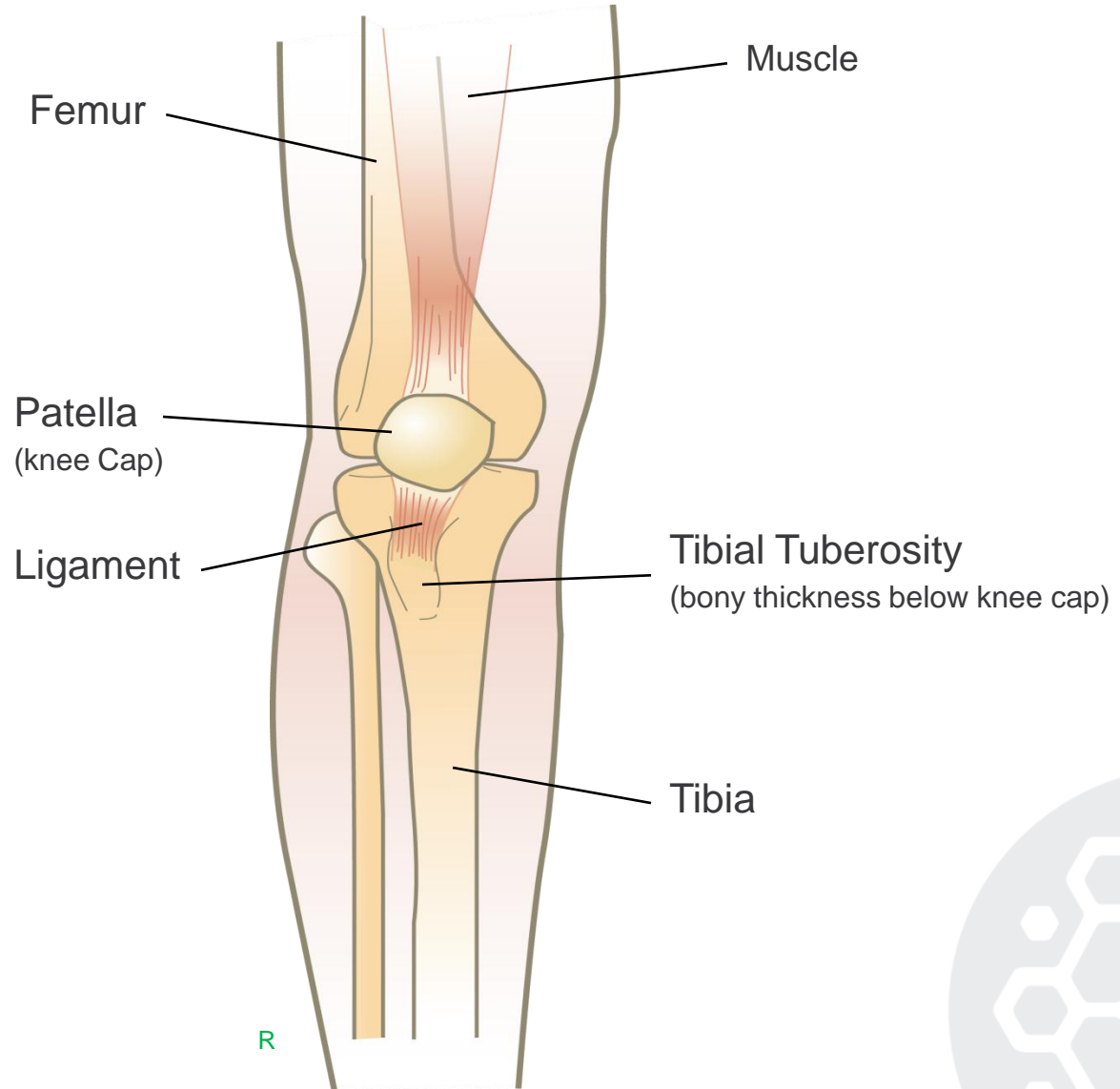


Note:
May need longer needle
– assess skin depth

Best for
children under 6
years



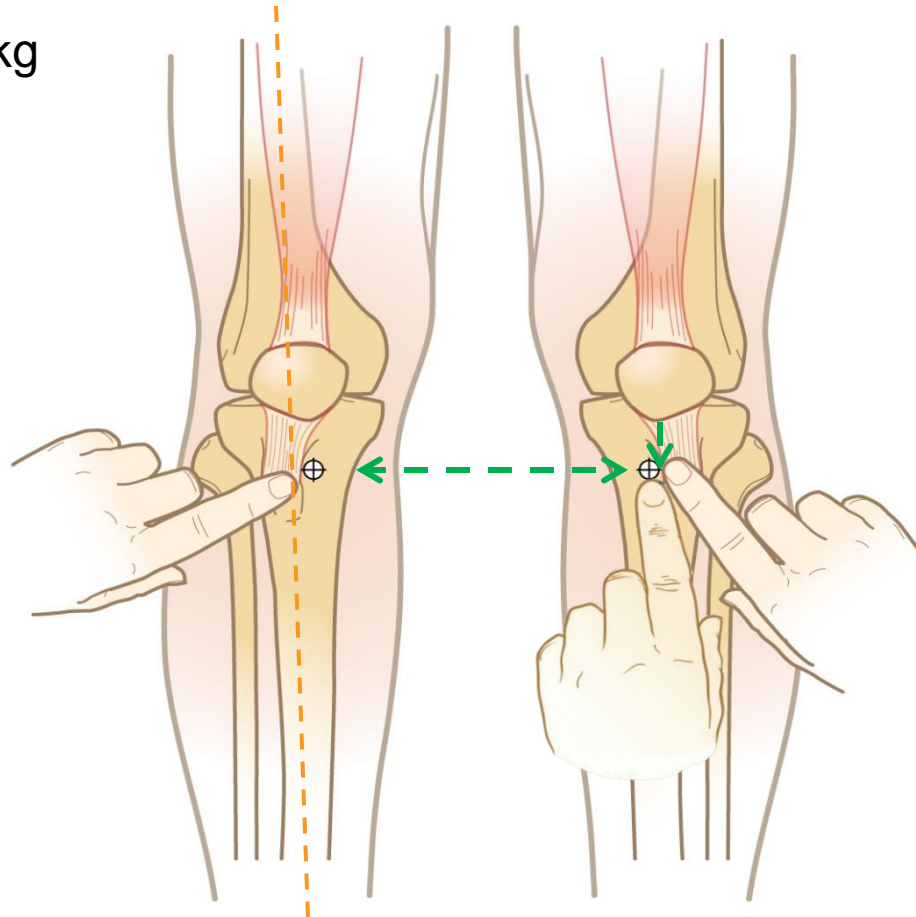
Proximal tibia



Proximal tibia

Patients above 40 kg

1 finger space
medial to
Tuberosity



2 finger breadths
or 3 cm from
base of patella

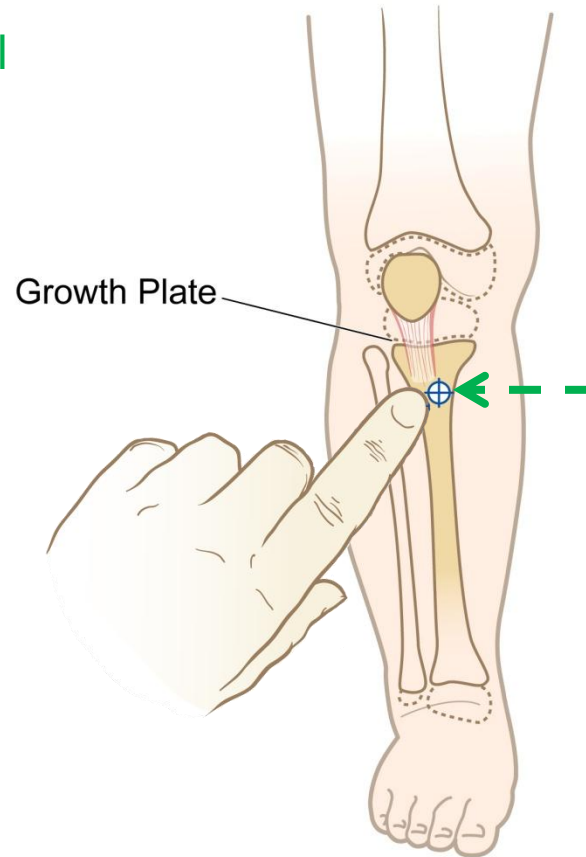
Actual insertion
sites located

Anterior (front) view
(Fingers on tibial tuberosities)

Proximal tibia

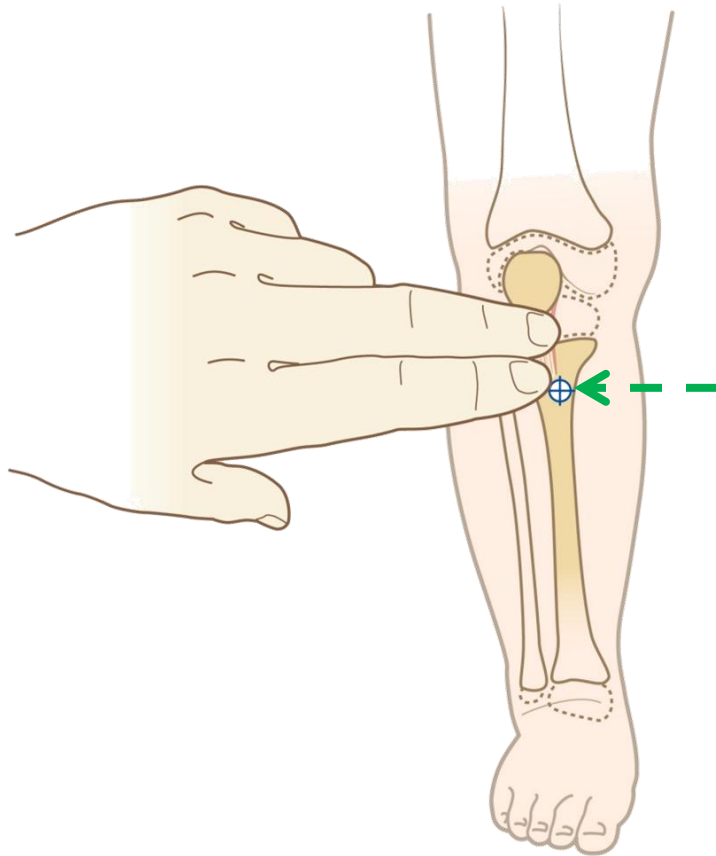
Patients up to 39kg

Palpate Tibial
Tuberosity

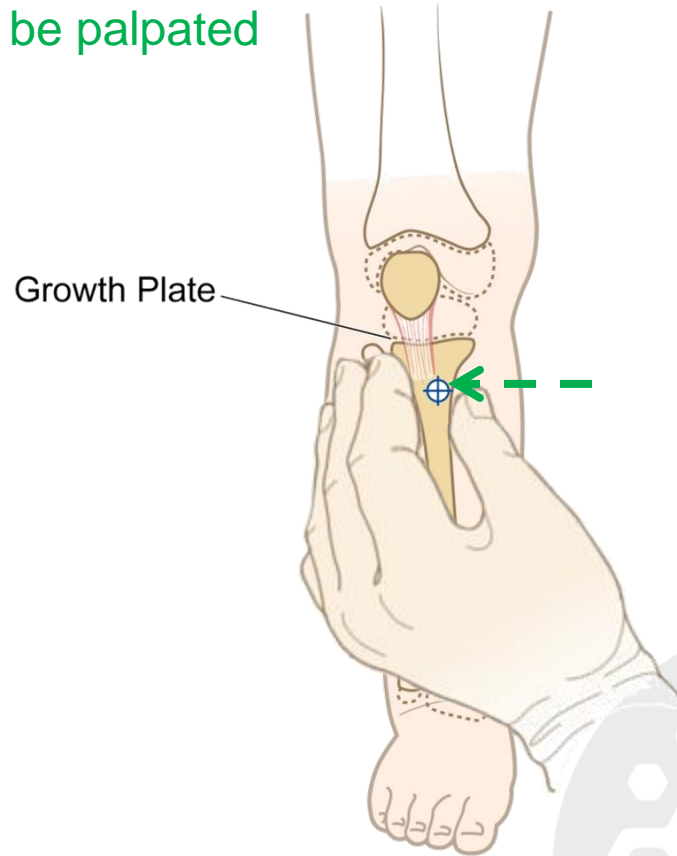


Proximal tibia

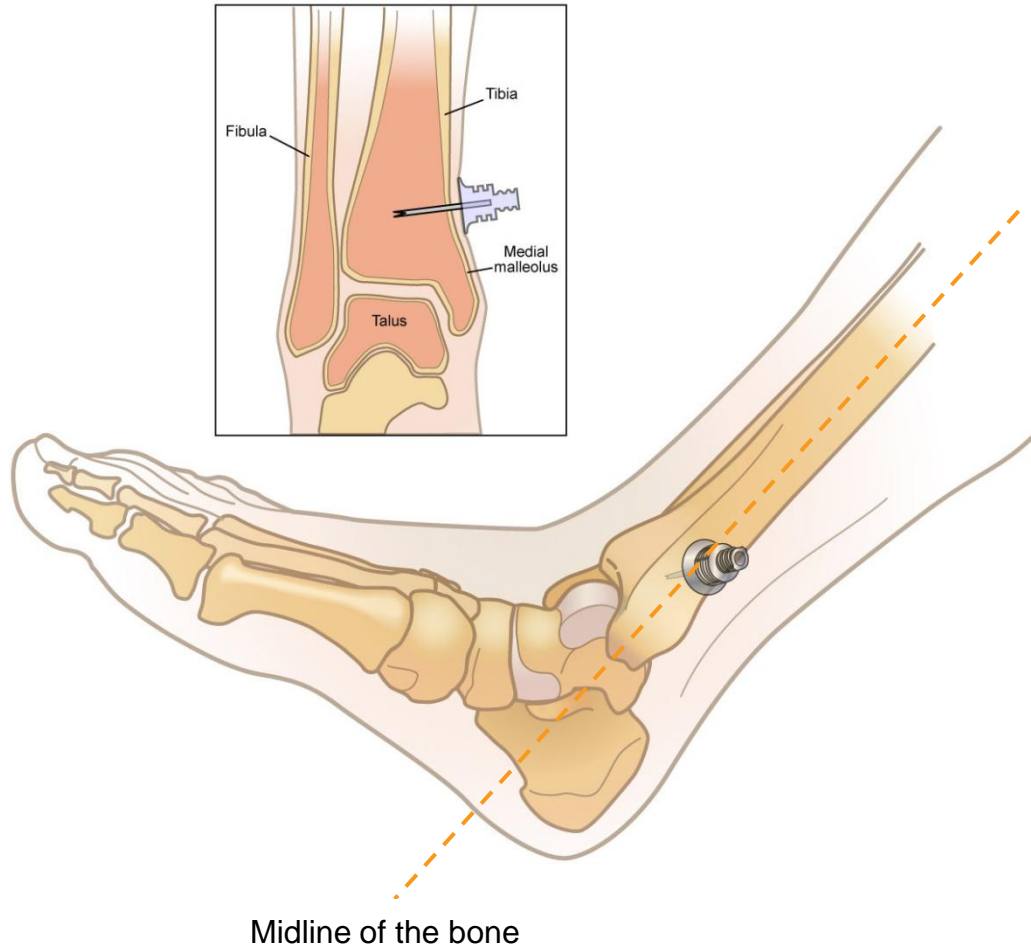
Patients up to 39kg



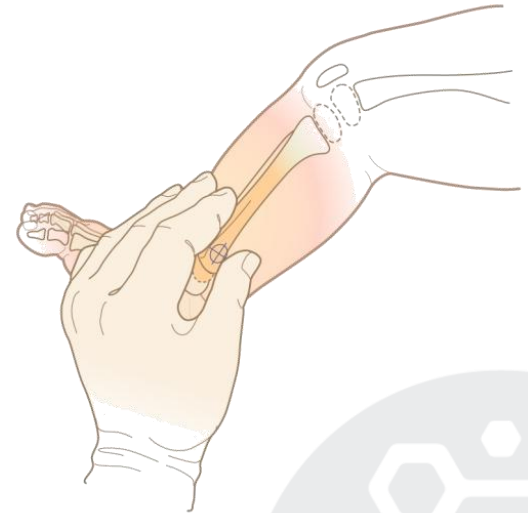
If Tibial Tuberosity
cannot be palpated



Distal tibia



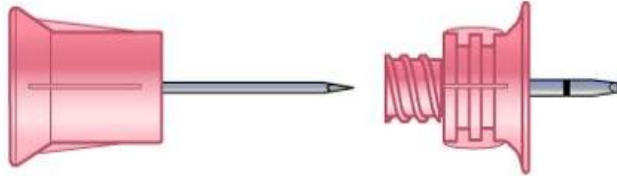
Midline of the bone





menu

3 Needles



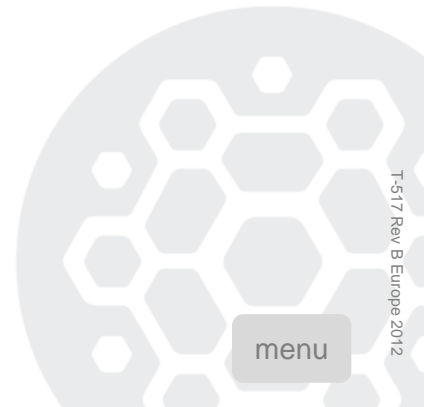
15 mm 3-39 KG

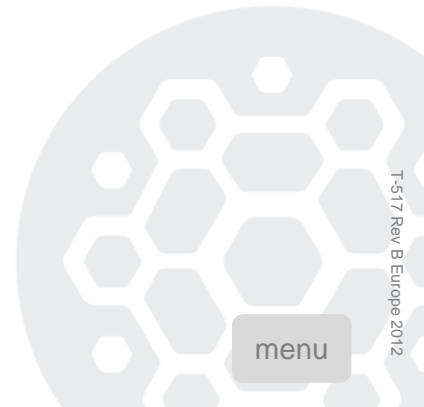
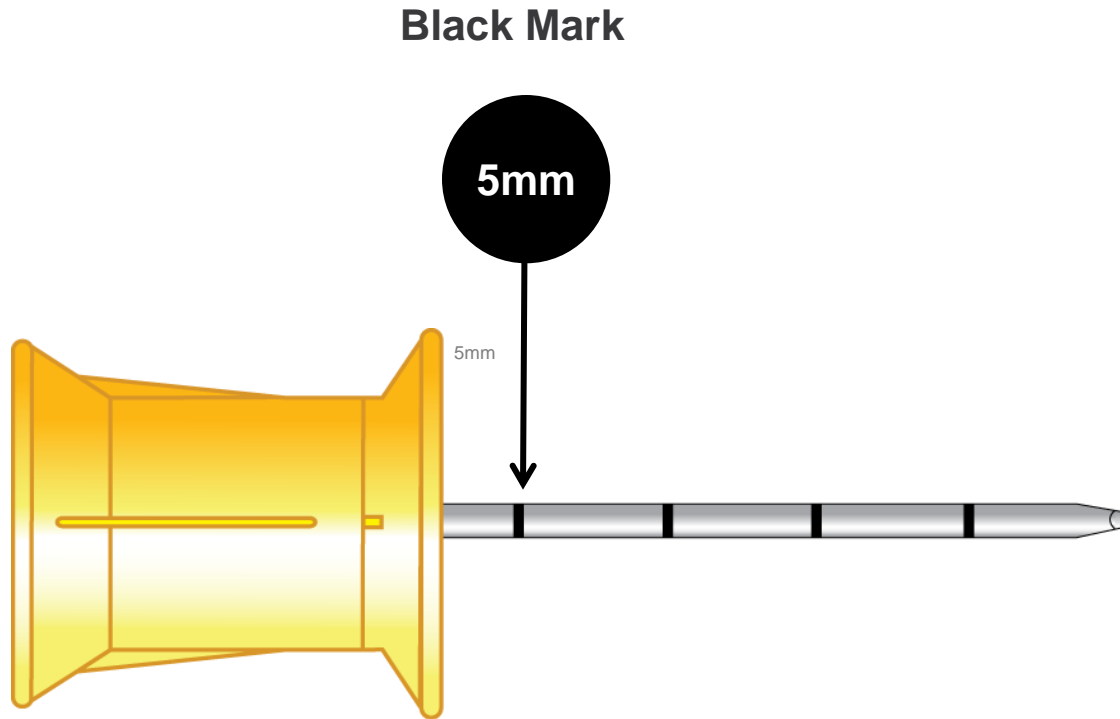


25 mm > 40 KG

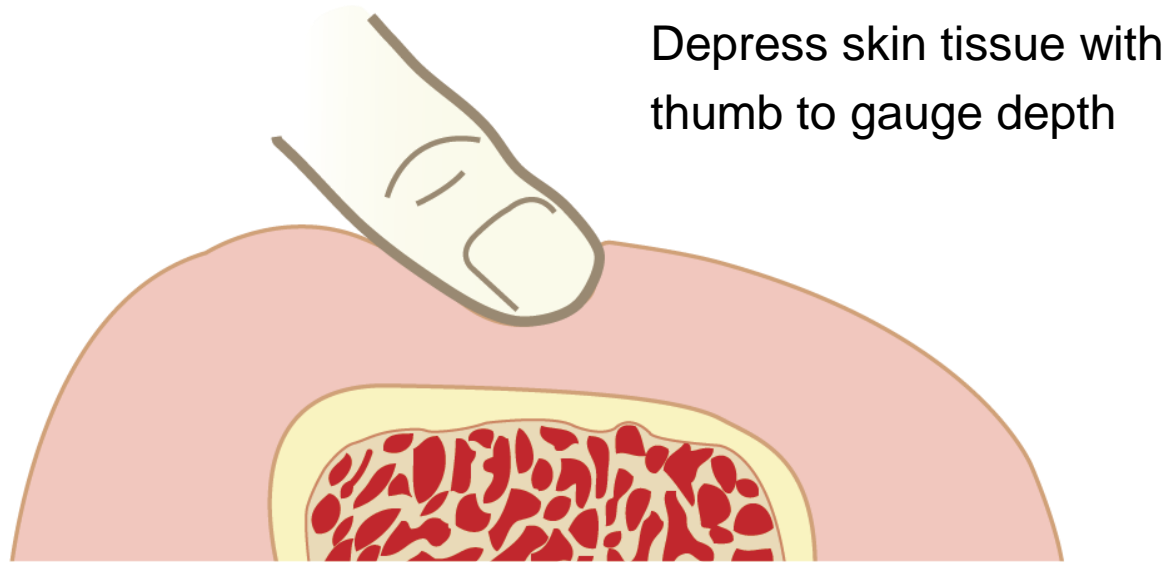


45 mm > 40 KG





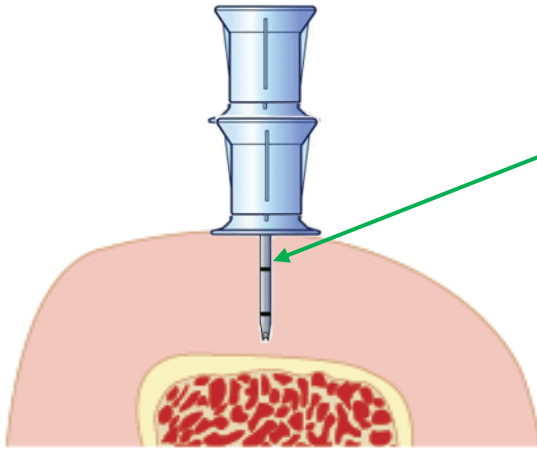
To choose correct needle, assess skin depth



Pre Drive
5mm
Black Mark

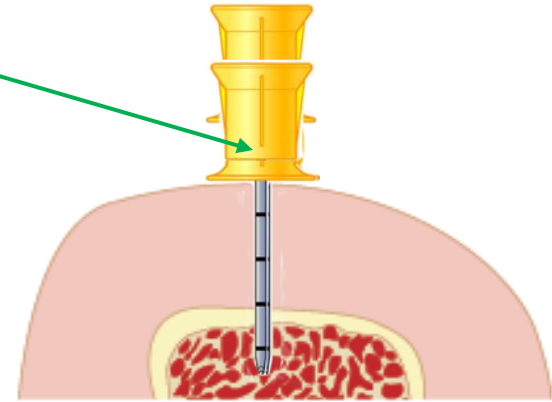
Check

Visible blood flash or aspirate



25mm Needle Set

No need to see mark
post drive



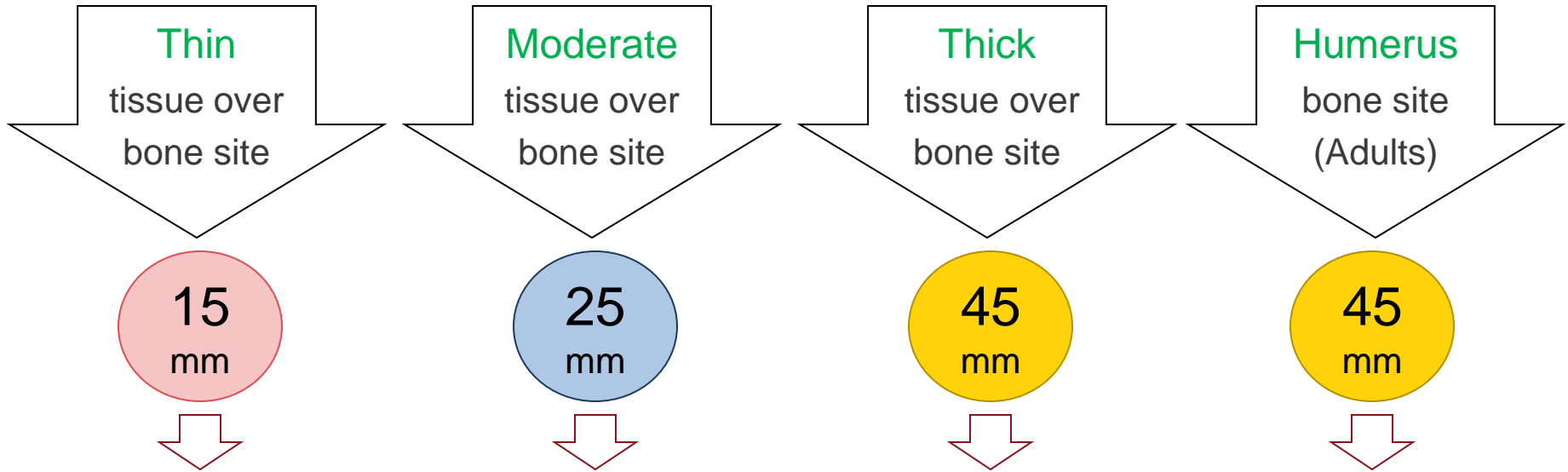
45mm Needle Set

NO

Too small, mark not visible
Needle not touching the cortex
and hub on skin

YES

Mark visible
Needle will then go through the cortex



Insert the needle tip through skin until bone felt

Can the **black 5mm** mark be seen?



No

Select next size up
or different site



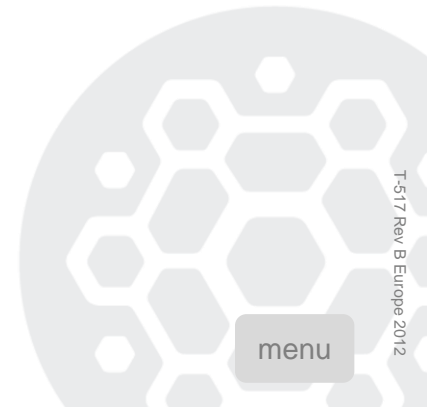
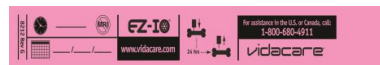
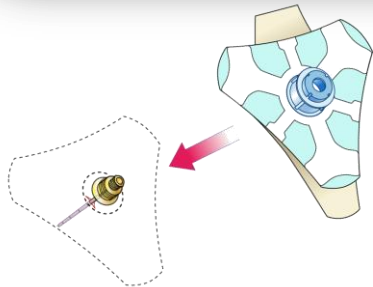
Yes

Insert needle



After insertion, check...

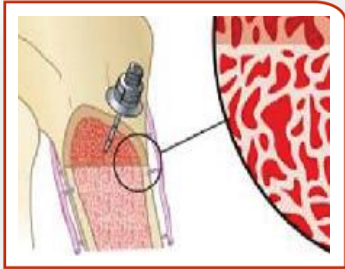
- Firmly seated needle
- Flash of blood
- No leaking around site
- No sign of extravasation
- Secure using EZ Stabilizer
- Use EZ Connect
- EZ-IO wrist band placed



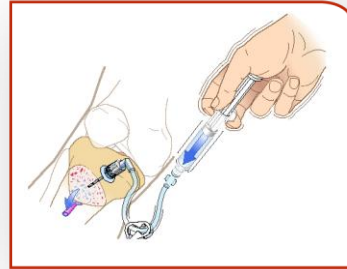


menu

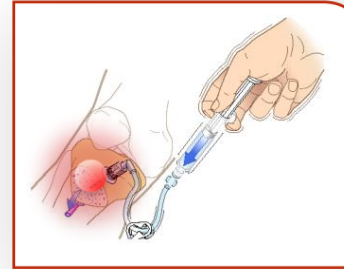
Flush for flow



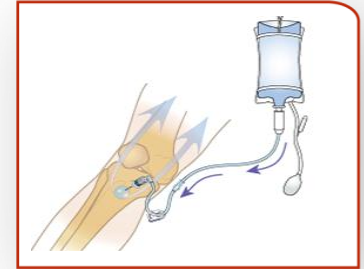
IO space
filled with
thick fibrin
mesh



Pressure
flush to
open mesh

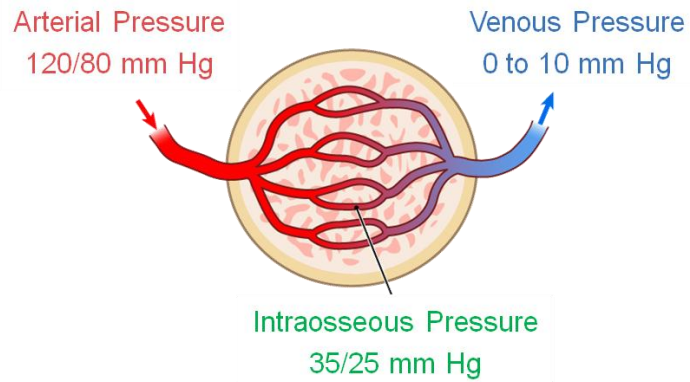


Flush can
be painful

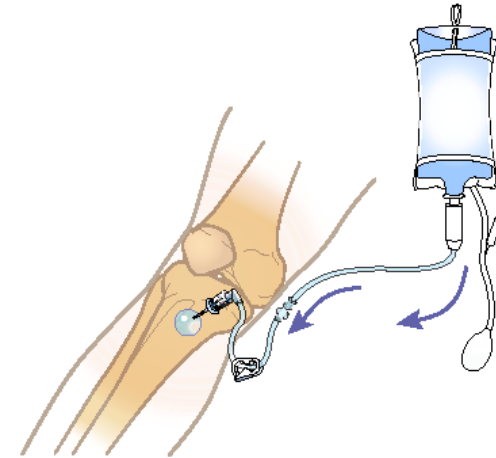


Pressurised
flow needed

Maintain flow



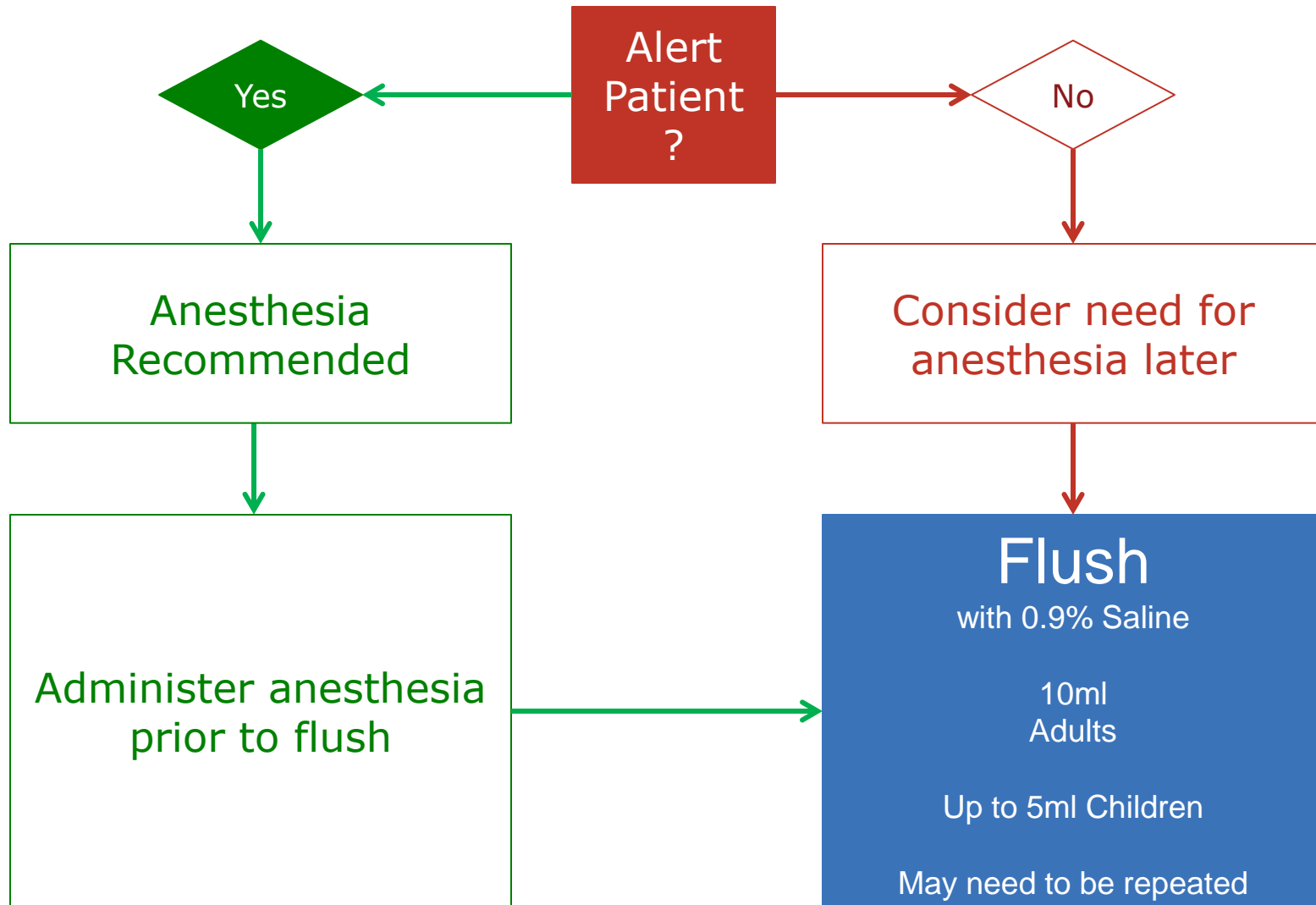
approx 1/3 arterial pressure



Medullary space pressure can stop flow

Infusions should be pressurised for optimal flow





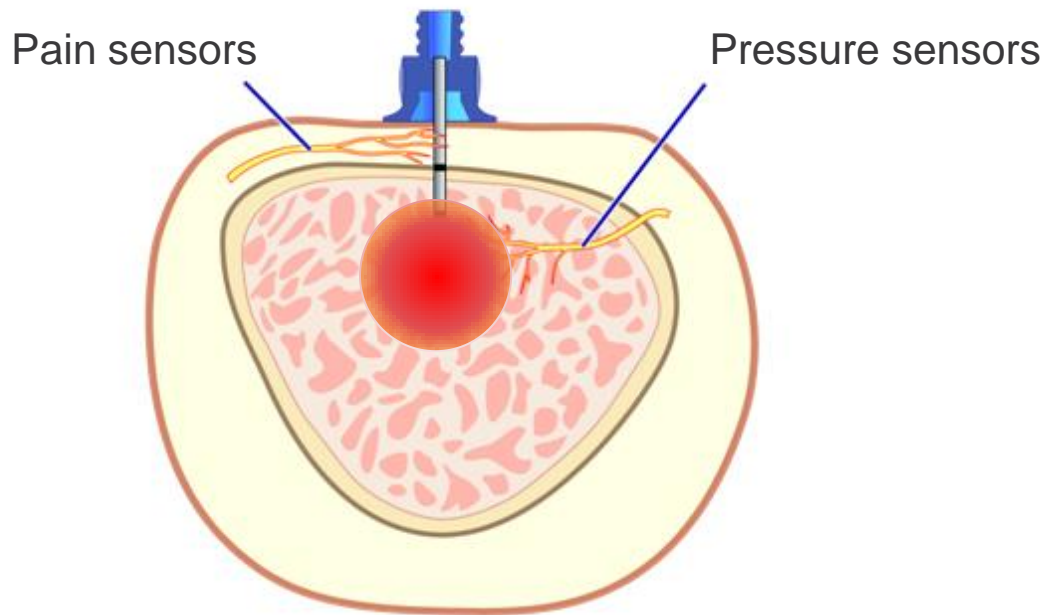


menu



Many procedures hurt...

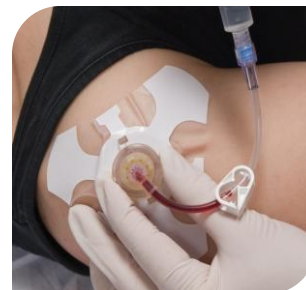
IM Injections | IV Cannula | Central Line Insertion | Sub-cut. Infusions | IO



Two causes of pain



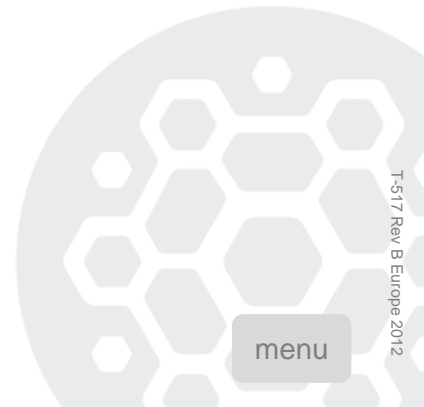
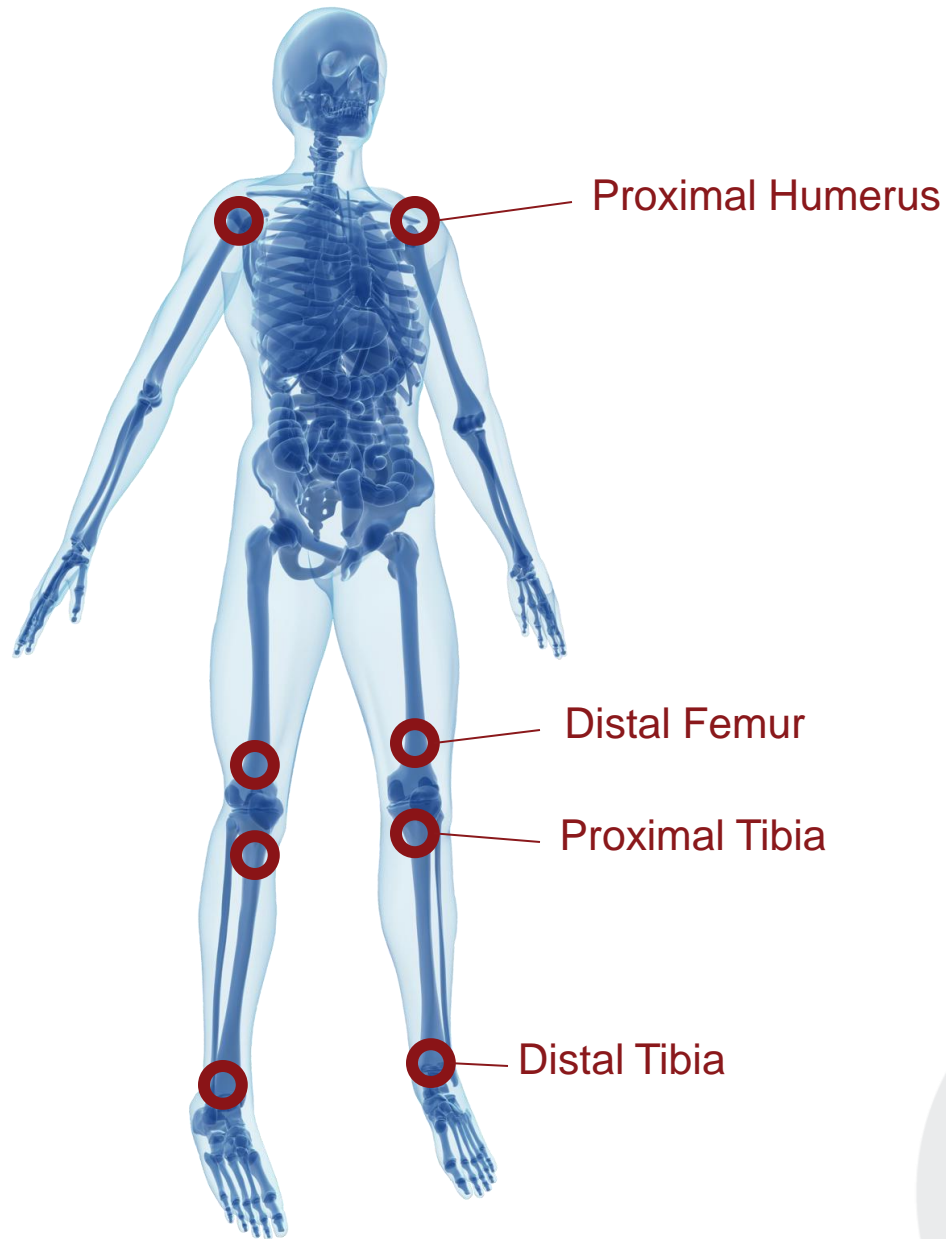
Insertion
specific
short duration



**Flush, Aspiration
& Infusion**
general
diffuse
related to pressure

Proximal humerus less painful

Philbeck et al 2010





Administration

Local IO anaesthesia must be administered very slowly until the desired anaesthetic effect is achieved



Consider

Cardiac lidocaine for patients responsive to pain. ⁽¹⁾

Give prior to IO flush. ⁽¹⁾

Repeat doses may be needed for continued local anaesthesia. ⁽¹⁾



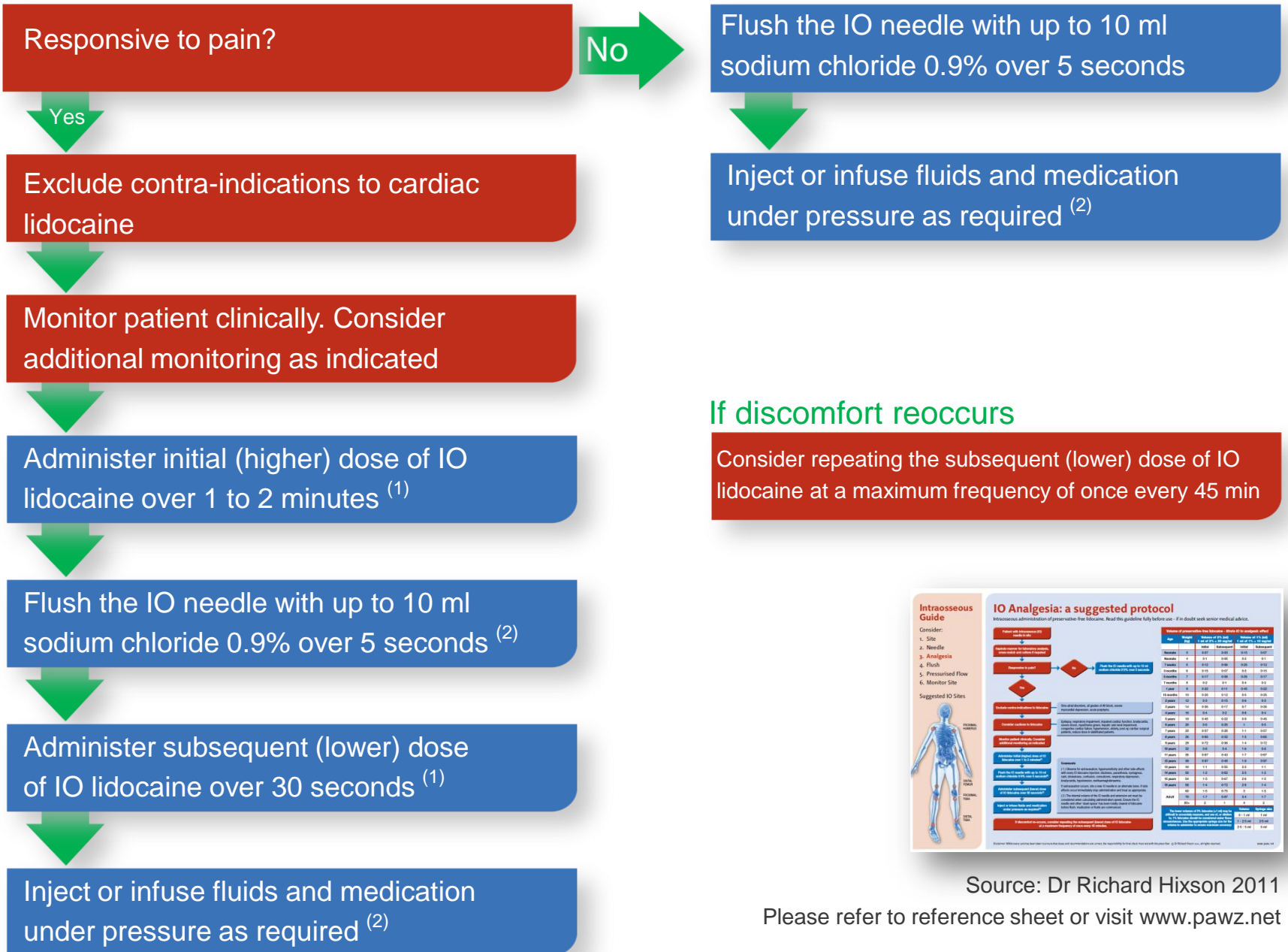
Local protocols

Physician must decide the appropriate anaesthetic & dose.

Recommendations by Dr. Hixson on next slide.

(1) Source: Dr Richard Hixson 2011
Please refer to reference sheet or visit www.pawz.net

Comfort | Suggested analgesia administration



Intraosseous Guide

Consider:

1. Site
2. Needle
3. Analgesia
4. Flush
5. Pressurised Flow
6. Monitor Site

Suggested IO Sites

IO Analgesia: a suggested protocol

Intraosseous administration of pressurised flow lidocaine. Read this guideline fully before use. If in doubt seek senior medical advice.

Number of pressurised flow lidocaine (PFL) IO injections (after 1st)

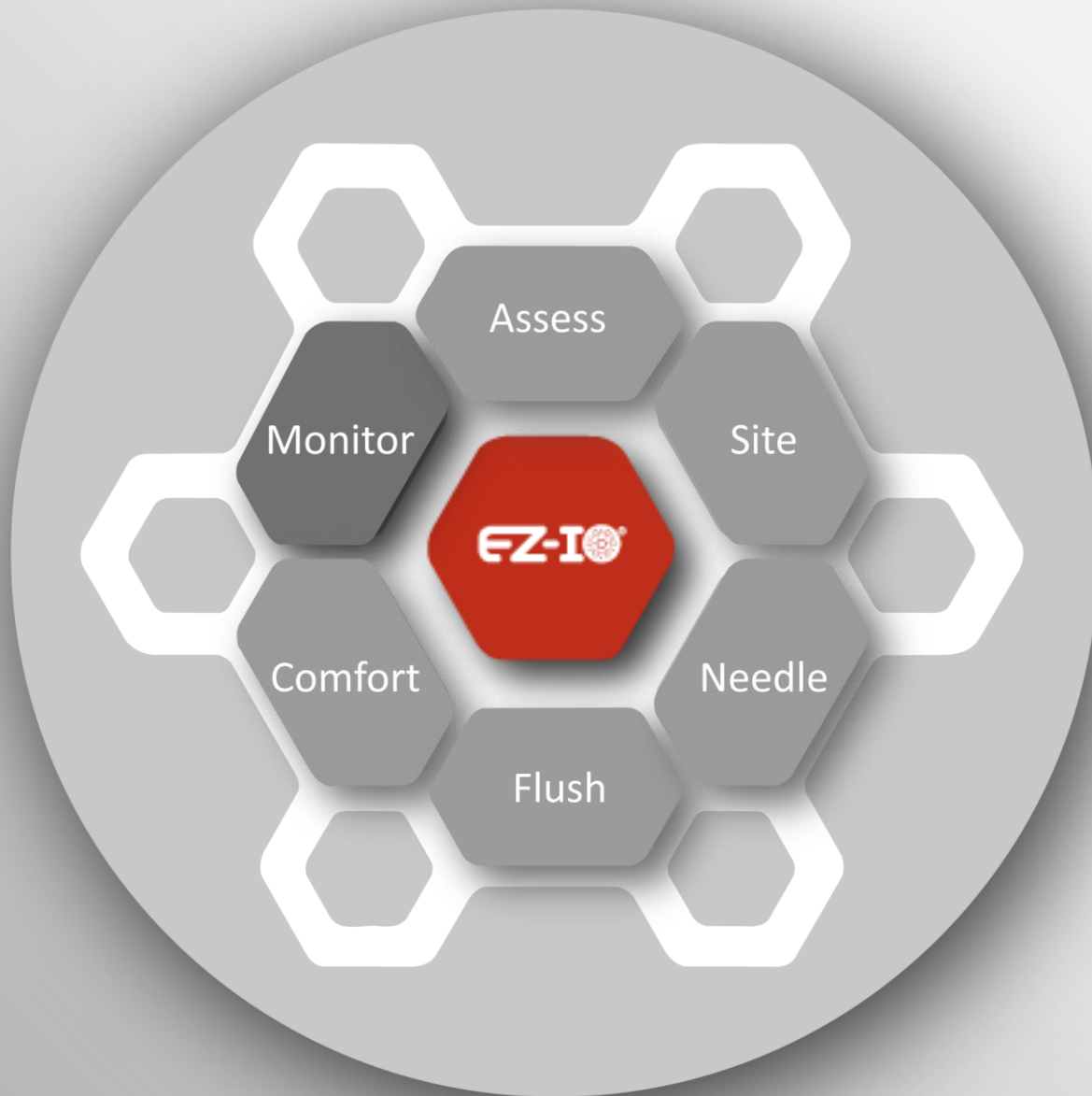
Age	Site	Volume of PFL (ml)	Concentration of PFL (%)	Volume of 0.9% NaCl (ml)	Volume of 0.9% NaCl (ml)
Neonate	I	0.5	0.5	0.5	0.5
Infant	I	1	1	1	1
1-2 years	I	1	1	1	1
2-5 years	I	1	1	1	1
5-10 years	I	1	1	1	1
10-15 years	I	1	1	1	1
15-20 years	I	1	1	1	1
20-25 years	I	1	1	1	1
25-30 years	I	1	1	1	1
30-35 years	I	1	1	1	1
35-40 years	I	1	1	1	1
40-45 years	I	1	1	1	1
45-50 years	I	1	1	1	1
50-55 years	I	1	1	1	1
55-60 years	I	1	1	1	1
60-65 years	I	1	1	1	1
65-70 years	I	1	1	1	1
70-75 years	I	1	1	1	1
75-80 years	I	1	1	1	1
80-85 years	I	1	1	1	1
85-90 years	I	1	1	1	1
90-95 years	I	1	1	1	1
95-100 years	I	1	1	1	1

Notes:

1. Volume of PFL should be adjusted according to patient size and weight.
2. The maximum volume of PFL should not exceed 10 ml.
3. The maximum volume of PFL should not exceed 10 ml.
4. The maximum volume of PFL should not exceed 10 ml.
5. The maximum volume of PFL should not exceed 10 ml.
6. The maximum volume of PFL should not exceed 10 ml.
7. The maximum volume of PFL should not exceed 10 ml.
8. The maximum volume of PFL should not exceed 10 ml.
9. The maximum volume of PFL should not exceed 10 ml.
10. The maximum volume of PFL should not exceed 10 ml.

Source: Dr Richard Hixson 2011

Please refer to reference sheet or visit www.pawz.net



menu



EZ-IO - What to monitor and record

Suggest adapting local policies for the management of IV cannula and CVC lines

Site

No leaking

Limb perfusion

Signs of:

Extravasation

Compartment Syndrome

Infection

Needle

Is secure

Is intact

EZ Stabilizer is secure

Connections are secure

Patient

No pain from IO infusion

EZ-IO Band is place

Flow

Pressurised Infusion (adults)

Expected flow achieved

Pharmacological effects seen

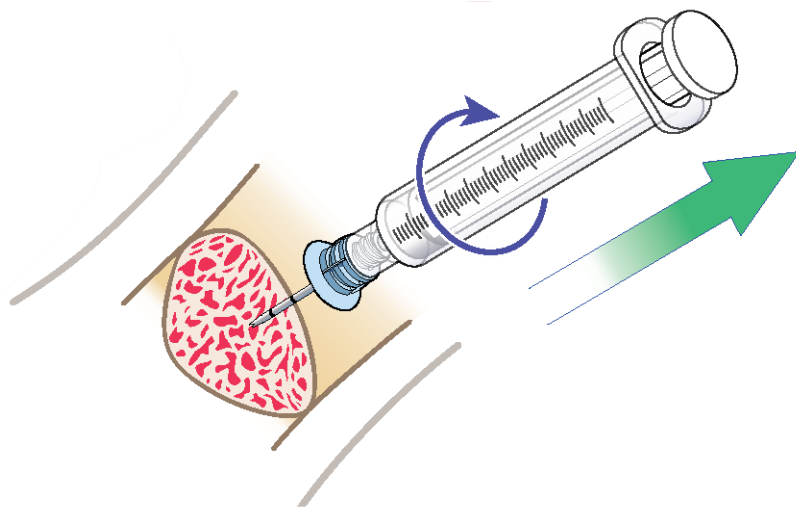
What we have covered





Session Complete

Do you have any questions?



Do not rock the catheter while removing.

Rocking or bending the catheter may cause the catheter to separate from the hub.

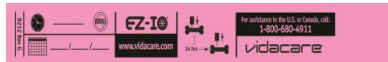
To remove catheter

- Stabilise patient's extremity
- Remove EZ-IO Stabiliser dressing
- Connect sterile Luer lock syringe to hub of catheter
- Rotate catheter clockwise – while pulling straight back
- When catheter has been removed, immediately place in appropriate biohazard container
- Leave EZ-IO Label on for 48hours



Wrist band

Contains contact information

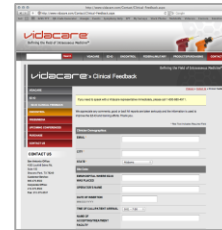


24 hour Emergency Line 1-800-680-4911



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