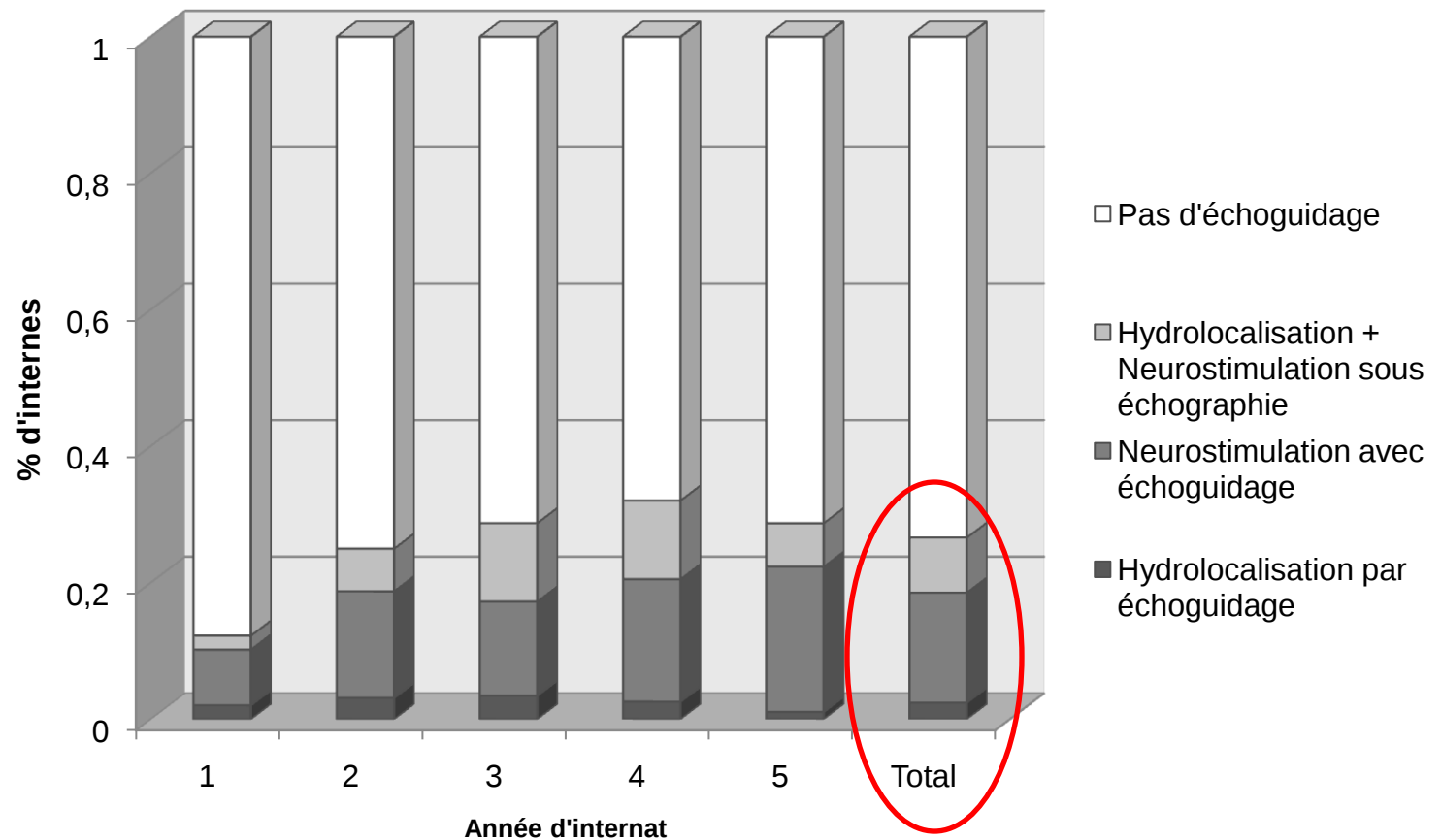


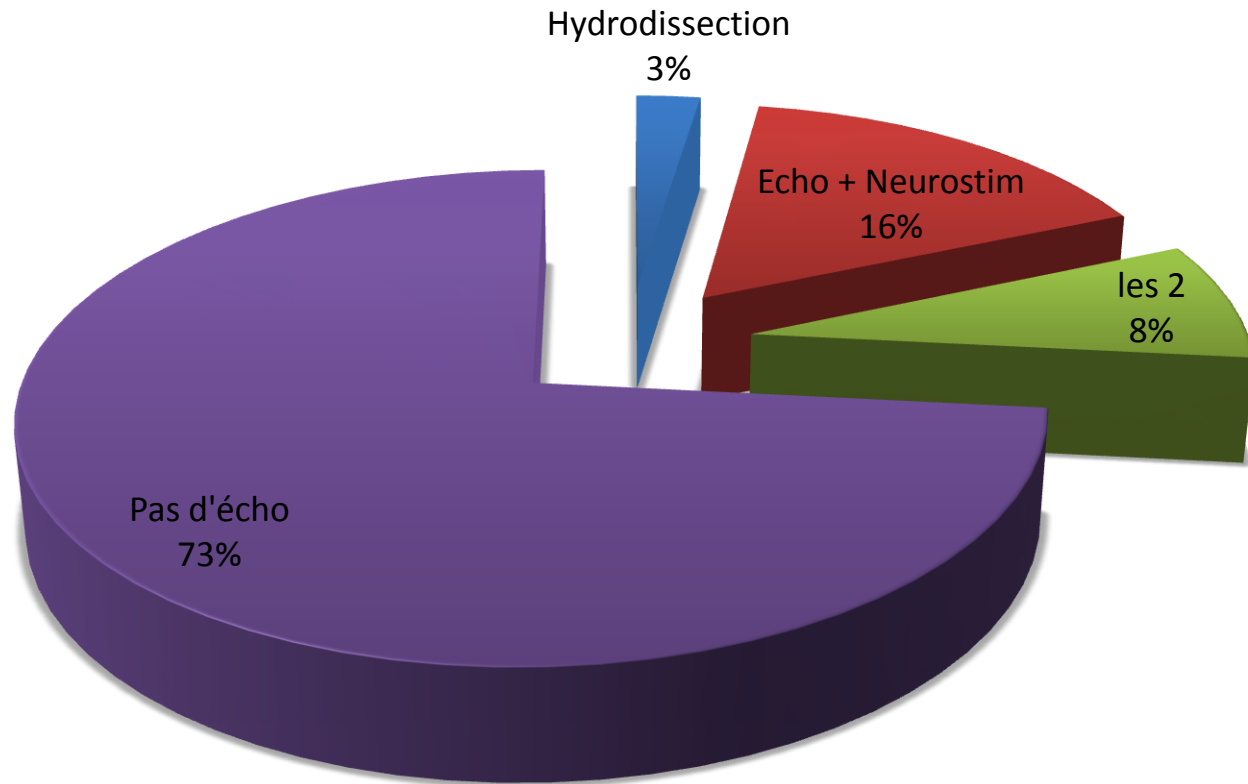


Principe de l'apprentissage en échographie ALR

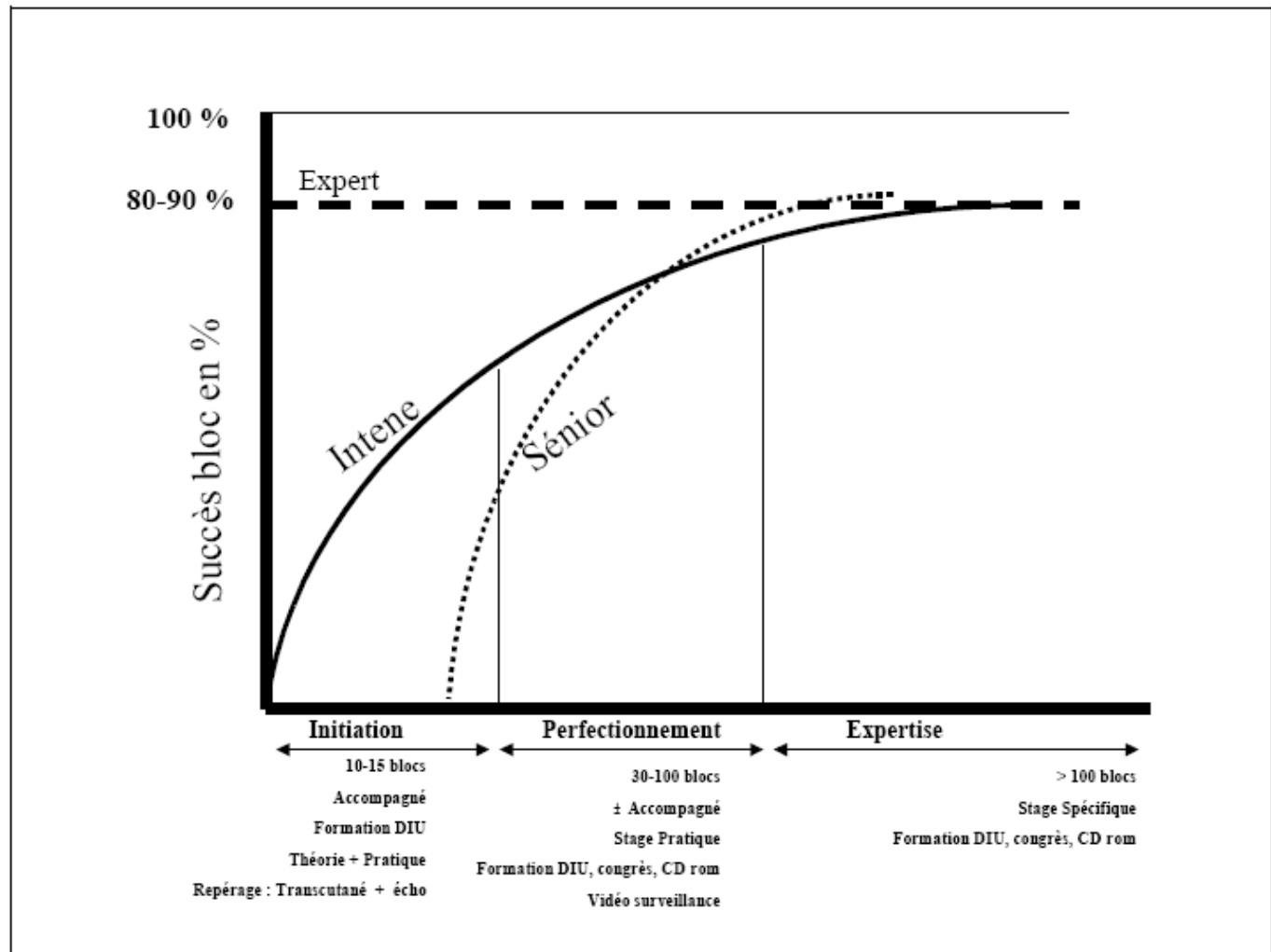
Formation en Echo ALR



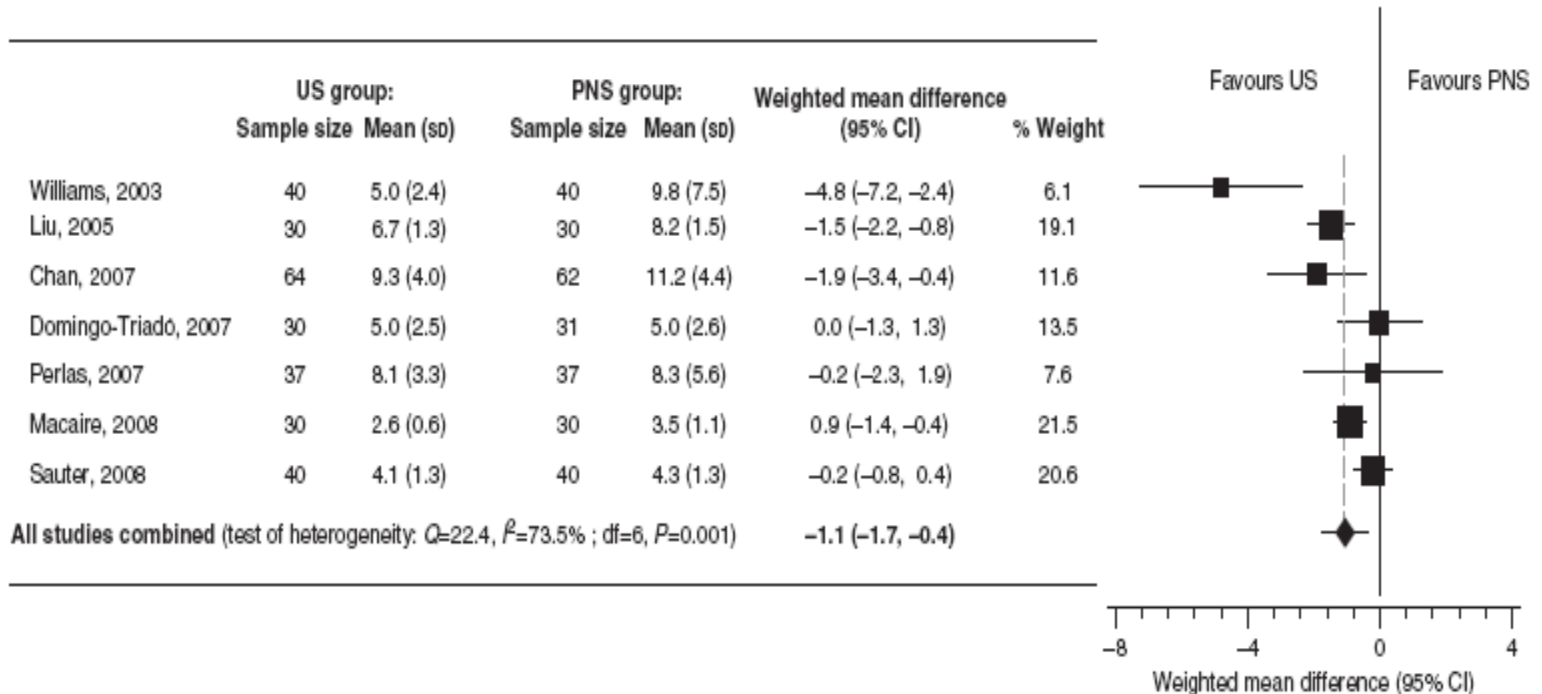
Formation en Echo ALR



Course d'apprentissage ALR



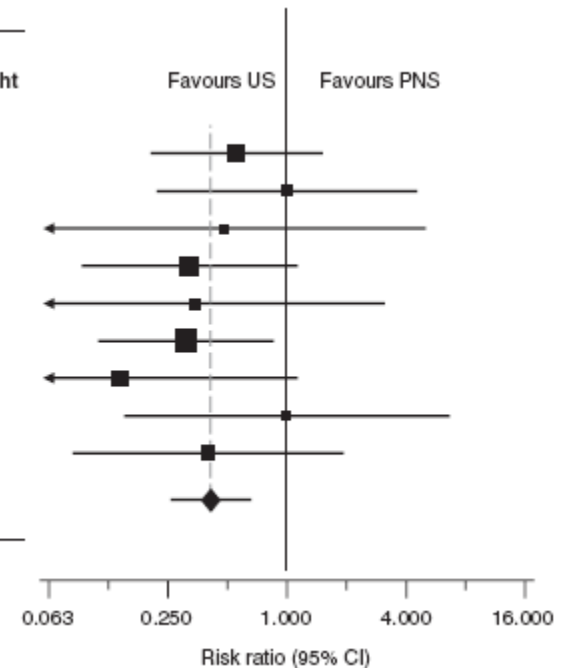
Echo Vs Neuro: Délai de réalisation



Temps réalisation plus faible:
Mais reflet indirect
Cliniquement pertinent?

Echo Vs Neuro: Taux d'echec

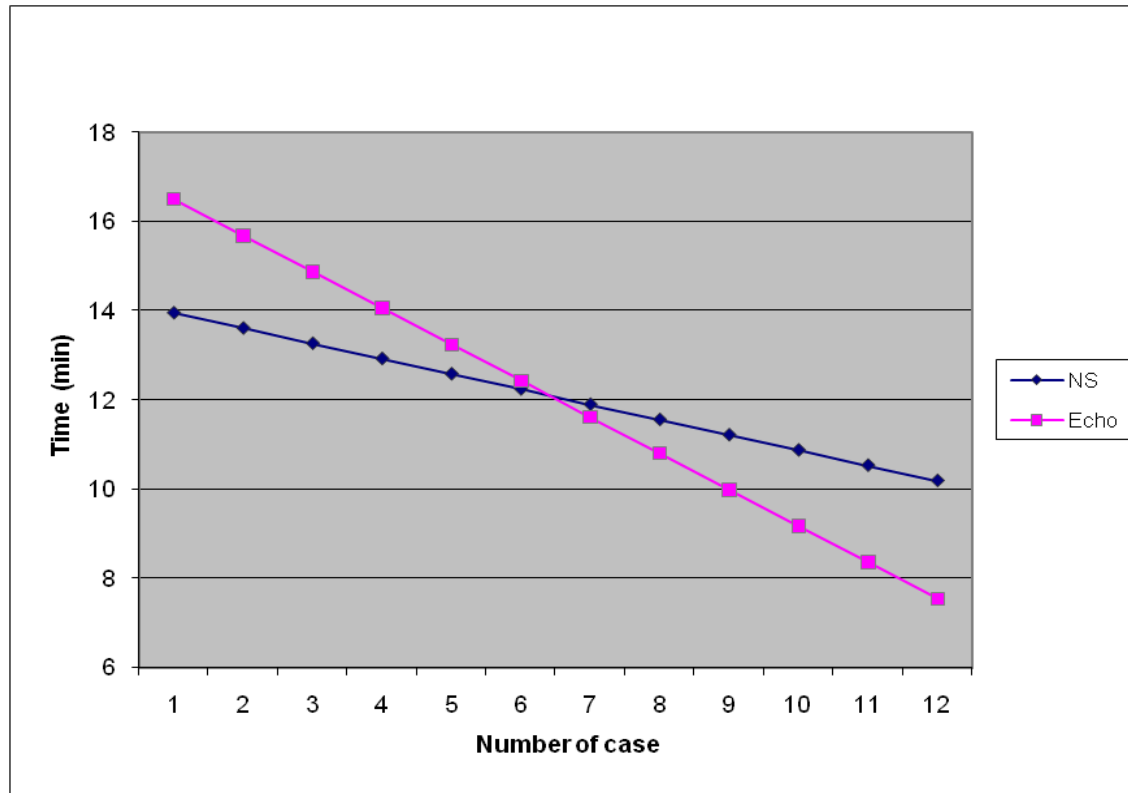
	US group: number of failed blocks/ total number	PNS group: number of failed blocks/ total number	Risk ratio (95% CI)	% Weight
Williams, 2003	5/40	9/40	0.56 (0.20, 1.51)	16.9
Liu, 2005	3/30	3/30	1.00 (0.22, 4.56)	5.6
Casati, 2007	1/30	2/29	0.48 (0.05, 5.05)	3.8
Chan, 2007	3/64	9/62	0.32 (0.09, 1.14)	17.2
Domingo-Triadó, 2007	1/30	3/31	0.34 (0.04, 3.13)	5.6
Perlas, 2007	4/37	13/37	0.31 (0.11, 0.86)	24.5
Kapral, 2008	1/80	7/80	0.14 (0.02, 1.13)	13.2
Macaire, 2008	2/30	2/30	1.00 (0.15, 6.64)	3.8
Sauter, 2008	2/40	5/40	0.40 (0.08, 1.94)	9.4
All studies combined (test of heterogeneity: $Q=3.99$, $I^2=0\%$; $df=8$, $P=0.86$)			0.41 (0.26, 0.66)	



D'autant plus vrai que l'on s'adresse:

- Interne.
- Senior réalisant peu d'ALR.

Course d'apprentissage en ALR



- Corrélation entre le nombre de bloc et le délai de réalisation.

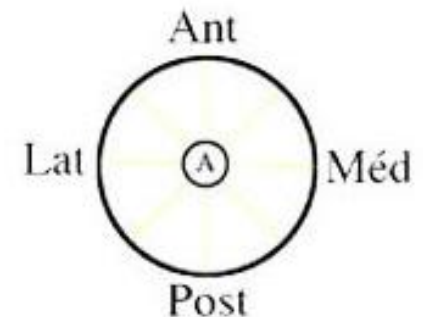
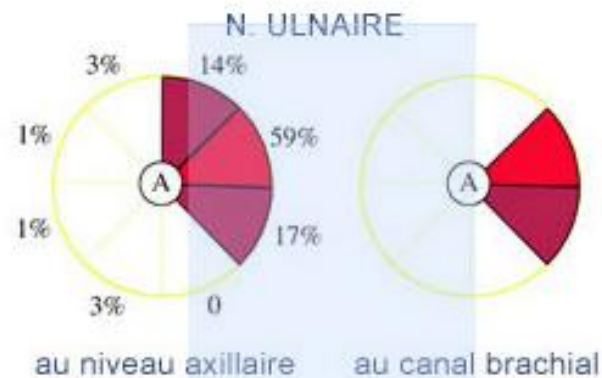
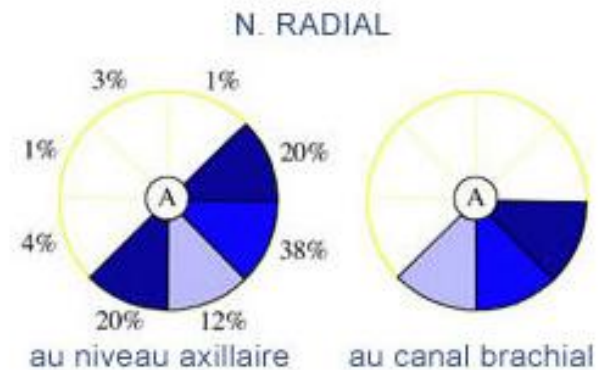
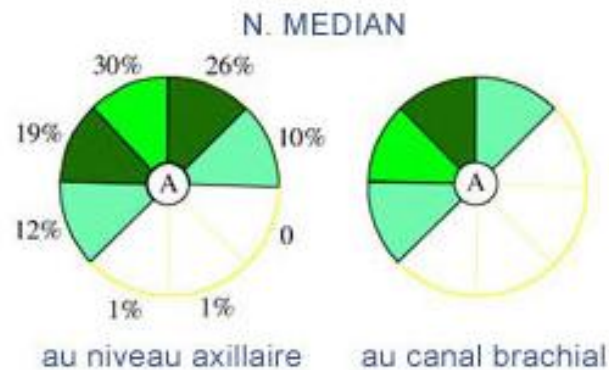
- Au delà de 6 blocs le temps de réalisation est plus court sous échographie.

- Diminution des volumes concomitantes (29 ± 5 ml grpe echo Vs 37 ± 2 ml grpe neuro).

Learning curve in locoregional training: ultrasound-guided compared to nerve stimulation
Nicolas Dufeu, Mourad Aissou, Marc Beaussier.
ASA 2009, Hôpital Saint Antoine, Paris (France).

Variation anatomique évaluer sous échographie

VARIATIONS ANATOMIQUES POSITIONNELLES DES BRANCHES DU PLEXUS BRACHIAL



ASRA et ESRA recommandation

Understanding US image generation	Image optimization	Image interpretation	Needle insertion and injection
Understanding basic technical principles image generation	Learn the importance transducer pressure	Identify nerve	Learn the in and out plane technique (limitation of the both technique)
Selection of transducer	Learn the importance transducer alignment	Identify muscle, fascia	Learn to recognize correct and incorrect LA spread
Selection of the appropriate depth and focus setting and overall gain	Learn the importance transducer rotation	Identify vessel distribush artery from vein	Minimize intenotional transducer mouvement
Understanding and applying color doppler		Identify artefacy	Learn to recognize intramuscular needle location
		Identify the better trajectory	Identify intraneural needle location

The American society of regional anesthesia and pain medicine and european society of regional anesthesia and pain therapy joint comittee: recomandation for education and training in ultrasound-guided regional anesthesia.
Reg Anesth Pain Med 2009 Jan-fev;34 (1): 40-46

IMC et repérage échographique

	BMI>30 kg/m ²	BMI<30 kg/m ²
Périmètre Bras (cm)	35,9 ± 4	30 ± 3
E-sc (cm)	1,1 ± 0,3	0,53 ± 0,3
Pmax (cm)	2,73 ± 0,8	1,84 ± 0,5
Echogénicité	23-77%	10-90%
Complications	0	0
Efficacité	100%	100%

60 patients bénéficiant BA
IMC n'affecte pas les caractéristique du BA
Autres blocs ?

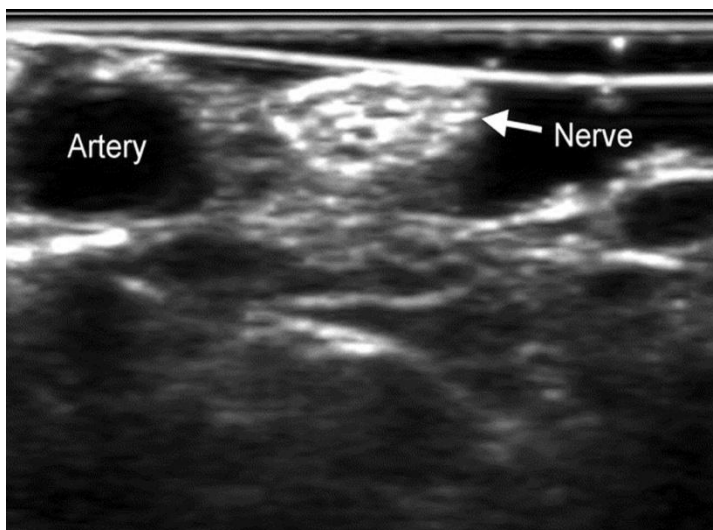
Approche dynamique ou statique

	US statique	US statique	US dynamique	US dynamique
	Correcte	Incorrecte	Correcte	Incorrecte
Médian (%)	97	3	98	2
Musculocutané	93	7	97	3
Ulnaire (%)	89	11	96	4
Radial (%)	82	18	92	8

Performance de deux approches échographique dans la localisation des nerfs du plexus
brachial.

F Berthier, E Samain. SFAR 2008.

ALR sous Echo avec ou sans neurostimulation

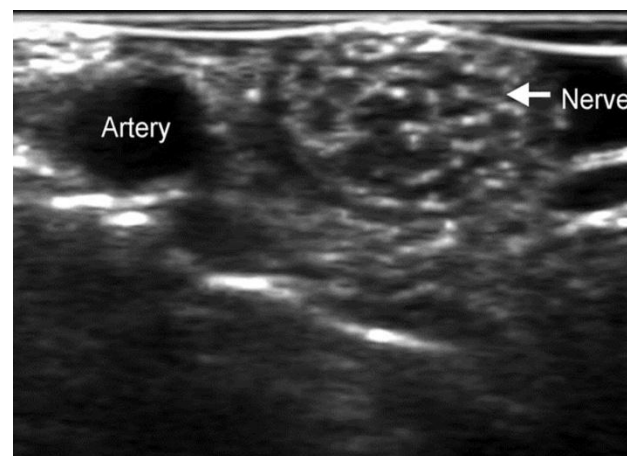


Intensité médiane (réponse motrice)
0.43 mA (range: 0.12–1.8 mA).

45% position intraneural lorsque
l'intensité est à 0,5 mA

5% si intensité est à 1 mA

Trauma direct < Ischémie 2^{re} injection



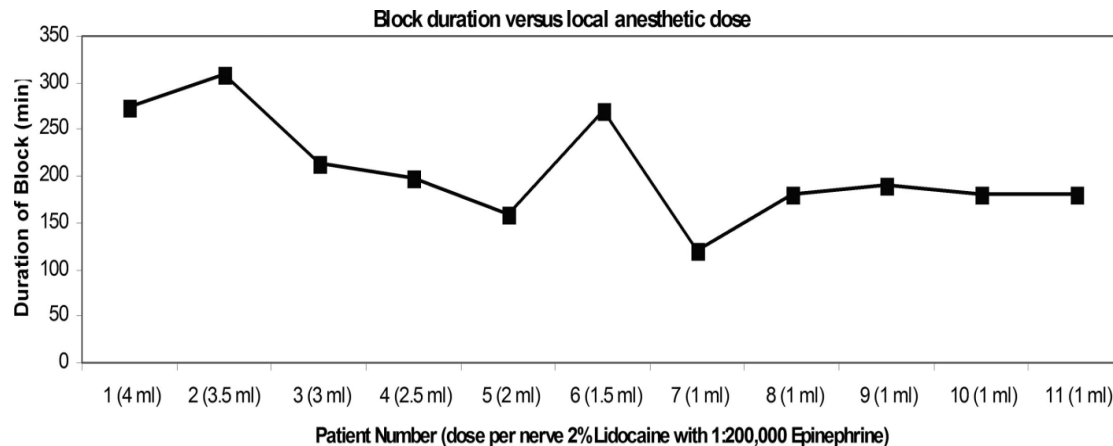
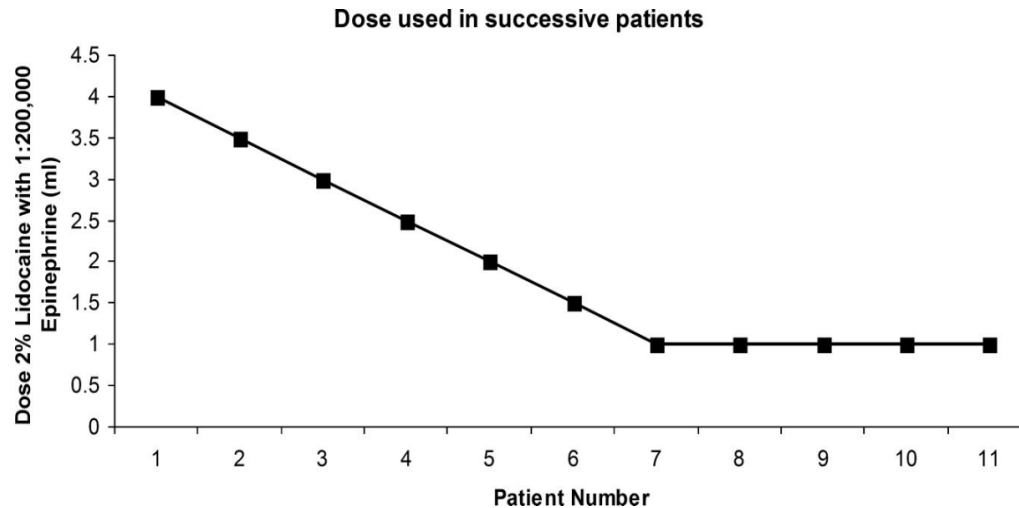


ALR sous Echo avec ou sans
neurostimulation ?

Formation des internes

- Connaissance anatomie fonctionnelle (structure musculaire, vasculaire, aspect nerf).
- Débute par BA.
- Attitude dynamique (parcourir le membre).
- Utiliser le NS en association systématique.

Echo Vs Neuro: Volume d'AL



An Estimation of the Minimum Effective Anesthetic Volume of 2% Lidocaine in Ultrasound-guided Axillary Brachial Plexus Block
Brian D. O'Donnell, Anesthesiology 2009; 111:25-9