

# Welcome to ESRA Updates

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## **Editorial Team**



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## **Editorial**



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"A society's essence and richness are based on its members' diversity and multiplicity."

#### Lufu, pati and compati

Tracking the origin of words can provide so much additional information and insights into their meaning and guidance on how to use them appropriately. There are so many words; the same word can have many meanings and sounds and even evoke different feelings. Each culture, each country, each society, and each community have their own code of words. The right word at the right time is priceless and can transform a conversation or a story. It makes all the difference. However, words must be simultaneously accurate, precise, truthful, and honest. Although a simple concept, it can be tough to find the right word!

Can we find core, primary words? Traditional words that are part of our linguistic DNA? Words that encapsulate ESRA?

A society's essence and richness are based on its members' diversity and multiplicity.

Since the creation of ESRA – 40 years ago, the number of members has been growing annually, and today we are more than 6,000! The ESRA family embraces members from different origins, experiences, environments, cultures and traditions. What's in common with this vast diversity that we represent? What words bring us together and move our big community forward?

We can only think of 3 words: Lufu, pati and compati.

Pati (the Latin word for passion) is related to suffering, following our passion even when it's not easy – the painful times are "worth it" because, ultimately, it's a journey with a reward – the journey of regional anaesthesia & pain medicine.

Compati (the Latin word for compassion) – "to suffer together" – the feeling that arises when you are faced with another's suffering and driven to relieve that suffering and pain – our patients.

And finally, *lufu* (Old-English word for love), warm affection, attachment and love for ESRA!

This edition of ESRA Updates celebrates our shared passion for <u>novelty</u> and <u>innovation</u>, our love for <u>diversity</u> and <u>renovation</u>, and our **compassion** for our patients.

We think these sentiments are described in this beautiful poem by the Portuguese poet Luís Vaz de Camões.

"Love is a fire that burns unseen, a wound that aches yet isn't felt, an always discontent contentment, a pain that rages without hurting,

a longing for nothing but to long, a loneliness in the midst of people, a never feeling pleased when pleased, a passion that gains when lost in thought.

It's being enslaved of your own free will; it's counting your defeat a victory; it's staying loyal to your killer.

But if it's so self-contradictory, how can Love, when Love chooses, bring human hearts into sympathy?"

Luís Vaz de Camões, Sonetos de Camões

## **ESRA** elections 2022



Clara Lobo (Editor of ESRA Updates; Cleveland Clinic Abu Dhabi, UAE) @claralexlobo



Nuala Lucas (Co-Editor of ESRA Updates, Norwick Park Hospital, Harrow, UK) @noolslucas



"A society's essence and richness are based on its members' diversity and multiplicity."

"Life is about change. Sometimes it's painful. Sometimes it's beautiful. But most of the time is both." - Lana Lang

Every 3 years this happens! 2022 was one of those years. New ESRA Board members, Major Officers and new Trainees representative. It's the ESRA cycle of change.

As Secretary General of ESRA from 2019-2022, I lived some of the best days of my life. I must confess the first 6 months were scary. Starting on a role I had no previous experience haunted by the uncertainty of the pandemic... But as we say in my country, there's no harm that lasts forever. And the ESRA spirit prevailed. Friends are the family we chose, I created new and true friends and it's not painful to leave, as I trust the new team will do a great job.

With the pandemic under control, a new world is before us and ESRA will rebuilt again.

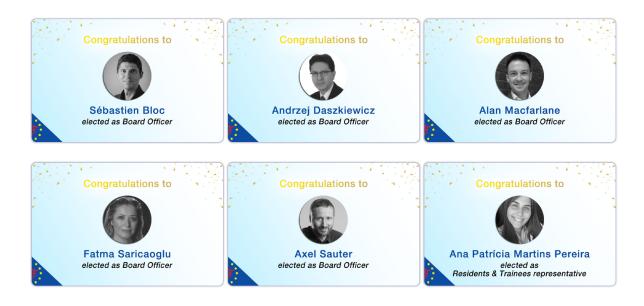
The beauty of change is the novelty it brings - new ideas, new perspectives, new faces, new minds, new blood.

Last 7th September, ESRA members approved the new elected members of the ESRA Executive Board and new ESRA Major Officers.

The new group of ESRA Major Officers for the next 3 years are President Elect, Eleni Moka (left her position of Treasurer); Treasurer, Philipe Gaultier and Secretary General, Luis Valdes.



ESRA Board has also suffered some modifications. The new members are Sebastien Bloc (France), Andrzej Daszkiewicz (Poland), Alan MacFarlane (UK), Fatma Saricaoglu (Turkey), Axel Sauter (North Countries), and Ana Patrícia Martins (as the new Residents & Trainees Representative) are full of energy and will be supporting the Major Officers team.



I must acknowledge and thank all the others that for so many years kept their allegiance and dedication and are now leaving. I can assure that all will still be in ESRA's service and working hard in the back scenes of the society. A special thank you to Alain Delbos (ESRA's President and Past President), Dan Dirzu (Romania, ESRA Board) and Morne Wolmarans (UK, ESRA Board).

If you want to know more about ESRA & ESRA People, please visit the links: <a href="https://esraeurope.org/about/">https://esraeurope.org/about/</a> and <a href="https://esraeurope.org/team/">https://esraeurope.org/team/</a>

## **E-Congress**



José Aguirre (Balgrist University Hospital, Switzerland) @JAG\_4773



Luc Mercadal (Quincy Anaesthesia - Quincy-sous-Sénart, France)



"The 5th Event will bring more interactive lectures focusing on what's new in the world of Regional Anaesthesia and Pain Management."

The E-Congress went first online on March 2018 as an interactive online Congress focusing on Regional Anaesthesia and Pain Management (acute and chronic). Due to the new concept at that time, it has been a great success from the beginning attracting at each edition more than 1'000 participants from over 80 countries all around the globe. Already in the second edition the program had to be extended to 20 hours of continuous online transmission to satisfy the requests of the regional anaesthesia enthusiasts all over the world. Additionally, in 2020 the event went on air as an ESRA-ASRA event attracting also colleagues of our Sister Society. Due to COVID-19 pandemic, the 4th edition on 2021 was the last event.

The concept introduced 2018 remains revolutionary: over 70 internationally recognized experts meet in a TV Studio in Paris and deliver in 2 parallel streams in 2 broadcasting studios lectures and discussions, answer online questions and demonstrate different techniques for regional anaesthesia and chronic pain in live demonstrations to an audience all over the world. To get access as fee below 100 Euros is required but the event remains for free for all ESRA Members. The audience can enjoy one year replay after the event. The online interaction with the speakers is highly appreciated. Also the interactive live demonstrations remain a highlight of the event. The e-Congress offer also e-Booths for a full congress experience, live chats & quizzes with instant results and with the introduction of an e-congress App a seamless experience in guaranteed.



We decided to re-introduced the event in March after the COVID-19 pandemic and therefore the 5th Edition will take place on March 18th 2023 with participation of all our Sister Societies: ASRA, LASRA, AOSRAPM and AFSRA to symbolize the strong intercontinental interest of Regional Anaesthesia and Pain Management all around the world and the solidarity of these Societies. The 5th Event will bring more interactive lectures focusing on what's new in the world of Regional Anaesthesia and Pain Management, live demonstrations of the latest developed blocks and chronic pain procedures, more chats & quizzes and with the support of the Industry e-Booths so that we all can get in contact with the latest news on the market.

The speakers are looking forward to meet again in Paris and to interact with you all around the globe during this amazing experience!

## 6th European Day of Regional Anaesthesia



Sébastien Bloc (Claude Galien Private Hospital - Quincy Sous Senart - Paris, France) @sebebloc



"The 6th edition will focus on patient's expectations about Pain management, RA in ambulatory surgery, Transitional Pain Service, rare Pain syndromes and ESP latest evidence."

Once upon a time, there was a face-to-face meeting.

Once upon a time, there was a meeting organized in several European cities, the same day, with the same program.

Once upon a time there was a meeting based on exchange, discussion with experts, interactivity.

Once upon a time there were round tables, workshops, podcasts, hands-on sessions, quizzes.

Come and find this same spirit during the 6th edition of European-Day which will take place on Saturday, 28th January 2023.

The 6th edition will focus on patient's expectations about Pain management, RA in ambulatory surgery, Transitional Pain Service, rare Pain syndromes and ESP latest evidence.

There will be lectures on anaesthesia and analgesia techniques, as well as live demos, for each of the themes. Not forgetting that podcasts on anatomy will also be available.

As every year, a large part of the meeting will be dedicated to workshops and round tables.

Come and have a full technical and practical focus on these subjects with local experts.



There certainly should be a city near you. For more information, click here.

#### Common programme

- > How to teach and manage a patient's expectations considering Pain Management? Panel discussion with local speakers
- Making RA great in ambulatory surgery.
   Panel discussion with local speakers
- > Transitional Pain service. What it is, what it does, how to implement it? Panel discussion with local speakers

#### **Podcasts**

- Top 5 rare chronic pain syndromes Dr Anu Kansal
- > ESP latest evidence speaker TBA

## Artificial Intelligence for Ultrasound Scanning in Regional Anaesthesia?



Eluned Fisher (Specialist Registrar, Aneurin Bevan University Health Board)



Steve Coppens (Co-editor of ESRA Updates, UZ Leuven, Belgium) @Steve\_Coppens



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#### **Declaration of Interest**

JSB is a Senior Clinical Advisor to Intelligent Ultrasound, reporting research funding and honoraria.

#### Acknowledgements

The authors would like to thank Patrick Cullum (Intelligent Ultrasound, Cardiff, UK) for his help in producing the figures and video.

The human eye can distinguish around a million different colours,<sup>1</sup> but only around 30 shades of grey,<sup>2</sup> so why do we persist with viewing medical images in greyscale?

#### Introduction

Regional anaesthesia has traditionally been performed using anatomical landmarks to identify underlying structures, in addition to information gathered from patient symptoms (e.g., paraesthesia), to guide needle placement and injection. The use of electrical stimulation was introduced used to elicit a motor or sensory response, and improve nerve identification.<sup>3</sup> Ultrasound image guidance, first described in 1989,<sup>4</sup> now forms the basis of practice for most regional anaesthesia.<sup>5</sup> Ultrasound-guided regional anaesthesia (UGRA) revolutionised peripheral nerve blockade, with improved success rate, faster onset and reduced rates of complications including vascular injury and local anaesthetic systemic toxicity.<sup>5,6</sup>

#### **Challenges in Ultrasound Guidance**

Despite the known advantages of UGRA, an inequality of patient access to such techniques persists based, to some extent, on the availability of an anaesthetist with the required specialist skills.<sup>7</sup> UGRA is undoubtedly operator-dependent<sup>8</sup> and fundamental skills required in these techniques, in particular ultrasound scanning and needle-probe manipulation, contribute to this. The ability to acquire and interpret optimal sonographic images requires many years of training, and remains a barrier to successful delivery of UGRA.<sup>9</sup> Unfortunately, patients who stand most to gain from UGRA are often those in whom ultrasound scanning is most difficult – the obese, those with previous surgery or trauma, and patients with co-morbidities which can lead to complications that grossly alter the sonographic image (e.g., oedema). In addition, interpretation may vary even amongst specialists in regional anaesthetist when viewing the same ultrasound images.<sup>10, 11</sup>

Recent initiatives have aimed to improve delivery of UGRA through standardisation of practice. 7, 12, 13 If these are to be successful, we must consider new technologies to augment ultrasound scanning such as bio-impedance needling 14 and artificial intelligence (AI) image interpretation. 9

#### **Artificial Intelligence**

Artificial intelligence encompasses a field that enables computers to perform tasks usually associated with human intelligence. Machine learning (ML) is a branch of Al which allows computers to learn (i.e., improve performance of a given task with increased experience). One of the most common strategies of ML is deep learning (DL). DL employs an artificial neural network to imitate the neural network of the human brain and is particularly suited to image recognition/analysis. The artificial neurons are arranged in layers, to process data sequentially and produce a fine-grained interpretation of the image (Figure 1). When training DL neural networks, data are presented to the neural network and statistical associations are made between the input data and the desired outcome (e.g., classifying an image as 'dog' or 'cat'). Over time, the systems become adept at differentiating between different images or features in the image such that, when the system is deployed, it can autonomously differentiate between different classes in the data (e.g., dog vs cat).

Artificial intelligence for UGRA has been tried before – one of the authors worked on a forerunner project which aimed to develop reliable nerve identification with adaptive learning. Although the project failed to achieve its objectives, the use of such systems in UGRA may be of benefit in ultrasound scanning and image interpretation, with the aim of making UGRA more accessible for clinicians and patients. ScanNavTM Anatomy Peripheral Nerve Block (Intelligent Ultrasound, Cardiff, UK) is one such system (Figure 2). It uses DL to produce a colour overlay on real-time B-mode ultrasound, which aims to draw the user's attentional gaze to the stucture(s) of interest (Figure 3 & Supplementary Video). Early evidence suggests that the device may help experts in teaching UGRA and non-experts in learning or performing UGRA.<sup>11</sup> The colour overlay aids the non-experts in acquiring optimal ultrasound images and correctly identifying structures on those images.16 In one study, experts viewed 720 ultrasounds scans and reported highlighting to be accurate in 93.5% (1519/1624) of structures. In addition, the experts concluded, in their subjective opinion, that complications of UGRA be reduced in 62.9% – 86.2% of scans viewed and that highlighting was likely to reduce the incidence of block failure in 81.2%.<sup>17</sup> The device has gained regulatory approval for clinical use in Europe (April 2021) and is currently undergoing review for a similar approval in the USA. Other systems have been designed with similar functions, including Nerveblox (Smart Alfa Teknoloji San. Ve Tic AS, Ankara, Turkey), <sup>18</sup> NerveTrack (Samsung Medison, Seoul, South Korea), <sup>19</sup> and cNerve (GE Healthcare, Chicago, USA).<sup>20</sup>

#### Limitations

Naturally, there is potential for error when using AI systems. Complications may arise relating to device performance or operator dependence on the technology instead of gaining the required procedural knowledge. Often, expectations of AI are exceedingly high, and some find initial limitations disappointing, however new systems will emerge and existing ones are likely to improve. As in other areas of clinical practice, current technology should be used to provide the operator with additional information, as opposed to being the decision maker in the process of UGRA (6).

#### Al Beyond Ultrasound and Anaesthesia

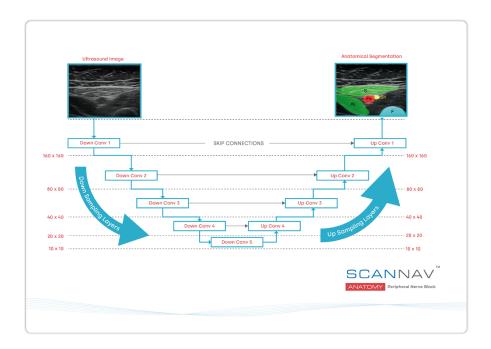
Artificial intelligence will be of benefit in other applications for anaesthesia, such as closed-loop feedback systems for propofol sedation,<sup>21</sup> prediction of patient outcome,<sup>22</sup> and potentially incorporating AI within robotic systems being design for practical skills such as tracheal intubation<sup>23</sup>. In some specialties, such as emergency medicine, doctors are often familiar with point of care ultrasound but perform UGRA infrequently. AI support may enable such doctors to develop their skills in a standardised manner, giving patients faster and safer intervention and improving outcomes.

#### **Summary**

We are practicing UGRA in a time of rapid technological advancement, so why do we limit our own practice by utilising potentially outdated technology such as greyscale images? As ultrasound machines evolve, with embedded high-performance Al image analysis, who knows what the future may bring – one can only dream of the possibilities!

### Figures & Videos

Figure 1
Simplified schematic of the artificial neural network used by ScanNav Anatomy Peripheral Nerve Block

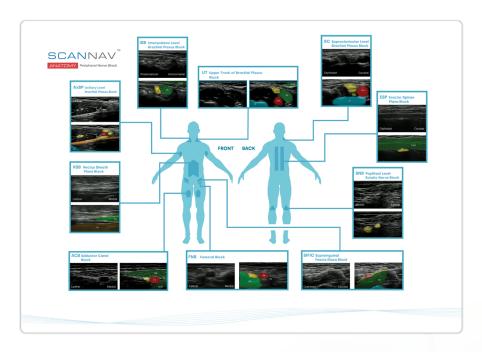


**Figure 2**ScanNav Anatomy Peripheral Nerve Block



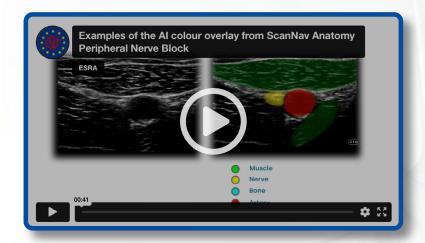
#### Figure 3

Examples of the AI colour overlay from ScanNav Anatomy Peripheral Nerve Block. ALM, adductor longus muscle; AS, anterior scalene; BPN, brachial plexus nerves (trunks/divisions); CPN, common peroneal (fibular) nerve; CTf, fascia overlying conjoint tendon; C5, C5 nerve root; C6, C6 nerve root; DCIA, deep circumflex iliac artery; ESM, erector spinae muscle group (and overlying muscles); FA, femoral artery; FI, fascia iliaca; H, humerus; I, ilium; IM, iliacus/iliopsoas muscle; McN, musculocutaneous nerve; MN, median nerve; MS, middle scalene; Pe, peritoneum and contents; PI, pleura; R, first rib; RA, rectus abdominis muscle; RN, radial nerve; RSa, anterior layer of rectus sheath; RSp, posterior layer of rectus sheath; SaN, saphenous nerve/nerve complex; ScA, subclavian artery; SCM, sternocleidomastoid muscle; SM, sartorius muscle; TN, tibial nerve; TP, transverse process; UN, ulnar nerve; UT, upper trunk of the brachial plexus.



#### **Supplementary Video**

A video showing Al-based highlighting for ultrasound scans of the axillary level brachial plexus, erector spinae plane, and adductor canal block regions.



#### References

- 1. https://www.bbc.com/future/article/20150727-what-are-the-limits-of-human-vision, Accessed 8th November 2022.
- 2. https://www.popsci.com/humans-can-only-distinguish-between-about-30-shades-gray/, Accessed 8th November 2022.
- 3. Bowness, J. and A. Taylor, Ultrasound-Guided Regional Anaesthesia: Visualising the Nerve and Needle. Adv Exp Med Biol, 2020. 1235: p. 19-34.
- Ting, P.L. and V. Sivagnanaratnam, Ultrasonographic study of the spread of local anaesthetic during axillary brachial plexus block. Br J Anaesth, 1989. 63(3): p. 326-9.
- Neal, J.M., R. Brull, J.L. Horn, et al., The Second American Society of Regional Anesthesia and Pain Medicine Evidence-Based Medicine Assessment of Ultrasound-Guided Regional Anesthesia: Executive Summary. Reg Anesth Pain Med, 2016. 41(2): p. 181-94.
- 6. Henderson, M. and J. Dolan, Challenges, solutions, and advances in ultrasound-guided regional anaesthesia. BJA Education, 2016. 16(11): p. 374-
- 7. Turbitt, L.R., E.R. Mariano, and K. El-Boghdadly, Future directions in regional anaesthesia: not just for the cognoscenti. Anaesthesia, 2020. **75**(3): p.
- 8. Marhofer, P. and G. Fritsch, Safe performance of peripheral regional anaesthesia: the significance of ultrasound guidance. Anaesthesia, 2017. 72(4): p. 431-434.
- 9. Bowness, J., K. El-Boghdadly, and D. Burckett-St Laurent, Artificial intelligence for image interpretation in ultrasound-guided regional anaesthesia. Anaesthesia, 2021. **76**(5): p. 602-607.
- Bowness, J., K. Turnbull, A. Taylor, et al., Identifying variant anatomy during ultrasound-guided regional anaesthesia: opportunities for clinical improvement. British Journal of Anaesthesia. British Journal of Anaesthesia, 2019. 122(5): p. e75-e77.
- 11. Bowness, J.S., K. El-Boghdadly, G. Woodworth, J.A. Noble, H. Higham, and D. Burckett-St Laurent, Exploring the utility of assistive artificial intelligence for ultrasound scanning in regional anesthesia. Reg Anesth Pain Med, 2022. 47(6): p. 375-379.
- 12. Bowness, J.S., A. Pawa, L. Turbitt, et al., International consensus on anatomical structures to identify on ultrasound for the performance of basic blocks in ultrasound-guided regional anesthesia. Reg Anesth Pain Med, 2022. 47(2): p. 106-112.
- 13. El-Boghdadly, K., M. Wolmarans, A.D. Stengel, et al., Standardizing nomenclature in regional anesthesia: an ASRA-ESRA Delphi consensus study of abdominal wall, paraspinal, and chest wall blocks. Reg Anesth Pain Med, 2021. 46(7): p. 571-580.
- 14. O'Donnell, B.D. and F. Loughnane, Novel nerve imaging and regional anesthesia, bio-impedance and the future. Best Pract Res Clin Anaesthesiol, 2019. 33(1): p. 23-35.
- 15. Drukker, L., J.A. Noble, and A.T. Papageorghiou, Introduction to artificial intelligence in ultrasound imaging in obstetrics and gynecology. Ultrasound Obstet Gynecol, 2020. 56(4): p. 498-505.
- 16. Bowness, J., O. Varsou, L. Turbitt, and D. Burkett-St Laurent, Identifying anatomical structures on ultrasound: assistive artificial intelligence in ultrasound-guided regional anesthesia. Clin Anat, 2021. 34(5): p. 802-809.
- 17. Bowness, J.S., D. Burckett-St Laurent, N. Hernandez, et al., Assistive artificial intelligence for ultrasound image interpretation in regional anaesthesia: an external validation study. Br J Anaesth. 2022.
- 18. Gungor, I., B. Gunaydin, S.O. Oktar, et al., A real-time anatomy identification via tool based on artificial intelligence for ultrasound-guided peripheral nerve block procedures: an accuracy study. J Anesth, 2021. 35(4): p. 591-594.
- 19. Link unavailable, Accessed 25.12.2021.
- https://www.gehealthcare.com/-/jssmedia/gehc/us/images/products/ultrasound/venue/republish/regional-anesthesia/brochure-regional-anesthesia-pocus-venue-family-jb20273xx.pdf?rev=-1, Accessed 8th November 2022.
- 21. Lee, H.C., H.G. Ryu, E.J. Chung, and C.W. Jung, Prediction of Bispectral Index during Target-controlled Infusion of Propofol and Remifentanil: A Deep Learning Approach. Anesthesiology, 2018. 128(3): p. 492-501.
- 22. Gabriel, R.A., B. Harjai, R.S. Prasad, et al., Machine learning approach to predicting persistent opioid use following lower extremity joint arthroplasty. Reg Anesth Pain Med, 2022. 47: p. 313-319.
- 23. Hemmerling, T.M., R. Taddei, M. Wehbe, C. Zaouter, S. Cyr, and J. Morse, First robotic tracheal intubations in humans using the Kepler intubation system. Br J Anaesth, 2012. 108(6): p. 1011-6.

## **ESRA Journal Club**



Maria Paz Sebastian (Consultant in Anaesthetics and acute pain, Royal National Orthopaedic Hospital NHS Trust)

ESRA UPDATES journal club invites leading experts in (regional) anaesthesia to select one (or more) article(s) which for him/her were/are important, interesting or changed his/her clinical practice. This choice can be a general big randomized study but can also be very personal. For this edition our choice went to Maria Paz Sebastian.

Dr. Maria Paz Sebastian is a consultant in anaesthetics and acute pain at the Royal National Orthopaedic Hospital (RNOH) NHS Trust since 2015. After graduating and completing her anaesthetic training in Madrid, she worked as Consultant Anaesthetist in Bilbao. Maria undertook the regional anaesthesia fellowship at University College London Hospital and she is currently the Regional Anaesthesia Lead at RNOH. Maria is extremely passionate about teaching ultrasound and regional anaesthesia. She was awarded on the ESRA educational video competition 2019. Maria was elected council member of RAUK in 2020, where she is the Lead for Equality and Diversity and is working on supporting and advancing the role of women in regional anaesthesia.



"I have selected papers which support some very specific parts of my practice. I hope they might provide some food-for-thought."

So many interesting papers have shaped the way I perform regional anaesthesia that it has been very difficult to choose just a few. In the end, I have selected papers which support some very specific parts of my practice; I hope they might provide some food-for-thought.

The first paper I would like to focus on is The Second ASRA Practice Advisory on Neurologic Complications Associated with Regional Anesthesia and Pain Medicine: Executive Summary 2015 (1). This practice advisory reviews the published evidence and condenses findings and recommendations on perioperative neurological complications.

Many important points are summarized on this paper. Among them, I would like to highlight one which influenced what I consent patients for.

Despite our concerns regarding the risk of nerve damage when performing blocks, this review did not find peripheral nerve blocks to be an independent risk factor for perioperative nerve injury. However, the review found enough evidence to support an association between nerve damage and general anaesthesia and epidural techniques.

The most recent paper published studying the incidence and aetiology of postoperative neurological symptoms after peripheral nerve block (2), supports this conclusion. Lam KK, et al. carried out a retrospective cohort study of 19219 patients. They found the incidence of prolonged (>10 days) postoperative neurological symptoms (PONS) related to peripheral nerve blocks to be 0.2:1000 whilst the incidence of PONS from all causes was 1:1000.

Some patient characteristics and surgical factors further influence the risk of PONS (1) but it is clear that patients should be consented for the risk of nerve injury regardless of the anaesthetic technique used.

The next topic I would like to focus on is the type, volume and concentration of local anaesthetic (LA) used when performing peripheral nerve blocks. We usually base our decision on the desired onset and duration of analgesia or anaesthesia.

It has been demonstrated that the mass of LA, rather than the volume and concentration, is the determining factor of the nerve block's onset and duration (3-5). However, it seems that beyond a certain threshold, increases in LA mass produce very little or no increase in onset speed or duration of analgesia (5-6).

Nader A. et al. (5) hypothesized that this threshold corresponds with the dose at which the ion channels along a predetermined length of the nerve are bound with LA molecules. By the time these ion channels are free again, the remaining LA molecules have been "washed" from the surrounding tissues and won't be available to bind ion channels and prolong the blockade.

This theory is based on the results of their double-blinded and randomized dose-ranging study (5), which analyses the success and duration of ultrasound-guided and nerve-stimulator-assisted sciatic nerve block using 2.5 ml to 30 mL of 0.5% ropivacaine and 0.5% bupivacaine on 139 patients.

They found that volumes of 10 to 30 ml had similar onset times, block duration and postoperative pain scores and analgesia consumption, while lower volumes than 10 ml were associated with longer time to complete successful blockade and with a dose-dependent decrease in block duration.

Other examples demonstrating this threshold effect for different blocks can be found in the literature. Riazi S. et al. (7) randomized forty patients to receive an ultrasound-guided interscalene brachial plexus block of either 5 or 20 ml of ropivacaine 0.5%. They found no significant differences in pain scores, sleep quality, and total morphine consumption up to 24h after surgery between both groups.

Therefore, the use of high volumes of high concentration LA seems unnecessary to prolong analgesia and may increase the risk of LAST and/or nerve damage; LA neurotoxicity seems to be concentration dependent (1).

The last paper I would like to comment on is a meta-analysis of randomized controlled trials studying the use of a single dose of perioperative dexamethasone on postoperative pain and opioid consumption (8). They analysed 24 studies with a total of 2,751 subjects having a wide range of surgeries.

Dexamethasone at doses of 0.1mg/kg or lower failed to show an opioid sparing effect. On the other hand, doses higher than 0.1 mg/kg were found to reduce postoperative pain and opioid consumption in the first 24h without an increase in rates of wound infection or delayed wound healing.

Although the low doses of dexamethasone typically used to prevent postoperative nausea and vomiting do not seem to provide analgesic benefit, this study implies that increasing the dose to 0.11mg/kg may decrease post operative pain and opioid consumption.

#### References

- Neal JM, Barrington MJ, Brull R, Hadzic A, Hebl JR, Horlocker TT, Huntoon MA, Kopp SL, Rathmell JP, Watson JC. The Second ASRA Practice Advisory on Neurologic Complications Associated With Regional Anesthesia and Pain Medicine: Executive Summary 2015. Reg Anesth Pain Med. 2015 Sep-Oct;40(5):401-30. doi: 10.1097/ AAP.000000000000286. PMID: 26288034.
- 2. Lam KK, Soneji N, Katzberg H, Xu L, Chin KJ, Prasad A, Chan V, Niazi A, Perlas A. Incidence and etiology of postoperative neurological symptoms after peripheral nerve block: a retrospective cohort study. Reg Anesth Pain Med. 2020 Jul;45(7):495-504. doi: 10.1136/rapm-2020-101407. Epub 2020 May 28. PMID: 32471926.
- 3. Gonzales AP, Bernucci F, Techasuk W, et al. A randomized comparison between 3 combinations of volume and concentration of lidocaine for ultrasound-guided infraclavicular block. Reg Anesth Pain Med 2013; 38:206–211.
- 4. Gupta PK, Hopkins PM. Effect of concentration of local anaesthetic solution on the ED50 of bupivacaine for supraclavicular brachial plexus block. Br J Anaesth 2013; 111:293–296. 3.- Reg Anesth Pain Med 2013;38: 492–502
- 5. Nader A, Kendall MC, De Oliveira GS Jr, et al. A dose-ranging study of 0.5% bupivacaine or ropivacaine on the success and duration of the ultrasound-guided, nerve-stimulator-assisted sciatic nerve block: a double-blind, randomized clinical trial. Reg Anesth Pain Med 2013; 38:492–502.
- 6. Fredrickson MJ, Abeysekera A, White R. Randomized study of the effect of local anesthetic volume and concentration on the duration of peripheral nerve blockade. Reg Anes Pain Med 2012; 37:495–501.
- 7. Riazi S, Carmichael N, Awad I, Holtby RM, McCartney CJ. Effect of local anaesthetic volume (20 vs 5 ml) on the efficacy and respiratory consequences of ultrasound-guided interscalene brachial plexus block. Br J Anaesth. 2008 Oct; 101(4):549-56. doi: 10.1093/bja/aen229. Epub 2008 Aug 4. PMID: 18682410.
- 8. Gildàsio S. De Oliveira, Marcela D. Almeida, Honorio T. Benzon, Robert J. McCarthy; Perioperative Single Dose Systemic Dexamethasone for Postoperative Pain: A Meta-analysis of Randomized Controlled Trials. Anesthesiology2011;115:575–588 doi: https://doi.org/10.1097/ALN.0b013e31822a24c2

## The Block room of our dreams



Jalil Hassanin (Jessa ziekenhuis, Belgium)



Björn Stessel (Jessa ziekenhuis, Belgium)



"It took some persuasion and dedication of the directory board to sway the minds to our vision, however the final result ended in us being extremely proud of our persistence."

Welcome to the nerve block center of the Jessa Hospital! Jessa Hospital is situated in Hasselt, the capital of the beautiful province of Limburg in Belgium. The rural character of the surroundings is reflected in the design of the block room.



Fig 1: The outside entrance to our dreamy nature block room

Sealing off a portion of the intake area and adding these nice landscapes made it also feel bigger than it is. In our opinion it also adds to safety. A regional anesthetist needs to be calm and without distraction during a procedure.(3) Time-out faults, drug errors are known to multiply in environments with a high probability of interference and interruption.(4) This space has given us a real oasis of serenity, focus and commitment to deliver the highest quality of regional anesthesia. Explaining procedures, talking trough informed consents and re-informing the patients also improves when it is performed in a low distraction area. (Fig 2)

Patients find themselves in the middle of a nice green meadow. This outdoor mimicking environment not only brings honor to the nearby countryside but also has a calming and relaxing effects on patients of all ages. Scientific research has shown that music and visuals aid in relaxing and might even diminish the amount of sedation needed.(1,2)

It took some persuasion and dedication of the directory board to sway the minds to our vision, however the final result ended in us being extremely proud of our persistence. (Fig 1)



Fig 2: A robust registration system and fully equipped/monitored room without distraction provides excellent quality.



Dr. Hassanin Jalil MD

With its capacity of 1241 beds, Jessa is one of the largest Belgian hospitals. All services are provided including cardiac surgery and neurosurgery. To provide state-of-the art anesthesia to orthopedic patients, a formal block team was set up after the arrival of Dr. Hassanin Jalil MD (picture left) to Jessa in 2017. Dr Hassanin received his training at UZ Leuven in Belgium and was NYSORA trained in regional blocks.

Peripheral nerve blocks were only occasionally provided to orthopedic patients at that time. About 300 blocks a year were performed, on random base, however.

The block-room and space creation initiated the successful regional program; however this first step was followed by extensive training own colleagues at the Jessa anesthesia department, a block team of ten consultants was formed.

This allowed an exponential increase in both number and type of blocks. Fascial plane blocks were introduced next to the peripheral nerve blocks. At this point, blocks are not limited to orthopedic patients but are provided for breast surgery, AV fistulae, thoracic surgery, laparotomies and even cardiac and neurosurgery. Last year, 3563 state-of-the-art nerve blocks were performed at Jessa, a tenfold increase in only four years! The protocolized approach to nerve blocks creates excellent teaching opportunities for residents. The Jessa block team aims to teach every single resident how to safely and accurate apply all basic blocks independently during their trainee rotation. High end equipment, ultrasounds and teaching are all included. (Fig 3)

Last year, we developed a formal fellowship in locoregional anesthesia. Our first fellow performed about 600 peripheral nerve and fascial blocks during his first 6 months of fellowship and actively participated in Jessa's ongoing scientific research. This experience will help him build his own regional anesthesia practice for the future.

The tenfold increase in blocks at Jessa has been a major gamechanger for patients and unit turnover times at Jessa. Future challenges are found in further expansion of the locoregional team, teaching capacity and scientific locoregional work. All serving one goal: Improving patient experience in Jessa hospital.



Fig 3: The inside of our little treasure cave equipped with state-of-the-art ultrasounds



Fig 4 The Regional team at Jessa <a href="https://www.jessazh.be/">https://www.jessazh.be/</a>

#### References

- 1. Graff V, Cai L, Badiola I, Elkassabany NM. Music versus midazolam during preoperative nerve block placements: a prospective randomized controlled study. Reg Anesth Pain Med. 2019 Aug;44(8):796–9.
- 2. Nielsen E, Wählin I, Frisman GH. Evaluating Pictures of Nature and Soft Music on Anxiety and Well-Being During Elective Surgery. Open Nurs J. 2018 Apr 24;12(1):58–66.
- 3. Gui JL, Nemergut EC, Forkin KT. Distraction in the operating room: A narrative review of environmental and self-initiated distractions and their effect on anesthesia providers. J Clin Anesth. 2021 Feb; 68:110110.
- 4. Campbell G, Arfanis K, Smith AF. Distraction and interruption in anaesthetic practice. Br J Anaesth. 2012 Nov;109(5):707-15.

## Narrowing the Gender Gap: Supporting women in Regional Anaesthesia



Becki Marsh (Founder of #ThisGirlBlocks) @beckimarshRA



"#ThisGirlBlocks is a community that supports and empowers women in regional anaesthesia, bringing us together."

Women in regional anaesthesia remain underrepresented. Compared to their male peers, they are much less likely to be in academic and leadership positions. The reasons for this are multifactorial and complex. Recent literature cites many barriers. An unconscious bias perpetuated through social norms and cultural upbringing exists; the belief that men are 'seen' as natural leaders, with their assertiveness praised and their competency assumed. Studies from Australasia have demonstrated a confidence gap between genders. Male trainees overestimate their competency level, often impacting female training opportunities. As regional anaesthesia requires repetitive mastery, this leads to decreased 'hands-on' experience, which is vital to achieving expertise. Women's progress is further impacted by family responsibilities, meaning they are often part-time and need career breaks for maternity. This results in a lack of female trainers and role models, further discouraging the engagement of women. In the wise words of Prof Edward Mariano, 'you can't be what you can't see'.





Facing challenges in my own regional anaesthesia career, I pondered what could be done to ameliorate this situation. Despite my maximal efforts, I became increasingly frustrated seeing my male counterparts seemingly achieving much more than me. This inspired a period of reflection and #ThisGirlBlocks was born. It is now just over a year since conception and my resolute commitment to tackle the issue of gender inequality.

#ThisGirlBlocks is a community that supports and empowers women in regional anaesthesia, bringing us together. We provide platforms where women can connect and communicate. This has included social events and meet ups at this year's ESRA conference. We promote honest conversations about our collective experiences, both positive and negative, in an attempt to challenge the status quo.

n order to move forward on this issue, we need the support of our male colleagues to promote and provide mentorship. Without our honorary #BlockBoys the #ThisGirlBlocks journey would have been impossible. Together we will find solutions to this problem.

We have provided lanyard badges to help start conversations regarding diversity. Over 600 pins have now been sent worldwide. Lots of exciting projects are in the pipeline and we cannot wait to share them. There are incredible women in our community and at #ThisGirlBlocks, we intend to showcase them. In more simple terms, the recognition that your female trainee might need a little extra support is a good starting point.



Whether you are male or female, please come and find us and say 'hello'. Diversity as a whole is important for creating a more inclusive community and promoting excellence in regional anaesthesia.

You can find us on social media, <u>Twitter</u>, <u>Instagram</u> and <u>Facebook</u>, under the handle @thisgirlblocks. We will also be in person at #ESRAworld2023 in Paris. Come along and join the fun. Grab a pin for your lanyard. We are attempting the biggest ever female 'RA selfie' to highlight our community – come along and help make it happen.



