Standardizing nomenclature in regional anesthesia

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Standardizing nomenclature in regional anesthesia: an ASRA-ESRA Delphi consensus study of upper and lower limb nerve blocks

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Abstract

Background. Inconsistent nomenclature and anatomical descriptions of regional anesthetic techniques hinder scientific communication and engender confusion; this in turn has implications for research, education and clinical implementation of regional anesthesia. Having produced standardized nomenclature for abdominal wall, paraspinal and chest wall regional anesthetic techniques, we aimed to similarly do so for upper and lower limb nerve blocks.

Methods. We performed a three-round Delphi international consensus study to generate standardized names and anatomical descriptions of upper and lower limb regional anesthetic techniques. Following a long-list production by the Steering Committee, two rounds of anonymized voting and commenting were followed by a third virtual round table to secure consensus for items that remained outstanding after the first and second rounds. As with previous methodology, strong consensus was defined as ≥75% agreement and weak consensus as 50–74% agreement.

Results. A total of 94, 91 and 65 Collaborators participated in the first, second and third rounds, respectively. We achieved strong consensus for 38 names and 33 anatomical descriptions, and weak consensus for five anatomical descriptions. We agreed on a template for naming peripheral nerve blocks based on the name of the nerve and the anatomical location of blockade. We identified several areas for future research.

Conclusions. We achieved consensus on nomenclature and anatomical descriptions of regional anesthetic techniques for upper and lower limb nerve blocks that we recommend

implementing in clinical and academic practice. This should improve research, teaching and learning of regional anesthesia to eventually improve patient care .

Background

Upper and lower limb peripheral nerve blocks have been widely used to provide anesthesia and analgesia for a range of surgical procedures. The advent of ultrasound-guidance with improved sonoanatomical understanding has enabled clinicians and researchers to refine regional anesthetic approaches or develop novel ones. Whilst this has likely led to improvements in patient care, the natural tendency to apply a different label to each new variation, to distinguish it from previous iterations, has led to an unwieldy expansion of the nomenclature in regional anesthesia techniques. This contributes to inconsistent communication in clinical and academic settings, which not only undermines teaching and training in regional anesthesia and related disciplines, but may also hamper interpretation and synthesis of clinical research. As a consequence, this may have implications for safe adoption of these techniques and patient access to regional anesthesia.[1]

There is thus a need to standardize nomenclature of regional anesthetic techniques for the benefit of trainees, researchers, clinicians, and patients. This has been successfully performed for abdominal, paraspinal, and chest wall blocks,[2] with evidence that the results have been widely implemented.[3–6] However, there remains no consensus on nomenclature for upper and lower limb regional anesthetic techniques.

Therefore, we conducted an international Delphi study aiming to achieve consensus on nomenclature for upper and lower limb nerve blocks. These recommendations regarding names and definitions are intended to have broad applications in regional anesthesia clinical practice, education, and scholarly work in the future.

Methodology

Representatives from the American Society of Regional anesthesia and Pain Medicine (ASRA) and European Society of Regional Anaesthesia and Pain Therapy (ESRA), collaborated to perform an international Delphi consensus study to standardize the names and anatomical definitions of regional anesthetic techniques for upper and lower limb nerve blocks. The study was conducted by an Executive Committee (KE, NE, EA, ERM, MW, SK) a Steering Committee (KE, NE, EA, JG, ERM, MW, SK, AP, AT), and an expert panel of Collaborators. This study received IRB exemption from Stanford University (ID 58535).

We replicated a methodology ~~we~~ used in a ~~our~~ previous study, which is reported in detail elsewhere.[2] In brief, ~~we used~~ a modified three-round Delphi approach was used, with two rounds of electronic questionnaires and a third round-table discussion round.

Collaborator selection and scope

We invited a diverse group of international collaborators, from a broad range of ethnodemographic backgrounds representing varied theoretical and clinical practices. Further detail on selection of collaborators is reported elsewhere.[2] Participants were invited on 14 December 2021, and those who declined or did not respond were not included.

We aimed to achieve consensus on two characteristics: names and anatomical descriptions for the position of the needle-tip during injection for different regional anesthetic techniques. Names were defined as the word or set of words by which each technique is known, addressed, or referred to. Anatomical descriptions were defined by the anatomical location of the needle-tip. This meant that non-ultrasound-guided methods of needle-tip localization were not considered (e.g. landmark-based techniques). The type of needle used, needle trajectory, patient position, the position of the ultrasound transducer, use of catheters, or

any other technical elements related to the performance of regional anesthetic techniques were not considered unless there was a fundamental requirement for doing so. Similarly, efficacy, safety, feasibility, surgical anesthesia, or any other clinical element of each regional anesthetic technique were not considered. For the purposes of this study, we defined upper limb nerve blocks as any regional anesthetic technique aiming to provide anesthesia or analgesia to any area of the neck, clavicle, shoulder, arm, wrist, hand and fingers. We defined lower limb nerve blocks as any regional anesthetic technique aiming to provide anesthesia or analgesia to any area of the hip, thigh, knee, leg, ankle and foot.

Long-list formulation

Following a qualitative literature review, the Steering Committee produced a long list of regional anesthetic techniques of the upper and lower limb. This included seeking variations in names or anatomical descriptions of different approaches. All regional anesthetic techniques were collated in a Microsoft Excel (Microsoft Inc., Redmond, CA, USA) spreadsheet that was then reviewed by all members of the Steering Committee to refine, clarify and reference. Techniques were excluded if they were unclear, duplicates, or outside the scope of the current project.

First round

As per previously-described methodology,[2] the long-list of all names, anatomical descriptions and clarifying questions was electronically distributed to all Collaborators, who were invited to “Agree”, “Disagree” or be “Unsure” for each. Each name could be voted on independent of the anatomical description and vice versa, and uncertainty was accepted. Collaborators were also invited to make free text written comments on each term and clarifying question.

All responses were collated and anonymized by the project administrator (AS). These anonymized responses were analyzed and revised by the Steering Committee aiming to increase the potential for consensus in the second round as follows (Figure 1):

1. **≥ 75% agreement: include**. Terms proceeded to the next round unchanged.
2. **< 75% agreement: revise**. Terms were revised for clarity in the absence of multiple names or anatomical descriptions.
3. **< 75% agreement: harmonize**. If multiple names or anatomical descriptions were deemed to be similar enough to warrant harmonization, this was done using either a novel anatomically descriptive term or an existing name or anatomical description encompassing multiple block descriptions.
4. **< 50% agreement: exclude**. Terms were excluded if they were outside the scope, if they were too similar to alternative terms, or were unclear. However, if there were multiple terms for similar blocks with <50% agreement, these were also eligible for ~~considering~~ harmonization.

Given potential areas of uncertainty, clarifying questions were asked to facilitate decision-making by the Steering Committee, who then used all the information to generate a revised list of names and/or descriptions with justification for the changes implemented.

Second round

Anonymized results and proposed changes were shared with all Collaborators who participated in the first round. Methodology mirrored the first round, both for Collaborator voting and result handling (Figure 1), with further clarifying questions asked. Management of the consensus regarding nerve block names and anatomical descriptions were as follows:

1. **≥ 75% agreement: accept**. Terms accepted in the final list of agreed nomenclature.

2. **50–74% agreement: discuss**. Terms proceeded for discussion in the third round.
3. **< 50% agreement: exclude**. Terms not discussed further due to similar approaches with different names or anatomical locations achieving higher agreement or remaining an area of future research. An exception was made in the event of a recognized group of blocks or a clarifying question in which none of the options achieved a threshold of >50%, in which case the two highest-scoring names, anatomical descriptions, or responses to clarifying questions proceeded to the third round.

In this round, it became apparent that consensus on the exact anatomical description of each peripheral nerve block was unlikely to be secured, as there are many individual peripheral nerves and numerous locations for blocking them. Thus, a proposal was made to produce a template for naming and describing individual peripheral nerve blocks that are uncommonly performed, associated with multiple approaches, or did not achieve consensus in naming or describing. This proposal formed one of the clarifying questions and was added for individual peripheral nerve blocks. In this round, it also became apparent that needle approaches (insertion site and trajectory) may have a role in distinguishing different block techniques, and thus a decision was made by the Executive Committee to consider including needle approaches within the scope of this nomenclature project. Whilst this was a deviation from our previous methodology, it was warranted given the nature of some upper and lower limb nerve blocks.

Third round

Collaborators who completed the first two rounds were invited to participate in a virtual round table discussion aiming to achieve consensus for names, anatomical descriptions, and

clarifying questions, using videoconferencing software (Zoom Video Communications, San Jose, CA, USA) that allowed live online polling. The session was chaired by one member of the Executive Committee (KE). Each name or anatomical description that had yet to achieve consensus but proceeded from the second round was allocated 5 min for discussion, followed by 1 min of anonymous voting. The possible outcomes for the nerve block names and anatomical descriptions were one of the following:

1. **≥ 75% agreement: accept as strong consensus**. Terms accepted in the final list of agreed nomenclature.
2. **50–74% agreement: accept as weak consensus**. Terms accepted but proceeded for discussion in the manuscript.
3. **< 50% agreement: exclude**. Terms not accepted and considered areas for future research.

Statistical analysis

We used a convenience sample of 94 Collaborators, which is in greater than most Delphi studies[2 7] and adds to the strength of our results. Data were reported descriptively. When percentages are reported, they refer to the proportion of Collaborators that agreed with the inclusion of a proposed name or anatomical description, unless otherwise stated (i.e. stating '50%' means '50% agreement for inclusion without further modification'). All denominators for percentages reported were based on responses, rather than participants.

Results

A total of 105 participants were invited to be Collaborators; 94 (90%) agreed to participate. Of those who agreed, 94 (100%), 91 (97%), and 65 (69%) participated in first, second, and third rounds, respectively (Supplementary Appendix 1). Details on all proposed names, anatomical descriptions, clarifying questions and changes made in each round are shown in Supplementary Appendix 1.

First round

In the first round, 104 blocks (44 upper limb; 60 lower limb) and four clarifying questions were proposed. For upper limb blocks, 12 names and one anatomical description achieved strong consensus and proceeded to the second round unchanged. There was no consensus on 17 names and 18 anatomical descriptions. In this first round, the name cervical plexus block was excluded (43%), as it was deemed to be insufficiently specific, while the anterior cutaneous branches block of the cervical plexus was also excluded (25%) for being too specific. The subomohyoid supraspacpular (SOS) block (32%); shoulder block (22%) and shoulder block including lateral pectoral nerve block (17%) were all excluded as they were deemed to refer to other techniques for which there was a more appropriate alternative name. Several approaches to the infraclavicular brachial plexus had low consensus, with a suggestion to harmonize and simplify the terminology of these blocks based on anatomical location. This included the retroclavicular approach to the infraclavicular region (RAPTIR; 39%), retroclavicular block (28%) and costoclavicular block (34%).

For lower limb blocks, there was strong consensus for 25 names and 25 anatomical descriptions, and no consensus on 17 names and 15 anatomical descriptions. It is worth

noting that block names and anatomical descriptions were voted on independently. There was strong consensus for the name and anatomical description of the adductor canal block (85% and 80%, respectively). The ultrasound-guided 3-in-1 block (17%); Alcock's canal block (22%); anterior pudendal nerve block (28%); medial retinacular nerve block (49%); popliteal plexus block (35%); and lateral retinacular nerve block (44%) were all excluded because of low consensus and comments suggesting either techniques that are not commonly performed, or low likelihood of consensus being achieved with further rounds of discussion.

For the clarifying questions, there was agreement that blocks targeting a nerve plexus should have the word "plexus" in the name (88%), and that blocks targeting an individual nerve should have the word "nerve" in the name (81%). Collaborators were asked whether the nomenclature for blocks of a peripheral nerve should include the anatomical location of the injection point: (a) after the name of the nerve in brackets (42%); (b) after the name of the nerve in full (17%); (c) before the name of the nerve (36%); (d) did not need to be included 4%); (e) or some other unspecified option (1%). Finally, given concerns that it may be required for this particular project, Collaborators were asked whether blocks with different needle trajectories should be named separately, and 51% said yes.

Second round

A total of 24 upper limb and 24 lower limb nerve blocks were considered, and two clarifying questions. For upper limb nerve blocks, 13 names and six anatomical descriptions had strong consensus. The midhumeral block (44%), forearm block (39%) and wrist block (47%) were all excluded as they did not achieve the minimum pre-defined level of agreement, and there was a proposal to provide a template for naming peripheral nerve blocks, and these three

approaches were deemed insufficiently precise. The remainder proceeded for discussion in the third round.

Sixteen lower limb names and 11 anatomical descriptions had strong consensus and were included in the final list of agreed-upon nomenclature, with one name (posterior tibial nerve block, 26%) and one anatomical description excluded (description for the fascial iliaca block (supra-inguinal approach), 33%). The remainder proceeded for discussion in the third round.

One of the clarifying questions proposed a template for names of each individual peripheral nerve block: <NAME OF NERVE> block at the <LOCATION>, which had weak consensus (64%). The second clarifying question asked whether this Delphi study should aim to achieve consensus for names and anatomical descriptions of every individual peripheral nerve block, which had no consensus (42%). However, taking both clarifying questions, comments suggested proposing a naming template was a more practical solution than naming every individual nerve block. This template could be applied to individual peripheral nerve blocks that are uncommonly performed, associated with multiple approaches, or did not achieve consensus in naming or describing. Therefore, individual peripheral nerve blocks that were considered at any stage in this study and met one of these criteria were agreed to follow this template (Table 1).

Third round

Three upper limb names and seven anatomical descriptions were discussed. Strong consensus was achieved for all three names and five anatomical descriptions, and weak consensus for two anatomical descriptions. Notably, there was strong agreement to harmonize names of

infraclavicular brachial plexus blocks based on the anatomical location of injection, with the term ‘infraclavicular brachial plexus block’ representing a group of three approaches. Weak consensus was achieved for the anatomical descriptions of the infraclavicular brachial plexus block (retroclavicular approach) (72%) and the axillary brachial plexus block (66%).

For lower limb nerve blocks, two names and 10 anatomical descriptions were discussed. There was strong consensus for both names and seven anatomical descriptions, but weak consensus for three anatomical descriptions. The pericapsular nerve group (PENG) block had 63% agreement with the anatomical description, whilst the inferior medial (67%) and inferior lateral (69%) genicular nerve blocks also had weak consensus. Final results can be seen in Table 2.

Discussion

Upper and lower limb peripheral nerve blocks have been adopted as ultrasound-guided techniques since the introduction of ultrasound into regional anesthesia practice. Many of these blocks are considered traditional approaches with established names and anatomical descriptions. However, both traditional and contemporary regional anesthetic techniques have historically had little consensus on the names and/or anatomical descriptions, resulting in similar nerve block techniques having different names or vice versa. In this modified Delphi study, 69 Collaborators achieved strong consensus on 38 names and 33 anatomical descriptions for upper and lower limb regional anesthetic techniques and weak consensus for five anatomical descriptions. We also defined and obtained consensus on a recommended template for naming peripheral nerve blocks.

Of the approaches that had inconsistency in nomenclature were the proximal lower limb blocks. The adductor canal block has been widely adopted over the past 15 years as an alternative for femoral nerve block to provide postoperative analgesia to the anteromedial aspect of the knee while avoiding significant quadriceps weakness.[8 9] Similarly to what happens with other fascial plane blocks, there has been some controversy on the nomenclature and exact location of the adductor canal.[10] Early descriptions were based on surface landmarks and advocated an approach in the 'mid-thigh'.[11] However, ultrasound imaging has provided some clarity to the nomenclature as it is possible to consistently identify the upper and lower limits of the adductor canal in the thigh.[12] The upper limit of the adductor canal is the apex of the femoral triangle, the point where the medial border of the sartorius muscle crosses the medial border of the adductor longus muscle. This point can be easily identified on ultrasound imaging, and it represents the distal end of the femoral triangle and

the proximal end of the adductor canal.[12] The inferior border of the adductor canal is the adductor hiatus, an opening in the aponeurotic distal attachment of the adductor magnus muscle on the femur through which the femoral vessels cross towards the popliteal fossa, and can be identified on ultrasound as the area where the femoral vessels 'dive' deep towards the popliteal fossa, moving away from the sartorius muscle.[12] In the current study, we achieved consensus by defining adductor canal blocks as an injection at the aponeurotic compartment that contains the femoral vessels distal to the apex of the femoral triangle and proximal to the adductor hiatus. An injection performed in the aponeurotic compartment proximal to the apex of the femoral triangle is by definition a femoral triangle block. Although the anatomical definition of the adductor canal block was expected to be controversial, it achieved strong consensus on the name (85%) and anatomical description (80%) in the first round, and the femoral triangle block name (76%) and anatomical description (76%) in the second. However, there was no consensus on further defining proximal and distal femoral triangle blocks.

Another area that this study successfully tackled was the nomenclature of different approaches to similar neural structures. There was consensus that the approach should be added after the block name and listed in parentheses. For example, we adopted this methodology in naming various infraclavicular brachial plexus block approaches. Moreover, the difference between approaches should be rooted in anatomical concepts: a retroclavicular approach is where the needle is inserted cephalad to the clavicle; a costoclavicular approach is where the final position of the needle tip is located adjacent to the cords of the brachial plexus around the second part of the subclavian artery; and the coracoid approach is where the final position of the needle tip is located adjacent to the cords

around the second part of the subclavian artery. Describing the needle trajectory explicitly, or its position relative to the subclavian artery is intuitive and relevant as different approaches to the block may land the needle adjacent to the cords in different parts of the infraclavicular fossa (figure xx).

This same nomenclature approach applied to the fascia iliaca and sciatic nerve. The two approaches for the fascia iliaca block were suprainguinal and infrainguinal. The different approaches to the sciatic nerve block included: transgluteal, infragluteal, and anterior approaches. In the second round of voting, the name subgluteal nerve block was harmonized with the transgluteal approach. The rationale behind choosing the transgluteal approach was to avoid confusing the subgluteal and infragluteal descriptors. Transgluteal infers the needle going through the gluteal muscle, while the infragluteal infers needle insertion with a trajectory towards to the sciatic nerve target inferior to the lower border of the gluteal muscles.

For the genicular nerves blocks, there was a strong consensus on the names of the different blocks based on their anatomical locations: superior medial (81%), superior lateral (80%), inferior medial (78%), and inferior lateral (81%). However, the anatomical description of the inferior medial and inferior lateral genicular nerves blocks achieved only weak consensus (67, and 69% respectively). Some authors consider the inferior genicular nerve as a group of nerves rather than one nerve with multiple vessels that may represent the genicular vessels.

One of the key agreements achieved was to name peripheral nerve blocks based on a template that includes the name of the nerve and the anatomical location at which it is

blocked (Table 1, Figure 2). The ankle block was the exception to this rule based as it was deemed to be a well-established block technique when it comes to its name and anatomical description that achieved strong consensus of 86% and 91% from the first round of voting. The other clarifying question that was included in the first round of voting was whether to include the word 'plexus' in the block name. This promotes clarity, which is obvious when we discuss axillary nerve blocks versus axillary brachial plexus blocks or the supraclavicular nerve block versus the supraclavicular brachial plexus block.

There are limitations to this study, many of which are related to Delphi methodology. First, this method of generating consensus does not handle large differences in opinion well, and whatever differences there are might not be sufficiently investigated. Second, there remains a risk that the views of the Steering Committee may influence the analysis. However, the Steering Committee was divided into different workgroups and reviewed all the comments submitted during each round to ensure all Collaborators' opinions were considered. Third, although there is reporting guidance,[13 14] there are no clear methodological guidelines for the use of the Delphi method in the harmonization of nomenclature, nor evidence of reliability. However, we adhered to the same methodology adopted in the first part of the project, which has evidence of successful implementation.[2] Delphi methododolgy has been used to achieve consensus and generate guidelines in other settings.[15–17] In this paper, the blocks in which no consensus was achieved followed the proposed template of naming the block using the name of the nerve and the anatomical area where the block was performed.

In conclusion, we achieved consensus for nomenclature in upper and lower limb regional anesthetic techniques and established principles for standardization of terminology moving

forward. Clinicians, educators, and researchers are encouraged to adhere to this universal standard of names and anatomical descriptions when researching, teaching or performing regional anesthesia of the upper and lower limbs.

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Table 1. Peripheral nerve blocks considered in this study whose anatomical descriptions are proposed to adhere to the peripheral nerve block template: <NAME OF PERIPHERAL NERVE> block at the <LOCATION>.

Name	Agreement (%)	Round included	Comments
Midhumeral block	69%	2	Individual nerve blocks should be described
Forearm block	70%	2	Individual nerve blocks should be described
Wrist block	62%	2	Individual nerve blocks should be described
Intercostobrachial nerve block	56%	2	Multiple approaches possible
Saphenous nerve block	57%	2	Multiple approaches proposed and possible
Infrapatellar nerve block	76%	1	Multiple approaches possible
Axillary nerve block	93%	3	Multiple approaches possible

Lateral femoral cutaneous nerve block	100%	3	Multiple approaches possible
Posterior femoral cutaneous nerve block	94%	3	Multiple approaches possible
Obturator nerve block	93%	3	Multiple approaches possible
Genitofemoral nerve block	92%	3	Multiple approaches possible
Tibial nerve block at the ankle	81%	3	Multiple approaches possible

Table 1. Consensus achieved for the block names. Strong consensus (≥75% agreement) was achieved for all block names and anatomical descriptions except for descriptions for the infraclavicular brachial plexus block (retroclavicular approach), axillary brachial plexus block, pericapsular nerve group (PENG) block, inferior median and lateral genicular nerve blocks, , that had a weak consensus (50–74% agreement).

Region	Name (%)	Anatomical description (%)

Upper limb	**1**	Interscalene brachial plexus block (98%)	Injection at the C5 and C6 nerve roots between anterior and middle scalene muscles (83%)
	2	Superior trunk block (92%)	Injection at the superior trunk before the suprascapular nerve emerges (80%)
	3	Supraclavicular brachial plexus block (99%)	Injection at the divisions of the brachial plexus immediately cephalad to the clavicle (78%)
	4	Infraclavicular brachial plexus block (82%)	Injection at the cords of the brachial plexus (87%)
	5	Infraclavicular brachial plexus block (Retroclavicular approach) (78%)	Injection at the cords of the brachial plexus where the needle insertion is proximal to the clavicle (72%)
	6	Infraclavicular brachial plexus block (Costoclavicular approach) (85%)	Injection at the cords of the brachial plexus in the medial infraclavicular fossa at the first part of the axillary artery (90%)
	7	Infraclavicular brachial plexus block (Coracoid approach) (85%)	Injection at the cords of the brachial plexus in the lateral infraclavicular fossa at the second part of the axillary artery (82%)
	8	Axillary brachial plexus block (95%)	Injection at the branches of the brachial plexus in the axillary region (66%)
	9	Suprascapular nerve block (anterior approach) (87%)	Injection of the suprascapular nerve coming off superior trunk and travelling to posterior neck under the posterior belly of Omohyoid muscle (84%)
	10	Suprascapular nerve (posterior approach) *89%)	Injection of the suprascapular nerve in the suprascapular notch or suprascapular fossa (84%)
	11	Deep cervical plexus block (95%)	Injection at one of more of the nerve roots of C2, 3, and 4, deep to the prevertebral fascia (88%)
	12	Intermediate cervical plexus block (93%)	Injection deep to the investing fascia and superficial to the prevertebral fascia at the midpoint of the posterior border of sternocleidomastoid muscle (93%)
	13	Superficial cervical plexus block (98%)	Injection superficial to the investing fascia at the midpoint of the posterior border of sternocleidomastoid muscle (85%)

Lower limb	**14**	Lumbar plexus block (97%)	Injection at the level of the lumbar roots (L2-4) coursing in the posterior third of the psoas muscle (95%)
	15	Sacral plexus block (98%)	Injection at the sacral plexus just medial to the posterior border of the ischium. The plexus lies deep to the piriformis muscle lateral to the inferior gluteal vessels (79%)
	16	Fascia iliaca block (supra-inguinal approach) (99%)	Injection deep to the fascia iliaca over the surface of the iliacus muscle, and proximal to the inguinal ligament (78%)
	17	Fascia iliaca block (infra-inguinal approach) (98%)	Injection deep to the fascia iliaca, over the surface of the iliacus muscle, and lateral to the femoral nerve, distal to the inguinal ligament. (85%)
	18	Sciatic nerve block (Transgluteal approach) (87%)	Injection at the sciatic nerve deep to the gluteus maximus muscle. (96%)
	19	Sciatic nerve block (Infragluteal approach) (90%)	Injection at the sciatic nerve at the midthigh region distal to the inferior border of the gluteus maximus muscle. (87%)
	20	Sciatic nerve block (Anterior approach) (86%)	Injection at the sciatic nerve between the adductor magnus anteriorly and gluteus maximus or biceps femoris muscles. (93%)
	21	Femoral nerve block (99%)	Injection at the femoral nerve cephalad to the bifurcation of the femoral artery, deep to the fascia iliaca (97%)
	22	Pericapsular nerve group (PENG) block (77%)	Injection in the musculofascial plane between the psoas tendon anteriorly and the pubic ramus posteriorly. (63%)
	23	Pudendal nerve block (85%)	Injection at the pudendal nerve medial to the pudendal artery between the sacrospinous and sacrotuberous ligaments at the level of ischial spine (79%)
	24	Femoral triangle block (76%)	Injection in the aponeurotic compartment containing the femoral vessles proximal to the apex of the femoral triangle. The apex of the femoral triangle is the point where the medial borders of the sartorius and adductor longus muscles cross. (76%)
	25	Adductor canal block (85%)	Injection in the aponeurotic compartment containing the femoral vessles distal to the apex of the femoral triangle and proximal to the adductor hiatus. The apex of the femoral triangle is the point where the medial borders of the sartorius and adductor longus muscles cross. (80%)
	26	Infiltration between the popliteal artery and capsule of the knee (IPACK) (86%)	Injection in the soft tissues between the popliteal artery and the posterior surface of the distal femur (92%)

	27	Superior medial genicular nerves block (79%)	Injection at the superior medial genicular nerve next to the genicular artery on the medial side of the distal femur (75%)
	28	Superior lateral genicular nerves block (80%)	Injection at the superior lateral genicular nerve next to the genicular artery on the lateral side of the distal femur (75%)
	29	Inferior medial genicular nerves block (81%)	Injection at the inferior medial genicular nerve near the genicular artery at the junction of the medial condyle of the tibia and tibial shaft (67%)
	30	Inferior lateral genicular nerves block (78%)	Injection at the inferior lateral genicular nerve near the genicular artery at the proximal fibula (69%)
	31	Sciatic nerve block at the popliteal fossa (87%)	Injection at the sciatic nerve at or near the point of bifurcation in the popliteal fossa (91%)
	32	Nerve to vastus medialis block (84%)	Injection at the nerve to vastus medialis where it is located deep to the sartorious and lateral to the sahenous nerve and femoral vessles in the femoral triangle (79%)
	33	Common peroneal nerve block (90%)	Injection at the common peroneal nerve distal to sciatic nerve bifurcation (93%)
	34	Ankle block (86%)	Injection at the 5 distal nerves that provide innervation of the foot at the level of the ankle: Posterior tibial nerve, Deep Peroneal nerve, Superficial Peroneal nerve, Saphenous and Sural nerves. (91%)
	35	Deep peroneal nerve block (95%)	Injection at the deep peroneal nerve above the intermalleolar line, medial to the anterior tibial artery (84%)
	36	Superficial peroneal nerve block (97%)	Injection at the superficial peroneal nerve superficially between the peroneus brevis and the extensor digitorum longus as a triangular hyperechoic shadow under the crural fascia. The extensor digitorum longus is anterior to the nerve, while the peroneus brevis is posterior to the nerve. (88%)
	37	Sural nerve block (92%)	Injection at the sural nerve above the lateral malleolus, anterior to the achilles tendon and posterior to the peroneus brevis (90%)
	38	Saphenous nerve block at the ankle (92%)	Injection at the saphenous nerve proximal to the medial malleous, anterior to the great saphenous vien (94%)

Figure Captions

Figure 1. (a) Flowchart demonstrating Steering Committee decision-making for names between Delphi rounds to achieve consensus. (b) Flowchart demonstrating Steering Committee decision-making for anatomical descriptions between Delphi rounds to achieve consensus.

Figure 2. Template for naming peripheral nerve blocks.