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Procedures Endorsement Program **Curriculum**

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Glossary

CNCP	Chronic Non-Cancer Pain
CRPS	Complex Regional Pain Syndrome
DRG	Dorsal Root Ganglion
EPG	External Pulse Generator
FPM	Faculty of Pain Medicine
INS	International Neuromodulation Society
IPG	Implantable Pulse Generator
MBB	Medial Branch Block
NSANZ	Neuromodulation Society of Australia and New Zealand
PRF	Pulsed Radiofrequency
RF	Radiofrequency
RFA	Radiofrequency Ablation
RFN	Radiofrequency Neurotomy
SIJ	Sacroiliac Joint
SIS	Spinal Intervention Society
SPMP	Specialist Pain Medicine Physician
WBPF	Workplace-Based Progressive Feedback

Endorsee	A practitioner seeking FPM endorsement in pain procedures
Fellow	A fellow of FPM ANZCA
Endorsed fellow	FFPMANZCA who is endorsed by FPM in at least one selected pain procedure
Accredited procedural supervisor	Supervisors of endorsees undertaking workplace-based training in pain procedures (cf. Supervisor of Training (SoT) in the pain medicine training program)

Introduction

The Faculty of Pain Medicine (FPM) of the Australian and New Zealand College of Anaesthetists (ANZCA) is responsible for the training and examination of specialist pain medicine physicians, and for the standards of clinical practice in New Zealand and Australia. The college's mission is to serve the community by fostering safety and high quality patient care in anaesthesia, perioperative medicine and pain medicine.

In a 2019 position statement the faculty accepted its role as the standard setting body in pain medicine in Australia and New Zealand, and committed to promoting the latest evidence and context around procedures in pain medicine by articulating the standards required, supporting training in and endorsement of procedural skills, and collaborating with national and international partners to promote judicious use of procedures.

Procedures in pain medicine in context

Procedures in pain medicine involves the use of invasive procedures to relieve, reduce, or manage pain and improve a patient's overall quality of life. The majority of procedures performed are elective and non-curative in intent. In the non-palliative context they are intended to facilitate physical and psychological rehabilitation. These procedures are costly and underpinned by a variable evidence base. The risks and benefits of procedures in the management of chronic pain require careful consideration. Particular attention is warranted in assessing the risks of procedures in a patient group that is highly motivated to seek medical attention, and attracted to the prospect of passively achieved rapid pain reduction.

FPM asserts that the sociopsychobiomedical paradigm informs the practice of all pain medicine at a fundamental level, and does not recognise 'interventional pain medicine' as a separate subspecialty. The faculty acknowledges that procedures with a sound rationale and robust evidence of efficacy have a place in the comprehensive care of patients suffering from acute, persistent or cancer pain. Specialist pain medicine physicians (SPMPs) who train in and practise pain medicine procedures should do so whilst maintaining the highest standards of care, in settings which fulfil the vision of comprehensive pain care that is wholly consistent with the multidisciplinary approach espoused by FPM.

Graduate outcome statement

An endorsed fellow is capable of providing unsupervised care encompassing the selection, performance and follow-up of procedures within the sociopsychobiomedical paradigm. This practitioner combines sound foundational knowledge, technical skills and clinical governance with an ethical and patient-centred approach to provide treatment of pain within the medical systems of Australia and New Zealand, as stated in the *Procedures in Pain Medicine Clinical Care Standard* (*PS11(PM)*).

Aim of the Procedures Endorsement Program curriculum

The mechanisms by which faculty endorsement is attained or maintained are specified in the FPM Procedures Endorsement Program Handbook and corresponding to by-law 20, FPM Procedures Endorsement Program. The purpose of this curriculum is to define the required learning, teaching and assessment of endorsees.

More specifically, the curriculum aims to:

- Articulate the scope of practice required by an SPMP proceduralist, including breadth and depth of knowledge, range of skills and professional behaviours necessary for quality patient care.
- Guide accredited procedural supervisors and other fellows involved in the training program with respect to suitable learning experiences for endorsees.
- Foster endorsees' self-directed learning by providing clear requirements.
- Promote regular and productive interaction between endorsees and accredited procedural supervisors, through formative workplace-based assessments and feedback.
- Provide consistency of standards and outcomes across different practice settings.
- Enable comparison with international training programs with respect to standards of experience, education and assessment.
- Provide a framework to inform the scope of continuing professional development activities.

Key sections of the curriculum

The key sections of the curriculum are:

1. Endorsed pain medicine procedures
2. Learning outcomes
   2.1. Generic learning outcomes
   2.2. Procedure-specific learning outcomes
3. Assessment Strategy

Section one outlines the principles guiding the faculty in selecting pain procedures for teaching and endorsement, and lists the selected procedures.

Section two outlines learning outcomes for pain medicine procedures. Generic learning outcomes (section 2.1) direct teaching and learning in relation to key aspects of pain medicine procedures within the context of a sociopsychobiomedical framework, and in line with *PS11(PM): Procedures in Pain Medicine Clinical Care Standard*. Procedure-specific learning outcomes (section 2.2) outline particular knowledge and technical skills relevant to discrete procedures.

To attain endorsement, endorsees will be expected to demonstrate competency in all generic learning outcomes, as well as in the specific learning outcomes relating to the procedures for which they seek endorsement.

Section three outlines the assessment strategy developed to support this curriculum. Workplace-based assessment tools have been developed to promote formative assessment of endorsees through direct observation and provision of timely and constructive feedback. The Procedures Endorsement Program Handbook provides further detail on the structure and use of applicable assessment tools.

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Section One
ENDORSED PROCEDURES IN PAIN MEDICINE

Principles in selecting procedures for endorsement

In a landscape of extremely variable clinical practice, where no consensus standards are underpinning the training of SPMPs performing pain procedures, the faculty sought to develop a quality training program that is scientifically and educationally sound, whilst enabling a balance of service provision and training.

Procedures that were selected for endorsement are:

- Established in practice.
- Supported by evidence.
- Able to be benchmarked.

It is important to note that the list of selected procedures is not comprehensive nor final. It will be reviewed regularly and may change over time, as more evidence is gathered for the clinical utility and harms of these and other procedures.

It is also important to note that faculty endorsement has no regulatory implications. The faculty does not suggest limiting the scope of practice to the procedures selected for endorsement, and endorsed fellows may practise and pursue training in other procedures as they wish. Credentialing in these procedures is outside the scope of faculty endorsement. Endorsed SPMPs are expected to stay up to date with the scientific evidence relevant to procedures they perform and adapt their procedural repertoire accordingly. SPMPs must be prepared to relinquish futile or harmful procedures, and to undertake training in new procedures as indicated by scientific and technological progress in the field.

Endorsed procedures in pain medicine

Selected procedures have been grouped into three categories according to the level of risk and skill involved. Some technically simpler procedures (in categories 1 or 2) are considered to be pre-requisites to more complicated procedures (in categories 2 or 3). Endorsees may commence training in complex procedures once they achieve a minimum level of competency in the pre-requisite procedures, as described below.

1.1 Category 1

Category 1 procedures:

- Are commonly performed.
- Present low risk of harm to patient in endorsee's hands.
- Involve needle only techniques.
- Do not entail minimum requirements for supervised practice during training.
- Competency may be attained relatively quickly.

There are no prerequisite mandatory competencies for endorsement in Category 1 procedures.

ID	Procedure	Mandatory competency[1]
1A	Cervical medial branch block	None
1B	Lumbar medial branch block	None

ID	Procedure	Mandatory competency[1]
1C	Lumbar transforaminal epidural injection	None
1D	Caudal epidural injection	None
1E	Sacroiliac joint injection	None

1.2 Category 2

Category 2 procedures:

- Are more technically demanding than Category 1 procedures.
- Present moderate risk of harm to patient in endorsee's hands.
- Entail minimum requirements for supervised practice during training.
- Are less commonly performed (which may require an extended period of supervision).

Note: the term "RF neurotomy" is used here to describe thermal lesioning.

ID	Procedure	Mandatory competency[1]
2A	Cervical sympathetic block	1A: Cervical medial branch block
2B	Lumbar sympathetic block	1B: Lumbar medial branch block 1C: Lumbar transforaminal epidural injection
2C	Coeliac plexus block	None
2D	Cervical medial branch radiofrequency neurotomy	1A: Cervical medial branch block
2E	Suprascapular radiofrequency procedures (thermal or pulsed)	None
2F	Lumbar medial branch radiofrequency neurotomy	1B: Lumbar medial branch block
2G	Sacroiliac joint radiofrequency neurotomy	1B: Lumbar medial branch block 1E: Sacroiliac joint injection
2H	Femoral and obturator nerve radiofrequency neurotomy	2F: Lumbar medial branch radiofrequency neurotomy
2I	Genicular nerve radiofrequency neurotomy	None
2J	Dorsal root ganglion pulsed radiofrequency treatment - thoracic and lumbar	1C: Lumbar transforaminal epidural injection

[1] Required level of competency in pre-requisite procedures is defined in section 2.2: procedure-specific learning outcomes.

1.3 Category 3

Category 3 procedures:

- Present the highest level of technical challenges of the endorsed procedures, and require more training to perform safely.
- Present a higher risk of harm to patient due to level of invasiveness and potential complications.
- Involve management of implantable devices.
- Training requires an extended period of exposure under supervision, including basic surgical skills.

ID	Procedure	Mandatory competency[1]
3A	Insertion of percutaneous epidural trial leads	1C: Lumbar transforaminal epidural injection 1D: Caudal epidural injection
3B	Implantation of permanent spinal neuromodulation system, non-DRG	3A: Insertion of percutaneous epidural trial leads 2J: Dorsal root ganglion pulsed radiofrequency treatment - thoracic and lumbar 1C: Lumbar transforaminal epidural injection
3C	Implantation of intrathecal drug delivery system	None
3D	Replacement of implantable pulse generator	3B: Implantation of permanent spinal neuromodulation system, non-DRG
3E	Revision of epidural leads	3B: Implantation of permanent spinal neuromodulation system, non-DRG 2J: Dorsal root ganglion pulsed radiofrequency treatment - thoracic and lumbar 1C: Lumbar transforaminal epidural injection
3F	Implantation of dorsal root ganglion (DRG) neuromodulation system	3A: Insertion of percutaneous epidural trial leads 3B: Implantation of permanent spinal neuromodulation system, non-DRG 2J: Dorsal root ganglion pulsed radiofrequency treatment - thoracic and lumbar 1C: Lumbar transforaminal epidural injection

Section Two
LEARNING OUTCOMES

2.1 Generic Learning Outcomes

Generic learning outcomes direct teaching and learning in relation to key aspects of pain medicine procedures within the context of a sociopsychobiomedical framework, and in line with *PS11(PM): Procedures in Pain Medicine Clinical Care Standard*.

An endorsed fellow will be able to:		
No.	Learning Outcome	Mapping to Clinical Care Standard Quality Statement (QS)
Background		
1.1	Discuss the role procedures may have for selected patients with chronic pain within a sociopsychobiomedical framework.	QS1. Triage and clinical assessment
1.2	Discuss the potential harms and/or limitations of procedures in patients with chronic cancer-related or non-cancer pain.	QS1. Triage and clinical assessment
1.3	Outline the elements of informed consent for procedures as per the Clinical Care Standard.	QS2. Patient preparation
1.4	Outline principles and specific protocols for patient preparation, especially management of peri-procedural anticoagulant therapy management relevant to neuraxial procedures.	QS2. Patient preparation
1.5	Discuss the guidelines for safe sedation for procedures as described in the Clinical Care Standard and ANZCA PS09: Guidelines on Sedation and/or Analgesia for Diagnostic and Interventional Medical, Dental or Surgical Procedures.	QS4. Sedation and anaesthesia
1.6	Outline principles and practice for ensuring radiation safety during procedures.	QS5. Imaging equipment and practice
1.7	Describe fundamental legal and ethical principles related to procedures, such as duty of care, medical negligence and regulatory framework for Australia and New Zealand.	QS6. Proceduralist

An endorsed fellow will be able to:		
No.	Learning Outcome	Mapping to Clinical Care Standard Quality Statement (QS)
1.8	Discuss the requirements for documentation in accordance with the Clinical Care Standard.	QS8. Documentation and communication
Assessment		
1.9	Conduct a sociopsychobiomedical assessment, to identify factors relevant to the consideration of performing a procedure as part of comprehensive pain management plan.	QS1. Triage and clinical assessment
Management		
1.10	Utilise training log and benchmark outcomes (i.e. audit and compare to best practice) to inform improvements to procedural practice.	QS6. Proceduralist
1.11	Outline the requirements for conducting procedures safely, in accordance with the Clinical Care Standard.	QS7. Procedural performance
1.12	Perform outcome assessment in accordance with the Clinical Care Standard.	QS9. Outcome assessment
1.13	Develop and implement a post-procedure care plan, in accordance with the Clinical Care Standard, including: • assessment and documentation of procedure outcomes • management of any associated complications • management of appropriate rehabilitation efforts • communication and hand-over of care as appropriate.	QS10. Post-procedure care

Table 2.1

2.2 Procedure-Specific Learning Outcomes

Procedure-specific learning outcomes outline particular knowledge and technical skills relevant to discrete procedures.

Table 2.2 below outlines learning outcomes that apply to all procedures, however details may vary from procedure to procedure. This table maps these learning outcomes to the clinical care standard.

An endorsed fellow will be able to:		
No.	Learning Outcome	Mapping to Clinical Care Standard Quality Statement (QS)
Background		
2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure.	QS5. Imaging equipment and practice
2.2	Describe anatomy relevant to the learned procedures.	QS6. Proceduralist
2.3	Critically evaluate the evidence for the learned procedure.	QS6. Proceduralist
Assessment		
2.4	Interpret investigations in the context of patient selection for procedures.	QS1. Triage and clinical assessment
Management		
2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard.	QS3. Safe and sufficient facilities
2.6	Independently perform the relevant procedure.	QS7. Procedural performance
2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard.	QS10. Post-procedure care

Table 2.2

2.2.1 Category 1 procedures

1A Cervical medial branch block

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			
1A.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Fluoroscopic positioning to ensure adequate view of anatomical target points to safely perform the procedure. • Detailed radiological appearance of anatomical target points on AP and lateral views for safely performing cervical medial branch blocks. • Radiological appearance of unsafe needle placement such as intraneural or epidural placement that may lead to complications. • Radiation safety and minimisation.	
1A.2.2	Describe anatomy relevant to the learned procedures	• Surgical anatomy of cervical medial branches supplying the corresponding zygapophysial joints that need to be blocked. • Anatomical basis of potential complications that may be encountered particularly with different techniques (postero-lateral, anterior, lateral).	• Third occipital nerve block (TON) for C2/3 joint is included in cervical nerve anatomy.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
1A.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of the procedure. • Critical application of plausible clinical rationale for patient selection. • Clinical evidence and rationale of performing cervical medial branch blocks as a diagnostic test for zygapophysial joint pain in an appropriate cohort of patients. • False positive and false negative diagnostic blocks from literature review and potential ways to mitigate this.	
Assessment			
1A.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for contraindications. • Correlation of imaging and diagnostic injection response.	• Correlation between imaging and diagnostic injection response Is inconsistent.
Management			
1A.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure and management of complications. • Role of sedation of patients in medial branch blocks.	• Potential complications include but are not limited to: vasovagal episodes, intravascular injection, spinal block, dizziness, worsening of pain.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
1A.2.6	Independently perform the relevant procedure	• Correct positioning of patient and fluoroscopy to enable safe access to relevant target points for medial branch block. • Sound sterile technique. • Consistently achieving adequate position of needle. • Recognising incorrect placement and appropriate remediation. • Reaching target accurately with minimal number of needle passes and radiation exposure. • Appropriate choice of local anaesthetic, including strength and volume • Minimal use of local anaesthetic elsewhere apart from blocking medial branches to minimise false positive. • Assessment of block efficacy pre and post procedure as per unit protocol (if relevant). • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	• Third occipital nerve block (TON) for C2/3 joint is included in cervical nerve anatomy.
1A.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate after-care both immediately after procedure and in follow-up (particularly in assessing block efficacy and proceeding to radiofrequency treatment).	

1B Lumbar medial branch block

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			
1B.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Fluoroscopic positioning to ensure adequate view of anatomical target points and to obtain best medial branch and L5 dorsal root access. • Detailed radiological appearance of anatomical target points on multiplane views for safe and accurate needle placement. • Accurate identification of spinal level including when anatomical variations exist. • Radiological appearance of unsafe needle placement that can potentially lead to complications. • Radiation safety and minimisation.	
1B.2.2	Describe anatomy relevant to the learned procedures	• Innervation of lumbar facet joints, including identification of the innervation for each facet joint. • Applied anatomy of the medial branch nerve. • Anatomical basis for potential complications that may be encountered, including but not limited to anatomical variations that alter the course of MB or access to it such as sacralisation, large osteophytes. • Common referral patterns of lumbar facets.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
1B.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of the procedure. • Critical analysis of literature regarding topics including the definition of a positive diagnostic block, and the requirement for multiple diagnostic blocks prior to proceeding to RF neurotomy. • Critical application of plausible clinical rationale for patient selection.	• Awareness of different guidelines e.g. SIS, and differing requirements depending on patient context including 3rd party compensable.
Assessment			
1B.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for contraindications. • Evaluation of spinal imaging as to implications for MBB and RF – such as spinal hardware. • Role of SPECT CT investigation results in regards to patient selection.	• Awareness and critical discussion of differing guidelines re spinal interventions and anticoagulation such as ASRA, SIS. • Endorsees need to be screening for CI to RF if looking to MBB. • Contrast allergy.
Management			
1B.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure and management of complications. • Role of sedation of patients in medial branch blocks.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
1B.2.6	Independently perform the relevant procedure	• Correct positioning of patient and fluoroscopy to enable safe access to relevant target points for medial branch block. • Sound sterile technique. • Identification of appropriate contrast pattern if used. • Appropriate choice of local anaesthetic, including strength and volume. • Consistently achieving adequate position of needle. • Recognising incorrect needle placement and remediation. • Reaching target accurately with minimal number of needle passes and radiation exposure. • Assessment of block efficacy pre and post procedure as per unit protocol (if relevant). • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	
1B.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate after-care both immediately after procedure and in follow-up.	

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1C Lumbar transforaminal epidural injection

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			
1C.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Fluoroscopic positioning to ensure adequate view of anatomical target points to safely perform the procedure. • Detailed radiological appearance of anatomical target points on multiplane views for safe and accurate needle placement in the foramen. • Radiological landmarks to access lumbar neural foramen. • Subpedicular/supraneural and infraneural approaches. • Live screening and digital subtraction angiography (DSA) and appropriate contrast flow. • Radiological appearance of unsafe needle placement that can potentially lead to complications. • Radiation safety and minimisation.	• Rationale for choice of approach depending on patient anatomy, including sacral (S1) foramen. • Provide a rationale for appropriate use of DSA.
1C.2.2	Describe anatomy relevant to the learned procedures	• Anatomy of lumbar neural foramen with particular reference to artery of Adamkiewicz and its sited variabilities. • Anatomical basis for potential complications that may be encountered.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
1C.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of transforaminal epidural injections. • Critical application of plausible clinical rationale for patient selection. • Professional literature regarding safety of particulate steroids for epidural injections.	
Assessment			
1C.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for contraindications, including analysis of lumbar MRIs to decide when transforaminal epidural is inappropriate.	
Management			
1C.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure and management of complications. • Depth of sedation as related to risk of intraneural injections.	• Complications include but are not limited to bleeding/infection, reduced mobility due to motor blockade, pain flare, intraneural injection, epidural puncture, intradiscal puncture.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
1C.2.6	Independently perform the relevant procedure	• Correct positioning of patient and fluoroscopy to enable safe access to neural foramen. • Sound sterile technique. • Consistently achieving adequate position of needle. • Appropriate contrast choice to confirm positioning. • Recognising incorrect needle placement and remediation. • Reaching target accurately with minimal number of needle passes and radiation exposure. • Appropriate choice of local anaesthetic and steroid including strength and volume. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	
1C.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate aftercare both immediately post procedure and in follow up.	

1D Caudal epidural injection

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			
1D.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Fluoroscopic positioning to ensure adequate view of anatomical target points to safely perform the procedure. • Detailed radiological appearance of sacral-coccygeal hiatus entry point on AP and lateral views for safely performing the procedure. • Radiological appearance of unsafe needle placement that can potentially lead to complications. • Radiation safety and minimisation.	
1D.2.2	Describe anatomy relevant to the learned procedures	• Surgical anatomy of sacral coccygeal hiatus. • Normal anatomical variation of the caudal hiatus. • Anatomical basis for potential complications that may be encountered.	
1D.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of caudal epidural injection. • Critical application of plausible clinical rationale for patient selection. • Professional literature regarding safety of particulate steroids for epidural injections.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Assessment			
1D.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for contraindications.	
Management			
1D.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure and management of complications.	• Complications include but are not limited to: minor bleeding/infection, epidural abscess, epidural haematoma, intravascular injection (if catheter used), urinary retention.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
1D.2.6	Independently perform the relevant procedure	• Correct positioning of patient and fluoroscopy to enable safe access to sacral coccygeal hiatus. • Sound sterile technique. • Consistently achieving adequate position of needle. • Appropriate contrast choice to confirm positioning. • Recognising incorrect needle placement and remediation. • Reaching target accurately with minimal number of needle passes and radiation exposure. • Appropriate choice of local anaesthetic and steroid including strength and volume. • Potential use of epidural catheter for accurate delivery of medication (requires contrast). • Correct positioning of patient after the procedure to minimise risk of sacral nerve block. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
1D.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate aftercare both immediately post procedure and in follow up.	

1E Sacroiliac joint injection

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			
1E.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Fluoroscopic positioning to ensure adequate view of anatomical target points to safely perform the procedure. • Detailed radiological appearance of SIJ on multiplane views for safe and accurate needle placement. • Radiological appearance of unsafe needle placement that can potentially lead to complications. • Radiation safety and minimisation.	• Correctly identifies posterior aspect of joint and can align.
1E.2.2	Describe anatomy relevant to the learned procedures	• Capacity of SIJ. • Innervation of SIJ and posterior structures. • Normal anatomical variation of the SIJ. • Anatomical basis of complications such as sciatic nerve block or sacral nerve block.	• Awareness of potential for deficient anterior joint capsule and spread to sciatic nerve.
1E.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of the procedure. • Critical application of plausible clinical rationale for patient selection. • Critical appraisal of literature regarding prevalence of SIJ in CLBP. • Critical appraisal of literature regarding SIJ complex diagnosis and the role of SIJ injection.	• Intra-articular vs. intra-articular with posterior ligament injection.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Assessment			
1E.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for contraindications.	• awareness and critical discussion of differing guidelines re spinal interventions and anticoagulation such as ASRA, SIS.
Management			
1E.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure and management of complications.	• Complications rare but as with all injections with contrast, allergy anaphylaxis management, vasovagal management.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
1E.2.6	Independently perform the relevant procedure	• Correct positioning of patient and fluoroscopy to enable safe access to relevant target points. • Correctly identifies when arthrogram has been obtained. • Sound sterile technique. • Consistently achieving adequate position of needle. • Recognising incorrect needle placement and remediation. • Reaching target accurately with minimal number of needle passes and radiation exposure. • Appropriate amount and selection of injectate for joint. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	
1E.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate aftercare both immediately post procedure and in follow up.	

2.2.2 Category 2 procedures

2A Cervical sympathetic block
Pre requisite is **1A: cervical medial branch block**, performed at a minimum level of "endorsee primarily responsible for procedure" (Supervision level 3)

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			
2A.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Use of radiological guidance with fluoroscopy and/or ultrasound to ensure accuracy of the block. • Recognizing in real time the radiological features required to safely perform the block. • Radiation safety and minimisation.	• Recommended that endorsee be familiar with both ultrasound and fluoroscopic techniques.
2A.2.2	Describe anatomy relevant to the learned procedures	• Surgical anatomy of the stellate ganglion and common anatomical variations. • Anatomical basis of complications that may be encountered during the block. • Anatomical basis of the clinical tests to assess adequacy of the block (Horner's Syndrome, skin temperature).	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
2A.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of cervical sympathetic block. • Critical application of plausible clinical rationale for patient selection. • Gaps in the current literature needing further study.	• Main indication of sympathetically mediated pain is one of many possible uses for cervical sympathetic block.
Assessment			
2A.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for contraindications, such as AV block on ECG, which is a contraindication.	• Investigations required to exclude contraindications, as CRPS is a clinical diagnosis.
Management			
2A.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure and management of rare but serious complications.	• Complications include but are not limited to: recurrent laryngeal nerve or phrenic nerve block, brachial plexus block, pneumothorax, generalized seizure due to injection into vertebral artery, total spinal block, paroxysmal hypertension, paratracheal haematoma.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
2A.2.6	Independently perform the relevant procedure	• Appropriate choice of radiological guidance. • Sound sterile technique. • Correct positioning of patient to enable safe access to relevant target points. • Consistently achieving adequate position of needle in plane of the stellate ganglion. • Appropriate choice of local anaesthetic, including strength and volume. • Accurate assessment of adequacy of block by clinical testing. • Safe troubleshooting of difficult needle placement and recover position. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	• Approach may be C6 ultrasound or fluoroscopic technique. Oblique C7 approach not required for endorsement as advanced skill.
2A.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate aftercare both immediately post procedure and in follow up.	

2B Lumbar sympathetic block
Pre requisite are **1B: lumbar medial branch block** and **1C: lumbar transforaminal epidural injection**, performed at a minimum level of "endorsee primarily responsible for procedure" (Supervisionlevel 3)

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge of and technical proficiency in:	Comments
Background			
2B.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Use of radiological guidance with fluoroscopy to ensure accuracy of the block. • Recognizing in real time the radiological features required to safely perform the block. • Radiation safety and minimisation.	
2B.2.2	Describe anatomy relevant to the learned procedures	• Surgical anatomy of the lumbar sympathetic chain and common anatomical variations. • Anatomical basis of complications that may be caused during the block. • Anatomical basis of the clinical tests to assess adequacy of the block.	
2B.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of lumbar sympathetic block. • Critical application of plausible clinical rationale for patient selection. • Gaps in the current literature needing further study.	• Main indication of sympathetically mediated pain is one of many possible uses for LSB.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge of and technical proficiency in:	Comments
Assessment			
2B.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for contraindications. • Evaluation of renal tract by history and imaging to ensure normal anatomy prior to proceeding.	• Investigations required to exclude contraindications, as CRPS is a clinical diagnosis.
Management			
2B.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure and management of rare but serious complications.	• Complications include but are not limited to: inadvertent ureter or renal puncture, vascular puncture, neuralgia. • A range of needle sizes should be available for body habitus of patient.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge of and technical proficiency in:	Comments
2B.2.6	Independently perform the relevant procedure	• Sound sterile technique. • Correct positioning of patient to enable safe access to relevant target points. • Consistently achieving adequate position of needle in plane of the lumbar sympathetic chain as documented by appropriate contrast. • Appropriate choice of local anaesthetic, including strength and volume. • Accurate assessment of adequacy of block by clinical testing. • Safe troubleshooting of difficult needle placement and recover position. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	
2B.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate aftercare both immediately post procedure and in follow up.	

2C Coeliac Plexus Block

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			
2C.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Fluoroscopic landmarks and intraoperative views required for performance of coeliac plexus block. • Radiological appearance of complications caused during coeliac plexus block. • Radiation safety and minimisation.	
2C.2.2	Describe anatomy relevant to the learned procedures	• Surgical anatomy of the sympathetic chain and the coeliac plexus in particular detail. • Anatomical basis of complications that may be encountered during the block.	
2C.2.3	Critically evaluate the evidence for procedures	• Level I Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of coeliac plexus block. • Critical application of plausible clinical rationale for patient selection.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Assessment			
2C.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for contraindications. • Assessment from MRI/CT findings whether coeliac plexus block is appropriate and safe.	• Ability to interpret imaging of the upper retroperitoneum to exclude patients with tumour invasion along the needle path, anaomalous location of coeliac trunk, abdominal sepsis, bowel obstruction, or aortic aneurysm.
Management			
2C.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure and management of complications. • Enumeration of required equipment, including appropriate needles and imaging modality to safely perform the block.	• Complications include but are not limited to: aortic or retroperitoneal bleeding, bowel obstruction or perforation, severe hypotension, spinal block and pneumothorax.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
2C.2.6	Independently perform the relevant procedure	• Correct positioning and preparation of patient to enable safe access to relevant target points. • Appropriate choice of approach. • Sound sterile technique. • Safe placement of needle using chosen approach. • Selection and administration of an appropriate injectate – either local anaesthetic or neurolytic solution. • Accurate identification of successful placement of injectate in real time. • Accurate identification when a successful block has occurred. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	• Posterior approaches recommended if CT guidance is not used.
2C.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate aftercare both immediately post procedure and in follow up. • Appropriate liaison with oncology, gastroenterology or palliative care teams once the injection has been performed.	

2D Cervical medial branch radiofrequency neurotomy
Pre requisite is **1A: cervical medial branch block**, performed at a minimum level of "endorsee primarily responsible for procedure" (Supervision level 3)

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			
2D.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Fluoroscopic positioning to ensure adequate view of anatomical target points of medial branches to safely perform the procedure. • Detailed radiological appearance of anatomical target points on AP and lateral views for safe and accurate placement of RF needle/ thermocouple. • Radiological appearance of unsafe RF needle/thermocouple placement such as intraneural or epidural/intraspinal placement that may lead to complications. • Radiation safety and minimisation.	
2D.2.2	Describe anatomy relevant to the learned procedures	• Surgical anatomy of cervical medial branch supplying the corresponding zygapophysial joints that need to be treated. • Anatomical basis of potential complications that may be encountered, including potential for neuritis C2/3.	• Third occipital nerve (TON) for C2/3 joint is included in cervical nerve anatomy.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
2D.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of cervical medial branch radiofrequency neurotomy. • Critical application of plausible clinical rationale for patient selection after diagnostic medial branch blocks. • Evidence regarding administration of corticosteroids post lesion.	
Assessment			
2D.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other peri-operative risks.	
Management			
2D.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure, including selection of appropriate RF settings, and management of complications.	• Complications include but are not limited to: vasovagal, systemic toxicity of excessive local anaesthetics, infection, haematoma, muscular spasm, cutaneous allodynia, nerve and spinal injuries from neurotomy (wrong target).

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
2D.2.6	Independently perform the relevant procedure	• Correct positioning of patient and fluoroscopy to enable safe access to relevant target points. • Sound sterile technique. • Accurate and safe placement of RF needle/thermocouple based on fluoroscopy images (AP & lateral), confirmed with electrical stimulation with appropriate voltage & frequency stimulation. • Recognising incorrect placement and appropriate remediation. • Delivery of thermo-coagulative radiofrequency treatment using appropriate settings. • Consider post procedural corticosteroids to reduce neuritis from thermal coagulative neurotomy. • Safe troubleshooting of difficult needle placement and recover position. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	
2D.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate after-care both immediately after procedure and in follow-up (particularly in assessing block efficacy and proceeding to radiofrequency treatment). • Collection and interpretation appropriate medium-term follow up outcome data.	

2E Suprascapular radiofrequency procedures (thermal or pulsed)

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			

2E.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Correct positioning of patient to ensure adequate view of anatomical target points to safely perform the procedure.
		• Detailed radiological or ultrasonic appearance of anatomical target points on multiplane views for safe and accurate RF cannula placement.
		• Radiation safety and minimisation.
			• Patient positioning:
			  ○ With Fluoroscopy, place patient on the fluoroscopy table in the prone position with arm tucked to side.
			  ○ With US, patient in a lateral decubitus position with affected shoulder on the upper side.
			• Place C-arm oblique about 10-20° and angle cephalo-caudad about 10-20°and identify suprascapular notch.
			• US improves quality because it provides direct visualization of nerve; provides a totally radiation-free, more available, and less expensive option, and takes less time).

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
2E.2.2	Describe anatomy relevant to the learned procedures	• Surgical anatomy of the suprascapular nerve. • Anatomy of the scapula especially the spine and the suprascapular fossa and suprascapular notch. • Anatomical basis for potential complications that may be encountered.	
2E.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of the procedure. • Advantages and disadvantages regarding use of pulsed RF techniques when compared to conventional thermal techniques. • Critical application of plausible clinical rationale for patient selection, considering adhesive capsulitis, rotator cuff syndrome or impingement syndrome of shoulder.	• Studies of Pulsed RF are often inadequately powered, but pulsed RF lessens chances of neural damage, and minimizes neuritis. • Conventional thermocoagulation with a neurolysis or neurectomy may extend duration of pain relief, but these methods may cause irreversible paralysis in supraspinatus and infraspinatus muscles.
Assessment			
2E.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors.	• Consider Contraindications for RF.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Management			
2E.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure, including selection of appropriate RF settings, and management of complications.	• •Complications include but are not limited to: pneumothorax while targeting SSN, and arterial injection as SSN lies in close proximity to arterial vessels at the target site.
2E.2.6	Independently perform the relevant procedure	• Correct positioning of patient to enable safe access to relevant target points. • Obtaining appropriate multiplane imaging or ultrasound studies to assist safe placement of the RF needle. • Sound sterile technique. • Accurate and safe placement of the needle and testing using voltage stimulation as well as radiological criteria for correct placement. • Recognising incorrect placement and appropriate remediation. • Delivery of RF treatment using appropriate parameters based on published evidence. • Safe troubleshooting of difficult needle placement and recover position. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	• Appropriate after care clear instructions and how to access after care if needed.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
2E.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate aftercare both immediately post procedure and in follow up. • Collection and interpretation of appropriate medium-term follow up outcome data.	

2F Lumbar medial branch radiofrequency neurotomy
Pre requisite is **1B: lumbar medial branch block**, performed at a minimum level of "endorsee primarily responsible for procedure" (Supervision level 3)

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			
2F.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Fluoroscopic positioning to ensure adequate view of anatomical target points of medial branches to safely perform the procedure. • Detailed radiological appearance of anatomical target points on multiplane views for safe and accurate placement of RF cannula. • Radiological appearance of unsafe RF cannula placement. • Radiation safety and minimisation.	• Explain how this is different from appearances of needle in lumbar medial branch block. • Radiological appearance can be different depending on the RF cannula that is used.
2F.2.2	Describe anatomy relevant to the learned procedures	• Innervation of lumbar facet joints, including identification of the innervation for each facet joint. • Applied anatomy of medial branch nerve. • Anatomical basis for potential complications that may be encountered, including but not limited to anatomical variations that alter the course of MB or access to it such as sacralisation, large osteophytes. • Common referral patterns of lumbar facets.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
2F.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of the procedure. • Critical appraisal of disparate views of RF lumbar spine in literature (identifying issues of patient selection, technique, patient grouping). • Critical application of plausible clinical rationale for patient selection. • Guidelines for RF protocols. •	• Consider NICE guidelines, SIS, and others. • Positive block v repeat RF.
Assessment			
2F.2.4	Interpret investigations in the context of patient selection for procedures	• Demonstrate appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for contraindications to RF. • Evaluation of spinal imaging as to implications for MBB and RF – such as spinal hardware.	
Management			
2F.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure, including selection of appropriate RF settings, and management of complications.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
2F.2.6	Independently perform the relevant procedure	• Correct positioning of patient to enable safe access to relevant target points. • Obtaining appropriate multiplane imaging studies to assist safe placement of the RF needle. • Sound sterile technique. • Accurate and safe placement of the needle and testing using voltage stimulation as well as radiological criteria for correct placement. • Recognising incorrect placement and appropriate remediation. • delivery of RF treatment using appropriate parameters based on published evidence. • Safe troubleshooting of difficult needle placement and recover position. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	• Discuss biophysics of radiofrequency including variation in needle gauge, active tip length, temperature and time on lesion generation. • Spinal hardware and implications for RF - position, temperature. • Post procedural pain anticipated and managed. • Appropriate after care needs to include clear instructions/communication after procedure, (As per clinical care standard).
2F.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate aftercare both immediately post procedure and in follow up. • Collection and interpretation of appropriate medium-term follow up outcome data.	

2G Sacroiliac joint radiofrequency neurotomy
Pre requisites are **1B: lumbar medial branch block** and **1E: SIJ injection**, performed at a minimum level of "endorsee primarily responsible for procedure" (ZwisSupervision level 3)

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			
2G.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Fluoroscopic positioning to ensure adequate view of anatomical target points to safely perform the procedure. • Detailed radiological appearance of anatomical target points on multiplane views for safe and accurate placement of RF cannula. • Radiological appearance of unsafe RF cannula placement. • Radiation safety and minimisation.	• Identifies sacral foramen. • Multiple RF techniques described.
2G.2.2	Describe anatomy relevant to the learned procedures	• Innervation to the sacroiliac joint. • Nerves ablated in this procedure. • Variation between anterior and posterior sensory nerve supply to the sacroiliac joint. • Anatomical basis for potential complications that may be encountered.	• Endorsee appreciates not denervating the SIJ joint.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
2G.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of SIJ RF and differing RF protocols. • Critical application of plausible clinical rationale for patient selection.	• Reported outcomes less than lumbar RF, endorsees should be able to critically discuss why. • Role of diagnostic lateral root block pre RF v SIJ IA only.
Assessment			
2G.2.4	Interpret investigations in the context of patient selection for procedures	• Demonstrate appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for contraindications to RF.	
Management			
2G.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure, including selection of appropriate RF settings, and management of complications.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
2G.2.6	Independently perform the relevant procedure	• Correct positioning of patient to enable safe access to relevant target points • Obtaining appropriate multiplane imaging studies to assist safe placement of the RF needle. • Sound sterile technique. • Accurate and safe placement of the needle and testing using voltage stimulation as well as radiological criteria for correct placement. • Recognising incorrect placement and appropriate remediation. • Delivery of RF treatment using appropriate parameters based on published evidence. • Safe troubleshooting of difficult needle placement and recover position. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	• bipolar v monopolar techniques and understands radiofrequency biophysics re same. • number of practitioners will ablate one side only at a time for patient comfort. • Appropriate after care needs to include clear instructions/communication after procedure, (As per clinical care standard) – Post procedural pain flare anticipated/management in place.
2G.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate aftercare both immediately post procedure and in follow up. • Collection and interpretation of appropriate medium-term follow up outcome data.	

2H Femoral and obturator nerve RF neurotomy
Pre requisite is **2F: lumbar medial branch RFN**, performed at a minimum level of "endorsee primarily responsible for procedure" (ZwisSupervision level 3)

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate knowledge and technical proficiency in:	Comments
Background			
2H.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Fluoroscopic positioning to ensure adequate view of articular branches of femoral and obturator nerves to perform the procedure. • Detailed radiological appearance of anatomical target points on multiplane views for safe and accurate placement of RF cannula. • Radiological appearance of unsafe RF cannula placement. • Radiation safety and minimisation.	
2H.2.2	Describe anatomy relevant to the learned procedures	• Innervation of the hip joint and in particular comment on variability of articular branches of the femoral and obturator nerves. • Surgical anatomy of the femoral artery and nerve with regards to safely approaching the obturator nerve branches. • Critical appraisal of different RF neurotomy protocols in terms of capture of articular branches of the femoral and obturator nerves. • Anatomical basis for potential complications that may be encountered.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate knowledge and technical proficiency in:	Comments
2H.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of RFN of articular branches of the femoral and obturator nerves. • Critical application of plausible clinical rationale for patient selection.	
Assessment			
2H.2.4	Interpret investigations in the context of patient selection for procedures	• Demonstrate appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for contraindications to RF.	
Management			
2H.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure, including selection of appropriate RF settings, and management of complications including providing sustained femoral artery pressure.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate knowledge and technical proficiency in:	Comments
2H.2.6	Independently perform the relevant procedure	• Correct positioning of patient in supine to get lateral view and enable safe access to relevant target points. • Obtaining appropriate multiplane imaging studies to assist safe placement of the RF needle. • Sound sterile technique. • Accurate and safe placement of the needle in either bipolar or unipolar configuration depending on patient factors, and testing using voltage stimulation as well as radiological criteria for correct placement. • Recognising incorrect placement and appropriate remediation. • Delivery of RF treatment using appropriate parameters based on published evidence. • Safe troubleshooting of difficult needle placement and recover position. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	• Appropriate after care needs to include clear instructions regarding late complications of femoral artery bleeding and the need for restricted activity for 24 hours.
2H.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate aftercare both immediately post procedure and in follow up. • Collection and interpretation of appropriate medium-term follow up outcome data.	

2I Genicular nerve radiofrequency neurotomy

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			
2I.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Fluoroscopic positioning to ensure adequate view of genicular nerves to perform the procedure. • Ability to identify true AP and lateral views. • Detailed radiological appearance of anatomical target points on multiplane views for safe and accurate placement of RF cannula. • Radiological appearance of unsafe RF cannula placement. • Radiation safety and minimisation.	• Recent studies demonstrating most common placement may need to be altered. • See 2.3 as well.
2I.2.2	Describe anatomy relevant to the learned procedures	• Innervation of the knee and in particular comment on variability of genicular nerve branches. • Critical appraisal of different RF neurotomy protocols in terms of capture of genicular nerves. • Anatomical basis for potential complications that may be encountered.	
2I.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of RFN of genicular nerves. • Critical application of plausible clinical rationale for patient selection, including place of genicular nerve block.	• Endorsee should identify literature predominantly in osteoarthritis of the knee, be aware of SR. • Discuss genicular nerve block benefits/limitations.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Assessment			
2I.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for factors that increase risk and contraindications to RF.	• Includes to the application radiofrequency.
Management			
2I.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure, including selection of appropriate RF settings, and management of complications.	• Be able to discuss biophysics of radiofrequency including variation in needle gauge, active tip length, temperature and time on lesion generation.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
2I.2.6	Independently perform the relevant procedure	• Correct positioning of patient to get lateral view and enable safe access to relevant target points. • Obtaining appropriate multiplane imaging studies to assist safe placement of the RF needle. • Sound sterile technique. • Accurate and safe placement of the needle and testing using voltage stimulation as well as radiological criteria for correct placement. • Recognising incorrect placement and appropriate remediation. • Delivery of RF treatment using appropriate parameters based on published evidence. • Safe troubleshooting of difficult needle placement and recover position. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	• Appropriate after care needs to include clear instructions/communication after procedure, (As per clinical care standard) – Post procedural pain flare anticipated/management in place.
2I.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate aftercare both immediately post procedure and in follow up. • Collection and interpretation of appropriate medium-term follow up outcome data.	

2J Dorsal root ganglion pulsed radiofrequency treatment - thoracic and lumbar
Pre requisite is **1C: lumbar transforaminal epidural injection**, performed at a minimum level of "endorsee primarily responsible for procedure" (Supervision level 3)

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			
2J.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Fluoroscopic positioning to ensure adequate view of thoracic and lumbar exit foramina, and the relationship of this to the dorsal root ganglion, to perform the procedure. • Detailed radiological appearance on multiplane views for safe and accurate placement of RF cannula within the exit foramen at both thoracic and lumbar levels. • Radiological appearance of unsafe RF cannula placement, including intraneural or intra-vascular needle placement. • Radiation safety and minimisation.	
2J.2.2	Describe anatomy relevant to the learned procedures	• Surgical anatomy of the dorsal root ganglia in the thoracic and lumbar regions, necessary for safe needle placement. • Anatomical basis for potential complications that may be encountered.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
2J.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of pulsed radiofrequency techniques in the dorsal root ganglion. • Critical application of plausible clinical rationale for patient selection.	• Where definitive evidence of the role of PRF is lacking, endorsees must be able to articulate a safe and rational approach to using this procedure, which limits risk and maximises patient utility. • Endorsees require knowledge of the biophysics of radiofrequency to adequately cover this learning objective.
Assessment			
2J.2.4	Interpret investigations in the context of patient selection for procedures	• Demonstrate appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for contraindications to RF.	
Management			
2J.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure, including selection of appropriate RF settings, and management of complications.	• Complications include but are not limited to: pneumothorax, spinal block, intraneural injection, intravascular injection, epidural haematoma and embolisation of the spinal cord at the thoracic level.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
2J.2.6	Independently perform the relevant procedure	• Correct positioning of patient to enable safe access to relevant target points. • Obtaining appropriate multiplane imaging studies to assist safe placement of the RF needle. • Sound sterile technique. • Accurate and safe placement of the needle and testing using voltage stimulation as well as radiological criteria for correct placement. • Recognising incorrect placement and appropriate remediation. • Delivery of pulsed RF treatment using appropriate parameters based on published evidence. • Safe troubleshooting of difficult needle placement and recover position. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	
2J.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate aftercare both immediately post procedure and in follow up. • Collection and interpretation of appropriate medium-term follow up outcome data.	

2.2.3 Category 3 procedures

3A Insertion of percutaneous epidural trial leads
Pre requisites are **1C: lumbar transforaminal epidural injection** and **1D: caudal epidural injection**, performed at a minimum level of "endorsee primarily responsible for procedure" (Supervision level 3)

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			
3A.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Fluoroscopic positioning to ensure adequate view of anatomical target points to safely pass leads into the epidural space at the appropriate level. • Detailed radiological appearance of anatomical target points on multiplane views for safe and accurate leads placement. • Radiological appearance of inadequate or dangerous placement of leads. • Radiation safety and minimisation.	• Adequate intra-operative imaging includes confirmation in two planes that the leads are in the posterior epidural space.
3A.2.2	Describe anatomy relevant to the learned procedures	• Surgical anatomy of the epidural space at the lumbar, thoracic and cervical levels, including common variations and changes due to prior surgery or disease states. • Anatomical basis of potential complications that may be encountered particularly with different epidural approaches (postero-lateral, anterior, lateral).	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
3A.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of trials of neuromodulation in an appropriate cohort of patients. • Evidence supporting the predictive value of trial periods of stimulation with different neuromodulation modalities. • Critical application of plausible clinical rationale for patient selection.	
Assessment			
3A.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for contraindications for attempted trials of neuromodulation, including interpretation of radiological findings of post-arachnoiditis changes or postoperative changes.	• Refer to relevant Neurostimulation Appropriateness Consensus Committee (NACC) safety guidelines.
Management			
3A.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure and provision of safe management of complications.	• Complications include but are not limited to: dural puncture or tears, spinal block, epidural haematoma, worsening of pain. • Insertion of percutaneous epidural trials leads outside of an operating theatre is not recommended.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
3A.2.6	Independently perform the relevant procedure	• Correct positioning of patient and fluoroscopy to enable safe access to epidural space and externalization of leads. • Sound sterile technique. • Consistently achieving adequate position of Tuohy needle in epidural space. • Recognising incorrect needle placement and remediation. • Reaching target accurately with minimal number of needle passes and radiation exposure. • Safe handling of initial passage of epidural leads into position using fluoroscopic guidance. • Recognising and safely troubleshooting malpositioning of leads during placement. • Safe tunnelling and externalize leads. • Appropriate surgical wound closures, including sound suture technique if used. • Conducting or supervising on-table sensory testing and interpreting patient feedback in relation to adequacy of lead position. • Safely securing the externalized leads for the trial and supervise connection to EPG unit. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	• Consistent needle placement includes mastery of interlaminar epidural approach using appropriate 'loss of resistance' technique – this technique may need to be learned ab initio for endorsees who do not have training in anaesthesia.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
3A.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate aftercare both immediately post procedure and in follow up. • Safe supervision and correct interpretation of the clinical course of the trial period, in collaboration with the company representative, patient, and practice staff. • Safe removal of trial leads at the end of the trial period and provision of appropriate aftercare. • Recognising when to abort neuromodulation trial due to potential infection, complication or adverse reaction by patient. • Arranging for appropriate specialist backup in the event of complications, e.g. infectious disease physician or neurosurgeon. • Appropriate documentation of clinical course and final outcome of neuromodulation trial.	

3B Implantation of permanent spinal neuromodulation system, non-DRG
Pre requisites **1C: Lumbar transforaminal epidural injection**, **2J: Dorsal root ganglion pulsed radiofrequency treatment - thoracic and lumbar** and **3A: Insertion of percutaneous epidural trial leads**, performed at a minimum level of "endorsee primarily responsible for procedure" (Supervision level 3)

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			
3B.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Fluoroscopic positioning to ensure adequate view of anatomical target points to safely pass leads into the epidural space at the appropriate level. • Detailed radiological appearance of anatomical target points on multiplane views for safe and accurate leads placement. • Radiological appearance of inadequate or dangerous placement of leads during the procedure. • Interpretation if post-implantation radiographs to detect malpositioning of componentry or hardware complications such as lead breakage.	• Adequate intra-operative imaging includes confirmation in two planes that the leads are in the posterior epidural space.
3B.2.2	Describe anatomy relevant to the learned procedures	• Surgical anatomy of the epidural space at the lumbar, thoracic and cervical levels, including common variations and changes due to prior surgery or disease states. • Anatomical basis of potential complications that may be encountered particularly with different epidural approach techniques (postero-lateral, anterior, lateral). • Surgical anatomy of IPG implantation site (pocket) including relevant tissue planes to be recognized, suitable sites for creation and importance of achieving haemostasis.	• If endorsee does not intend to create their own pockets, this anatomical knowledge is still required.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
3B.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of different types of componentry and stimulation patterns, including knowledge of the major literature justifying each choice. • Critical analysis of gaps in the current neuromodulation evidence and outlining the types of research needed to provide more definitive information to fill these gaps. • Role of clinical registry data in improving patient safety and monitoring device and operator performance.	• Critical evaluation includes description of sham vs placebo controls, crossover effect and influence of industry sponsored research.
Assessment			
3B.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for contraindications for attempted trials of neuromodulation, including interpretation of radiological findings of post-arachnoiditis changes or postoperative changes.	• Refer to relevant Neurostimulation Appropriateness Consensus Committee (NACC) safety guidelines.
3B.2.4A	Educate patients as part of the assessment process	• Educating patients regarding requirements for post-operative care and programming, and use this to enhance selection of appropriate patients.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Management			
3B.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure and management of complications. • Articulating the endorsee's own planned scope of practice for pocket creation and/or paddle electrode insertion and referral network to general or neurosurgical colleagues.	• Short-term complications include but are not limited to: dural puncture or tears, spinal block, epidural haematoma, worsening of pain. • Longer term complications include but are not limited to: lead breakage, infection, seroma formation, lead erosion of surrounding structures, and patient request for explantation, pocket pain.

3B.2.6	Independently perform the relevant procedure	• Correct positioning of patient and fluoroscopy to enable safe access to epidural space, then on-table testing and pocket creation. • Sound sterile technique. • Checking that antibiotic prophylaxis has been administered. • Selection of an appropriate site for incision and using adequate surgical techniques for exposure of the interspineous ligament. • Consistently achieving safe and adequate position of Tuohy needle in epidural space. • Recognising incorrect Touhy needle placement and remediation. • Recognising and safely troubleshooting malpositioning of leads during placement. • Conducting or supervising on-table sensory testing and interpreting patient feedback in relation to adequacy of lead position. • Safe tunnelling and anchoring leads. • Appropriate surgical technique to create a suitably located pocket for implantation of IPG, including meticulous haemostasis. • Safely securing leads and connecting to IPG. • Testing adequacy of connection to IPG prior to appropriately closing the pocket. • Performing check list to ensure no retained surgical instruments. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	• Endorsees who have not had anaesthesia training will need to demonstrate consistent mastery of interlaminar Tuohy needle placement using ‘loss of resistance’ technique. • Skin preparation solution must be discarded immediately after use to prevent contamination of the epidural space during the procedure.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
3B.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Arranging for appropriate specialist backup in the event of complications, e.g. infectious disease physician or neurosurgeon. • Next day review by proceduralist or associate, with adequate written discharge information including contact details for 24 hour per day follow up. • Routine review of wound by proceduralist or practice nurse/associate within 1 week. • Programming appointments to be done via practice or company representative. • Ensuring adequate documentation, including registry data where required.	• 1 week review MUST be by the practice of the proceduralist, not by GP or other health care practitioner. • Early recognition by the system of care of postoperative complications such as bleeding or infection is essential for safe performance of the procedure.

3C Implantation of intrathecal drug delivery system

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			
3C.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Fluoroscopic positioning to ensure adequate view of thoracolumbar spine with regards to neuraxial access for safe intrathecal catheter placement. • Detailed radiological appearance of anatomical target points on multiplane views for level of intrathecal entry and final location of intrathecal catheter tip. • Radiological appearance of major complications. • Radiation safety and minimisation.	
3C.2.2	Describe anatomy relevant to the learned procedures	• Surgical anatomy of neuroaxial space and contents in order to allow safe intrathecal catheter placement. • Surgical anatomy for optimal placement of subcutaneous reservoir/pump. • Anatomical basis of complications that may be encountered during the whole procedures from intrathecal catheter placement, tunnelling of catheter to fashioning of subcutaneous pocket for pump.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
3C.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of using intrathecal drug delivery system in different patient cohorts (baclofen for spasticity, analgesia alone or combination for cancer or non-cancer pain). • Critical analysis of gaps in the current literature needing further study especially for CNCP. • Role of pre-implantation trials in different cohorts of patients (intrathecal vs epidural, single shot vs short term catheter). • Critical application of plausible clinical rationale for patient selection.	• Demonstrate sound knowledge of current literature updates such as polyanalgesic consensus guidelines.
Assessment			
3C.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for contraindications.	
Management			
3C.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure and management of complications. • Importance of multidisciplinary team/staff input for patient selection and patient education at the start of journey.	• Complications include but are not limited to: direct spinal cord injury, spinal headaches, CSF leaks/hygroma, wound infections/haematoma, viscus injury (during tunnelling).

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
3C.2.6	Independently perform the relevant procedure	• Full theatre preparation and sterility. • Correct positioning of patient (2 stage vs 1 stage) and fluoroscopy for safe introduction of needle intrathecally and placement/advancement of intrathecal catheter. • Meticulous surgical skill to secure catheter with provided anchor para-spinally and fashioning adequately sized pump pocket (anterior abdomen subcostally). • Basic surgical skills to achieve good haemostasis, wound washout and adequate closure. • Safe troubleshooting of difficult neuroaxial access, catheter placement/ anchoring/ tunnelling, CSF leak, early recognition of catheter puncture (during tunnelling). • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	
3C.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate after-care both immediately after the procedure and in follow-up, including pump refills and troubleshooting of malfunctioned pump.	

3D Replacement of implantable pulse generator (IPG)
Pre requisite is **3B: Implantation of permanent spinal neuromodulation system, non-DRG**, independently performed (Supervision level 4: “endorsee performs procedure independently”) before commencing training in this procedure

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate knowledge and technical proficiency in:	Comments
Background			
3D.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Appropriate use of fluoroscopy.	• Generally fluoroscopy is not required, but should be available.
3D.2.2	Describe anatomy relevant to the learned procedures	• Surgical anatomy of pocket wound at different sites (buttock, axilla, chest wall), re-incision, refashioned. • Anatomical basis of complications that may be encountered during IPG replacements, including but not limited to wound dehiscence, infection, haematoma.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate knowledge and technical proficiency in:	Comments
3D.2.3	Critically evaluate the evidence for procedures	• Indication for IPG replacement (end of date, malfunction, charging burden +/- lack of effectiveness) with reference to available literature. • Critical analysis of gaps in the current literature needing further study, especially when changing to different battery/stimulation system/company using adaptors. • All available stimulator paradigm with different systems available, should the decision to replace IPG be due to lack of efficacy.	
Assessment			
3D.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors.	
Management			
3D.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment required for safe performance of procedure and management of complications.	• Replacement of IPG outside an operating theatre is not recommended. • Complications include but are not limited to: wound infection, haematoma, wound dehiscence, pocket pain. • Generally fluoroscopy is not required, but should be available.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate knowledge and technical proficiency in:	Comments
3D.2.6	Independently perform the relevant procedure	• Correct positioning of patient (depending on the IPG site). • Sound sterile technique. • Careful surgical incision to re-open wound followed by blunt dissection down to fibrous subcutaneous pocket. • Appropriate level of surgical skills to achieve good haemostasis (including use of bipolar diathermy), wound washout and adequate closure. • Meticulous surgical technique to expose old implantable pulse generator and connected leads without compromising them. • Careful handling of leads during disconnection to avoid lead fracture and migration (from excessive pulling/tugging). • Refashioning pocket size/plane either enlarge or reduce to provide “snug” fit for new battery (including non-rechargeable), without compromising any underlying anatomical structure depending on sites. • Meticulous technique to ensure minimal kinking of original leads with excess loops placed behind new IPG. • Reconnecting leads to the IPG and perform on-table testing. • IPG to be sutured down to minimise excessive movement in old pocket site if required. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	• Ensure the correct IPG is being replaced in cases where more than 2 have been implanted.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate knowledge and technical proficiency in:	Comments
3D.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate after-care both immediately after the procedure and in follow-up, including programming sessions and troubleshooting.	

3E Revision of epidural leads
Pre requisites are **1C: Lumbar transforaminal epidural injection** and **2J: DRG pulsed radiofrequency treatment - thoracic and lumbar**, performed at a minimum level of "endorsee primarily responsible for procedure" (Supervision level 3), **AND** **3B: Implantation of permanent spinal neuromodulation system, non-DRG**, independently performed (Supervision level 4: "endorsee performs procedure independently") before commencing training in this procedure.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
Background			
3E.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Detailed fluoroscopic appearance on multiplane views of cervico-thoraco-lumbar-sacral spine for safe epidural access for lead revision (anterograde or retrograde). • Detailed radiological appearance of optimal epidural leads placement during revision (physiological vs anatomical midline, gutter stim, retrograde, sacral foramina). • Radiological appearance of lead migration, mal-positioned lead (ventral, foraminal etc), inadvertent intrathecal placement, major complications. • Radiological appearance of inadequate or dangerous access/placement of epidural leads, including extensive instrumentations, severe rotoscoliosis. • Radiation safety and minimisation.	
3E.2.2	Describe anatomy relevant to the learned procedures	• Surgical anatomy of epidural space and its contents (venous plexus, fibrous bands) in order to allow safe epidural lead access and steering to final position during lead revision. • Anatomical basis of complications that may be encountered during lead revisions, including but not limited to epidural abcess, haematoma, CSF leak, direct/indirect cord injury, cord ischaemia.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
3E.2.3	Critically evaluate the evidence for procedures	• Rationale and indication for epidural lead revision (fracture, migration, poor coverage), with reference to available literature. • Critical analysis of gaps in the current literature needing further study in lead revisions, including techniques in keeping the same functioning leads, using different leads with more contacts, anchoring technique, different level of lead placements, converting to surgical plate, salvaging using different lead system i.e. DRGs, ultrahigh frequency.	• Maximum number of lead revisions e.g. 2-3, before considering surgical plate. • "Salvage" procedure: different system (32 contacts, DRG) before surgical plate.
Assessment			
3E.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Troubleshoot loss of effective stimulation (lead migration, lead fracture, epidural scarring around leads) complemented by technology (programming) and imaging, prior to epidural lead revision.	
Management			
3E.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment required for safe performance of procedure and management of complications.	• Complications include but are not limited to: direct spinal cord injury, dural puncture or irritation headaches, epidural haematoma/ abscess, wound infections/ haematoma, viscus injury (during tunnelling).

3E.2.6	Independently perform the relevant procedure	• Full theatre preparation and sterility. • Correct positioning of patient (lumbar and neck) and fluoroscopy (multiplane) for safe epidural lead access, steering and advancement. • Careful surgical exploration to disconnect lead from IPG pocket or extensions sites (rare) to preserve functioning leads. • Careful surgical dissection at old anchor site to expose leads, loops, sutures, anchors (if used) which may allow identification of lead fracture site, suture inadequacy. • Removal of non-functioning lead in entirety (if that is the case). • New epidural access is often required even for migrated functioning lead (in some cases depending on the anchor type, lead /wire stylus cab be re-inserted to reposition lead without new epidural access). • Meticulous surgical skill to secure lead with provided commercial-available anchor para-spinally with adequate tissue “bite” to minimise lead migration (especially if the original lead placement was secured with direct suturing). • Meticulous technique to ensure minimal kinking of leads at anchor points, loops (if used). • Safe tunnelling technique to re-connect revised lead to IPG (may be new system) or extension. • Basic surgical skills to achieve good haemostasis, wound washout and adequate closure. • Safe troubleshooting of difficult epidural lead access, steering, advancement, CSF leak. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate sound knowledge and technical proficiency in:	Comments
3E.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Delivery of appropriate after-care both immediately after the procedure and in follow-up, including programming sessions and troubleshooting. • Arranging for appropriate specialist backup in the event of complications, e.g. infectious disease physician or neurosurgeon.	

3F Implantation of dorsal root ganglion (DRG) neuromodulation system
Pre requisites are **1C: Lumbar transforaminal epidural injection, 2J: DRG pulsed radiofrequency treatment - thoracic and lumbar**, and **3A: Insertion of percutaneous epidural trial leads**, performed at a minimum level of "endorsee primarily responsible for procedure" (Supervision level 3), **AND** **3B: Implantation of permanent spinal neuromodulation system, non-DRG**, independently performed (Supervision level 4, "endorsee performs procedure independently") before commencing training in this procedure.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate knowledge and technical proficiency in:	Comments
Background			
3F.2.1	Outline the physical principles of medical imaging techniques used to identify relevant anatomy as it relates to the relevant procedure	• Optimal fluoroscopic positioning to safely pass leads into the exit foramen adjacent to the DRG at thoracic, lumbar and sacral levels. • Radiological appearance of inadequate or dangerous placement of leads during the procedure. • Interpretation of post-implantation radiographs to detect malpositioning of componentry or hardware complications such as lead breakage.	• Adequate intra-operative imaging includes confirmation in two planes that the leads are in the appropriate position within the foramen.
3F.2.2	Describe anatomy relevant to the learned procedures	• Detailed surgical anatomy of the epidural space at the lumbar and thoracic levels, including common variations and changes due to prior surgery or disease states. • Anatomical basis for stimulating the DRG as a treatment for pain. • Anatomical basis of potential complications that may be encountered with the approach required for DRG positioning. • Detailed surgical anatomy of IPG implantation site (pocket) including relevant tissue planes to be recognized, suitable sites for creation and importance of achieving haemostasis.	• If endorsee does not intend to create their own pockets, this anatomical knowledge is still required.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate knowledge and technical proficiency in:	Comments
3F.2.3	Critically evaluate the evidence for procedures	• Evidence from professional literature regarding the indication, rationale, role, efficacy and long term outcome of DRG stimulation. • Critical analysis of gaps in the current evidence and outlining the types of research needed to provide more definitive information to fill these gaps. • Role of clinical registry data in improving patient safety and monitoring device and operator performance.	
Assessment			
3F.2.4	Interpret investigations in the context of patient selection for procedures	• Appropriate risk mitigation for patients on anticoagulants or other perioperative risk factors. • Correct identification of and investigation for contraindications for attempted trials of DRG stimulation, including interpretation of radiological findings of post-arachnoiditis changes or postoperative changes.	• Refer to NSANZ or INS recommendations for perioperative investigations.
3F.2.4A	Educate patients as part of the assessment process	• Educating patients regarding requirements for post-operative care and programming, and use this to enhance selection of appropriate patients.	

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate knowledge and technical proficiency in:	Comments
Management			
3F.2.5	Discuss the staffing and equipment requirements of a procedures in pain medicine program, in accordance with the Clinical Care Standard	• Staffing and equipment requirements for safe conduct of the procedure and management of complications. • Defining the endorsee's referral network for managing complications, including neurosurgical and infectious disease support.	• Must be performed in an operating theatre. • Short-term complications include but are not limited to: dural puncture or tears, spinal block, haematoma (inc. epidural), worsening of pain, superficial or deep infection. • Longer term complications include but are not limited to: lead breakage, lead migration, infection, seroma formation, lead erosion of surrounding structures, and patient request for explantation, pocket pain.

3F.2.6	Independently perform the relevant procedure	• Correct positioning the patient and fluoroscopy to enable safe access to epidural space, then on-table testing and pocket creation. • Meticulous sterile technique. • Checking that antibiotic prophylaxis has been administered. • Consistently achieving safe and adequate position of Tuohy needle in epidural space from an extreme lateral approach. • Formation of loops in the epidural space. • Recognising incorrect Tuohy needle placement and remediation. • Safe positioning of leads in the superior dorsal quadrant of the chosen foramen, confirmed with bi planar imaging. • Recognising and safely troubleshooting malpositioning of leads during placement. • Conducting or supervising on-table sensory testing and interpreting patient feedback in relation to adequacy of lead position. • Safe tunnelling and anchoring leads. • Appropriate surgical technique to create a suitably located pocket for implantation of IPG, including meticulous haemostasis. • Safely securing leads and connects to IPG. • Testing for adequacy of connection to IPG prior to appropriately closing the pocket. • Performing check list to ensure no retained surgical instruments. • Recognising complications by systematic assessment during and after procedure, and appropriate management of these complications. • Appropriately abandoning the procedure if unforeseen risks or complications are encountered	• Endorsees who have not had anaesthesia training will need to demonstrate consistent mastery of interlaminar Tuohy needle placement using ‘loss of resistance’ technique. • Skin preparation solution must be discarded immediately after use to prevent contamination of the epidural space during the procedure.

A fellow endorsed in this procedure will be able to:			
No.	Learning Outcome	In particular, demonstrate knowledge and technical proficiency in:	Comments
3F.2.7	Develop and implement a procedure-specific after-care plan, in accordance with the Clinical Care Standard	• Arranging for appropriate specialist backup in the event of complications, including infectious disease physician or neurosurgeon. • Next day review by proceduralist or associate, with adequate written discharge information including contact details for 24 hour per day follow-up. • Routine review of wound by proceduralist or practice nurse/associate within 1 week. • Programming appointments to be done via practice or company representative. • Ensuring adequate documentation, including registry data where required.	• 1 week review MUST be by the practice of the proceduralist, not by GP or other health care practitioner. • Early recognition by the system of care of postoperative complications such as bleeding or infection is essential for safe performance of the procedure.

Section Three
ASSESSMENT STRATEGY

The faculty has developed a workplace-based assessment strategy that supports the procedures endorsement program curriculum. For each learned procedure, the strategy involves:

- **Formative assessment** – to allow quick endorsee self-assessment and supervisor assessment (rating). This stage will allow for multiple, continuous points of feedback, so that non-progression is identified early.
- **Advanced formative assessment** - to assess whether an endorsee is ready to progress in competency levels, the supervisor assesses different dimensions of the endorsee's performance during a nominated case, and considers whether the current level of competency has been achieved.
- **Summative assessment** – to confirm that an endorsee is eligible for endorsement, the supervisor attests (on a designated form) that the endorsee can competently and independently perform a particular procedure within the context of the sociopsychobiomedical framework.

To facilitate this assessment strategy the faculty developed a set of Workplace-based progressive feedback (WBPF) tools, which provide a framework to support teaching and learning in the clinical environment and promote formative assessment through direct observation and provision of timely and constructive feedback to endorsees as they select, treat and follow-up patients undergoing pain procedures.

Specific progressive feedback forms correspond to each level of assessment. Individual items and descriptors on the WBPF forms have been developed from learning outcomes outlined in section two above. A logbook, or a similar mobile app, are supporting the formative assessments. Direct observation of procedural skills (DOPS) forms have been developed to support advanced formative assessments, and sign-off forms have been developed to confirm an endorsee's eligibility to be endorsed by the faculty. Further details are included in the procedures endorsement program handbook.

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