



Explore. Discover. Examine.

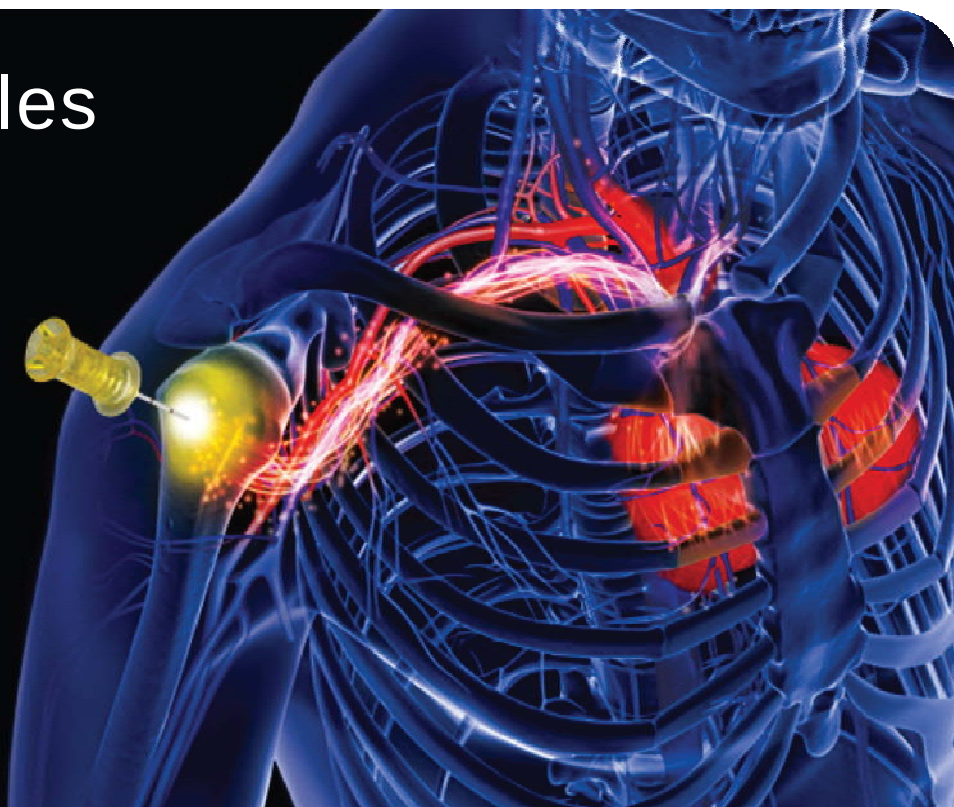
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T-522, Rev A

Explore. Discover. Examine.

EZ-IO® Clinical Principles to Successful Intraosseous Vascular Access



Expand Your Skills. Develop Your Practice

For adult and pediatric patients
anytime in which vascular access
is difficult to obtain in emergent,
urgent or medically necessary
situations







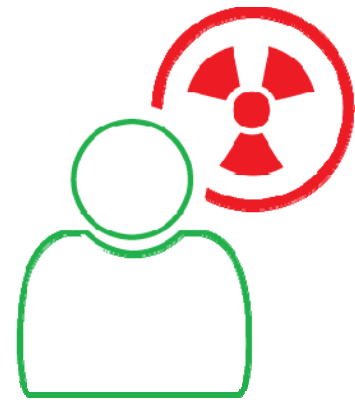
What to consider



When to use
EZ-IO



Rule out
contraindications



Other
considerations





When to use IO

When you need to give medications or fluids immediately

Shock Trauma

Pediatric and Adult
Shock

Burns

Drug overdose

Rapid sequence
intubation

Post partum
haemorrhage

Cardiac

Cardiac arrest

Arrhythmia

Myocardial infarction

Congestive heart
failure

Chest pain

Neurological

Status epilepticus

Stroke

Coma

Head Injury

Respiratory

Respiratory arrest

Status asthmaticus

Systemic

Haemophiliac crisis

Sickle Cell crisis

Dehydration

DKA (diabetic)

End stage renal
disease

Dialysis



When to use IO

When IV access is difficult or impossible

Pre & Post
Surgery

Anesthesia

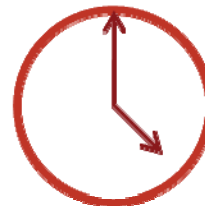
IV Fluid
Therapy

Obesity

Young & Old



Any Peripheral
IV Drug



24Hour
Placement



Assess | Rule out contra-indications



Rule out contraindications



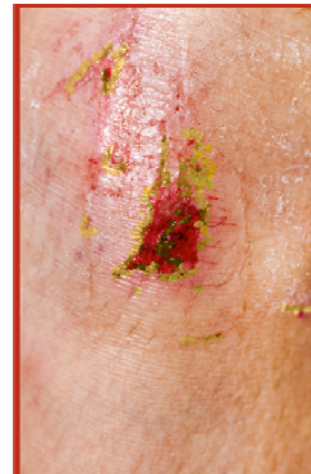
Prosthesis



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 stabilize IO
site

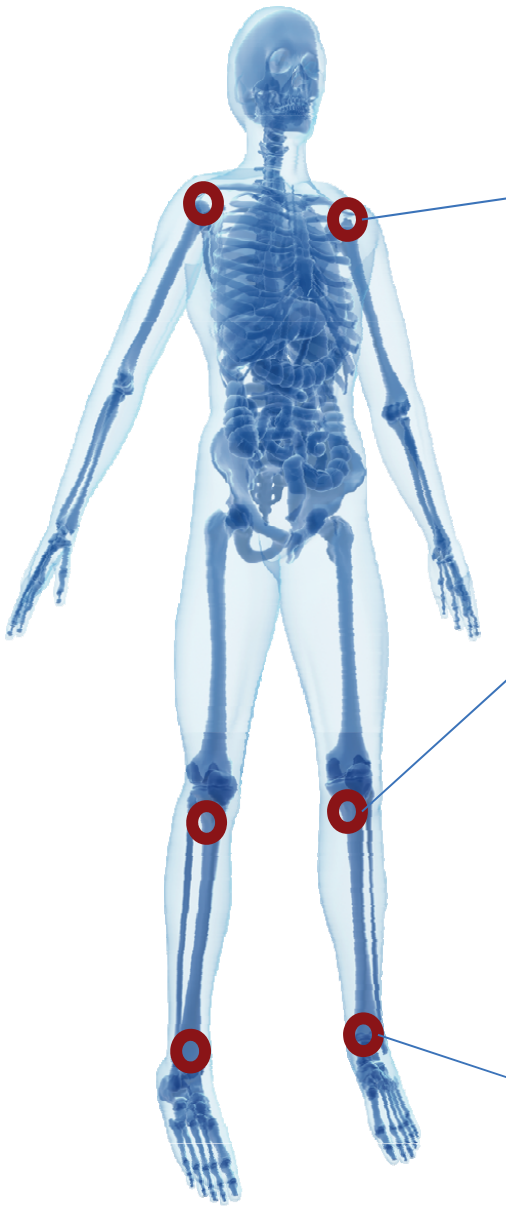
Post Insertion

Ability to monitor IO
site

Ability to maintain
patient safety



Site



3 Sites, 6 Options

Proximal Humerus

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

Proximal Tibia

Unresponsive
Unfamiliarity with other sites
Unable to landmark other sites

Distal Tibia

Larger patient
Unable to access other sites

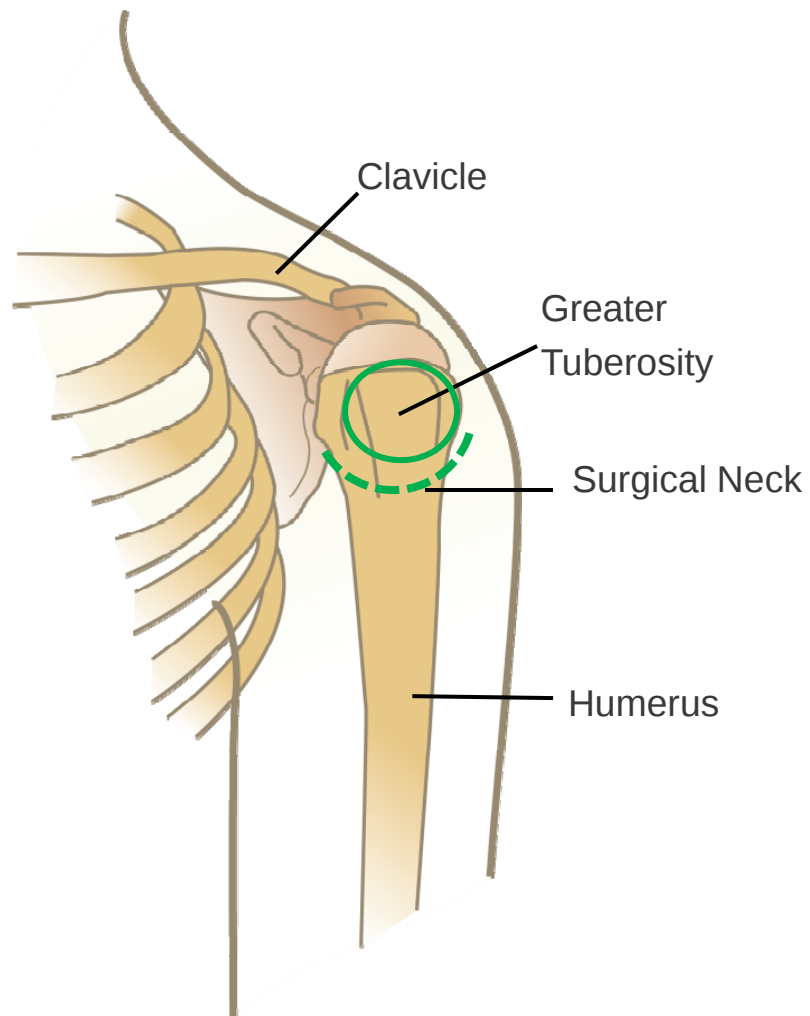
Site selection

Dependent upon:

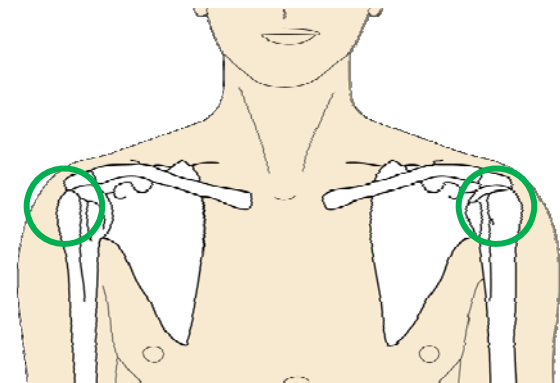
- No previous IO in 48 hours
- Absence of contraindications
- Accessibility
- Ability to secure & monitor

Site | Proximal humerus

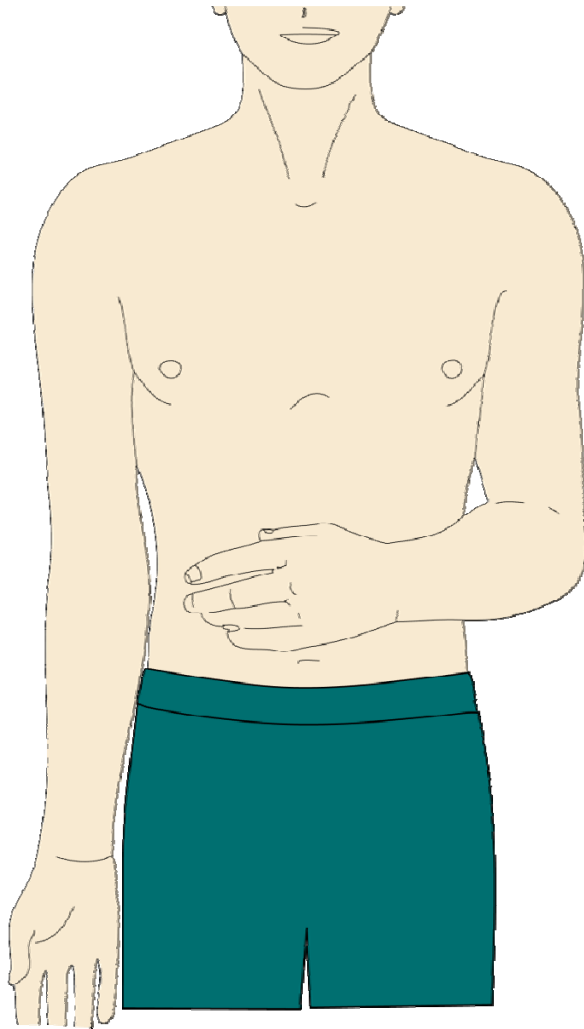
Proximal humerus



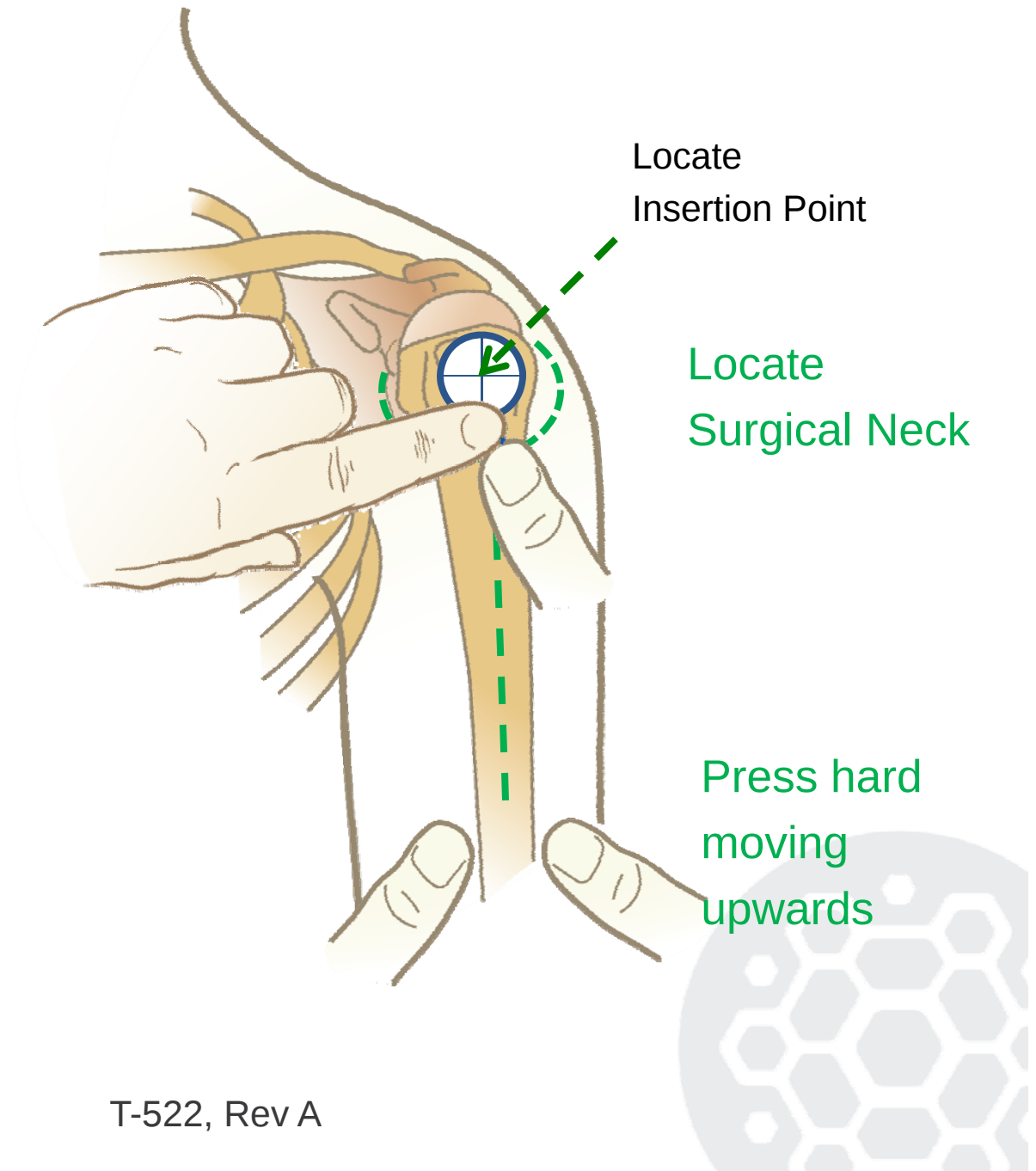
Proximal Humerus
insertion site



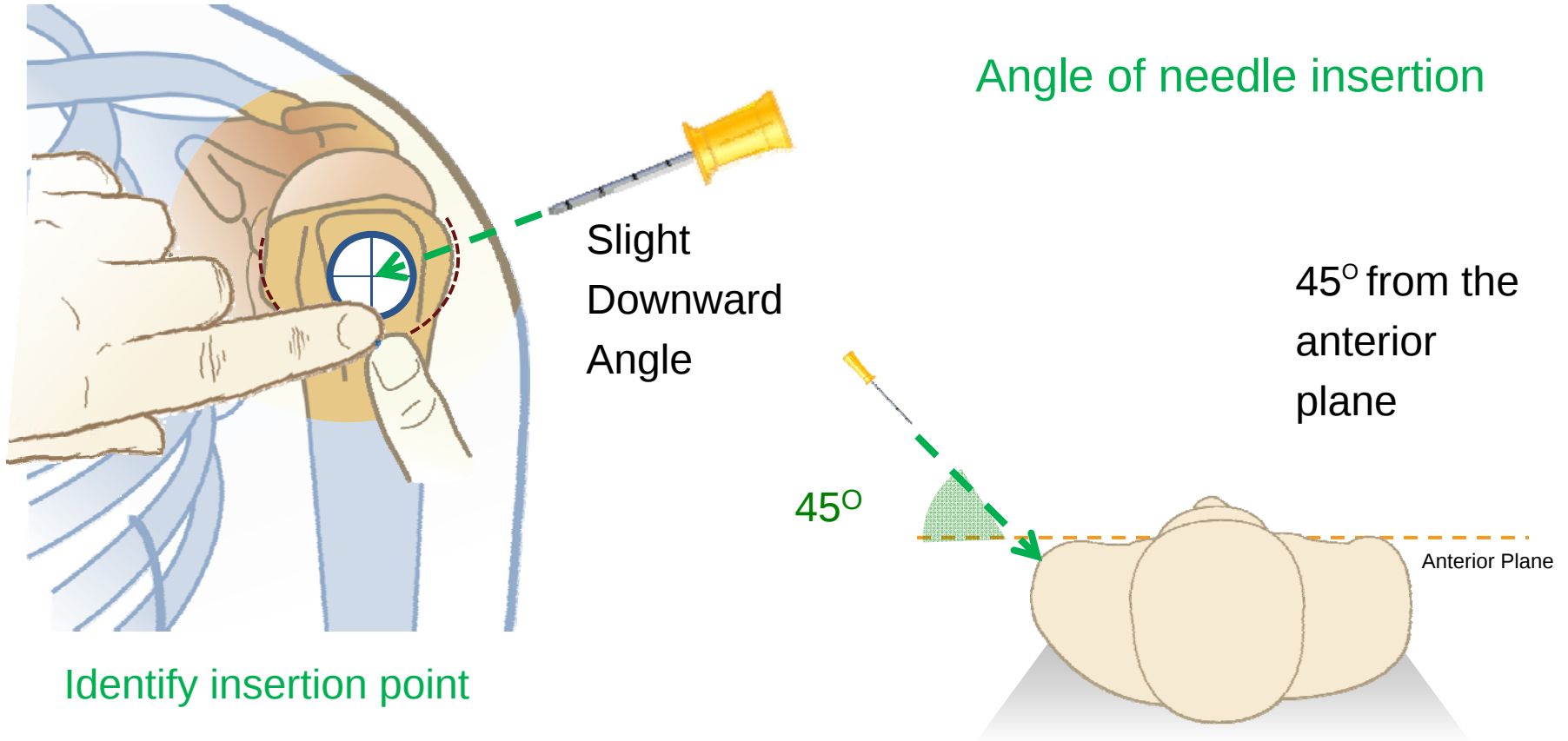
Site | Proximal humerus



Hand on Umbilicus



Site | Proximal humerus



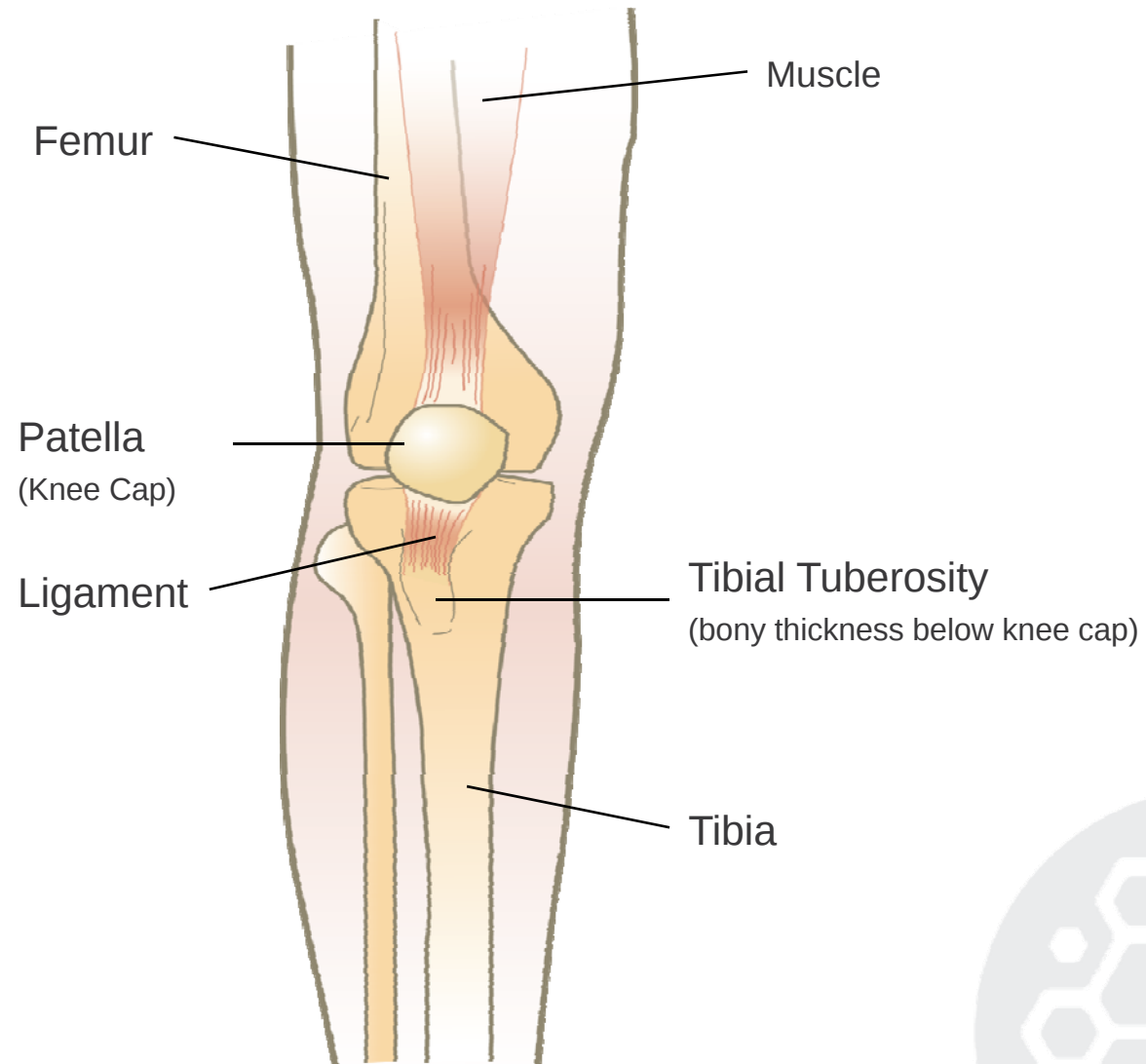
Additional Guidance

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



Site | Proximal tibia

Proximal tibia



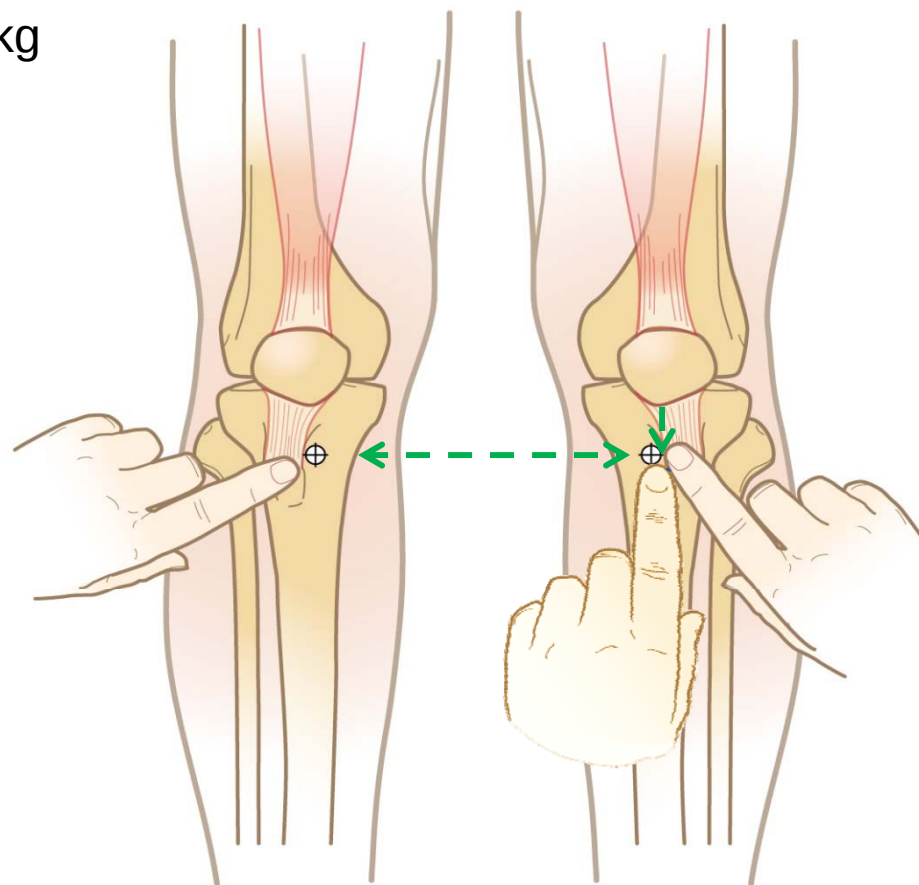
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Site | Proximal tibia

Proximal tibia

Patients above 40 kg



2 finger breadths
or 2 cm from
base of patella

Actual insertion
sites located

Anterior (front) view

(Fingers on tibial tuberosities)

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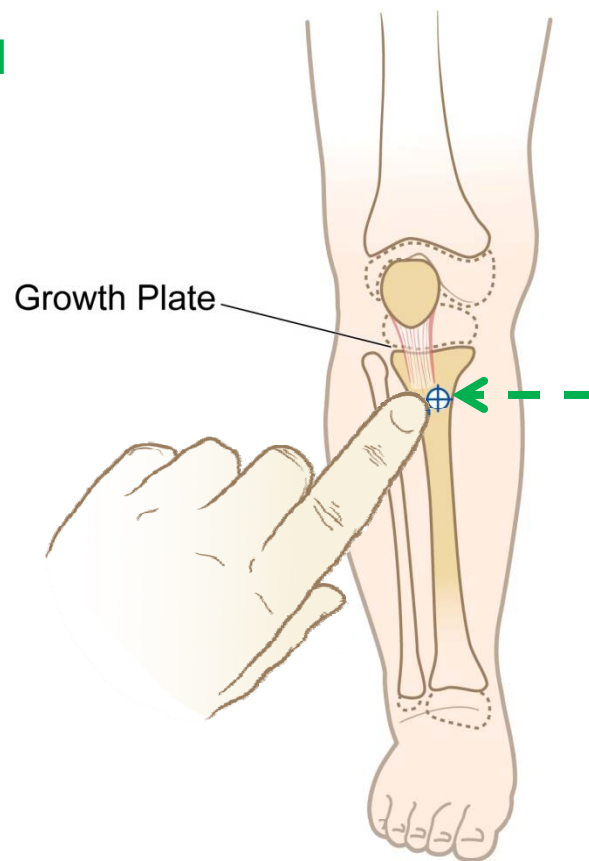


Site | Proximal Tibial

Proximal tibia

Patients up to 39kg

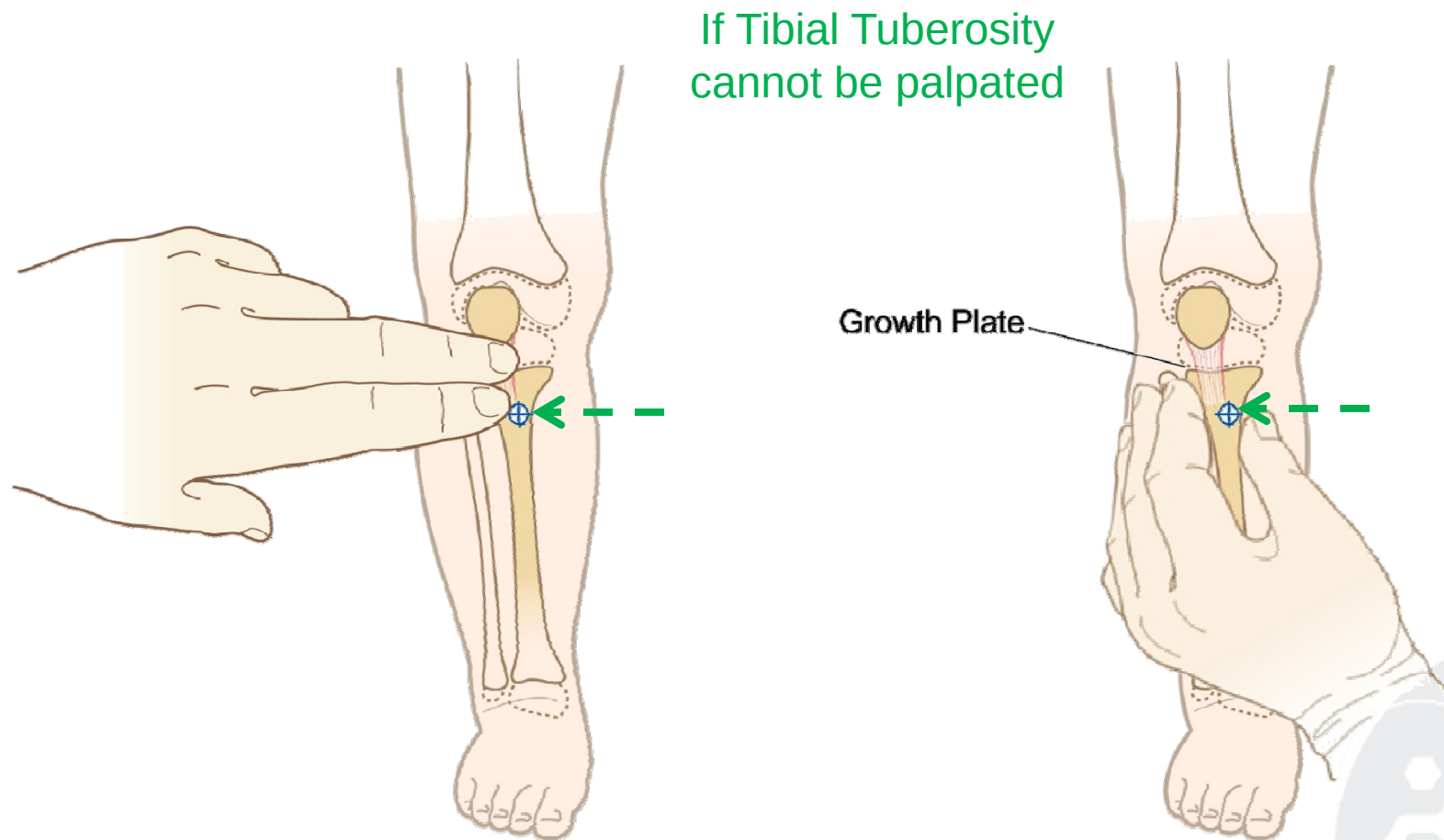
Palpate Tibial
Tuberosity



Site | Proximal Tibial

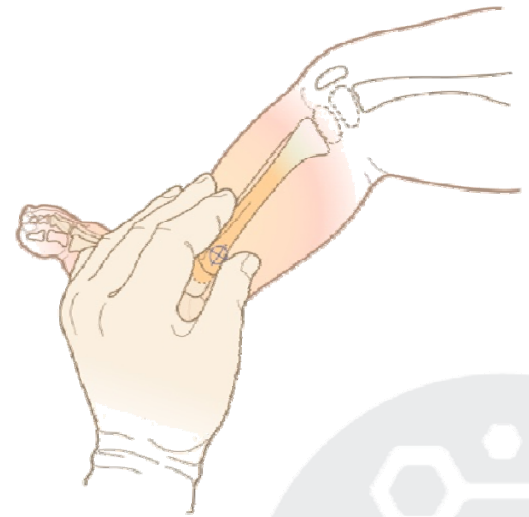
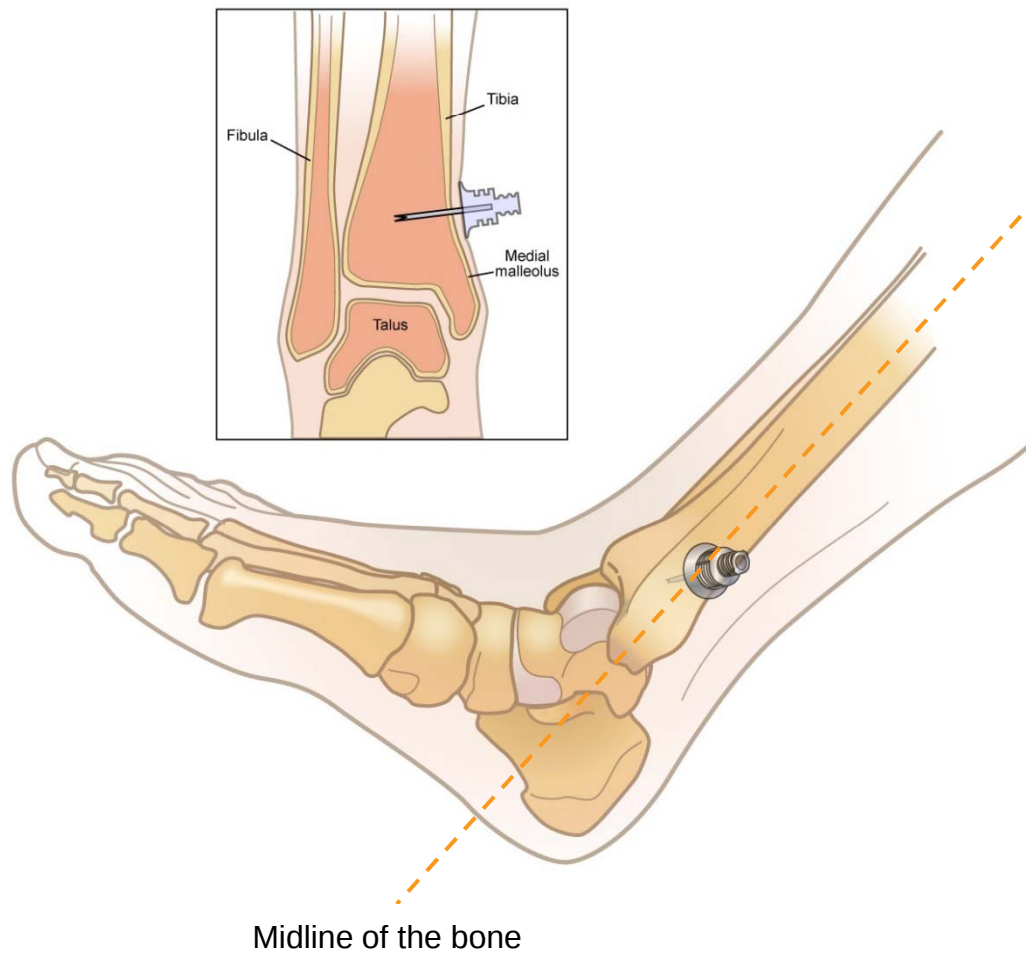
Proximal tibia

Patients up to 39kg



Site | Distal tibia

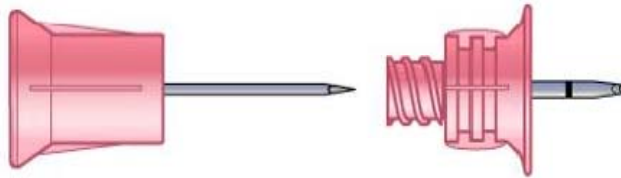
Distal tibia





Needle | Needle sizes

3 Needles



15 mm 3-39 KG



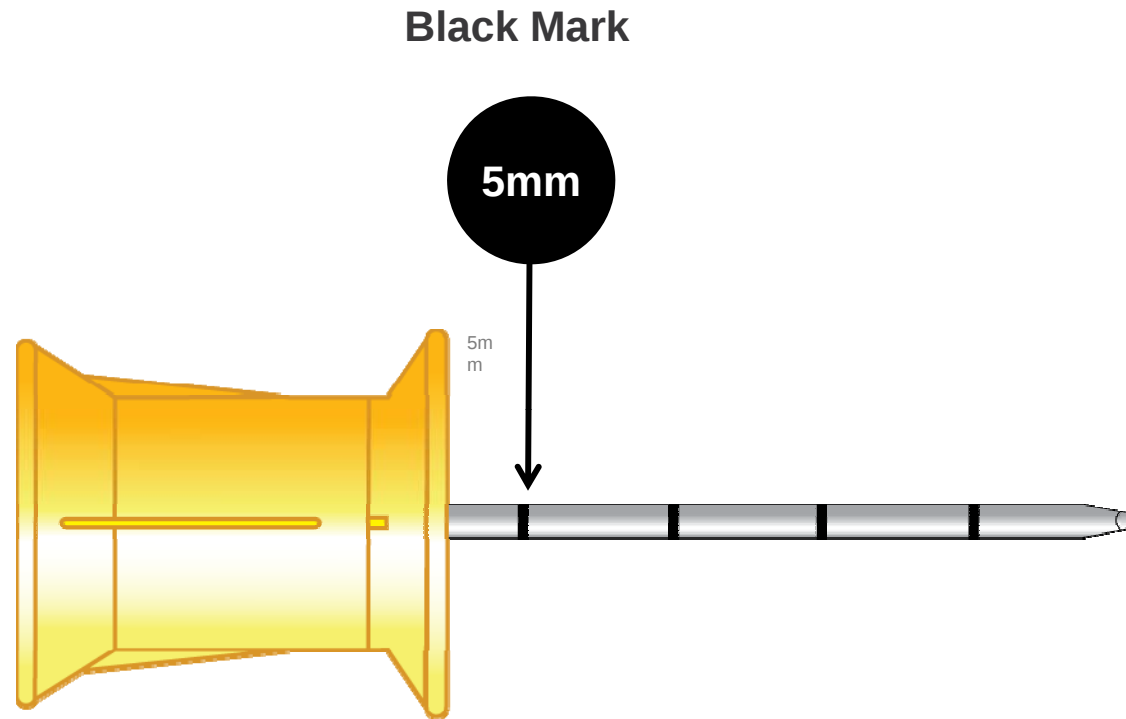
25 mm > 40 KG



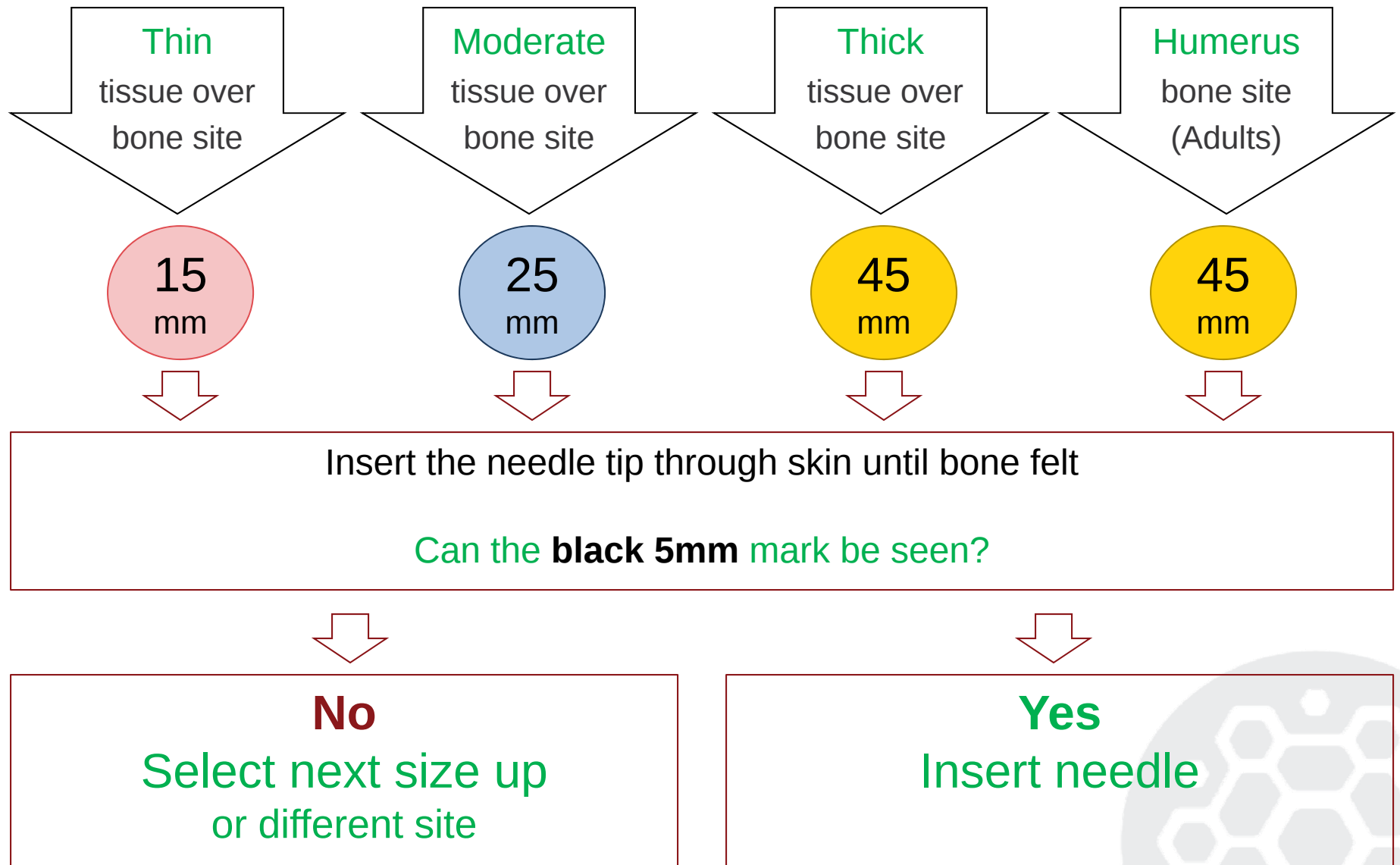
45 mm > 40 KG



Needle | Needle features



Needle | Selection

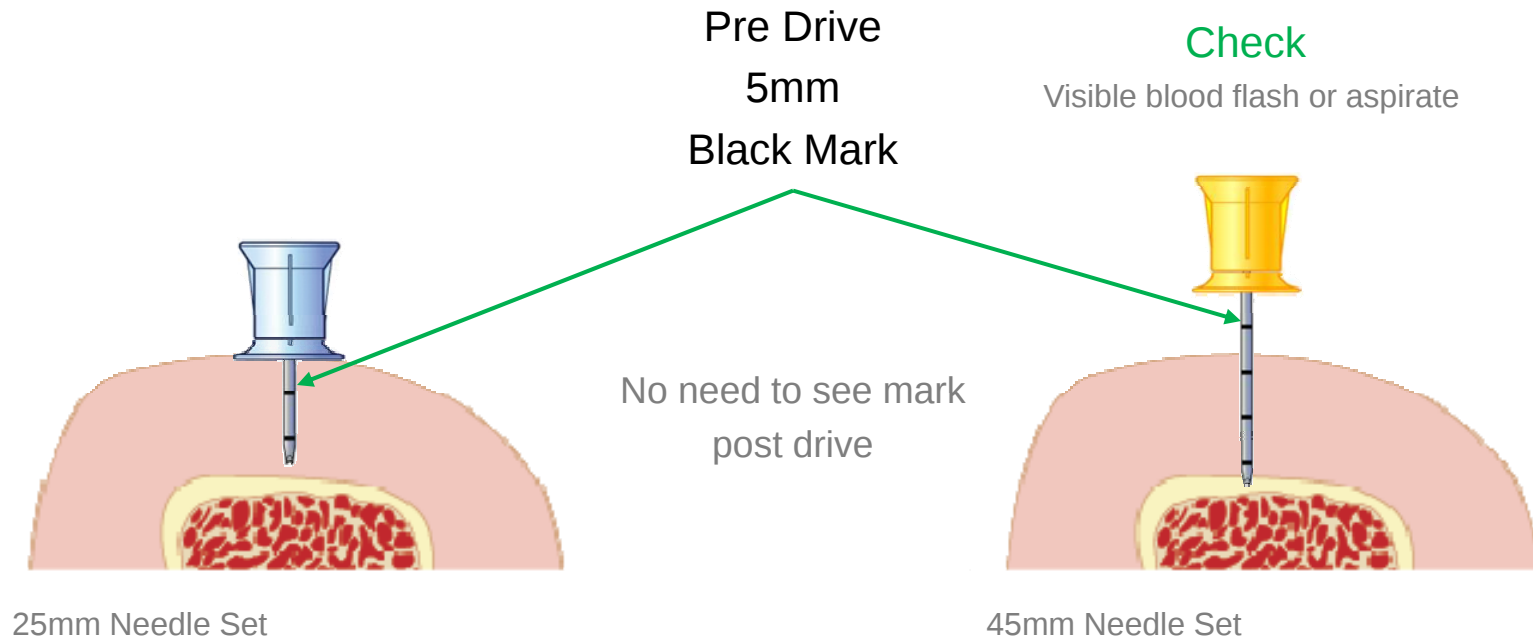


Needle | Selection

To choose correct needle, assess skin depth



Needle | Selection



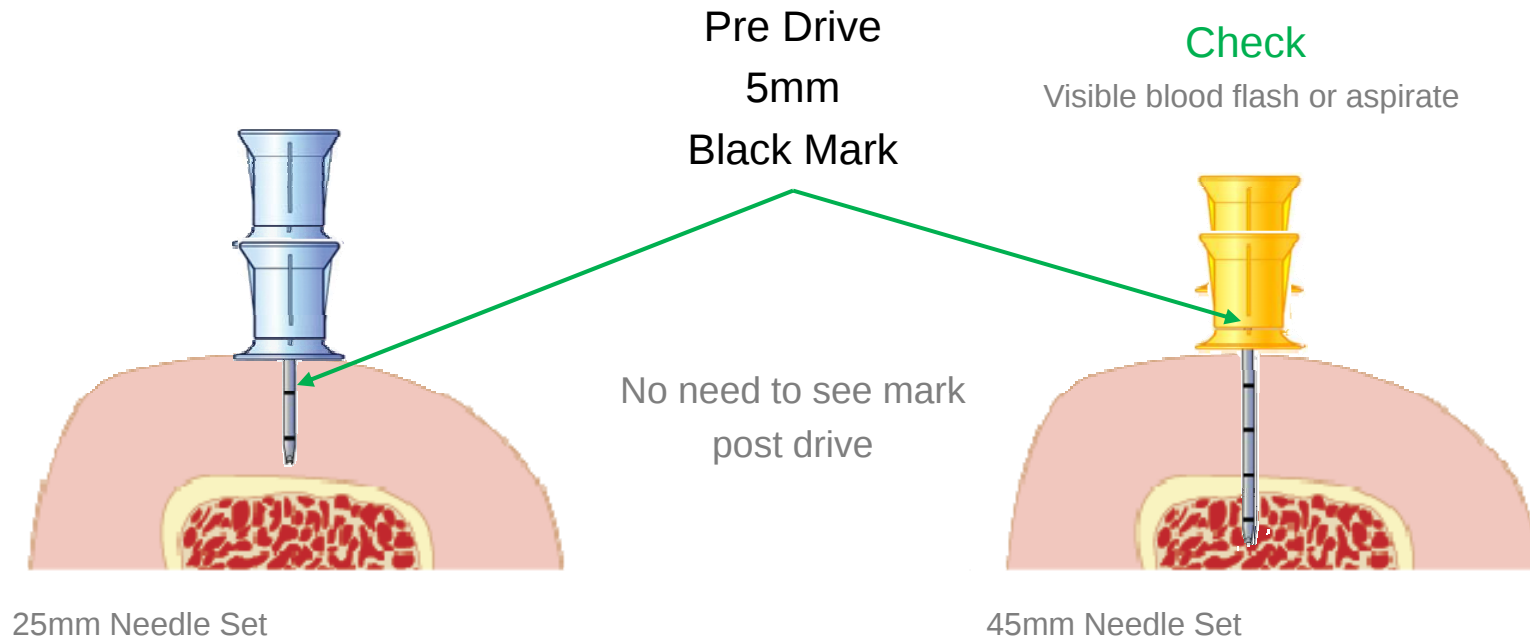
NO

Too small, mark not visible
Needle not touching the cortex

YES

Mark visible
Needle will then go through the cortex

Needle | Selection



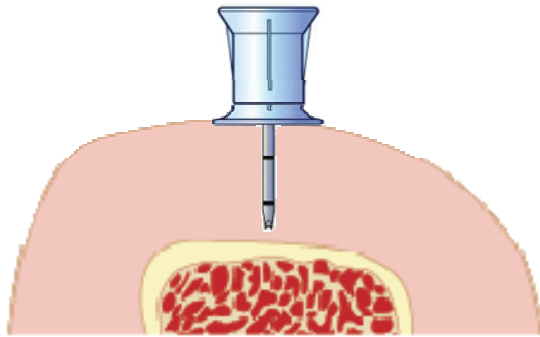
NO

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

YES

Mark visible
Needle will then go through the cortex

Needle | Selection

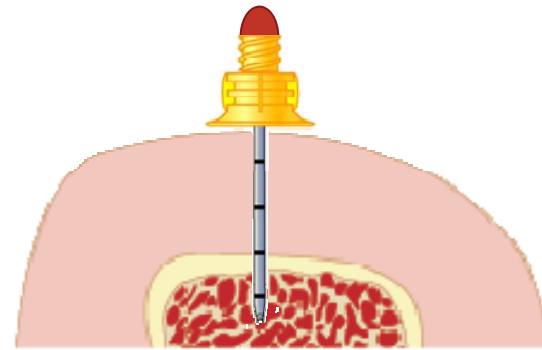


25mm Needle Set

NO

Too small, mark not visible
Needle not touching the cortex

No need to see mark
post drive



45mm Needle Set

Check

Visible blood flash or aspirate

YES

Mark visible
Needle will then go through the cortex

Insertion



Remove the needle cap



Insertion



Insertion of the EZ-IO

- Stabilize Extremity
- Insert Needle Set through the skin at a 90 degree angle
- Assess for black line when touching the bone

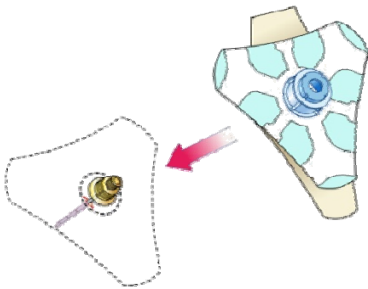


Needle | Check



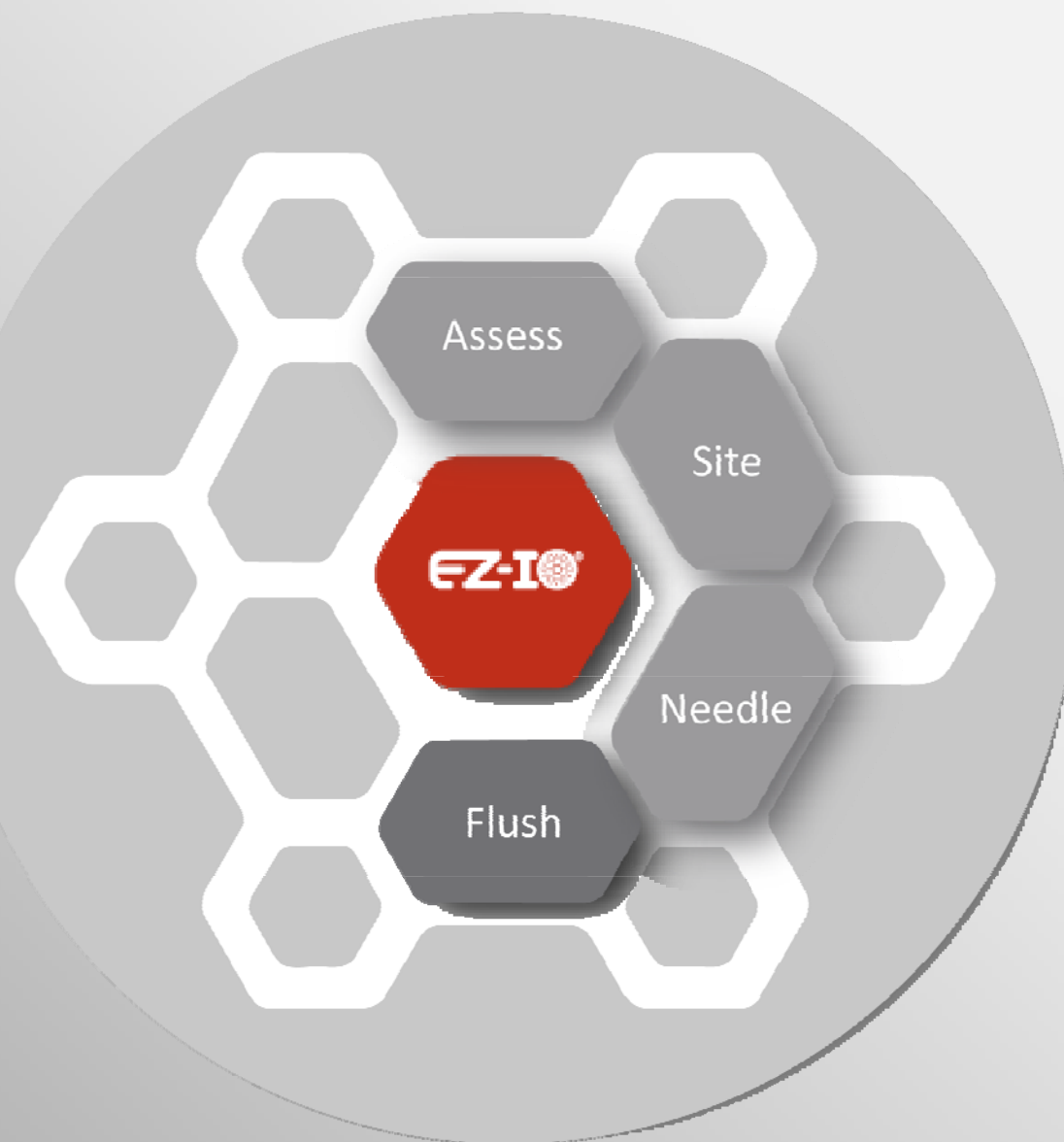
After insertion, check...

- 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



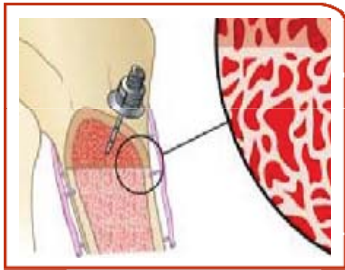
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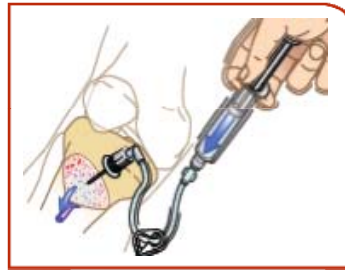


Flush

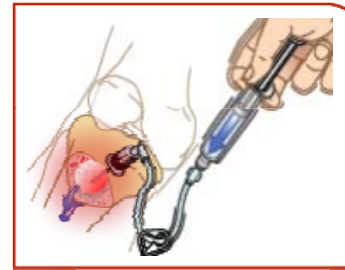
Flush for flow



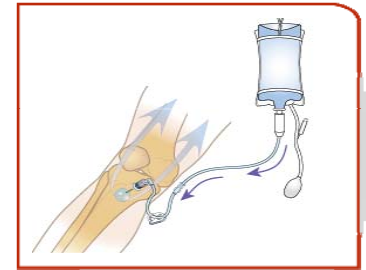
IO space
filled with
thick fibrin
mesh



Pressure
flush to
open mesh



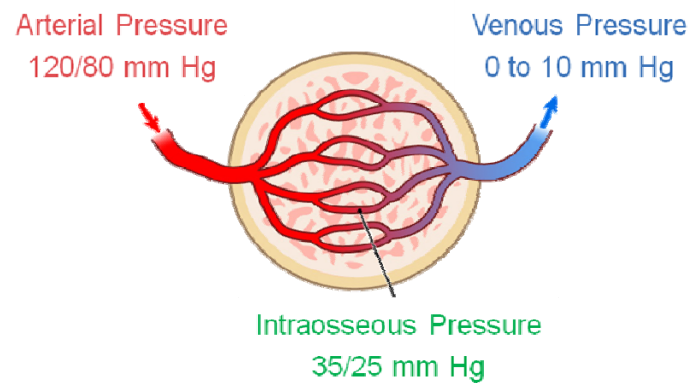
Flush can
be painful



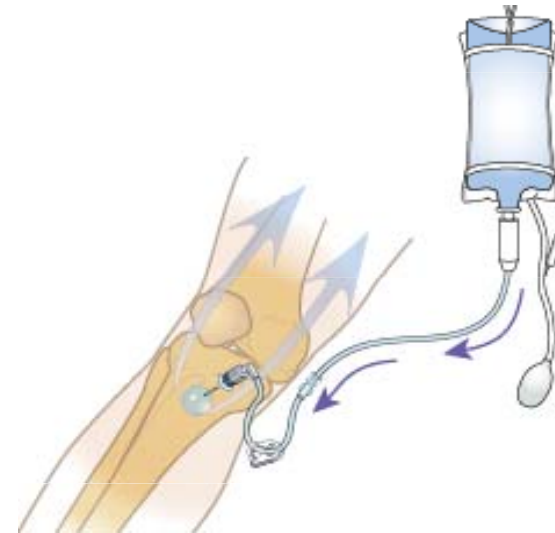
Pressurized
flow needed



Maintain flow



approx 1/3 arterial pressure

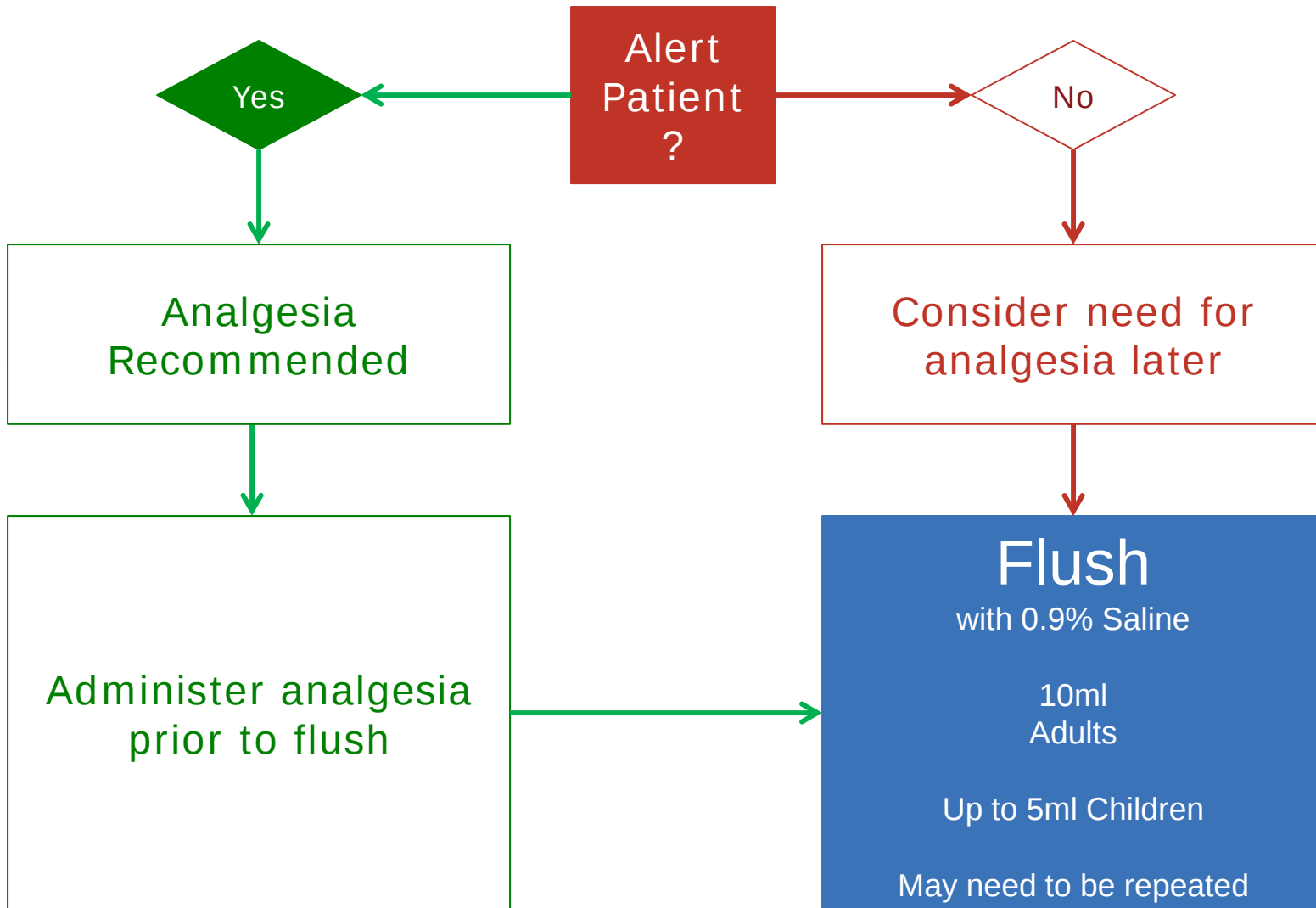


Medullary space pressure can stop flow

Infusions should be pressurised for optimal flow

Note* These assumptions are anecdotal, based on observations in an animal lab. They have not been confirmed or published

Flush





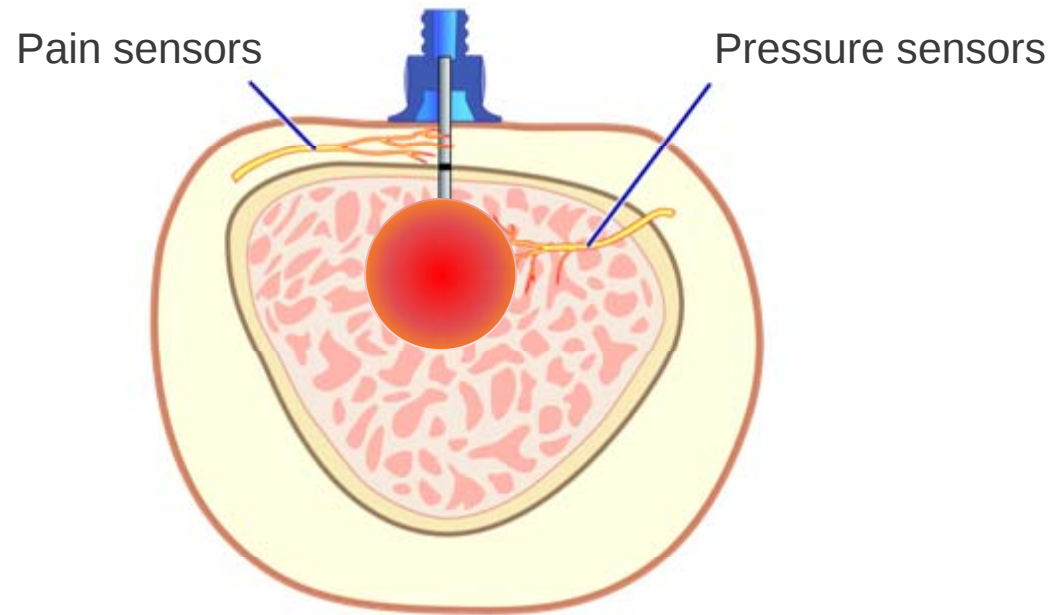
Comfort



Many procedures hurt...

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

Comfort



Two causes of pain



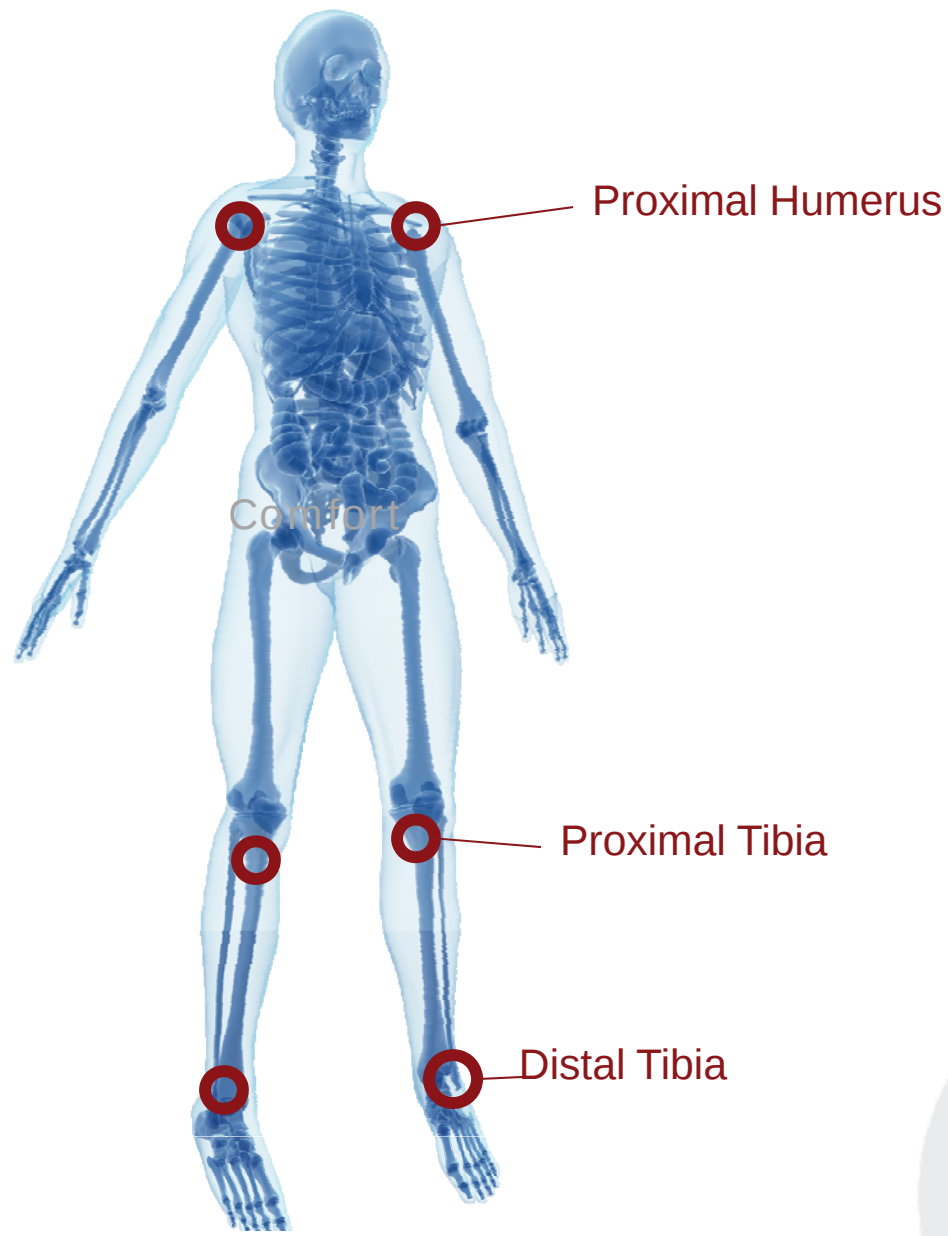
Insertion
specific
short duration



**Flush, Aspiration
& Infusion**

general
diffuse
related to pressure

Proximal humerus
less painful



Comfort



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⁾

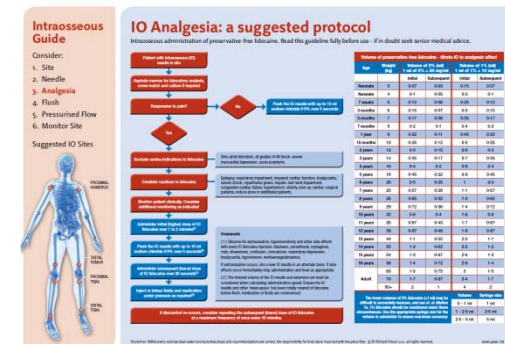
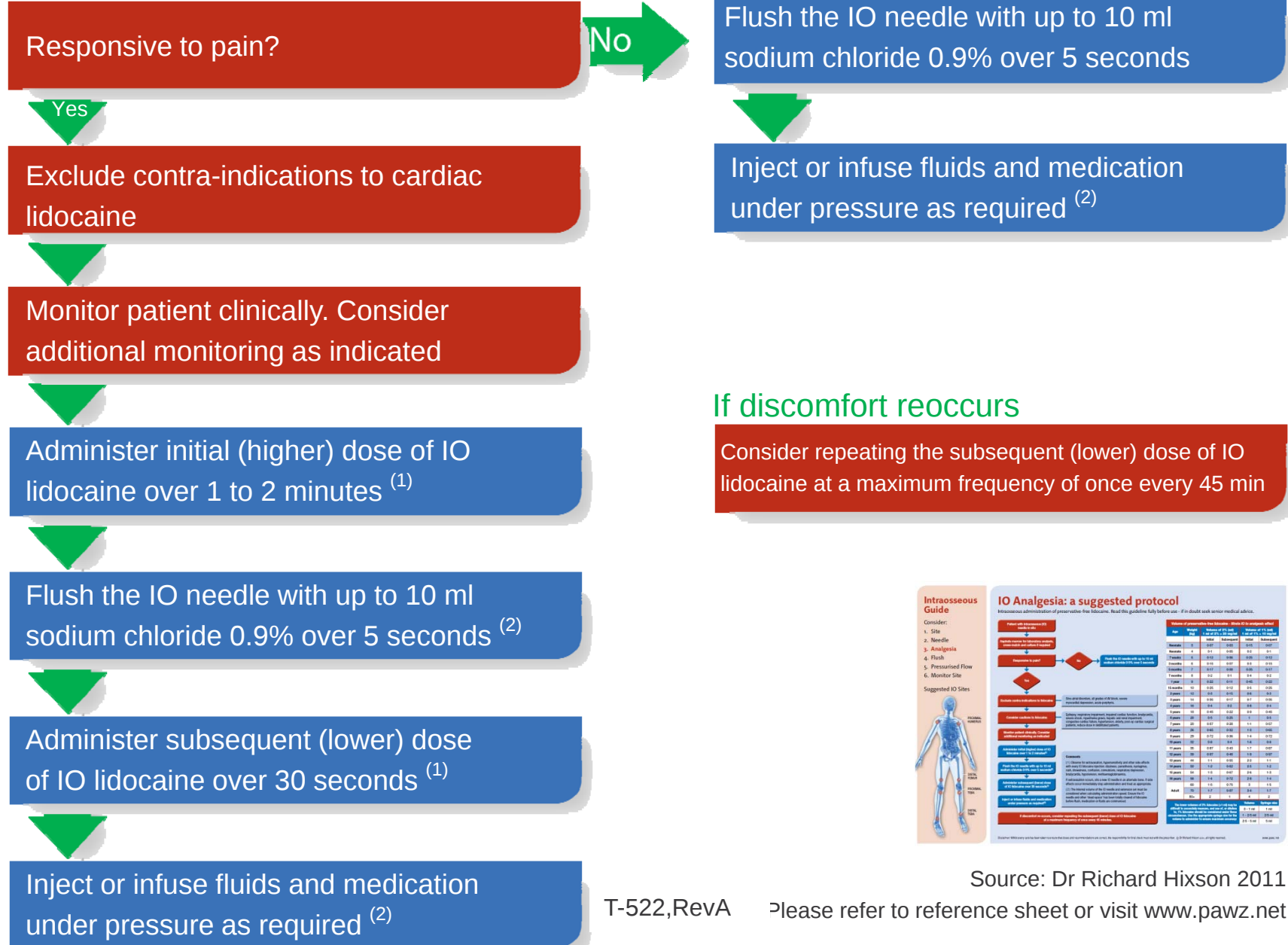


Local protocols

Physician must decide the appropriate anaesthetic & dose.

Recommendations by Dr. Hixson on next slide.

Comfort | Suggested analgesia administration



Source: Dr Richard Hixson 2011

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



Monitor



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
placed on patient

Flow

Pressurized
Infusion (adults)

Expected flow
achieved

Pharmacological
effects

EZ-IO Removal

Maintain axial alignment –
DO NOT rock the syringe

Rotate syringe clockwise
while pulling straight back



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Back the EZ-IO catheter out of patient while stabilizing the extremity.

T-430 Rev, G

Cleaning and Disinfecting

- Wipe clean with moistened cloth
- Spray with anti-microbial solution
- Momentarily depress trigger several times during cleaning
- Clean around drive shaft with cotton applicator – check to ensure nothing has attached to the magnetic tip
- Wipe dry
- Inspect driver and return to case or replace trigger guard

Do Not Submerge driver at any time



What we have covered



Clinical Support

Wrist band

All the info you
need



24 hour Emergency Line

1-800-680-4911



Web support

www.vidacare.com

Feedback
form



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Access
via
website



Principles of Using EZ-IO Competency Exam

Please mark the following slides with the correct True or False answer:

1. Optimal Flow rates for the EZ-IO can be obtained using gravity drip rates.
 - a. True
 - b. False



Principles of Using EZ-IO Competency Exam

2. A rapid syringe bolus (flush) of the EZ-IO immediately after insertion will ensure an optimal flow rate.
 - a. True
 - b. False



3. The EZ-IO is indicated for patients who need emergent or medically indicated vascular access.
- a. True
 - b. False



Principles of Using EZ-IO Competency Exam

4. Correctly placing an EZ-IO includes gripping the driver lightly and avoiding use of excessive force during insertions. Additionally, when placing the needle into a TIBIAL site, a 90 degree angle to the skin should be maintained during insertion.
- a. True
 - b. False



5. For patients that respond to pain, consider using 2% Lidocaine without preservatives; or Epinephrine Free Lidocaine (cardiac Lidocaine) IO prior to initial sterile saline bolus or flush.
- a. True
 - b. False



6. The 45 mm needle is the recommended needle for use in the proximal humerus on patients weighing greater than 40 kg.

- a. True
- b. False



7. In case of emergency questions, product failure or other needs for immediate assistance, clinicians should call the emergency number listed on the EZ-IO wristband or removal poster.
- a. True
 - b. False



8. An EZ-IO 25mm needle set can only be used on adult patients.
- a. True
 - b. False



9. IF you are unable to aspirate blood when confirming placement, you should attempt to flush the IO while assessing for signs of extravasation.
- a. True
 - b. False



10. You have inserted the needle set into the soft tissues and have not reached the bone, and you cannot see a black line on the needle remaining outside the patient's skin. You should stop and choose a longer needle length OR consider using a new IO site.

- a. True
- b. False



11. A humeral IO site will generally have a slower flow rate compared to tibial insertion sites.

- a. True
- b. False



12. Pain management for patients who are alert or responsive to pain may include regular periodic assessments for pain response and PRN infusions of Lidocaine following individual medical protocols.

- a. True
- b. False



13. Labs cannot be drawn using an IO site.

- a. True
- b. False



14. The best first choice for IO fluid volume resuscitation in a hypovolemic patient is the proximal humerus site.

- a. True
- b. False

Thank you for your interest in using EZ-IO!

