GUIDELINE FOR WOUND REPAIR

Wound characteristics amenable to repair with: (see Glue and suture guides on PAGE 3)	
GLUE	**SUTURE**
Linear lacerations < 5 cm *	Linear lacerations ≥ 5 cm
* NB: If wound > 3 cm, only glue if *not* gaping and *no* tension	
Easily opposable wounds	Wound not easily opposable despite Steri-Strips™
No tissue loss	Complex and/or non-linear laceration
No surrounding abrasion	Abrasion of skin adjacent to wound edges
No wound tension	Wound over large joint (i.e. knee) or with tension on skin edges
Wound characteristics that need specialty consultation	
Neurovascular compromise	Plastic surgery
Tendon injury	Plastic surgery
Vermilion border that is complex or unable to approximate	Plastic surgery
Ear/nose laceration crossing cartilage	ORL or plastic surgery
Eyelid laceration needing suturing	Ophthalmology
Wound characteristics that may need investigations	
Suspected foreign body	Ultrasound and/or x-ray
Wound characteristics with special considerations	
Non-facial wound > 24 hours	Consider secondary / delay repair
Excessive tissue tension	Consider 2 layer closure and/or mattress suture
Mucosal laceration	Suture only if large flap, bleeding or > 2cm
Tongue laceration	Suture if large flap or midline gaping laceration
Scalp laceration	Consider hair apposition technique
If concern about scarring	Refer to plastics

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PATIENT PREPARATION

MOST important step to ensure successful procedure is child preparation.

- Use child-friendly language to describe the steps you will take to fix the cut with goal of no pain.
- Involve child life professional before procedure.
- Engage parents be present at head of bed with child for distraction.
- Wrap/immobilize in warm blanket, especially < 8yrs.
- Use a health care worker to help immobilize the child as needed.
- Avoid showing the "metal" tools and needles

PAIN CONTROL

- Apply liberal amounts of L.E.T. (mixture of lidocaine, epinephrine and tetracaine stored in the refrigerator) using a piece of gauze or cover with an Op-Site/Tegaderm for > 30 minutes to attain local anesthesia and hemostasis. Can be used safely on wounds in any location on the body.
- Verify local anaesthesia prior to procedure; top-up with infiltration of lidocaine if needed.
- When infiltrating wound edges (i.e. not intact skin) with lidocaine, use a small needle (eg. 30 gauge) and inject slowly to minimize discomfort.
- Consider nerve blocks (ex. single injection digital nerve block)
- **Lidocaine + epinephrine** can be used on wounds in any location
  (max dose: 7 mg/kg, 1% lidocaine=10 mg/cc, 2% lidocaine=20 mg/cc)

WOUND PREPARATION

- Irrigation is the key to decrease wound infections
  - Irrigation with tap water is adequate - 50-100 ml per cm wound
  - Use 30 or 60 cc syringe with 20 gauge angiocath
    (may use medication cup as home-made splash guard)
- May use Chlorhexidine 2% to disinfect skin
- DO NOT use alcohol or related products (causes cell damage)
- DO NOT SHAVE the patient (increases infection rate)

PITFALLS

- Missing tendon/nerve/cartilage/intra-articular injury
- Leaving foreign body in wound → irrigate thoroughly, image when in doubt
- Always ask about tetanus vaccination status (see appendix)

WOUND CARE (give patient handout)

- Keep wound dry for 24 hours (glue & sutures)
- Do not pick at or try to remove glue until wound more than 10 days old
- Wounds take 3 months to regain the majority of their tensile strength; consider Steri-Strip™ if high risk sport activities
- Once glue or sutures fall off or are removed, instruct to use sunscreen and gentle massage to optimize healing and wound cosmesis for 1 year.
- Counsel that wound red x 6 months, then clears to skin color by 1 year.
- If signs of infection (red, tender, pus), seek medical care.

GUIDE FOR HISTOACRYL ® (or any other type of "skin glue")

- Ensure wound easily opposable (can use Steri-Strip™ prior to application)
- Ensure a simple laceration with no tissue loss, abrasions, or tension.
- Must be completely **dry** prior to application of glue
  - If bleeding, apply continuous pressure for 5 minutes and/or consider using L.E.T. 30 minutes prior to applying glue
- If wound 3-5 cm, ensure no gaping of the wound
- Steri-Strips™ great adjunct to minimize wound tension, to serve as dressing, as well as to minimize likelihood of dehiscence

GUIDE FOR SUTURES

Absorbable: **Plain gut, Vicryl RAPIDE**
Non-absorbable: **Nylon**

If cannot approximate a wound with 4-0 suture, then excessive tension is present and should consider deep sutures

Location of wound	Suture material	Size	Removal + f/u
<u>Face</u>	Plain gut or vicryl RAPIDE	5-0 or 6-0	
<u>Scalp</u>	Plain gut or vicryl RAPIDE	4-0	
<u>Mucosal/tongue</u>	Plain gut	4-0	
<u>Hand</u> • Palm • Fingers, Nailbed	 Plain gut Plain gut	 4-0 5-0	 f/u Plastics PRN
<u>Extremities/torso</u> • No tension • Tension/large joint	 Plain gut Nylon	 3-0 4-0	 Removal 10-14 days
<u>Deep sutures if tension</u>	Vicryl	4-0	For muscle fascia and dermis - avoid suturing fat
<u>Bite wounds</u> • Face	 Plain gut	 5-0	 Antibiotics (see appendix) f/u next plastics clinic

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APPENDIX

Tetanus

Children > 7 years

History of tetanus immunization	History of tetanus immunization		Dirty wounds [A]	
	Tetanus vaccine	Tig	Tetanus vaccine	Tig*
Unknown or less than 3 doses in a vaccine series	Yes	No	Yes	Yes
< **5 years** since last booster dose	No	No	No	No**
< **10 years** since last booster dose	No	No	Yes	No**
> **10 years** since last booster dose	Yes	No	Yes	No**

Children 2 months to 7 years old

History of tetanus immunization	History of tetanus immunization		Dirty wounds [O]	
	Tetanus vaccine	Tig*	Tetanus vaccine	Tig*
< 3 doses or unknown	Yes if last vaccine > 4 weeks ago	No	Yes	Yes
3 doses and last >1 year ago	Yes	No	Yes	No**
> 3 doses and child < 4 years old	No	No	No	No**
> 3 doses and 4-6 years old (last dose received before age 4)	Yes	No	Yes	No**

[O] Dirty wounds defined as those contaminated with dust, human or animal saliva, stool or earth, penetrating wound (ex. a bite or a rusty nail), wounds containing devitalized tissue, necrotic or gangrenous wound, frostbite or burn.

* Tetanus Immunoglobulin (Tig) – IM in deltoid or lateral thigh, 250 units IM (1ml)
  Give with a different needle and syringe as the vaccine and at separate sites

** Yes if known to have humoral immune deficiency state

NB: Choice of vaccine to administer depends on child's age and vaccine history. Consult the Protocole d'immunisation du Québec for specific recommendations:
http://publications.msss.gouv.qc.ca/acrobat/f/documentation/piq/html/web/Piq.htm

Bite wound prophylaxis

Refer all bite wounds for follow-up with Plastics at next available clinic.
If bite wound on face, hands, feet and/or if wound closed with sutures, start antibiotic prophylaxis.

1st choice: Clavulin (7:1) 45 mg/kg/day divided BID x 7 days

If penicillin allergic: Septra 10 mg/kg/day TMP divided BID ***and*** Clindamycin 30 mg/kg/day divided TID x 7 days
or
Moxifloxacin 400 mg PO once daily x 7 days (adolescents)

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