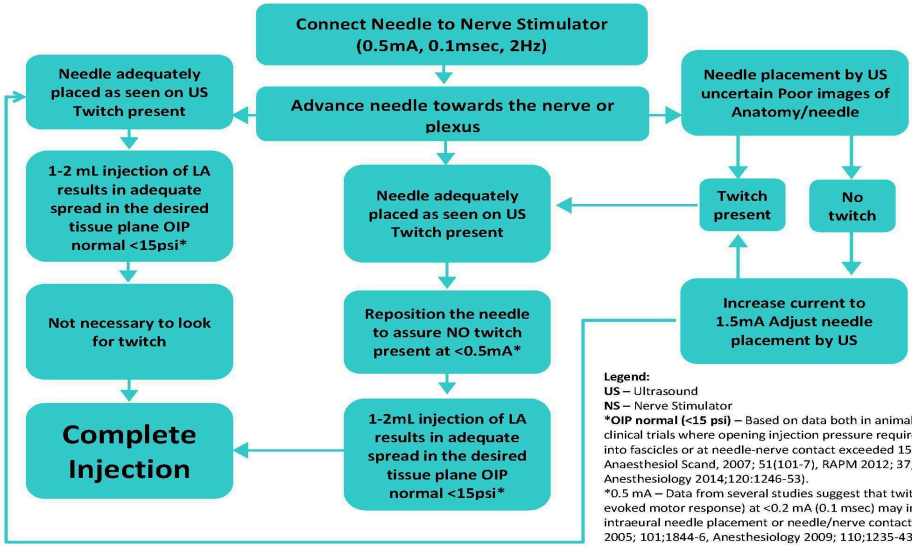
CURRENT TRENDS

- Complications in Paediatric RA (ADARPEF Study in 1996, 2010)
  - Overall RA complication rate in children is low at 0.09-0.12%.
  - Complications are more frequent in children<6 months
  - CNB has higher (6X) complications than PNB
- Trends in Paediatric RA
  - There is a move from CNB to PNB (40%→66% in ADARPEF's study)
  - Caudals still account for most (80%) of CNB
  - PNB offers the advantage of providing a target-controlled area of localized anaesthesia / analgesia, reducing the amount of LA used, thus systemic absorption is smaller. It is most useful in cases where CNB is contraindicated Eg. Truncal PNB may substitute CNB for laparotomy
- Technique evolution
  - Timeline
    - 1962- nerve stimulator
    - 1994- ultrasound
    - 2003- ultrasound in paediatric RA
  - Ultrasound vs nerve stimulator
    - Shorter block performance time
    - Higher success rate
    - Longer block duration
    - Less volume of LA
    - Visibility of neuraxial structures esp in infants<3mth old
    - Useful in paralysed patients or those with neuropathy

Suggested Standard Monitoring For Nerve Blocks

Ultrasound + Nerve Stimulation + Opening Injection Pressure (OIP)



Legend:
US – Ultrasound
NS – Nerve Stimulator
***OIP normal (<15 psi)** – Based on data both in animal models and clinical trials where opening injection pressure required to inject into fascicles or at needle-nerve contact exceeded 15 psi (Acta Anaesthesiol Scand, 2007; 51(101-7), RAPM 2012; 37;525-9, Anesthesiology 2014;120:1246-53).
*0.5 mA – Data from several studies suggest that twitch (EMR; evoked motor response) at <0.2 mA (0.1 msec) may indicate intraeural needle placement or needle/nerve contact (Anesth Analg 2005; 101;1844-6, Anesthesiology 2009; 110;1235-43)

References:

1. Eccofey C, Lacroix F, Giaufre´ E et al. Epidemiology and morbidity of regional anaesthesia in children: a follow-up one-year prospective survey of the French-Language Society of Paediatric Anaesthesiologists (ADARPEF). Pediatr Anesth 2010; 20: 1061–1069.
2. Polaner DM et al. Pediatric Regional Anesthesia Network (PRAN): a multi-institutional study of the use and incidence of complications of pediatric regional anesthesia. Anesth Analg. 2012 Dec;115(6):1353-64
3. Rubin K, Sullivan D, Sadhasivam S. Are peripheral and neuraxial blocks with ultrasound guidance more effective and safe in children? Pediatr Anesth 2009; 19: 92–96
4. Marhofer, P., Ivani, G., Suresh, S., Melman, E., Zaragoza, G., Bosenberg, A. (2012), Everyday regional anesthesia in children. Pediatric Anesthesia, 22: 995–1001
5. The ASRA Evidence Based Medicine Assessment of the UGRA and pain medicine. Reg.Anesth and Pain Medicine 2010; 35;S1-9
6. NYSORA textbook. Hadzic's Peripheral nerve blocks and anatomy for ultrasound-guided regional Anaesthesia T
7. Ecoffey C, Bosenberg A, Lonnqvist PA, Suresh S, Delbos A, Ivani G. Practice advisory on the prevention and management of complications of pediatric regional anesthesia. J Clin Anesth. 2022 Aug;79:110725. doi: 10.1016/j.jclinane.2022.110725. Epub 2022 Mar 18. PMID: 35313269.