NEW CURRICULA

Curriculum standards

Advanced Training in Neurology (Adult Medicine)

February 2025

RACP Specialists. Together

About this document

The new Advanced Training in Neurology (AM) curriculum consists of curriculum standards and learning, teaching, and assessment (LTA) programs.

This document outlines the curriculum standards for Advanced Training in Neurology (AM) for trainees and supervisors. The curriculum standards should be used in conjunction with the Advanced Training in Neurology (AM) LTA program.

The new curriculum was approved by the College Education Committee in February 2025. Please refer to the College website for details on its implementation.

Contents

Program overview

Purpose of Advanced Training

The RACP offers Advanced Training in 33 diverse medical specialties as part of Division, Chapter, or Faculty training programs.

The purpose of Advanced Training is to develop a workforce of physicians who:

- have received breadth and depth of focused specialist training, and experience with a wide variety of health problems and contexts
- are prepared for and committed to independent expert practice, lifelong learning, and continuous improvement
- provide safe, quality health care that meets the needs of the communities of Australia and Aotearoa New Zealand.

Specialty overview

The practice of neurology encompasses the diagnosis and management of diseases affecting the central, peripheral, and autonomic nervous systems, as well as muscle.

Neurologists demonstrate an understanding of the nervous system and how it is affected by disease and ageing, as well as the processes for treatment and management of chronic, acute, and emergency conditions. With an aging population, rates of neurological disorders are high, and are projected to increase further. In the future these brain disorders will have a greater cost to the Australian and Aotearoa New Zealand economy than heart disease, cancer, and respiratory disease combined. There is a rapid expansion of treatment and therapies within the specialties that are changing the lives of those living with neurological disorders.

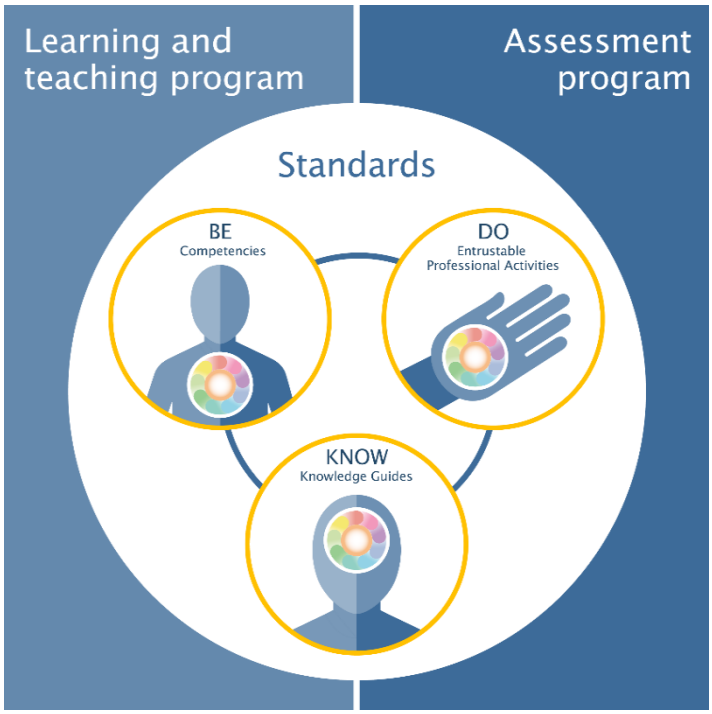
Neurologists develop high-level communication skills to support patients across a range of inpatient and outpatient settings throughout the course of their adult life.

Neurologists are skilled diagnosticians who reach accurate diagnoses by taking detailed histories, performing thorough neurological examinations, and investigating patients rationally by using tools such as imaging, lumbar puncture (LP), neurophysiology, and/or neuropsychology. Neurologists are expected to be skilled in the interpretation of nerve conduction studies (NCS), electromyography (EMG), and electroencephalography (EEG). They also:

- **apply a multidisciplinary approach.** Neurologists are required to work effectively as part of a multidisciplinary team. They need to liaise with other medical and allied health professionals to optimise patient outcomes.
- **work sensitively with a variety of patients.** Neurologists work with patients to address determinants of health that affect them and their access to needed health services or resources, providing culturally safe education and support in a professional, empathic, and non-judgemental manner. Some neurological conditions are untreatable so the neurologist must be able to provide a prognosis and support to these patients and their carers, as well as manage end-of-life issues.

- **demonstrate strong communication skills.** Neurologists must develop an effective interviewing technique to support their investigations. They appreciate when referral to a more appropriate or more qualified practitioner in a particular subspecialty is necessary.
- **apply a scholarly approach.** Neurologists conduct and apply research to make evidence-based decisions that improve the treatment and management of their patients. Furthermore, the rapid expansion in knowledge, particularly in areas of diagnosis and treatment, necessitates the ability to keep up to date with research, and the neurologist must identify appropriate resources to do this.

Advanced Training curricula standards



The **RACP curriculum model** is made up of curricula standards supported by learning, teaching, and assessment programs.

Learning and teaching programs outline the strategies and methods to learn and teach curricula standards, including required and recommended learning activities.

Assessment programs outline the planned use of assessment methods to provide an overall picture of the trainee's competence over time.

The **curricula standards** outline the educational objectives of the training program and the standard against which trainees' abilities are measured.

- **Competencies** outline the expected professional behaviours, values, and practices of trainees in 10 domains of professional practice.

- **Entrustable Professional Activities** (EPAs) outline the essential work tasks trainees need to be able to perform in the workplace.

- **Knowledge guides** outline the expected baseline knowledge of trainees.

Professional Practice Framework

The Professional Practice Framework describes 10 domains of practice for all physicians.

Learning, teaching, and assessment structure

The learning, teaching, and assessment structure defines the framework for delivery

Advanced Training learning, teaching, and assessment structure

- An **entry decision** is made before entry into the program.
- **Progress decisions**, based on competence, are made at the end of the specialty foundation and specialty consolidation phases of training.
- A **completion decision**, based on competence, is made at the end of the training program, resulting in eligibility for admission to Fellowship.

Advanced Training is a **hybrid time- and competency-based training program**. There is a minimum time requirement of between three to five years' full-time equivalent experience, depending on the training program undertaken. Progress and completion decisions are based on evidence of trainees' competence.

Curriculum standards

Competencies

Competencies outline the expected professional behaviours, values, and practices that trainees need to achieve by the end of training.

Competencies are grouped by the 10 domains of the professional practice framework.

Competencies will be common across training programs.

Medical expertise

Professional standard: Physicians apply knowledge and skills informed by best available current evidence in the delivery of high-quality, safe practice to facilitate agreed health outcomes for individual patients and populations.

Knowledge: Apply knowledge of the scientific basis of health and disease to the diagnosis and management of patients.

Synthesis: Gather relevant data via age- and context-appropriate means to develop reasonable differential diagnoses, recognising and considering interactions and impacts of comorbidities.

Diagnosis and management: Develop diagnostic and management plans that integrate an understanding of individual patient circumstances, including psychosocial factors and specific vulnerabilities, epidemiology, and population health factors in partnership with patients, families, whānau, or carers[1], and in collaboration with the healthcare team.

[1] References to patients in the remainder of this document may include their families, whānau, and/or carers.

Communication

Professional standard: Physicians collate information, and share this information clearly, accurately, respectfully, responsibly, empathetically, and in a manner that is understandable.

Physicians share information responsibly with patients, families, carers, colleagues, community groups, the public, and other stakeholders to facilitate optimal health outcomes.

Effective communication: Use a range of effective and appropriate verbal, nonverbal, written and other communication techniques, including active listening.

Communication with patients, families, and carers: Use collaborative, effective, and empathetic communication with patients, families, and carers.

Communication with professionals and professional bodies: Use collaborative, respectful, and empathetic clinical communication with colleagues, other health professionals, professional bodies, and agencies.

Written communication: Document and share information about patients to optimise patient care and safety.

Privacy and confidentiality: Maintain appropriate privacy and confidentiality, and share information responsibly.

Quality and safety

Professional standard: Physicians practice in a safe, high-quality manner within the limits of their expertise.

Physicians regularly review and evaluate their own practice alongside peers and best practice standards, and conduct continuous improvement activities.

Patient safety: Demonstrate a safety focus and continuous improvement approach to own practice and health systems.

Harm prevention and management: Identify and report risks, adverse events, and errors to improve healthcare systems.

Quality improvement: Participate in quality improvement activities to improve quality of care and safety of the work environment.

Patient engagement: Enable patients to contribute to the safety of their care.

Teaching and learning

Professional standard: Physicians demonstrate a lifelong commitment to excellence in practice through continuous learning and evaluating evidence.

Physicians foster the learning of others in their profession through a commitment to mentoring, supervising, and teaching.[2]

Lifelong learning: Undertake effective self-education and continuing professional development.

Self-evaluation: Evaluate and reflect on gaps in own knowledge and skills to inform self-directed learning.

Supervision: Provide supervision for junior colleagues and/or team members.

Teaching: Apply appropriate educational techniques to facilitate the learning of colleagues and other health professionals.

Patient education: Apply appropriate educational techniques to promote understanding of health and disease amongst patients and populations.

Research

Professional standard: Physicians support creation, dissemination, and translation of knowledge and practices applicable to health.[2]

They do this by engaging with and critically appraising research, and applying it in policy and practice to improve the health outcomes of patients and populations.

Evidence-based practice: Critically analyse relevant literature and refer to evidence-based clinical guidelines, and apply these in daily practice.

Research: Apply research methodology to add to the body of medical knowledge and improve practice and health outcomes.

[2]Adapted from Richardson D, Oswald A, Chan M-K, Lang ES, Harvey BJ. Scholar. In: Frank JR, Snell L, Sherbino J, editors. The Draft CanMEDS 2015 Physician Competency Framework – Series IV. Ottawa: The Royal College of Physicians and Surgeons of Canada; 2015 March.

Cultural safety

Professional standard: Physicians engage in iterative and critical self-reflection of their own cultural identity, power, biases, prejudices and practising behaviours. Together with the requirement of understanding the cultural rights of the community they serve; this brings awareness and accountability for the impact of the physician's own culture on decision-making and healthcare delivery. It also allows for an adaptive practice where power is shared between patients, family, whānau and/or community and the physician, to improve health outcomes.

Physicians recognise the patient and population's rights for culturally-safe care, including being an ally for patient, family, whānau and/or community autonomy and agency over their decision-making. This shift in the physician's perspective fosters collaborative and engaged therapeutic relationships, allows for strength-based (or mana-enhanced) decisions, and sharing of power with the recipient of the care, optimising health care outcomes.

Physicians critically analyse their environment to understand how colonialism, systemic racism, social determinants of health and other sources of inequity have and continue to underpin the healthcare context. Consequently, physicians then can recognise their interfacing with, and contribution to, the environment in which they work to advocate for safe, more equitable and decolonised services and create an inclusive and safe workplace for all colleagues and team members of all cultural backgrounds.[3]

Critical reflection. Engage in iterative and critical self-reflection and demonstrate cultural safety in the context of their own cultural identity, power, biases, prejudices and practising behaviours.

Allyship. Recognise the patient and population's rights to culturally-safe care, including being an ally for patient, family, whānau and/or community autonomy and agency over their decision-making.

Inclusive communication. Apply culturally-safe communication, acknowledging the sharing of power, and cultural and human rights to enable patients, families and whānau to engage in appropriate patient care decisions.

Culturally-safe environment. Contributes to a culturally-safe learning and practice environment for patients and team members. Respect patients may feel unsafe in the healthcare environment.

[3] The RACP has adopted the Medical Council of New Zealand's definition of cultural safety (below):
Cultural safety can be defined as[1].

- The need for doctors to examine themselves and the potential impact of their own culture on clinical interactions and healthcare service delivery.
- The commitment by individual doctors to acknowledge and address any of their own biases, attitudes, assumptions, stereotypes, prejudices, structures, and characteristics that may affect the quality of care provided.
- The awareness that cultural safety encompasses a critical consciousness where healthcare professionals and healthcare organisations engage in ongoing self-reflection and self-awareness and hold themselves accountable for providing culturally safe care, as defined by the patient and their communities.

1. Curtis et al. "Why cultural safety rather than cultural competency is required to achieve health equity". International Journal for Equity in Health (2019) 18:174

Ethics and professional behaviour

Professional standard: Physicians' practice is founded upon ethics, and physicians always treat patients, their families, communities, and populations in a caring and respectful manner.

Physicians demonstrate their commitment and accountability to the health and wellbeing of individual patients, communities, populations, and society through ethical practice.

Physicians demonstrate high standards of personal behaviour.

Beliefs and attitudes: Reflect critically on personal beliefs and attitudes, including how these may impact on patient care.
Honesty and openness: Act honestly, including reporting accurately, and acknowledging their own errors.
Patient welfare: Prioritise patients' welfare and community benefit above self-interest.
Accountability: Be personally and socially accountable.
Personal limits: Practise within their own limits and according to ethical principles and professional guidelines.
Self-care: Implement strategies to maintain personal health and wellbeing.
Respect for peers: Recognise and respect the personal and professional integrity, roles, and contribution of peers.
Interaction with professionals: Interact equitably, collaboratively, and respectfully with other health professionals.
Respect and sensitivity: Respect patients, maintain appropriate relationships, and behave equitably.
Privacy and confidentiality: Protect and uphold patients' rights to privacy and confidentiality.
Compassion and empathy: Demonstrate a caring attitude towards patients and endeavour to understand patients' values and beliefs.
Health needs: Understand and address patients', families', carers', and colleagues' physical and emotional health needs.
Medical and health ethics and law: Practise according to current community and professional ethical standards and legal requirements.

Judgement and decision making

Professional standard: Physicians collect and interpret information, and evaluate and synthesise evidence, to make the best possible decisions in their practice.

Physicians negotiate, implement, and review their decisions and recommendations with patients, their families and carers, and other health professionals.

Diagnostic reasoning: Apply sound diagnostic reasoning to clinical problems to make logical and safe clinical decisions.

Resource allocation: Apply judicious and cost-effective use of health resources to their practice.

Task delegation: Apply good judgement and decision making to the delegation of tasks.

Limits of practice: Recognise their own scope of practice and consult others when required.

Shared decision making: Contribute effectively to team-based decision-making processes.

Leadership, management, and teamwork

Professional standard: Physicians recognise, respect, and aim to develop the skills of others, and engage collaboratively to achieve optimal outcomes for patients and populations.

Physicians contribute to and make decisions about policy, protocols, and resource allocation at personal, professional, organisational, and societal levels.

Physicians work effectively in diverse multidisciplinary teams and promote a safe, productive, and respectful work environment that is free from discrimination, bullying, and harassment.

Managing others: Lead teams, including setting directions, resolving conflicts, and managing individuals.

Wellbeing: Consider and work to ensure the health and safety of colleagues and other health professionals.

Leadership: Act as a role model and leader in professional practice.

Teamwork: Negotiate responsibilities within the healthcare team and function as an effective team member.

Health policy, systems, and advocacy

Professional standard: Physicians apply their knowledge of the nature and attributes of local, national, and global health systems to their own practices. They identify, evaluate, and influence health determinants through local, national, and international policy.

Physicians deliver and advocate for the best health outcomes for all patients and populations.

Health needs: Respond to the health needs of the local community and the broader health needs of the people of Australia and Aotearoa New Zealand.

Prevention and promotion: Incorporate disease prevention, health promotion, and health surveillance into interactions with individual patients and their social support networks.

Equity and access: Work with patients and social support networks to address determinants of health that affect them and their access to needed health services or resources.

Stakeholder engagement: Involve communities and patient groups in decisions that affect them to identify priority problems and solutions.

Advocacy: Advocate for prevention, promotion, equity, and access to support patient and population health needs within and outside the clinical environment.

Resource allocation: Understand the factors influencing resource allocation, promote efficiencies, and advocate to reduce inequities.

Sustainability: Manage the use of healthcare resources responsibly in everyday practice.

Entrustable Professional Activities

Entrustable Professional Activities (EPAs) outline the essential work tasks trainees need to be able to perform in the workplace.

#	Theme	Title
1	**Team leadership**	Lead a team of health professionals
2	**Supervision and teaching**	Supervise and teach professional colleagues
3	**Quality improvement**	Identify and address failures in health care delivery
4	**Clinical assessment and management**	Clinically assess and manage the ongoing care of patients
5	**Management of transitions in care**	Manage the transition of patient care between health professionals, providers, and contexts
6	**Acute care**	Manage the early care of acutely unwell patients
7	**Longitudinal care**	Manage and coordinate the longitudinal care of patients with chronic illness, disability, and/or long-term health issues
8	**Communication with patients**	Discuss diagnoses and management plans with patients
9	**Prescribing**	Prescribe therapies tailored to patients' needs and conditions
10	**Procedures**	Plan, prepare for, perform, and provide aftercare for important practical procedures
11	**Investigations**	Select, organise, and interpret investigations
12	**Clinic management**	Manage an outpatient clinic
13	**End-of-life care**	Manage the care of patients at the end of their lives

EPA 1: Team leadership

Theme	Team leadership	AT-EPA-01
Title	**Lead a team of health professionals**	
Description	This activity requires the ability to: • prioritise workload • manage multiple concurrent tasks • articulate individual responsibilities, expertise, and accountability of team members • recognise the range of team members' skills, expertise, and roles • acquire and apply leadership techniques in daily practice • collaborate with and motivate team members • encourage and adopt insights from team members • act as a role model.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision The trainee will:	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity The trainee may:
Medical expertise	• synthesise information with other disciplines to develop optimal, goal-centred plans for patients[4] • use evidence-based care to meet the needs of patients or populations • assess and effectively manage clinical risk in various scenarios • demonstrate clinical competence and skills by effectively supporting team members	• demonstrate adequate knowledge of healthcare issues by interpreting complex information • assess the spectrum of problems to be addressed • apply medical knowledge to assess the impact and clinical outcomes of management decisions • provide coordinated and quality health care for populations or patients as a member of a multidisciplinary team
Communication	• provide support and motivate patients or populations and health professionals by effective communication • demonstrate a transparent, consultative style by engaging patients, families, carers, relevant professionals, and/or the public in shared decision making	• communicate adequately with colleagues • communicate adequately with patients, families, carers, and/or the public • respect the roles of team members

[5] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• demonstrate rapport with people at all levels by tailoring messages to different stakeholders • work with patients, families, carers, and other health professionals to resolve conflict that may arise when planning and aligning goals	
Quality and safety	• identify opportunities to improve care by participating in surveillance and monitoring of adverse events and 'near misses' • identify activities within systems to reduce errors, improve patient and population safety, and implement cost-effective change • place safety and quality of care first in all decision making	• participate in audits and other activities that affect the quality and safety of patients' care • participate in interdisciplinary collaboration to provide effective health services and operational change • use information resources and electronic medical record technology where available
Teaching and learning	• regularly self-evaluate personal professional practice, and implement changes based on the results • actively seek feedback from supervisors and colleagues on their own performance • identify personal gaps in skills and knowledge, and engage in self-directed learning • maintain current knowledge of new technologies, health care priorities, and changes of patients' expectations • teach competently by imparting professional knowledge • manage and monitor learner progress, providing regular assessment and feedback	• accept feedback constructively, and change behaviour in response • recognise the limits of personal expertise, and involve other health professionals as needed • demonstrate basic skills in facilitating colleagues' learning
Cultural safety	• demonstrate culturally competent relationships with professional colleagues and patients • demonstrate respect for diversity and difference • take steps to minimise unconscious bias, including the impact of gender, religion, cultural beliefs, and socioeconomic background on decision making	• demonstrate awareness of cultural diversity and unconscious bias • work effectively and respectfully with people from different cultural backgrounds
Ethics and professional behaviour	• promote a team culture of shared accountability for decisions and outcomes • encourage open discussion of ethical and clinical concerns	• support ethical principles in clinical decision making • maintain standards of medical practice by recognising the health interests of patients or populations as primary responsibilities

	• respect differences of multidisciplinary team members • demonstrate understanding of the ethics of resource allocation by aligning optimal patients and organisational care • effectively consult with stakeholders, achieving a balance of alternative views • acknowledge personal conflicts of interest and unconscious bias • act collaboratively to resolve behavioural incidents and conflicts such as harassment and bullying	• respect the roles and expertise of other health professionals • work effectively as a member of a team • promote team values of honesty, discipline, and commitment to continuous improvement • demonstrate understanding of the negative impact of workplace conflict
Judgement and decision making	• evaluate health services and clarify expectations to support systematic, transparent decision making • make decisions when faced with multiple and conflicting perspectives • ensure medical input to organisational decision making • adopt a systematic approach to analysing information from a variety of specialties to make decisions that benefit health care delivery	• monitor services and provide appropriate advice • review new health care interventions and resources • interpret appropriate data and evidence for decision making
Leadership, management, and teamwork	• combine team members' skills and expertise in delivering patient care and/or population advice • develop and lead effective multidisciplinary teams by developing and implementing strategies to motivate others • build effective relationships with multidisciplinary team members to achieve optimal outcomes • ensure all members of the team are accountable for their individual practice	• recognise the range of personal and other team members' skills, expertise, and roles • acknowledge and respect the contribution of all health professionals involved in patients' care • participate effectively and appropriately in multidisciplinary teams • seek out and respect the perspectives of multidisciplinary team members when making decisions
Health policy, systems, and advocacy	• engage in appropriate consultation with stakeholders on the delivery of health care • advocate for the resources and support for healthcare teams to achieve organisational priorities • influence the development of organisational policies and procedures to optimise health outcomes	• communicate with stakeholders within the organisation about health care delivery • demonstrate understanding of methods used to allocate resources to provide high-quality care • promote the development and use of organisational policies and procedures

	• identify the determinants of health of the population, and mitigate barriers to access to care • remove self-interest from solutions to health advocacy issues

EPA 2: Supervision and teaching

Theme	Supervision and teaching	AT-EPA-02
Title	**Supervise and teach professional colleagues**	
Description	This activity requires the ability to: • provide work-based teaching in a variety of settings • teach professional skills • create a safe and supportive learning environment • plan, deliver, and provide work-based assessments • encourage learners to be self-directed and identify learning experiences • supervise learners in day-to-day work, and provide feedback • support learners to prepare for assessments.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision The trainee will:	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity The trainee may:
Medical expertise	• combine high-quality care with high-quality teaching • explain the rationale underpinning a structured approach to decision making • consider the patient-centric view during consultations • consider the population health effect when giving advice • encourage learners to consider the rationale and appropriateness of investigation and management options	• teach learners using basic knowledge and skills
Communication	• establish rapport and demonstrate respect for junior colleagues, medical students, and other health professionals • communicate effectively when teaching, assessing, and appraising learners • encourage learners to tailor communication as appropriate for different patients[5], such as younger or older people, and different populations	• demonstrate accessible, supportive, and compassionate behaviour

[6] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• listen and convey information clearly and considerately • actively encourage a collaborative and safe learning environment with learners and other health professionals • support learners to deliver clear, concise, and relevant information in both verbal and written communication	
Quality and safety	• support learners to deliver quality care while maintaining their own wellbeing • apply lessons learnt about patient safety by identifying and discussing risks with learners • assess learners' competence, and provide timely feedback to minimise risks to care • maintain the safety of patients and organisations involved with education, and appropriately identify and action concerns	• observe learners to reduce risks and improve health outcomes
Teaching and learning	• demonstrate knowledge of the principles, processes, and skills of supervision • provide direct guidance to learners in day-to-day work • work with learners to identify professional development and learning opportunities based on their individual learning needs • offer feedback and role modelling • participate in teaching and supervision professional development activities • encourage self-directed learning and assessment • develop a consistent and fair approach to assessing learners • tailor feedback and assessments to learners' goals • seek feedback, and reflect on own teaching by developing goals and strategies to improve • establish and maintain effective mentoring through open dialogue • support learners to identify and attend formal and informal learning opportunities • recognise the limits of personal expertise, and involve others appropriately	• demonstrate basic skills in the supervision of learners • apply a standardised approach to teaching, assessment, and feedback without considering individual learners' needs • implement teaching and learning activities that are misaligned to learning goals • adopt a teaching style that discourages learner self-directedness

Research	• encourage and guide learners to seek out relevant research to support practice • clarify junior colleagues' research project goals and requirements, and provide feedback regarding the merits or challenges of proposed research • monitor the progress of learners' research projects regularly, and may review research projects prior to submission • support learners to find forums to present research projects	• guide learners with respect to the choice of research projects • ensure that the research projects planned are feasible and of suitable standards
Cultural safety	• role model a culturally appropriate approach to teaching • encourage learners to seek out opportunities to develop and improve their own cultural safety • encourage learners to consider culturally appropriate care of Aboriginal and Torres Strait Islander peoples and Māori into patients' management • consider cultural, ethical, and religious values and beliefs in teaching and learning	• function effectively and respectfully when working and teaching with people from different cultural backgrounds
Ethics and professional behaviour	• apply principles of ethical practice to teaching scenarios • act as a role model to promote professional responsibility and ethics among learners • respond appropriately to learners seeking professional guidance	• demonstrate professional values, including commitment to high-quality clinical standards, compassion, empathy, and respect • provide learners with feedback to improve their experiences
Judgement and decision making	• prioritise workloads and manage learners with different levels of professional knowledge or experience • link theory and practice when explaining professional decisions • promote joint problem solving • support a learning environment that allows for independent decision making • use sound and evidence-based judgement during assessments and when giving feedback to learners • escalate concerns about learners appropriately	• provide general advice and support to learners • use health data logically and effectively to investigate difficult diagnostic problems

Leadership, management, and teamwork	• maintain personal and learners' effective performance and continuing professional development • maintain professional, clinical, research, and/or administrative responsibilities while teaching • create an inclusive environment in which learners feel part of the team • help shape organisational culture to prioritise quality and work safety through openness, honesty, shared learning, and continued improvement	• demonstrate the principles and practice of professionalism and leadership in health care • participate in mentor programs, career advice, and general counselling
Health policy, systems, and advocacy	• advocate for suitable resources to provide quality supervision and maintain training standards • explain the value of health data in the care of patients or populations • support innovation in teaching and training	• incompletely integrate public health principals into teaching and practice

EPA 3: Quality improvement

Theme	Quality improvement	AT-EPA-03
Title	**Identify and address failures in health care delivery**	
Description	This activity requires the ability to: • identify and report actual and potential ('near miss') errors • conduct and evaluate system improvement activities • adhere to best practice guidelines • audit clinical guidelines and outcomes • contribute to the development of policies and protocols designed to protect patients[6], reduce bias, achieve equity, and enhance health care for all • monitor one's own practice with critical self-reflection, and develop individual improvement plans.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity
	The trainee will:	The trainee may:
Medical expertise	• regularly review patients' and population health outcomes to identify opportunities for improvement in delivering care that is appropriate and delivers equity for marginalised groups • evaluate socioeconomic determinants of health and environmental and lifestyle health risks, and advocate for healthy lifestyle choices and organisational changes • use standardised protocols to adhere to best practice and prevent the occurrence of wrong-site, wrong-patient procedures • regularly monitor personal professional performance	• contribute to processes on identified opportunities for improvement • recognise the importance of prevention and early detection in clinical practice • use local guidelines to assist patient care decision making • actively ask and listen to factors that contribute to patients' health, and tailor care based on patients' personalised health goals
Communication	• support patients to have access to, and use, easy-to-understand, language-accessible, culturally safe, high-quality information about health care • support patients to share decision making about their own health care, to the extent they choose	• apply knowledge of how health literacy, culture, and language might affect the way patients or populations gain access to, understand, and use health information

[6] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• assist patients' access to their health information, as well as complaint and feedback systems • discuss with patients any safety and quality concerns they have relating to their care • implement the organisation's open disclosure policy	• demonstrate awareness of the evidence for person-centred care and engagement and its contribution to quality improvement in care
Quality and safety	• demonstrate safety skills, including infection control, adverse event reporting, and effective clinical handover • participate in organisational quality and safety activities, including morbidity and mortality reviews, clinical incident reviews, root cause analyses, and corrective action preventative action plans • participate in systems for surveillance and monitoring of adverse events and 'near misses', including reporting such events • ensure that identified opportunities for improvement are raised and reported appropriately, and follow up on resultant system changes • use clinical audits and registries of data on patients' experiences and outcomes, learnings from incidents, and complaints to improve care	• be cognisant of a systematic approach to improving the quality and safety of health care, with a specific focus on outcomes of marginalised groups
Teaching and learning	• translate quality improvement approaches and methods into practice • participate in professional training in quality and safety to ensure a contemporary approach to safety system strategies • supervise and manage the performance of junior colleagues in the delivery of high-quality, safe care • participate in cultural competency training	• work within organisational quality and safety systems for the delivery of clinical care • use opportunities to learn about safety and quality theory and systems
Research	• ensure that any protocol for human research is approved by a human research ethics committee, in accordance with the national statement on ethical conduct in human research • learn about principles of Indigenous data sovereignty to ensure that outcomes data do not cause inadvertent harm to Indigenous groups	• recognise that patient participation in research is voluntary and based on an appropriate understanding about the purpose, methods, demands, risks, and potential benefits of the research • undertake training on the principles of Good Clinical Practice prior to engaging in research

Cultural safety	• undertake professional development opportunities that address the impact of cultural bias on health outcomes	• communicate effectively with patients from culturally and linguistically diverse backgrounds
Ethics and professional behaviour	• align improvement goals with the priorities of the organisation • contribute to developing an organisational culture that enables and prioritises patients' safety and quality of care	• comply with professional regulatory requirements and codes of conduct
Judgement and decision making	• use decision-making support tools, such as guidelines, protocols, pathways, and reminders • analyse and evaluate current care processes to improve care	• access information and advice from other health practitioners to identify, evaluate, and improve patients' care management
Leadership, management, and teamwork	• formulate and implement quality improvement strategies as a collaborative effort, involving all key health professionals • support multidisciplinary team activities to lower patients' risk of harm, and promote interdisciplinary programs of education • actively involve clinical pharmacists in the medication-use process	• demonstrate attitudes of respect and cooperation among members of different professional teams • partner with clinicians and managers to ensure patients receive appropriate care and information on their care
Health policy, systems, and advocacy	• recognise evaluation and monitoring of governance processes • participate regularly in multidisciplinary meetings where quality and safety issues are standing agenda items, and where innovative ideas and projects for improving care are actively encouraged	• maintain a dialogue with service managers about issues that affect patients' care • contribute to relevant organisational policies and procedures • help shape an organisational culture that prioritises safety and quality through openness, honesty, learning, and quality improvement

EPA 4: Clinical assessment and management

Theme	Clinical assessment and management	AT-EPA-04
Title	**Clinically assess and manage the ongoing care of patients**	
Description	This activity requires the ability to: • identify and access sources of relevant information about patients[7] • obtain patient histories • examine patients • synthesise findings to develop provisional and differential diagnoses • discuss findings with patients, families, and/or carers • generate management plans • present findings to other health professionals.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity
	The trainee will:	The trainee may:
Medical expertise	• elicit accurate, organised, and problem-focused neurological histories, as well as relevant aspects of other medical history, including family, social, and occupational factors. Specific aspects of this include the determination of: » the history of the presenting problem, including symptom onset, duration, and course of the condition, associated symptoms, and previous therapeutic interventions » the patient's view of the problem, their level of background knowledge, and their expectations » other factors which may be relevant, such as ○ environmental ○ genetic ○ pharmacological ○ social » other medical conditions (current or previous), and their relevance	• take patient-centred histories, considering psychosocial factors • perform accurate physical examinations • recognise and correctly interpret abnormal findings • synthesise pertinent information to direct clinical encounters and diagnostic categories • develop appropriate management plans

[7] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• perform targeted examinations to elicit relevant signs and exclude important negative signs in light of the history gathered. Trainees should be confident with performing examinations of: » cognition / mental state » coordination and gait » cranial nerve function » motor function and reflexes » sensory function • where appropriate, use quantitative rating scales as part of clinical assessments, demonstrating awareness of the variety of scales available for use • synthesise and interpret findings from histories, examinations, and investigations to devise the most likely provisional diagnoses and reasonable differential diagnoses • plan necessary investigations, giving due consideration to appropriate prioritisation and timeliness of investigations • reconsider and, if necessary, revise a diagnosis in light of investigation findings • develop management plans based on relevant guidelines, and consider the balance of benefit and harm by taking patients' personal sets of circumstances into account • consider consequences of treatment and the likelihood of treatment-related complications, and how these can be mitigated or managed • consider impacts of diagnosis and treatment on relevant legislation (such as assessing fitness to drive) and occupational risk	
Communication	• communicate clearly, effectively, respectfully, and promptly with other health professionals involved in patients' care • listen, communicate in a culturally safe manner, and take patients' concerns seriously, giving them adequate opportunity to ask questions	• anticipate, read, and respond to verbal and nonverbal cues • demonstrate active listening skills • communicate patients' situations to colleagues, including senior clinicians

	• provide information and guidance to patients and their family and/or carers to enable them to make fully informed decisions from various diagnostic, therapeutic, and management options	
Quality and safety	• demonstrate safety skills, including infection control, adverse event reporting, and effective clinical handover • obtain informed consent before undertaking any investigation or providing treatment (except in an emergency) • ensure patients are informed of the material risks associated with any part of proposed management plans	• perform hand hygiene, and take infection control precautions at appropriate moments • take precaution against assaults from confused or agitated patients, ensuring appropriate care of patients • document history and physical examination findings, and synthesise with clarity and completeness
Teaching and learning	• set defined objectives for clinical teaching encounters, and solicit feedback on mutually agreed goals • regularly reflect upon and self-evaluate professional development • obtain informed consent before involving patients in teaching activities • turn clinical activities into an opportunity to teach, appropriate to the setting	• set unclear goals and objectives for self-learning • self-reflect infrequently • deliver teaching considering learners' level of training
Research	• search for, find, compile, analyse, interpret, and evaluate information relevant to the research subject • access information from neurogenetic databases, such as Online Mendelian Inheritance in Man (OMIM)	• refer to guidelines and medical literature to assist in clinical assessments when required • demonstrate awareness of the limitations of evidence and the challenges of applying research in daily practice
Cultural safety	• use plain-language patient education materials, and demonstrate cultural and linguistic sensitivity • demonstrate effective and culturally competent communication and care for Aboriginal and Torres Strait Islander peoples and Māori, and members of other cultural groups • recognise the impact of familial interpreters as alternate information sources	• display respect for patients' cultures, and attentiveness to social determinants of health • demonstrate awareness of at least the most prevalent cultures in society, and an appreciation of their sensitivities • appropriately access interpretive or culturally focused services

	• acknowledge patients' beliefs and values, and how these might impact on health • use a professional interpreter, health advocate, or a family or community member to assist in communication with patients, and understand the potential impact that different approaches have on accuracy and/or completeness of information	
Ethics and professional behaviour	• demonstrate professional values, including compassion, empathy, respect for diversity, integrity, honesty, and partnership to all patients • hold information about patients in confidence, unless the release of information is required by law or public interest • assess patients' capacity for decision making, involving a proxy decision maker appropriately • recognise the laws that govern practice, such as disclosure of health information and mandatory reporting	• demonstrate professional conduct, honesty, and integrity • consider patients' decision-making capacity • identify patients' preferences regarding management and the role of families in decision making • not advance personal interest or professional agendas at the expense of patient or social welfare
Judgement and decision making	• apply knowledge and experience to identify patients' problems, making logical, rational decisions, and acting to achieve positive outcomes for patients • use a holistic approach to health, considering comorbidity, risk, and uncertainty • use the best available evidence for the most effective therapies and interventions to ensure quality care • recognise how and when to access additional resources and/or to refer patients to other neurologists, neurosurgeons, rehabilitation physicians, or other specialist physicians	• demonstrate clinical reasoning by gathering focused information relevant to patients' care • recognise personal limitations and seek help in an appropriate way when required
Leadership, management, and teamwork	• work effectively as a member of multidisciplinary teams to achieve the best health outcomes for patients • demonstrate awareness of colleagues in difficulty, and work within the appropriate structural systems to support them while maintaining patients' safety	• share relevant information with members of the healthcare team

Health policy, systems, and advocacy	• participate in health promotion, disease prevention and control, screening, and reporting notifiable diseases • aim to achieve the optimal cost-effective patient care to allow maximum benefit from the available resources • recognise the medicolegal issues relating to capacity and competence and relevant regulations, such as the state / national driving regulations as applied to neurological conditions	• identify and navigate components of the healthcare system relevant to patients' care • identify and access relevant community resources to support patient care

EPA 5: Management of transitions in care

Theme	Management of transitions in care	AT-EPA-05
Title	**Manage the transition of patient care between health professionals, providers, and contexts**	
Description	This activity requires the ability to: • manage transitions of patient care to ensure the optimal continuation of care between providers • identify the appropriate care providers and other stakeholders with whom to share patient information • exchange pertinent, contextually appropriate, and relevant patient information • perform this activity in multiple settings, appropriate to the speciality, including ambulatory, critical care, and inpatient settings.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity
	The trainee will:	The trainee may:
Medical expertise	• facilitate optimal transitions of care for patients • identify and manage key risks for patients during transition • anticipate possible changes in patients' conditions, and provide recommendations on how to manage them	• demonstrate awareness of the details of patients' conditions, illness severity, and potential emerging issues, with appropriate actions • provide accurate summaries of patients' information with accurate identification of problems or issues
Communication	• write relevant and detailed medical record entries, including clinical assessments and management plans • write comprehensive and accurate summaries of care, including discharge summaries, clinic letters, and transfer documentation • initiate and maintain verbal communication with other health professionals, when required • communicate with patients[8], families, and/or carers about transitions of care, and engage and support these parties in decision making	• communicate clearly with clinicians and other caregivers • use standardised verbal and written templates to improve the reliability of information transfer and prevent errors and omissions • communicate accurately and in a timely manner to ensure effective transitions between settings, and continuity and quality of care

[8] References to patients in the remainder of this document may include their families, whānau, and/or carers.

Quality and safety	• identify patients at risk of poor transitions of care, and mitigate this risk • use electronic tools (where available) to securely store and transfer patient information • use consent processes, including written consent if required, for the release and exchange of information • recognise the medicolegal context of written communications	• ensure that handover is complete, or work to mitigate risks if incomplete • ensure all outstanding results or procedures are followed up by receiving units and clinicians • keep patients' information secure, adhering to relevant legislation regarding personal information and privacy
Teaching and learning	• integrate clinical education in handover sessions and other transition of care meetings • tailor clinical education to the level of the professional parties involved	• take opportunities to teach junior colleagues during handover, as necessary
Cultural safety	• communicate with careful consideration to health literacy, language barriers, and culture regarding patient preferences, and whether they are realistic and possible, respecting patient choices • recognise the timing, location, privacy, and appropriateness of sharing information with patients and their families or carers	• include relevant information regarding patients' cultural or ethnic background in handovers, and whether an interpreter is required
Ethics and professional behaviour	• disclose and share only contextually appropriate medical and personal information • recognise the clinical, ethical, and legal rationale for information disclosure • share information about patients' care in a manner consistent with privacy law and professional guidelines on confidentiality • be able to explain the additional complexity related to some types of information, such as genetic information and blood-borne virus status, and seek appropriate advice about disclosure of such information • interact in a collegiate and collaborative way with professional colleagues during transitions of care	• maintain respect for patients, families, carers, and other health professionals, including respecting privacy and confidentiality
Judgement and decision making	• ensure patients' care is in the most appropriate facility, setting, or provider	• use a structured approach to consider and prioritise patients' issues

		• recognise personal limitations and seek help in an appropriate way when required
Leadership, management, and teamwork	• share the workload of transitions of care appropriately, including delegation • recognise the medical governance of patient care, and the differing roles of team members • show respect for the roles and expertise of other health professionals, and work effectively as a member of professional teams • ensure that multidisciplinary teams provide the opportunity for patients' engagement and participation when appropriate	• recognise factors that impact transfers of care, and help subsequent health professionals understand the issues to continue care • work to overcome the potential barriers to continuity of care, appreciating the role of handover in overcoming these barriers
Health policy, systems, and advocacy	• contribute to processes for managing risks, and identify strategies for improvement in transition of care • engage in organisational processes to improve transitions of care, such as formal surveys or follow-up phone calls after hospital discharge	• factor transport issues and costs to patients into arrangements for transferring patients to other settings

EPA 6: Acute care

Theme	Acute care	AT-EPA-06
Title	**Manage the early care of acutely unwell patients**	
Description	This activity requires the ability to: • assess seriously unwell or injured patients, and initiate management • recognise clinical deterioration, and respond by following the local process for escalation of care • recognise and manage acutely unwell patients who require resuscitation • lead the resuscitation team initially, and involve other necessary services • liaise with transport services and medical teams • perform this activity primarily in inpatient settings.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity
	The trainee will:	The trainee may:
Medical expertise	• recognise immediate life-threatening conditions and deteriorating and critically unwell patients[9], and respond appropriately • perform advanced life support, according to resuscitation council guidelines, to a high level of advanced resuscitation skills • demonstrate knowledge of potential risks and complications of resuscitation • effectively assess, diagnose, and manage acute undifferentiated clinical presentations • select investigations that ensure maximum patient safety through excluding or diagnosing critical patient issues • systematically identify causes of acute deterioration in health status and levels of physical and cognitive functioning • manage escalations or transitions of care in a proactive and timely manner	• recognise seriously unwell patients requiring immediate care • apply basic life support as indicated • recognise general medical principles of caring for patients with undifferentiated and undiagnosed conditions • identify potential causes of current deterioration, and comply with escalation protocols • facilitate initial tests to assist in diagnosis, and develop management plans for immediate treatment • document information to outline the rationale for clinical decisions and action plans • assess perioperative and periprocedural patients

[9] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• optimise medical management before, during, and after operations • develop plans of multidisciplinary treatment, rehabilitation, and secondary prevention following acute events • provide clear and effective discharge summaries with recommendations for ongoing care	
Communication	• communicate clearly with other team members, and coordinate efforts of multidisciplinary team members • use closed-loop and clear communication with other healthcare team members during resuscitation • facilitate early communication with patients, families, and healthcare team members to allow shared decision making • negotiate realistic treatment goals, and determine and explain the expected prognoses and outcomes • employ communication strategies appropriate for younger patients or those with cognitive difficulties • explain situations to patients in a sensitive and supportive manner, avoiding jargon and confirming their understanding • determine the level of health literacy of individual patients and level of understanding of agreed care decisions	• demonstrate communication skills to sufficiently support the function of multidisciplinary teams • if possible, determine patients' understanding of their diseases and what they perceive as the most desirable goals of care
Quality and safety	• maintain up-to-date certification in advanced life support • use clinical information technology systems for conducting prospective and retrospective clinical audits • evaluate and explain the benefits and risks of clinical interventions based on individual patients' circumstances • identify evidence-based practice gaps using clinical indicators, and implement changes to improve patients' outcomes	• evaluate the quality of processes through well-designed audits • recognise the risks and benefits of operative interventions • raise appropriate issues for review at morbidity and mortality meetings • evaluate the quality and safety processes implemented within the workplace, and identify gaps in their structure

	• analyse adverse incidents and sentinel events to identify system failures and contributing factors • coordinate and encourage innovation, and objectively evaluate improvement initiatives for outcomes and sustainability	
Teaching and learning	• demonstrate effective supervision skills and teaching methods adapted to the context of the training • encourage questioning among junior colleagues and students in response to unanswered clinical questions • seek guidance and feedback from healthcare teams to reflect on encounters and improve future patients' care	• mentor and train others to enhance team effectiveness • provide constructive feedback to junior colleagues to contribute to improvements in individuals' skills • coordinate and supervise junior colleagues from the emergency department and wards
Research	• select studies based on optimal trial design, freedom from bias, and precision of measurement • evaluate the value of treatments in terms of relative and absolute benefits, cost, potential patient harm, and feasibility • evaluate the applicability of the results of clinical studies to the circumstances of individual patients, especially those with multiple comorbidities • specify research evidence to the needs of individual patients	• demonstrate efficient searching of literature databases to retrieve evidence • use information from credible sources to aid in decision making • refer to evidence-based clinical guidelines and protocols on acutely unwell patients • demonstrate awareness of the limitations of the evidence and the challenges of applying research in daily practice
Cultural safety	• negotiate health care decisions in a culturally appropriate way by considering variation in family structures, cultures, religion, or belief systems • integrate culturally appropriate care of Aboriginal and Torres Strait Islander peoples and Māori into patients' management • consider cultural, ethical, and religious values and beliefs in leading multidisciplinary teams	• practise cultural competency appropriate for the community serviced • proactively identify barriers to healthcare access
Ethics and professional behaviour	• develop management plans based on medical assessments of the clinical conditions and multidisciplinary assessments of functional capacity • advise patients of their rights to refuse medical therapy, including life-sustaining treatment	• communicate medical management plans as part of multidisciplinary plans • establish, where possible, patients' wishes and preferences about care • contribute to building a productive culture within teams

	• consider the consequences of delivering treatment that is deemed futile, directing to other care as appropriate • facilitate interactions within multidisciplinary teams that respect values, encourage involvement, and engage all participants in decision making • demonstrate critical reflection on personal beliefs and attitudes, including how these may affect patient care and health care policy	
Judgement and decision making	• recognise the need for escalations of care, and escalate to appropriate staff or services • integrate evidence related to questions of diagnosis, therapy, prognosis, risks, and cause into clinical decision making • reconcile conflicting advice from other specialties, applying judgement in making clinical decisions in the presence of uncertainty • use care pathways effectively, including identifying reasons for variations in care	• involve additional staff to assist in a timely fashion when required • recognise personal limitations and seek help in an appropriate way when required
Leadership, management, and teamwork	• work collaboratively with staff in the emergency department, intensive care, and other subspecialty inpatient units • manage the transition of acute medical patients through their hospital journeys • lead a team by providing engagement while maintaining a focus on outcomes	• collaborate with and engage other team members, based on their roles and skills • ensure appropriate multidisciplinary assessment and management • encourage an environment of openness and respect to lead effective teams
Health policy, systems, and advocacy	• use a considered and rational approach to the responsible use of resources, balancing costs against outcomes • prioritise patient care based on need, and consider available healthcare resources • collaborate with emergency medicine staff and other colleagues to develop policies and protocols for the investigation and management of common acute medical problems	• be cognisant of the systems for the escalation of care for deteriorating patients • recognise the role of clinician leadership and advocacy in appraising and redesigning systems of care that lead to better patient outcomes

EPA 7: Longitudinal care

Theme	Longitudinal care	AT-EPA-07
Title	**Manage and coordinate the longitudinal care of patients with chronic illness, disability, and/or long-term health issues**	
Description	This activity requires the ability to: • develop management plans and goals in consultation with patients[10], families, and/or carers • manage chronic and advanced conditions, comorbidities, complications, and disabilities • collaborate with other health care providers • ensure continuity of care • facilitate patients' and/or families' and/or carers' self-management and self-monitoring • engage with the broader health policy context.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision The trainee will:	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity The trainee may:
Medical expertise	• regularly assess and review care plans for patients with chronic conditions and disabilities, based on short- and long-term clinical and quality of life goals • provide documentation on patients' presentation, management, and progress, including key points of diagnosis and decision making to inform coordination of care • ensure patients contribute to their needs assessments and care planning • monitor treatment outcomes, effectiveness, and adverse events	• assess patients' knowledge, beliefs, concerns, and daily behaviours related to their chronic condition and/or disability and its management • contribute to medical record entries on histories, examinations, and management plans in a way that is accurate and sufficient as a member of multidisciplinary teams
Communication	• encourage patients' self-management through education to take greater responsibility for their care, and support problem solving • encourage patients' access to self-monitoring devices and assistive technologies	• provide healthy lifestyle advice and information to patients on the importance of self-management • work in partnership with patients, and motivate them to comply with agreed care plans

[10] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• communicate with multidisciplinary team members, and involve patients in that dialogue	
Quality and safety	• review medicine use, and ensure patients understand safe medication administration to prevent errors • support patients' self-management by balancing between minimising risk and helping them become more independent • participate in quality improvement processes impacting on patients' abilities to undertake normal activities of daily living	• participate in continuous quality improvement processes and clinical audits on chronic disease management • identify activities that may improve patients' quality of life
Teaching and learning	• contribute to the development of clinical pathways for chronic diseases management based on current clinical guidelines • educate patients to recognise and monitor their symptoms, and undertake strategies to assist their recovery	• use clinical practice guidelines for chronic diseases management
Research	• prepare reviews of literature on patients' encounters to present at journal club meetings • search for and critically appraise evidence to resolve clinical areas of uncertainty	• search literature using problem / intervention / comparison / outcome (PICO) format • recognise appropriate use of review articles
Cultural safety	• assist patients from culturally and linguistically diverse backgrounds to receive the support needed for long-term self-management	• provide culturally safe chronic disease management
Ethics and professional behaviour	• share information about patients' health care, consistent with privacy laws and professional guidelines on confidentiality • use consent processes for the release and exchange of health information • assess patients' decision-making capacity, and appropriately identify and use proxy decision makers	• share information between relevant service providers • acknowledge and respect the contribution of health professionals involved in patients' care
Judgement and decision making	• implement stepped care pathways in the management of chronic diseases and disabilities • recognise patients' needs in terms of both internal resources and external support on long-term health care journeys	• recognise personal limitations and seek help in an appropriate way when required

Leadership, management, and teamwork	• coordinate whole-person care through involvement in all stages of patients' care journeys • use a multidisciplinary approach across services to manage patients with chronic diseases and disabilities • develop collaborative relationships with patients, families, carers, and a range of health professionals	• participate in multidisciplinary care for patients with chronic diseases and disabilities, including organisational and community care on a continuing basis, appropriate to patients' context
Health policy, systems, and advocacy	• use health screening for early intervention and chronic diseases management • assess alternative models of health care delivery to patients with chronic diseases and disabilities • participate in government initiatives for chronic diseases management to reduce hospital admissions and improve patients' quality of life • encourage patients to access initiatives and services for patients with chronic diseases and disabilities	• demonstrate awareness of government initiatives and services available for patients with chronic diseases and disabilities, and display knowledge of how to access them

EPA 8: Communication with patients

Theme	Communication with patients	AT-EPA-08
Title	**Discuss diagnoses and management plans with patients**	
Description	This activity requires the ability to: • select suitable contexts, and include family and/or carers and other team members • adopt a patient-centred perspective, including adjusting for cognition, cultural background, and disabilities • select and use appropriate modalities and communication strategies • structure conversations intentionally • negotiate mutually agreed management plans • verify patients'[11], family members', or carers' understanding of information conveyed • develop and implement plans to ensure actions occur • ensure conversations are documented.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision The trainee will:	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity The trainee may:
Medical expertise	• anticipate and be able to correct any misunderstandings patients may have about their conditions and/or risk factors • inform patients of all aspects of their clinical management, including assessments and investigations, and give them adequate opportunity to question or refuse interventions and treatments • seek to understand the concerns and goals of patients, and plan management in partnership with them • present the following patient information verbally and document in written form: » diagnoses or differential diagnoses » key clinical findings of histories and examinations » proposed management plans » results of investigations	• apply knowledge of the scientific basis of health and disease to the management of patients • demonstrate awareness of the clinical problems being discussed • formulate management plans in partnership with patients

[11] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• provide information to patients to enable them to make informed decisions about diagnostic, therapeutic, and management options	
Communication	• use appropriate communication strategies and modalities for communication, such as emails, face-to-face, letters, phone calls, and telemedicine • speak directly to the patient rather than 'over them' to their family or carers • use active listening techniques • elicit patients' views, concerns, and preferences, promoting rapport • provide information to patients in plain language, avoiding jargon, acronyms, and complex medical terms • encourage questions, and answer them thoroughly • provide an environment that is private • ask for patients' consent before speaking in front of family members, carers, or friends • convey information such as diagnoses, prognoses, and management plans considerately and sensitively to patients and their families, seeking clarification if unsure of how best to proceed • practice gender inclusive care and promote equality	• select appropriate modes of communication • engage patients in discussions, avoiding the use of jargon • check patients' understanding of information • adapt communication style in response to patients' age, developmental level, and cognitive, physical, cultural, socioeconomic, and situational factors • collaborate with patient liaison officers as required
Quality and safety	• discuss with patients their condition and the available management options, including potential benefits and harms • provide information to patients in a way they can understand before asking for their consent • recognise and take precautions where patients may be vulnerable, such as issues of child protection, self-harm, or elder abuse • participate in processes to manage patients' complaints • assess capacity	• inform patients of the material risks associated with proposed management plans • treat information about patients as confidential

Teaching and learning	• discuss the aetiology of diseases and explain the purpose, nature, and extent of the assessments to be conducted • obtain informed consent or other valid authority before involving patients in teaching • obtain informed consent before involving patients in journal publications or medical education presentations	• respond appropriately to information sourced by patients, and to patients' knowledge regarding their condition
Research	• provide information to patients that is based on guidelines issued by the National Health and Medical Research Council and/or Health Research Council of New Zealand • provide information to patients in a way they can understand before asking for their consent to participate in research • obtain an informed consent or other valid authority before involving patients in research	• refer to evidence-based clinical guidelines • demonstrate awareness of the limitations of the evidence and the challenges of applying research in daily practice
Cultural safety	• demonstrate effective and culturally competent communication with Aboriginal and Torres Strait Islander peoples and Māori • effectively communicate with members of other cultural groups by meeting patients' specific language, cultural, and communication needs • use qualified language or cultural interpreters to help meet patients' communication needs • provide plain language and culturally appropriate written materials to patients when possible	• identify when to use interpreters • allow enough time for communication across linguistic and cultural barriers
Ethics and professional behaviour	• encourage and support patients to be well informed about their health, and to use this information wisely when they make decisions • encourage and support patients and, when relevant, their families or carers, in caring for themselves and managing their health • demonstrate respectful, professional relationships with patients • prioritise honesty, patients' welfare, and community benefit above self-interest	• respect the preferences of patients • communicate appropriately, consistent with the context, and respect patients' needs and preferences • maximise patient autonomy, and support their decision making • avoid sexual, intimate, and/or financial relationships with patients • demonstrate a caring attitude towards patients

	• develop a high standard of personal conduct, consistent with professional and community expectations • support patients' rights to seek second opinions	• respect patients, including understanding and protecting their rights to privacy and confidentiality • behave equitably towards all, irrespective of gender, age, culture, socioeconomic status, sexual preferences, beliefs, contribution to society, illness-related behaviours, or the illness itself • use social media ethically and according to legal obligations to protect patients' confidentiality and privacy
Leadership, management, and teamwork	• communicate effectively with team members involved in patients' care, and with patients, families, and carers • discuss medical assessments, treatment plans, and investigations with patients and primary care teams, working collaboratively with all • discuss patients' care needs with healthcare team members to align them with appropriate resources • facilitate an environment in which all team members feel they can contribute and their opinion is valued • communicate accurately and succinctly, and motivate others on the healthcare team	• answer questions from team members • summarise, clarify, and communicate responsibilities of healthcare team members • keep healthcare team members focused on patient outcomes
Health policy, systems, and advocacy	• collaborate with other services, such as community health centres and consumer organisations, to help patients navigate the healthcare system	• communicate with and involve other health professionals as appropriate

EPA 9: Prescribing

Theme	Prescribing	AT-EPA-09
Title	**Prescribe therapies tailored to patients' needs and conditions**	
Description	This activity requires the ability to: • take and interpret medication histories • choose appropriate medicines based on an understanding of pharmacology, taking into consideration age, benefits, comorbidities, potential drug interactions, and risks • communicate with patients[12], families, and/or carers about the benefits and risks of proposed therapies • provide instructions on medication administration effects and side effects • monitor medicines for efficacy and safety • review medicines and interactions, and cease where appropriate • collaborate with pharmacists.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity
	The trainee will:	The trainee may:
Medical expertise	• identify patients' disorders requiring pharmacotherapy • consider non-pharmacologic therapies • consider age, allergies, chronic disease status, lifestyle factors, patient preference, and potential drug interactions prior to prescribing new medications • plan for follow-up and monitoring	• be aware of potential side effects and practical prescription points, such as medication compatibility and monitoring in response to therapies • select medicines for common conditions accurately, appropriately, and safely • demonstrate awareness of the benefits, contraindications, dosage, drug interactions, rationale, risks, and side effects • identify and manage adverse events
Communication	• discuss and evaluate the benefits, rationale, and risks of treatment options, making decisions in partnership with patients • write clear and legible prescriptions in plain language, and include specific indications for the anticipated duration of therapy • describe dosages and rate of change when titrating medication doses up or down	• discuss and explain the rationale for treatment options with patients, families, or carers • explain the benefits and burdens of therapies, considering patients' individual circumstances • write clearly legible scripts or charts using generic names of the required medication in full, including mg / kg / dose information and all legally required information

[12] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• educate patients about the expected outcomes, intended use, and potential side effects for each prescribed medication, addressing the common, rare, and serious side effects at the time of prescribing to improve patients' adherence to pharmacotherapy • describe how the medication should and should not be administered, including any important relationships to food, time of day, and other medicines being taken • ensure patients' understanding by repeating back pertinent information, such as when to return for monitoring and whether therapy continues after this single prescription • identify patients' concerns and expectations, and explain how medicines might affect their everyday lives • discuss consequences of non-adherence to pharmacotherapy, particularly in relation to factors such as driving and antiseizure medications	• seek further advice from experienced clinicians or pharmacists when appropriate
Quality and safety	• review medicines regularly to reduce non-adherence, and monitor treatment effectiveness, possible side effects, and drug interactions, ceasing unnecessary medicines • use electronic prescribing tools where available, and access electronic drug references to prevent errors caused by drug interactions and poor handwriting • prescribe new medicines only when they have been demonstrated to be safer or more effective at improving patient-oriented outcomes than existing medicines • participate in clinical audits to improve prescribing behaviour, including an approach to polypharmacy and prescribing cascade	• check the dose before prescribing • monitor side effects of medicines prescribed • identify medication errors and institute appropriate measures • use electronic prescribing systems safely • rationalise medicines to avoid polypharmacy

	• report suspected adverse events to the Advisory Committee on Medicines, and record it in patients' medical records	
Teaching and learning	• use continuously updated software for computers and electronic prescribing programs • ensure patients understand management plans, including adherence issues • use appropriate guidelines and evidence-based medicine resources to maintain a working knowledge of current medicines, keeping up to date on new medicines	• undertake continuing professional development to maintain currency with prescribing guidelines • reflect on prescribing, and seek feedback from a supervisor
Research	• critically appraise research material to ensure any new medicine improves patient-oriented outcomes more than older medicines, and not just more than placebo • use sources of independent information about medicines that provide accurate summaries of the available evidence on new medicines	• make therapeutic decisions according to the best evidence • recognise where evidence is limited, compromised, or subject to bias or conflict of interest
Cultural safety	• explore patients' understanding of and preferences for non-pharmacological and pharmacological management • offer patients effective choices based on their expectations of treatment, health beliefs, and cost • interpret and explain information to patients at the appropriate level of their health literacy • anticipate queries to help enhance the likelihood of medicines being taken as advised • ensure appropriate information is available at all steps of the medicine management pathway	• recognise patients' cultural and religious backgrounds, attitudes, and beliefs, and how these might influence the acceptability of non-pharmacological and pharmacological management approaches
Ethics and professional behaviour	• provide information to patients about prescribed medicines and: » how to take the medicine » potential side effects » what the medicine does » what the medicine is for » when the medicine should be stopped	• consider the efficacy of medicines in treating illnesses, including the relative merits of different non-pharmacological and pharmacological approaches • follow regulatory and legal requirements and limitations regarding prescribing

	• make prescribing decisions based on good safety data when the benefits outweigh the risks involved • recognise the ethical implications of pharmaceutical industry-funded research and marketing	• follow organisational policies regarding pharmaceutical representative visits and drug marketing
Judgement and decision making	• use a systematic approach to select treatment options • use medicines safely and effectively to get the best possible results • choose suitable medicines only if medicines are considered necessary and will benefit patients • prescribe medicines appropriately to patients' clinical needs, in doses that meet their individual requirements, for a sufficient length of time, with the lowest cost to them • evaluate new medicines in relation to their possible efficacy and safety profile for individual patients	• recognise personal limitations and seek help in an appropriate way when required • consider the following factors for all medicines: » contraindications » cost to patients, families, and the community » funding and regulatory considerations » generic versus brand medicines » interactions » risk-benefit analysis
Leadership, management, and teamwork	• interact with medical, pharmacy, nursing staff, and general practitioners to ensure safe and effective medicine use	• work collaboratively with pharmacists • participate in medication safety and morbidity and mortality meetings
Health policy, systems, and advocacy	• choose medicines in relation to comparative efficacy, safety, and cost-effectiveness against medicines already on the market • prescribe for individual patients, considering allergies, current medicines, history, and preferences, ensuring that resources are used wisely for the benefit of patients	• prescribe in accordance with the organisational policy

EPA 10: Procedures

Theme	Procedures	AT-EPA-10
Title	**Plan, prepare for, perform, and provide aftercare for important practical procedures**	
Description	This activity requires the ability to: • select appropriate procedures in partnership with patients[13], their families, and/or carers • obtain informed consent • set up the equipment, maintaining an aseptic field • perform procedures • manage unexpected events and complications during and after procedures • provide aftercare for patients • communicate aftercare protocols and instructions to patients and medical and nursing staff • interpret the results and outcomes of procedures, including imaging and reports • communicate the outcome of procedures and associated investigations to patients • perform this activity across multiple relevant settings.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision The trainee will:	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity The trainee may:
Medical expertise	• select procedures by assessing patient-specific factors, including alternatives, benefits, and risks • confidently and consistently perform a range of common procedures • ensure team members are aware of all allergies and adverse reactions identified, and take precautions to avoid allergies and adverse reactions during procedures • ensure patients have complied with preprocedural preparation • confirm the correct position / site / side / level on patients for planned procedures	• assess patients and identify indications for procedures • check for allergies and adverse reactions • consider risks and complications of procedures • interpret results of common diagnostic procedures • organise and document postprocedural review of patients

[13] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• recognise and manage effectively complications arising during or after procedures • recognise and correctly interpret normal and abnormal findings of diagnostic procedures • perform a lumbar puncture (LP)	
Communication	• accurately document procedures in the clinical notes, including informed consent, procedures requested and performed, reasons for procedures, medicines given, aseptic technique, and aftercare • explain procedures clearly to patients, families, and carers, including reasons for procedures, potential alternatives, and possible risks, to facilitate informed choices • counsel patients sensitively and effectively, and support them to make informed choices • address patients', families', or carers' concerns relating to procedures, providing opportunities to ask questions • tailor language according to individual patients' age and capacity to understand • communicate effectively with team members, patients, families, and carers prior to, during, and after procedures • ensure team members are confident and competent in their assigned roles	• explain the process of procedures to patients without providing a broader context • help patients, families, and carers choose procedures • communicate with members of procedural teams so all team members understand who each member is • discuss postprocedural care with patients, families, and carers • complete relevant patients' documentation, and conduct appropriate clinical handovers
Quality and safety	• obtain informed consent or other valid authority before undertaking any procedure • set up all necessary equipment, and consistently use universal precautions and aseptic technique • confirm patients' identification, verify the procedure, and, where appropriate, the correct position / site / side / level for the procedure • ensure that information on patients' consent forms matches procedures to be performed • identify, document, and appropriately notify of any adverse events or equipment malfunction	• provide information in a manner so that patients are fully informed when consenting to any procedures • demonstrate an inconsistent application of aseptic technique • identify patients using approved patients' identifiers before any treatment or intervention is initiated

Teaching and learning	• refer to and/or be familiar with relevant published procedural guidelines prior to undertaking procedures • organise or participate in in-service training on new technology • provide specific and constructive feedback and comments to junior colleagues • initiate and conduct skills training for junior staff	• participate in continued professional development • help junior colleagues develop new skills • actively seek feedback on personal technique until competent
Cultural safety	• consider individual patients' cultural perception of health and illness, and adapt practice accordingly	• respect religious, cultural, linguistic, and family values and differences
Ethics and professional behaviour	• confidently perform common procedures • identify appropriate proxy decision makers when required • show respect for the knowledge and expertise of colleagues • maximise patient autonomy in decision making	• perform procedures when adequately supervised • follow procedures to ensure safe practice
Judgement and decision making	• identify roles and optimal timing for diagnostic procedures • critically appraise information from the assessment and evaluation of risks and benefits to prioritise patients on waiting lists • make clinical judgements and decisions based on the available evidence • select the most appropriate and cost-effective diagnostic procedures • adapt procedures in response to assessments of risks to individual patients • select appropriate investigations on the samples obtained in diagnostic procedures	• prioritise which patients receive procedures first (if there is a waiting list) • assess personal skill levels, and seek help with procedures when appropriate • use tools and guidelines to support decision making
Leadership, management, and teamwork	• explain critical steps, anticipated events, and equipment requirements to teams on planned procedures • provide staff with clear aftercare instructions, and explain how to recognise possible complications	• ensure all relevant team members are aware that a procedure is occurring • discuss patients' management plans for recovery with colleagues

	• identify relevant management options with colleagues, according to their level of training and experience, to reduce errors, prevent complications, and support efficient teamwork • coordinate efforts, encourage others, and accept responsibility for work done	
Health policy, systems, and advocacy	• discuss serious incidents at appropriate clinical review meetings • initiate local improvement strategies in response to 'near misses' or serious incidents • undertake audits of practice • use resources efficiently when performing procedures	• perform procedures in accordance with the organisational guidelines and policies • identify or be able to discuss incidents of concern with team

EPA 11: Investigations

Theme	Investigations	AT-EPA-11
Title	**Select, organise, and interpret investigations**	
Description	This activity requires the ability to: • select, plan, and use evidence-based clinically appropriate investigations • appropriately prioritise patients receiving investigations by clinical need • evaluate the anticipated value of investigations • work in partnership with patients[14], including their families and/or carers if they so wish, to facilitate choices that are right for them • provide aftercare for patients (if needed) • interpret the results and outcomes of investigations • communicate the outcome of investigations to patients.	

Behaviours		
Professional practice framework Domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity
	The trainee will:	The trainee may:
Medical expertise	• choose evidence-based investigations as an adjunct to comprehensive clinical assessments • assess patients' concerns, and determine the need for specific tests that are likely to result in overall benefit • develop plans for investigations, identifying their roles and timing • recognise and correctly interpret findings, considering patients' specific circumstances, and act accordingly • recognise the concept of false positive and false negative results • respond appropriately to incidental findings • request and interpret reports on basic nerve conduction studies (NCS), such as studies for carpal tunnel syndrome, other common entrapment neuropathies, and peripheral neuropathies	• provide rationale for investigations • recognise the significance of abnormal test results, and act on these • consider patient factors and comorbidities • consider age-specific reference ranges

[14] References to patients in the remainder of this document may include their families, whānau, and/or carers.

Communication	• explain to patients the potential benefits, burdens, costs, risks, and side effects of each option, including the option to have no investigations • use clear and simple language, and check that patients understand the terms used and agree to proceed with proposed investigations • identify patients' concerns and expectations, providing adequate explanations on the rationale for individual test ordering • confirm whether patients understand the information they have been given and whether they need more information before proceeding with investigations • offer opportunities for patients to discuss investigations with their families • use written or visual material or other aids that are accurate and up to date to support discussions with patients • explain findings and outcomes of investigations to patients, and, with patients' consent, to their families and/or carers • give information that patients may find distressing in a considerate way	• discuss the benefits, complications, indications, and risks of investigations with patients before ordering investigations • explain the results of investigations to patients • arrange investigations, providing accurate and informative referrals, and liaise with other services where appropriate
Quality and safety	• identify adverse outcomes that may result from proposed investigations, focusing on patients' individual situations • identify risks that may result from not having an investigation • report 'near misses' and critical incidents • undertake regular audits	• consider the safety aspects of investigations when planning them • seek help with interpretation of test results for less common tests or indications or unexpected results
Teaching and learning	• use appropriate guidelines, evidence sources, and decision support tools • participate in clinical audits to improve test ordering strategies for diagnoses and screening	• undertake professional development to maintain currency with investigation guidelines
Research	• provide patients with relevant information if a proposed investigation is part of a research program	• refer to evidence-based clinical guidelines • consult current research on investigations

	• obtain written consent from patients if the investigation is part of a research program	
Cultural safety	• acknowledge patients' views and preferences about any proposed investigations and the adverse outcomes they are most concerned about	• consider patients' cultural and religious backgrounds, attitudes, and beliefs, and how these might influence the acceptability of proposed investigations
Ethics and professional behaviour	• remain within the scope of the authority given by patients (with the exception of emergencies) • discuss with patients how decisions will be made once the investigation has started and the patient is not able to participate in decision making • respect patients' decisions to refuse investigations, even if their decisions may not be appropriate or evidence based • advise patients there may be additional costs, which patients may wish to clarify before proceeding • explain the expected benefits as well as the potential burdens and risks of any proposed investigations before obtaining informed consent or other valid authority • demonstrate awareness of complex issues related to genetic information obtained from investigations, and subsequent disclosure of such information	• identify appropriate proxy decision makers when required • choose not to investigate in situations where it is not appropriate for ethical reasons • practise within current ethical and professional frameworks • practise within own limits, and seek help when needed • involve patients in decision making regarding investigations, obtaining the appropriate informed consent, including financial consent, if necessary
Judgement and decision making	• evaluate the benefits, costs, and potential risks of each investigation in clinical situations • adjust the investigative path depending on test results • consider whether patients' conditions may get worse or better if no tests are selected • consider the ramifications of incidental findings	• choose the most appropriate investigations for clinical scenarios in discussion with patients • recognise personal limitations and seek help in an appropriate way when required
Leadership, management, and teamwork	• consider the role other members of the healthcare team might play, and what other sources of information and support are available • ensure results are checked in a timely manner, taking responsibility for following up results	• demonstrate awareness of what parts of an investigation are provided by different doctors or health professionals

Health policy, systems, and advocacy	• select and justify investigations regarding the pathological basis of disease, appropriateness, cost effectiveness, safety, and utility • consider resource use through peer review of testing behaviours	

EPA 12: Clinic management

Theme	Clinic management	AT-EPA-12
Title	**Manage an outpatient clinic**	
Description	This activity requires the ability to: • oversee medical procedures and treatments • oversee quality improvement activities • communicate with patients[15], their families, and/or carers • liaise with other health professionals and team members • demonstrate problem-solving skills • responsibly use public resources.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision The trainee will:	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity The trainee may:
Medical expertise	• effectively identify and address current clinical concerns, as well as longer-term clinical objectives, appropriate to patients' context • evaluate environmental and lifestyle health risks, and advocate for healthy lifestyle choices • create accurate and appropriately prioritised problem lists as part of ambulatory care reviews • update documentation in a timeframe appropriate to the clinical situation of patients	• demonstrate awareness of the importance of prevention, early detection, health maintenance, and chronic condition management
Communication	• help patients navigate the healthcare system through collaboration and communication with other services, such as community health centres and consumer organisations • link patients to specific community-based health programs and group education programs	• wherever practical, meet patients' specific language and communication needs • facilitate the appropriate use of interpreter services and translated materials
Quality and safety	• practice health care that maximises patient safety • identify aspects of service provision that may be a risk to patients' safety	• take reasonable steps to address issues if patients' safety may be compromised

[15] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• ensure that patients are informed about fees and charges	• demonstrate awareness of a systematic approach to improving the quality and safety of health care • participate in organisational quality and safety activities, including clinical incident reviews
Teaching and learning	• critically appraise their own professional practice • demonstrate learning behaviour and skills in educating junior colleagues • maintain professional continuing education standards	• recognise the limits of personal expertise, and involve other professionals as needed to contribute to patients' care • use information technology appropriately as a resource for modern medical practice
Research	• obtain informed consent or other valid authority before involving patients in research • inform patients about their rights, the purpose of the research, procedures to be undertaken, and potential risks and benefits of participation before obtaining consent	• allow patients to make informed and voluntary decisions to participate in research
Cultural safety	• seek and apply knowledge of the cultural needs of the community, and how to shape service provision appropriately • mitigate the influence of own culture and beliefs on interactions with patients and decision making • adapt practice to improve culturally safe patient engagement and health outcomes	• acknowledge the social, economic, cultural, and behavioural factors influencing health, both at individual and population levels
Ethics and professional behaviour	• identify and respect the boundaries that define professional and therapeutic relationships • respect the roles and expertise of other health professionals • comply with the legal requirements of preparing and managing documentation • demonstrate awareness of financial and other conflicts of interest	• recognise the responsibility to protect and advance the health and wellbeing of individuals and communities • maintain the confidentiality of documentation, and store clinical notes appropriately • ensure that the use of social media is consistent with ethical and legal obligations
Judgement and decision making	• integrate prevention, early detection, health maintenance, and chronic condition management, where relevant, into clinical practice • work to achieve optimal and cost-effective patient care	• demonstrate awareness of the appropriate use of diagnostic interventions, human resources, therapeutic modalities, and health care facilities

Leadership, management, and teamwork	• prepare for and conduct clinical encounters in a well-organised and time-efficient manner • work effectively as a member of multidisciplinary teams or other professional groups • ensure that all important discussions with colleagues, multidisciplinary team members, and patients are appropriately documented • review discharge summaries, notes, and other communications written by junior colleagues • support colleagues who raise concerns about patient safety	• attend relevant clinical meetings regularly
Health policy, systems, and advocacy	• demonstrate capacity to engage in the surveillance and monitoring of the health status of populations in the outpatient setting • maintain collaborative relationships with health agencies and services • apply the principles of efficient and equitable allocation of resources to meet individual, community, and national health needs	• recognise common population health screening and prevention approaches

EPA 13: End-of-life care

Theme	End-of-life care	AT-EPA-13
Title	**Manage the care of patients at the end of their lives**	
Description	This activity requires the ability to: • recognise the dying phase • support patients[16] to plan for their advance care, and document their own wishes • manage end-of-life care plans.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity
	The trainee will:	The trainee may:
Medical expertise	• accurately assess patients' physical and psychological symptoms • estimate prognosis and communicate this appropriately, if requested, including the uncertainties around such estimates • develop and clearly document individualised end-of-life care plans, including patients' preferences for treatment options, resuscitation plans, preferred place of care, and preferred place of death • provide holistic symptom management, focusing on psychological and physical distress, according to patients' wishes • avoid unnecessary investigations or treatments, ensuring physical and psychosocial support • review the goals of care and treatment plans with patients, families, and/or carers if significant changes in patients' conditions or circumstances occur • recognise and manage the terminal phase in a timely way	• demonstrate awareness of the principles of care for patients at the end of their lives • provide timely assessment, and document patients' care plans • manage physical symptoms in alignment with patients' wishes • take steps to alleviate patients' symptoms and distress • correctly identify patients approaching the end of life, and provide symptomatic treatment • adequately manage patients in their terminal phase • recognise the role of the palliative care physician, and when referral is appropriate

[16] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• discuss issues with patients and/or caregivers, and consult with patients and/or caregivers to determine management plans that prevent suffering • manage symptoms such as anxiety, dyspnoea, and pain • ensure spiritual and cultural factors are involved throughout the end-of-life process	
Communication	• establish supportive relationships with patients, families, and/or carers based on understanding, trust, empathy, and confidentiality • explore patients' concerns across physical, spiritual, cultural, and psychological domains thoughtfully • identify opportunities to discuss end-of-life care, aligning it with patients' values and preferences • identify proxy decision makers or other persons nominated by the patient to be involved in discussions about their end-of-life care • identify and document lists of close family members or carers, and develop support plans for them • provide bereaved families or carers with written information about access to bereavement support • communicate effectively and in a timely manner with other health professionals involved in patients' care • acknowledge and convey the legal and ethical considerations of voluntary assisted dying	• discuss with patients, families, and/or carers the goals of care and treatment, and document this in patients' clinical records • ensure consistent messages are given to patients, families, and/or carers about treatment options, their likelihood of success, risks, and prognosis • provide honest and clear clinical assessment summaries of situations, using plain language and avoiding medical jargon • discuss with families and/or carers the availability of appropriate support and bereavement care
Quality and safety	• conduct medication chart safety audits and multidisciplinary mortality and morbidity meetings, and provide feedback to colleagues • review all deaths to determine the safety and quality of patients' end-of-life care and how it could be improved	• collect and review data on the safety and effectiveness of end-of-life care delivery • communicate the content of discussions about prognoses and advance care planning to multidisciplinary teams • ensure that actual care is aligned with patients' documented wishes

	• develop monitoring and evaluation strategies to capture feedback about the quality of care from multidisciplinary team members, patients, families, and carers • review technological systems and processes that support safe and high-quality end-of-life care	
Teaching and learning	• provide supervision, support, and teaching to develop the skills of junior colleagues on end-of-life care • reflect on personal practice, and use this process to guide continuing professional development • ensure all members of multidisciplinary teams receive education on their roles and responsibilities for managing end-of-life care • promote education covering: » competencies for providing culturally responsive end-of-life care to Aboriginal and Torres Strait Islander peoples and Māori, and to people from other cultural backgrounds » ethical and medicolegal issues » relevant legislation in the state, territory, or region	• participate in education on disease-specific symptom assessment and evidence-based symptom management • participate in upskilling in best practice of end-of-life care management • encourage junior colleagues to participate in multidisciplinary case reviews, mortality and morbidity meetings, and adverse event reviews
Research	• ensure that quality end-of-life care management processes are evidence based and outcome focused • use systematic reviews or personal reviews and appraisal of literature as evidence for the appropriate management • support clinical trials to build the end-of-life care evidence base	• recognise that the evidence may be insufficient to resolve uncertainty and make definitive decisions
Cultural safety	• practise culturally responsible medicine based on understanding the personal, historical, and cultural influences on patients, families, and carers • develop strategies for identifying culturally appropriate decision makers, and obtain their input in discussions of patients' end-of-life care • offer support to patients, families, and/or carers to include cultural or religious practices in their care	• recognise, respect, and respond to individual preferences and needs of patients, regardless of their culture and religious beliefs • support patients, families, and carers with communication difficulties associated with cultural and linguistic diversity

Ethics and professional behaviour	• ensure all team members discuss end-of-life care with patients, and act on expressed patient preferences • enhance the quality of life for patients at the end of life to minimise pain and suffering caused by ineffective treatments • recognise the complexity of ethical issues related to human life and death when considering the allocation of scarce resources • recognise feelings of moral distress and burnout in themselves and colleagues	• ensure that information on advance care plans, treatment plans, goals of care, and patients' treatment preferences is available to all involved in patients' care • ensure patients' dignity is preserved • respond appropriately to distress or concerns of colleagues, patients, families, and carers
Judgement and decision making	• maximise patients' autonomy and their best interests when making treatment decisions • liaise with other relevant services, providing referrals as necessary	• define and document patients', families', and/or carers' goals and agreed outcomes
Leadership, management, and teamwork	• ensure care plans are communicated to all teams involved in patients' care, including relevant community care providers • define the responsibilities and roles of team members involved in patients' care • achieve agreement between multidisciplinary teams about patients' treatment options • coordinate care and support to be provided in patients' preferred place of care • effectively manage personal challenges of dealing with death and grief	• coordinate end-of-life care to minimise fragmentation of care • document multidisciplinary care plans, including the terminal phase
Health policy, systems, and advocacy	• participate in developing frameworks for organisational advance care planning • allocate resources according to the organisational strategic plan to support systems for effective delivery of end-of-life care • advocate for the needs of individual patients, social groups, and cultures within the community who have specific palliative care needs or inequitable access to palliative care services	• allocate scarce resources effectively • support community-based service providers to build capacity for people to be cared for in their preferred place of death

Knowledge Guides

Knowledge guides (KGs) provide detailed guidance to trainees on the important topics and concepts trainees need to understand to become experts in their chosen specialty.

Trainees are not expected to be experts in all areas or have experience related to all items in these guides.

#	Title
1	Scientific foundations of neurology
2	Pain, including headaches and facial pain
3	Disorders of consciousness and sleep
4	Disorders of memory, including dementia
5	Paroxysmal disorders, including seizures, syncope, and stroke
6	Disorders of vision and other senses
7	Weakness and sensory change – central and peripheral disorders
8	Disorders of gait and balance, including disequilibrium, dizziness, and vertigo
9	Movement disorders

EPIDEMIOLOGY, PATHOPHYSIOLOGY, AND CLINICAL SCIENCES

Advanced Trainees will have in-depth knowledge of the topics listed under each clinical sciences heading.

For the statistical and epidemiological concepts listed, trainees should be able to describe the underlying rationale, the indications for using one test or method over another, and the calculations required to generate descriptive statistics.

Central and peripheral nervous system

- Anatomy and physiology of the nervous system, including neuroembryology
- Fundamental principles of neurophysiology
- Mechanisms by which underlying neuroanatomical, neuropathological, and neurophysiological processes result in neurological symptoms and abnormal neurological signs
- Microanatomy and histology of brain, meninges, and peripheral nerves

Neuropsychiatry

- Diseases which present as, and can be confused with, neurological conditions, such as weakness due to conversion disorder and non-epileptic seizures
- Pharmacological and behavioural treatment of neuropsychiatric illnesses
- Psychological aspects of illnesses and their management, such as:
  - anxiety
  - conversion
  - depression
  - psychosis

Neurorehabilitation

- Formulate a prognosis based on an understanding of the natural history of the relevant condition coupled with clinical assessment of the relevant markers for recovery
- Neurorehabilitation, including:
  - goal setting
  - indications for referral
  - setting realistic outcome expectations
  - the techniques employed
- Recovery from neurological illness and/or injury, including the natural history and neuronal plasticity
- Referral to rehabilitation physicians and/or allied health professionals involved in rehabilitation, including:
  - continence advisors
  - occupational therapists
  - physiotherapists
  - social workers
  - speech pathologists

Therapeutic interventions

- Devices used in the specialist management of neurological diseases, such as implantable brain stimulators and focused ultrasound:
  - common and uncommon adverse effects
  - indications
  - monitoring requirements
  - neuroanatomy, neurophysiology, and neuropathology, where relevant
  - safe and rational use
- Endovascular procedures, including, but not limited, to thrombectomy / therapy (EVT) for stroke
- Immunotherapy and cytotoxic drugs

- Management strategies for drug-resistant conditions, such as drug-resistant epilepsy, including surgical management
- Medication to treat acute and chronic neurological illness:
  - common and uncommon adverse effects
  - indications
  - monitoring requirements
  - potential drug interactions
  - safe and rational use
- Neuropharmacology drug interactions, metabolism, pharmacodynamics, and pharmacokinetics, along with the potential role of pharmacogenomics
- Pharmacological therapy and other forms of management for various diseases and disorders
- Plasmapheresis:
  - common and uncommon adverse effects
  - indications
  - monitoring requirements
  - safe and rational use

INVESTIGATIONS, PROCEDURES, AND CLINICAL ASSESSMENT TOOLS

Advanced Trainees will know the scientific foundation of each investigation and procedure, including relevant anatomy and physiology. They will be able to interpret the reported results of each investigation or procedure.

Advanced Trainees will know how to explain the investigation or procedure to patients[17], families, and carers, and be able to explain procedural risk and obtain informed consent where applicable.

Cerebrospinal fluid (CSF)

- Abnormalities seen on lumbar puncture (LP)
- Interpret CSF results, including:
  - opening pressure
  - special tests:
    - amino acids
    - antibodies:
      - autoimmune
      - paraneoplastic
    - CSF cytology
    - glucose ratio
    - neurotransmitters
    - oligoclonal bands
    - polymerase chain reaction (PCR) for viruses
  - standard tests:
    - cell counts
    - culture
    - glucose
    - gram stain
    - protein
    - xanthochromia
- Limitations of interpretation, and the implications for formulating diagnoses
- LP:
  - contraindications
  - limitations to interpretation
  - requests
  - urgent investigation
- Neuroanatomy and neurophysiology of CSF, including the pathological mechanisms that underlie abnormalities of pressure and CSF constituents
- Normal ranges of CSF opening pressure and the various laboratory measurements

[17] References to patients in the remainder of this document may include their families, whānau, and/or carers.

- Potential complications of LP and the management of post-LP symptoms, including the role of blood patch in treating post-LP headache

Clinical neurophysiology

- Abnormalities on clinical neurophysiology investigations
- Clinical neurophysiology modalities
- Interpret and report EEG and evoked potentials results, including:
  - abnormal and normal EEG waveforms
  - EEG electrode placement and recording
  - localising focal epileptiform discharges and slow wave activity
  - physiological basis of EEG potentials and waveforms
  - reporting EEG studies, and interpret findings in clinical context
  - role and limitations of EEG in clinical neurology
  - skills and knowledge required to appropriately request studies and interpret reports as an informed consumer
  - technology used for EEG recording
  - the change in normal EEG patterns across the lifespan
- Interpret and report electromyography (EMG) and nerve conduction study (NCS) results, including:
  - interpreting EMG and NCS reports
  - physiological basis of EMG and NCS potentials and waveforms
  - skills and knowledge required to appropriately request studies and interpret reports as an informed consumer
  - technology used for EMG and NCS recording
- Interpret results of clinical neurophysiology tests, and synthesise these findings with other clinical data in the management of patients with neurological conditions
- Neuroanatomy and neurophysiology of:
  - muscle
  - neuromuscular junction
  - peripheral nervous system
- Neurophysiological investigations:
  - discuss the results with a neurophysiologist
  - limitations to interpretation
  - potential complications
  - questioning a formal report
  - requesting further test(s)
  - requests
  - urgent investigation
- Role of evoked potentials

Neurogenetics

- Abnormalities on neurogenetic testing in appropriate conditions
- Genetics and the patterns of inheritance of inherited neurological conditions, including classifications of genetic syndromes
- Limitations of interpretation, and the implications for formulating a diagnosis
- Pre-test counselling and potential implications of a positive diagnosis for patients and families
- Referral to neurogeneticist
- Techniques used in neurogenetics laboratories, including limitations in interpretation of the results
- Utility of genetic testing in neurological diagnosis, even in asymptomatic individuals

Neuroimaging

- Abnormalities on neuroimaging investigations
- Appearance of a normal brain and spinal cord on neuroimaging techniques, including vascular anatomy
- Basic principles underlying the various imaging modalities
- Considerations of performing neuroimaging, including radiation risks and technical difficulties
- Limitations of interpretation, and the implications for formulating a diagnosis
- Neuroimaging investigations:
  - limitations to interpretation
  - potential complications
  - questioning a formal report
  - requesting further test(s)
  - requests
  - urgent investigation
- Pathological mechanisms that underlie imaging abnormalities
- Recognise when to request further tests, and when to discuss the results with a neuroradiologist
- Relevant neuroanatomy of the brain and spinal cord and their respective vascular supply

Neuroimmunology

- Abnormalities seen on neuroimmunological testing in appropriate conditions
- Immunology and the processes involved in the generation of immunologically mediated neurological conditions
- Limitations of interpretation, and the implications for formulating a diagnosis
- Neuroimmunologist referral
- Pharmacology management of neuroimmunology disease
- Techniques used in the neuroimmunology laboratory, including limitations to interpretation of the results

Neuropathology

- Importance of communication with neuropathologists regarding suspected diagnosis and differential diagnosis
- Limitations of interpretation, and the implications for formulating a diagnosis
- Neuroanatomy of brain, muscle, and nerve, coupled with an understanding of the pathological mechanisms that underlie abnormalities seen on neuropathology
- Neuropathology investigations, such as when to request them and what limitations there might be to interpretation
- Potential complications of neuropathology investigations, and the management of these complications

Neuropsychology

- Abnormalities detected in neuropsychological testing
- Limitations of interpretation, and the implications for formulating a diagnosis
- Neuroanatomy and cognitive functions of the brain, and broadly how the various neuropsychological domains are tested by the neuropsychologist
- Role of the neurologist and neuropsychologist in assessing competence and determining patients' decision-making and testamentary capacity
- When to request neuropsychological testing, and what limitations there might be to interpretation

Neurosurgery, including vascular surgery and interventional radiology

- Common techniques used by neurosurgeons, vascular surgeons, and interventional radiologists in the management of neurological conditions
- Potential complications of procedures
- Procedures:
  - brain tumour surgery, such as:
    - biopsy
    - debulking
    - excision
  - CSF shunting, CSF diversion procedures, and neuroendoscopy
  - emergency surgical procedures for the management of trauma, such as evacuation of intracranial haematoma and decompressive hemicraniectomy
  - functional neurosurgery, such as:
    - deep brain stimulation
    - movement disorders
    - procedures for epilepsy
    - spinal surgery, such as:
      - laminectomy
      - microdiscectomy
  - vascular surgery, such as:
    - aneurysm clipping and coiling
    - carotid endarterectomy
    - endovascular thrombectomy / therapy (EVT)
    - surgical procedures for treatment of moyamoya disease
- When to refer to the:
  - neurointerventionalist
  - neurosurgeon
  - vascular surgeon

IMPORTANT SPECIFIC ISSUES

Advanced Trainees will identify important specialty-specific issues and the impact of these on diagnosis, management and outcomes.

End-of-life (EOL) care

- EOL issues and consulting with patients, families, and/or carers to determine management plans that prevent suffering
- Manage symptoms, such as:
  - anxiety
  - dyspnoea
  - pain
- Principles of the techniques used by palliative care physicians, along with the potential complications of any procedures involved
- Prognosis and implications of these disorders
- Role of the neurosurgeon and the intensive care unit, and when referral is appropriate
- Role of the palliative care physician, and when referral is appropriate

Neurological emergencies

- Evidence-based pharmacological therapy, potential complications, and other forms of management of various conditions presenting as emergencies, as well an ability to instigate appropriate treatment
- Neuroanatomy, neuropathology, and neurophysiology relevant to the various conditions presenting as neurological emergencies
- Rapid clinical assessment of patients with a neurological emergency

Patient-centred care

- Impact and interrelationship of comorbidities and neurological conditions on each other, including:
  - clinical presentation
  - diagnostics
  - impact of illness
  - management
  - prognostics
- Patient care considerations for specific patient groups and those with culturally diverse backgrounds, including:
  - Aboriginal and Torres Strait Islander peoples
  - adolescent
  - elderly
  - ethnic minorities
  - low socioeconomic background
  - Māori
  - non-English speaking background
  - overseas travellers
  - pregnant or peripartum state
  - refugees
  - religious ideologies, such as Jehovah's Witness

Pregnancy

- Collaborate with obstetricians on treatment and management plans
- Impact and management of primary obstetric disorders, including eclampsia and epidural anaesthesia, and other obstetric issues with neurological sequalae
- Impact of neurological disease and management on fertility, pregnancy, and the postpartum period, including breastfeeding, method of delivery, and teratogenesis
- Neurological investigations and treatment in pregnancy with reference to:
  - limitations
  - potential hazards
  - safety issues
- Pharmacological therapy and other forms of management for neurological conditions in pregnancy and when breastfeeding
- Prognosis and longer-term implications of the various conditions

KEY PRESENTATIONS AND CONDITIONS

Advanced Trainees will have a comprehensive depth of knowledge of these presentations and conditions.

Presentations – emergency

- Acute pain
- Bladder / Bowel dysfunction
- Sudden onset new severe headache
- Sudden onset weakness / sensory disturbance

Presentations – headache

- Asthenia / Fatigue
- Dysesthesia / Numbness
- Neuropathic pain
- Pain / Stiffness, chronic
- Weakness

Conditions – acute

- Central causes, such as:
  - demyelination
  - stroke, including:
    - cerebral venous thrombosis
    - intracerebral haemorrhagic
    - ischaemic
- Peripheral nerves, such as:
  - Guillain–Barré syndrome
  - inflammatory plexopathies
- Primary headache disorders, such as:
  - cluster headache
  - glossopharyngeal neuralgia
  - trigeminal autonomic cephalgias
  - trigeminal neuralgia

Conditions – chronic

- Conversion disorder / Functional neurological disorder
- Peripheral nerves:
  - entrapment neuropathies
  - peripheral neuropathies:
    - acquired
    - inherited
  - radiculopathies
- Primary headache disorders, such as:
  - migraine
  - tension-type headache
  - trigeminal autonomic cephalgias

For each presentation and condition, Advanced Trainees will **know how to:**

Synthesise

- recognise the clinical presentation
- identify relevant epidemiology, prevalence, pathophysiology, and clinical science
- take a comprehensive clinical history
- conduct an appropriate examination
- establish a differential diagnosis
- plan and arrange appropriate investigations
- consider the impact of illness and disease on patients[18] and their quality of life when developing a management plan

Manage

- provide evidence-based management
- prescribe therapies tailored to patients' needs and conditions
- recognise potential complications of disease and its management, and initiate preventative strategies
- involve multidisciplinary teams

Consider other factors

- identify individual and social factors and the impact of these on diagnosis and management

[18] References to patients in the remainder of this document may include their families, whānau, and/or carers.

- Secondary headache disorders, such as:
  - benign sex headache
  - cervical arterial dissection
  - cervicogenic headaches
  - giant cell arteritis
  - idiopathic intracranial hypertension
  - low pressure headaches
  - medication overuse headache
  - myofascial pain syndrome
  - reversible vasoconstriction syndrome
  - space-occupying lesions
  - temporomandibular joint disorders
  - tumour

Conditions – emergency

- Central / Peripheral:
  - giant cell arteritis
  - meningoencephalitis
  - subarachnoid haemorrhage
  - traumatic brain injury, including:
    - concussion
- Spinal cord:
  - demyelinating conditions, including:
    - multiple sclerosis
    - neuromyelitis optica spectrum disorder (NMOSD)
  - extrinsic compression
  - ischaemia, including:
    - stroke

LESS COMMON OR MORE COMPLEX PRESENTATIONS AND CONDITIONS

Advanced Trainees will understand these presentations and conditions.

Advanced Trainees will understand the resources that should be used to help manage patients with these presentations and conditions.

Conditions

- Vasculitis / cerebrovascular inflammatory conditions

EPIDEMIOLOGY, PATHOPHYSIOLOGY, AND CLINICAL SCIENCES

Advanced Trainees will have a comprehensive depth of knowledge of the principles of the foundational sciences.

- Common, rare, primary, and secondary diseases that result in headache, pain, and sensory disturbance
- Neuroanatomy, neuropharmacology, and neurophysiology involved in the generation of headache and facial pain
- Neuroanatomy, neuropharmacology, and neurophysiology of the pain pathway, peripheral nerves, and sensory pathways

INVESTIGATIONS, PROCEDURES, AND CLINICAL ASSESSMENT TOOLS

Advanced Trainees will know the scientific foundation of each investigation and procedure, including relevant anatomy and physiology. They will be able to interpret the reported results of each investigation or procedure.

Advanced Trainees will know how to explain the investigation or procedure to patients, families, and carers, and be able to explain procedural risk and obtain informed consent where applicable.

Cerebrospinal fluid (CSF) procedures and investigations

- Lumbar puncture (LP) and interpretation of investigation results, such as:
  - basic CSF analysis:
    - cell count
    - cytology
    - glucose level
    - immunological tests
    - microbiological tests
    - protein level
    - xanthochromia
  - opening pressure
  - special tests:
    - oligoclonal bands
    - spectrophotometry

Clinical neurophysiology investigations

- Electromyography (EMG):
  - evoked potentials:
    - brainstem
    - somatosensory
    - visual
  - needle EMG
- Nerve conduction studies (NCS):
  - motor and sensory studies

Neurogenetic investigations

- Genetic testing, including, but not limited to:
  - chromosomal testing, such as:
    - karyotype
    - microarray
  - genomic testing, including whole exome or genome sequencing
  - mitochondrial genome sequencing
  - targeted panel testing
- Referral to a neurogeneticist

Neuroimaging investigations

- CT, including:
  - CT angiography
  - perfusion
  - venography
- MRI, including:
  - functional (fMRI)
  - magnetic resonance:
    - angiography (MRA)
    - spectroscopy (MRS)
    - venogram (MRV)
  - with contrast

- Myelography
- Vascular imaging:
  - catheter angiography
  - neuroimmunology investigations

Neuroimmunology investigations

- Autoantibody measurement:
  - anti-aquaporin 4 and myelin oligodendrocyte antibodies
  - paraneoplastic antibodies
- Referral to a neuroimmunologist

Neuropathology investigations

- Biopsy:
  - brain
  - muscle
  - nerve
  - temporal artery

Neuropsychological investigations

- Cognitive screening:
  - Mini-Mental State Examination
  - Montreal Cognitive Assessment
  - Rowland Universal Dementia Assessment Scale
- Referral to a neuropsychologist

Other investigations

- Polysomnography
- Serum investigations:
  - autoimmune screen
  - blood glucose
  - electrolytes
  - full blood count
  - infective serology
  - inflammatory markers
  - thrombophilia screen
  - toxic / metabolic screen, including heavy metals, and mineral or vitamin deficiency

IMPORTANT SPECIFIC ISSUES

Advanced Trainees will identify important specialty-specific issues and the impact of these on diagnosis and management and integrate these into care.

- Importance of early diagnosis and treatment of acute conditions, such as:
  - giant cell arteritis
  - meningitis
  - subarachnoid haemorrhage
- Knowledge and treatment strategies for psychosocial effects and drivers of pain
- Management strategies for the common types of headaches, such as:
  - acute
  - non-pharmaceutical interventions
  - preventative
  - rational use of medications
- Overlap with other allied health and medical specialties, such as pain services, physiotherapy, and rehabilitation medicine, and when it is appropriate to refer
- Overlap with other medical conditions, such as depression / anxiety and sleep apnoea
- Prognosis and economic and lifestyle implications of these disorders

KEY PRESENTATIONS AND CONDITIONS

Advanced Trainees will have a comprehensive depth of knowledge of these presentations and conditions.

Presentations – disorders of consciousness

- Anxiety
- Confusion or somnolence
- Dizziness
- Fainting / Loss of consciousness
- Fever
- Hallucinations
- Headache
- Heart palpitations and/or shortness of breath
- Muscular difficulties:
  - coordination problems
  - stiffness
  - weakness and/or paralysis
- Nausea and/or vomiting
- Pain
- Pins and needles and/or sensory loss
- Seizures
- Shakiness
- Speech and/or swallowing difficulties

Presentations – disorders of sleep

- Concentration / Memory impairment
- Episodes of incomplete awakening and limited responsiveness
- Excessive daytime sleepiness, narcolepsy, and sleep attacks
- Insomnia
- Loud snoring
- Morning headaches
- Sleep paralysis
- Waking gasping or choking during the night

Conditions – cognition

- Delirium
- Metabolic and inherited disorders
- Neurodegeneration

For each presentation and condition, Advanced Trainees will **know how to:**

Synthesise

- recognise the clinical presentation
- identify relevant epidemiology, prevalence, pathophysiology, and clinical science
- take a comprehensive clinical history
- conduct an appropriate examination
- establish a differential diagnosis
- plan and arrange appropriate investigations
- consider the impact of illness and disease on patients[19] and their quality of life when developing a management plan

Manage

- provide evidence-based management
- prescribe therapies tailored to patients' needs and conditions
- recognise potential complications of disease and its management, and initiate preventative strategies
- involve multidisciplinary teams

Consider other factors

- identify individual and social factors and the impact of these on diagnosis and management

[19] References to patients in the remainder of this document may include their families, whānau, and/or carers.

Conditions – inflammatory and infectious

- Demyelinating disease
- Encephalitis:
  - autoimmune
  - infective
  - vasculitis
- Meningitis
- Systematic inflammatory disorders
- Systemic infection

Conditions – metabolic and toxic

- Hepatic
- Hypoglycaemia
- Kidney failure
- Prescribed and illicit drugs

Conditions – other

- Epilepsy, especially sudden unexpected death in epilepsy (SUDEP)
- Obstructive sleep apnoea
- Syncope
- Traumatic brain injury, including:
  - concussion

Conditions – structural

- Raised intracranial pressure
- Space-occupying lesions:
  - abscess
  - haemorrhage
  - tumour
- Stroke
- Subarachnoid haemorrhage

LESS COMMON OR MORE COMPLEX PRESENTATIONS AND CONDITIONS

Advanced Trainees will understand these presentations and conditions.

Advanced Trainees will understand the resources that should be used to help manage patients with these presentations and conditions.

Presentations

- Non-rapid eye movement (REM), such as:
  - confusional arousal
  - night terrors
  - sleep talking
  - somnambulism
- REM sleep behaviour disorder (RBD)
- Sleep attacks

Conditions

- Sleep disorders, such as:
  - hypersomnia
  - narcolepsy
  - parasomnia

EPIDEMIOLOGY, PATHOPHYSIOLOGY, AND CLINICAL SCIENCES

Advanced Trainees will have a comprehensive depth of knowledge of the principles of the foundational sciences.

- Conditions required for brain death diagnosis
- Neuroanatomy, neuropharmacology, and neurophysiology of brain and brainstem mechanisms involved in the maintenance of normal consciousness
- Neuroanatomy, neuropharmacology, and neurophysiology of normal sleep function
- Pathological mechanisms that result in decreased consciousness
- Pathological mechanisms that result in disturbed sleep and describe the way disorders of sleep can present

INVESTIGATIONS, PROCEDURES, AND CLINICAL ASSESSMENT TOOLS

Advanced Trainees will know the scientific foundation of each investigation and procedure, including relevant anatomy and physiology. They will be able to interpret the reported results of each investigation or procedure.

Advanced Trainees will know how to explain the investigation or procedure to patients, families, and carers, and be able to explain procedural risk and obtain informed consent where applicable.

Assessments

- Epworth Sleepiness Scale
- Glasgow Coma Scale

Cerebrospinal fluid (CSF) procedures and investigations

- Lumbar puncture (LP) and interpretation of investigation results, such as:
  - CSF analysis:
    - cell count
    - cytology
    - immunological tests, including:
      - encephalitis panel
      - paraneoplastic
    - microbiological tests
    - oligoclonal bands
    - protein level
    - sugar level
    - xanthochromia
  - opening pressure

Clinical neurophysiology investigations

- EEG:
  - sleep-deprived EEG
  - standard EEG
  - video EEG
- Evoked potentials:
  - brainstem
  - somatosensory

Neurogenetic investigations

- Genetic testing, including, but not limited to:
  - chromosomal testing, such as:
    - karyotype
    - microarray
  - genomic testing, including whole exome or genome sequencing
  - mitochondrial genome sequencing
  - targeted panel testing
- Referral to a neurogeneticist

Neuroimaging investigations

- CT, including:
  - CT angiography
  - perfusion
  - venography

- MRI, including:
  - functional (fMRI)
  - magnetic resonance:
    - angiography (MRA)
    - spectroscopy (MRS)
    - venogram (MRV)
  - with contrast
- PET
- Single photon emission computed tomography (SPECT)
- Vascular imaging:
  - catheter angiography
  - doppler ultrasound

Neuropsychological investigations

- Cognitive screening:
  - Addenbrooke's Cognitive Examination
  - Mini-Mental State Examination
- Referral to a neuropsychologist

Other investigations

- Cardiac investigations:
  - 24-hour ECG monitoring
  - ECG
  - echocardiography
- Lung function tests:
  - formal lung function tests
  - vital capacity
- Other laboratory tests, such as:
  - autoimmune serology
  - B12 level
  - electrolytes
  - full blood count and inflammatory markers
  - hepatic and renal function
  - metabolic testing, including:
    - glucose level
    - heavy metal and other toxins, including:
      - alcohol
      - ammonia levels
      - drugs
    - micronutrients
- Multiple Sleep Latency Test (MSLT)
- Polysomnography

IMPORTANT SPECIFIC ISSUES

Advanced Trainees will identify important specialty-specific issues and the impact of these on diagnosis and management and integrate these into care.

- Conditions that mimic disturbance of consciousness, such as:
  - acute aphasia
  - functional disorders, including:
    - non-epileptic status epilepticus
  - locked-in syndrome
  - stroke
- Conditions that result in prolonged disturbance of consciousness, such as persistent vegetative state and minimally conscious state
- Overlap with specific neurological syndromes, such as Parkinson disease and REM sleep behavioural disorders
- Prognosis and implications of sleep disorders, such as driving
- Role of neurologist in neuroprognostication for serious intercranial injury, including hypoxic ischaemic encephalopathy and subarachnoid haemorrhage

KEY PRESENTATIONS AND CONDITIONS

Advanced Trainees will have a comprehensive depth of knowledge of these presentations and conditions.

Presentations

- Autonomic dysfunction
- Behavioural / Personality changes, such as:
  - apathy
- Confusion
- Emotional changes, such as:
  - anxiety
  - depression
- Language difficulty
- Loss of balance
- Memory problems
- Speech abnormalities
- Perception / Vision changes
- Weakness

Conditions

- Alzheimer disease and related dementias
- Atypical Parkinsonian disorders
- Cerebrovascular inflammatory disease
- Delirium
- Dementia with Lewy bodies
- Frontotemporal lobar degeneration syndromes, including:
  - progressive aphasias
- Immune-related encephalopathies
- Metabolic disease
- Normal pressure hydrocephalus
- Parkinson disease
- Poisoning / Toxins
- Psychiatric diseases, including:
  - depression
  - schizophrenia
- Systemic / Cerebrovascular inflammatory disease
- Thyroid dysfunction
- Toxins, including ethyl alcohol or ethanol (EtOH)
- Transient epileptic amnesia
- Transient global amnesia
- Vascular dementia
- Vitamin or mineral deficiency

For each presentation and condition, Advanced Trainees will **know how to:**

Synthesise

- recognise the clinical presentation
- identify relevant epidemiology, prevalence, pathophysiology, and clinical science
- take a comprehensive clinical history
- conduct an appropriate examination
- establish a differential diagnosis
- plan and arrange appropriate investigations
- consider the impact of illness and disease on patients[20] and their quality of life when developing a management plan

Manage

- provide evidence-based management
- prescribe therapies tailored to patients' needs and conditions
- recognise potential complications of disease and its management, and initiate preventative strategies
- involve multidisciplinary teams

Consider other factors

- identify individual and social factors and the impact of these on diagnosis and management

[20] References to patients in the remainder of this document may include their families, whānau, and/or carers.

LESS COMMON OR MORE COMPLEX PRESENTATIONS AND CONDITIONS

Advanced Trainees will understand these presentations and conditions.

Advanced Trainees will understand the resources that should be used to help manage patients with these presentations and conditions.

Presentations

- Catatonia
- Hyperkinetic movement disorder(s)
- Myoclonus
- Neuroimaging abnormalities
- Rapidly progressive cognitive decline

Conditions

- Genetic / Inherited neurodegenerative disease
- Inborn errors of metabolism
- Leukodystrophies
- Mitochondrial disease
- Prion disease:
  - » Creutzfeldt–Jakob disease
  - » familial prion disorders
- Repeat expansion disorders

EPIDEMIOLOGY, PATHOPHYSIOLOGY, AND CLINICAL SCIENCES

Advanced Trainees will have a comprehensive depth of knowledge of the principles of the foundational sciences.

- Acute, chronic, common, and rare diseases that result in disorders of behavioural change, language, memory, or movement
- Neuroanatomy, neuropharmacology, and neurophysiology of normal memory and language function
- Pathological mechanisms that result in disturbed memory or behavioural function

INVESTIGATIONS, PROCEDURES, AND CLINICAL ASSESSMENT TOOLS

Advanced Trainees will know the scientific foundation of each investigation and procedure, including relevant anatomy and physiology. They will be able to interpret the reported results of each investigation or procedure.

Advanced Trainees will know how to explain the investigation or procedure to patients, families, and carers, and be able to explain procedural risk and obtain informed consent where applicable.

Cerebrospinal fluid (CSF) procedures and investigations

- Lumbar puncture (LP) and interpretation of investigation results, such as:
  - » basic CSF analysis:
    - cell count
    - cytology
    - glucose level
    - immunological tests
    - microbiological tests
    - protein level
    - xanthochromia
  - » opening pressure
  - » special tests:
    - 14-3-3 protein
    - amyloid and tau levels
    - neurofilament light chain
    - oligoclonal bands

Clinical neurophysiology investigations

- EEG:
  - » sleep-deprived EEG
  - » standard EEG
  - » video EEG
- Electromyography (EMG) / Nerve conduction studies (NCS)
  - » motor and sensory studies
  - » needle EMG

Neurogenetic investigations

- Genetic testing, including, but not limited to:
  - chromosomal testing, such as:
    - karyotype
    - microarray
  - genomic testing, including whole exome or genome sequencing
  - mitochondrial genome sequencing
  - targeted panel testing
- Referral to a neurogeneticist

Neuroimaging investigations

- CT, including:
  - CT angiography
  - perfusion
  - venography
- MRI, including:
  - functional (fMRI)
  - magnetic resonance:
    - angiography (MRA)
    - spectroscopy (MRS)
    - venogram (MRV)
  - with contrast
- PET
- Single photon emission computed tomography (SPECT)
- Vascular imaging:
  - catheter angiography

Neuroimmmunology investigations

- Autoantibody measurement:
  - limbic encephalitis panel
  - paraneoplastic antibodies
- Referral to a neuroimmunologist

Neuropathology investigations

- Brain biopsy

Neuropsychological investigations

- Cognitive screening:
  - Addenbrooke's Cognitive Examination
  - Mini-Mental State Examination
  - Montreal Cognitive Assessment
  - Rowland Universal Dementia Assessment Scale
- Referral to a neuropsychologist

Other investigations

- Ethanol / Heavy metals / Toxins:
  - autoimmune antibodies
  - infective serology
- Other laboratory tests:
  - acanthocytes
  - urinary porphyrins
  - urine drug screen
- Polysomnography
- Serum investigations:
  - electrolytes
  - full blood count
  - glucose level
  - mineral and vitamin levels

IMPORTANT SPECIFIC ISSUES

Advanced Trainees will identify important specialty-specific issues and the impact of these on diagnosis and management and integrate these into care.

- Consider cultural implications and stigma related to diagnosis of neurodegeneration
- Consider implications of genetic / inherited causes of neurodegenerative disease
- Prognosis and implications of neurodegenerative diseases, such as:
  - advance care planning
  - driving
  - increased care needs
  - institutional care
- Specific conditions that mimic disturbance of memory, including psychiatric disorders

KEY PRESENTATIONS AND CONDITIONS

Advanced Trainees will have a comprehensive depth of knowledge of these presentations and conditions.

Presentations

- Confusion
- Dyskinetic movement disorders
- Epilepsy
- Fainting / Loss of consciousness
- Fatigue
- Headaches
- Jerky, rhythmic, or twitching motions
- Light-headedness and/or dizziness
- Muscular difficulties:
  - coordination problems
  - stiffness
  - weakness and/or paralysis
- Nausea and/or vomiting
- Reduced level of consciousness
- Seizures
- Sensory disturbances
- Speech difficulties
- Staring
- Stroke
- Sweating
- Syncope
- Unresponsiveness

Conditions – epileptic

- Lesion-related epilepsies
- Metabolic disturbance
- Primary generalised epilepsies
- Status epilepticus

Conditions – haemorrhagic

- Cerebral amyloid angiopathy
- Primary intracranial haemorrhage
- Subarachnoid haemorrhage
- Venous infarction

Conditions – ischaemic

- Amaurosis fugax
- Cervical arterial dissection
- Ischaemic stroke:
  - acute thromboembolic
  - arterial
- Lacunar stroke
- Transient ischaemic attacks
- Venous sinus thrombosis
- Watershed infarcts

For each presentation and condition, Advanced Trainees will **know how to:**

Synthesise

- recognise the clinical presentation
- identify relevant epidemiology, prevalence, pathophysiology, and clinical science
- take a comprehensive clinical history
- conduct an appropriate examination
- establish a differential diagnosis
- plan and arrange appropriate investigations
- consider the impact of illness and disease on patients[21] and their quality of life when developing a management plan

Manage

- provide evidence-based management
- prescribe therapies tailored to patients' needs and conditions
- recognise potential complications of disease and its management, and initiate preventative strategies
- involve multidisciplinary teams

Consider other factors

- identify individual and social factors and the impact of these on diagnosis and management

[21] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	Conditions – non-epileptic • Non-epileptic pseudo-status • Non-epileptic seizures **Conditions – stroke mimics** • Conversion disorder • Migraine • Mitochondrial disorders **Conditions – syncope** • Autonomic failure • Cardiac arrhythmias • Carotid sinus hypersensitivity • Dehydration • Vasovagal syncope **Other episodic conditions** • Movement disorders	
LESS COMMON OR MORE COMPLEX PRESENTATIONS AND CONDITIONS Advanced Trainees will understand these presentations and conditions. Advanced Trainees will understand the resources that should be used to help manage patients with these presentations and conditions.	**Conditions** • Neuromuscular paroxysmal disorders • Paroxysmal movement disorders • Posterior reversible encephalopathy syndrome (PRES) • Reversible cerebral vasoconstriction syndrome (RCVS)	
EPIDEMIOLOGY, PATHOPHYSIOLOGY, AND CLINICAL SCIENCES Advanced Trainees will have a comprehensive depth of knowledge of the principles of the foundational sciences.	• Arterial blood supply, vascular anatomy, and venous drainage of the brain and spinal cord • Causes of stroke syndromes, ischaemic and haemorrhagic diseases, and mimics, including those listed above • Classification and clinical features of the different types of epileptic seizure and epilepsy syndromes • Evidence-based pharmacological therapy and other forms of management of stroke and related syndromes, in relation to the acute situation, rehabilitation, and prophylaxis • Neuroanatomy, neuropharmacology, and neurophysiology involved in the generation of epilepsy and syncope	

INVESTIGATIONS, PROCEDURES, AND CLINICAL ASSESSMENT TOOLS

Advanced Trainees will know the scientific foundation of each investigation and procedure, including relevant anatomy and physiology. They will be able to interpret the reported results of each investigation or procedure.

Advanced Trainees will know how to explain the investigation or procedure to patients, families, and carers, and be able to explain procedural risk and obtain informed consent where applicable.

Cerebrospinal fluid (CSF) procedures and investigations

- Lumbar puncture (LP) and interpretation of investigation results, such as:
  - basic CSF analysis:
    - cell count
    - cytology
    - glucose level
    - immunological tests
    - microbiological tests
    - protein level
    - xanthochromia
  - opening pressure

Clinical neurophysiology investigations

- Autonomic testing
- EEG:
  - sleep-deprived EEG
  - standard EEG
  - video EEG
- Electromyography (EMG) / Nerve conduction studies (NCS)

Neurogenetic investigations

- Genetic testing, including, but not limited to:
  - chromosomal testing, such as:
    - karyotype
    - microarray
  - genomic testing, including whole exome or genome sequencing
  - mitochondrial genome sequencing
  - targeted panel testing
- Referral to a neurogeneticist

Neuroimaging investigations

- CT, including:
  - CT angiography
  - perfusion
  - venography
- MRI, including:
  - functional (fMRI)
  - magnetic resonance:
    - angiography (MRA)
    - spectroscopy (MRS)
    - venogram (MRV)
  - with contrast
- PET
- Referral to a neurointerventionalist or vascular surgeon
- Vascular imaging:
  - catheter angiography
  - Doppler ultrasound

Neuroimmunology investigations

- Autoantibody measurement:
  - autoimmune
  - paraneoplastic
- Referral to a neuroimmunologist

Neuropsychological investigations

- Cognitive screening:
  - Mini-Mental State Examination
  - Montreal Cognitive Assessment
- Referral to a neuropsychologist

Other investigations

- Cardiac investigations:
  - 24-hour electrocardiogram monitoring
  - ECG
  - echocardiography
- Other laboratory tests:
  - acanthocytes
  - alcohol
  - B12 level
  - creatine kinase (CK)
  - electrolytes
  - fasting lipid profile
  - full blood count (FBC)
  - lactate
  - thrombophilia screen
  - troponin
  - urine drug screen
- Polysomnography

IMPORTANT SPECIFIC ISSUES

Advanced Trainees will identify important specialty-specific issues and the impact of these on diagnosis and management and integrate these into care.

- Overlap with other allied health and medical specialties, such as occupational therapy, physiotherapy, rehabilitation medicine, and speech pathology, and when it is appropriate to refer
- Overlap with other medical conditions, such as:
  - cardiac disorders
  - depression
  - non-epileptic disorders
  - syncope
- Prognosis and implications of seizures, stroke, and syncope, such as driving and pregnancy
- Prognosis, implications, and management strategies for stroke, such as:
  - acute management
  - impact on the family
  - rehabilitation
  - secondary prevention
- Risk factors and comorbidities in stroke

KEY PRESENTATIONS AND CONDITIONS

Advanced Trainees will have a comprehensive depth of knowledge of these presentations and conditions.

Presentations – hearing and balance

- Ataxia
- Auditory hallucinations / Aura
- Hearing loss
- Loss of balance and/or coordination
- Nausea and/or vomiting
- Tinnitus

Presentations – smell and taste

- Behavioural / Mood / Personality changes
- Difficulties with vision and/or speech
- Gustatory / Olfactory aura
- Loss of smell
- Loss of taste
- Memory loss

Presentations – vision

- Anisocoria
- Binocular visual loss
- Bi-temporal hemianopia
- Blurry vision
- Difficulty reading
- Diplopia / Double vision
- Headache
- Hemianopia
- Jaw claudication
- Light sensitivity
- Loss of depth perception
- Monocular visual loss
- Muscular difficulties:
  - » coordination problems
  - » stiffness
  - » weakness and/or paralysis
- Myalgia
- Nausea and/or vomiting
- Nystagmus
- Pain
- Partial visual loss
- Photopsia
- Ptosis and/or exotropia
- Quadrantinopia
- Red eye
- Seizures
- Transient visual loss
- Visual hallucinations

For each presentation and condition, Advanced Trainees will **know how to:**

Synthesise

» recognise the clinical presentation
» identify relevant epidemiology, prevalence, pathophysiology, and clinical science
» take a comprehensive clinical history
» conduct an appropriate examination
» establish a differential diagnosis
» plan and arrange appropriate investigations
» consider the impact of illness and disease on patients[22] and their quality of life when developing a management plan

Manage

» provide evidence-based management
» prescribe therapies tailored to patients' needs and conditions
» recognise potential complications of disease and its management, and initiate preventative strategies
» involve multidisciplinary teams

Consider other factors

» identify individual and social factors and the impact of these on diagnosis and management

[22] References to patients in the remainder of this document may include their families, whānau, and/or carers.

Conditions – double vision

- Internuclear ophthalmoplegia
- Myasthenia gravis
- Ocular motor nerve palsies

Conditions – hearing

- Acoustic neuroma
- Raised intracranial pressure
- Seizures
- Stroke

Conditions – papilloedema / optic disc swelling

- Cerebral venous thrombosis
- Idiopathic intracranial hypertension
- Intracranial space-occupying lesions

Conditions – positive visual phenomena

- Charles Bonnet syndrome
- Dementia with Lewy bodies
- Migraine
- Occipital epilepsy
- Parkinson disease

Conditions – smell / taste

- Neurodegenerative conditions
- Orbitofrontal tumours
- Seizures

Conditions – vision loss

- Anterior pathway:
  - anterior ischaemic optic neuropathy
  - giant cell arteritis
  - optic neuritis
- Chiasmal compression
- Demyelinating disease, such as:
  - multiple sclerosis (MS)
  - neuromyelitis optica spectrum disorder (NMOSD)
- Diabetes with microvascular ischaemic complications
- Posterior pathway:
  - migraine
  - occipital seizures
  - posterior cortical atrophy
  - stroke

EPIDEMIOLOGY, PATHOPHYSIOLOGY, AND CLINICAL SCIENCES

Advanced Trainees will have a comprehensive depth of knowledge of the principles of the foundational sciences.

- Acute, chronic, common, and rare diseases that cause:
  - disorders of the special senses
  - double vision
  - papilledema
  - visual loss
- Methods of assessing automated and confrontation perimetry, pupillary function, visual acuity, and visual fields, and performing a direct ophthalmoscopy
- Neuroanatomy and neurophysiology of the auditory, oculomotor, olfactory, pupillary, and visual systems

INVESTIGATIONS, PROCEDURES, AND CLINICAL ASSESSMENT TOOLS

Advanced Trainees will know the scientific foundation of each investigation and procedure, including relevant anatomy and physiology. They will be able to interpret the reported results of each investigation or procedure.

Advanced Trainees will know how to explain the investigation or procedure to patients, families, and carers, and be able to explain procedural risk and obtain informed consent where applicable.

Cerebrospinal fluid (CSF) procedures and investigations

- Lumbar puncture (LP) and interpretation of investigation results, such as:
  - basic CSF analysis:
    - cell count
    - cytology
    - immunological tests
    - microbiological tests
    - protein level
    - sugar level
    - xanthochromia
  - opening pressure
  - special tests:
    - 14-3-3 protein
    - oligoclonal bands
    - spectrophotometry

Clinical neurophysiology investigations

- EEG:
  - sleep-deprived EEG
  - standard EEG
  - video EEG
- Electromyography (EMG):
  - needle EMG
  - single-fibre EMG
- Evoked potentials:
  - repetitive nerve stimulation
  - visual
- Vestibular function tests

Neurogenetic investigations

- Genetic testing, including but not limited to:
  - chromosomal testing, such as:
    - karyotype
    - microarray
  - genomic testing, including whole exome or genome sequencing
  - mitochondrial genome sequencing
  - targeted panel testing
- Referral to a neurogeneticist

Neuroimaging investigations

- CT, including:
  - CT angiography
  - perfusion
  - venography

- MRI, including:
  - functional (fMRI)
  - magnetic resonance:
    - angiography (MRA)
    - spectroscopy (MRS)
    - venogram (MRV)
  - with contrast
- PET
- Single photon emission computed tomography (SPECT)
- Vascular imaging:
  - catheter angiography
  - Doppler ultrasound

Neuroimmunology investigations

- Autoantibody measurement:
  - anti-aquaporin 4 antibodies
  - autoantibodies associated with myasthenia gravis, such as anti-acetylcholine receptor antibodies
  - paraneoplastic antibodies
- Referral to a neuroimmunologist

Neuropathology investigations

- Biopsy:
  - brain
  - temporal artery

Neuropsychological investigations

- Cognitive screening:
  - Mini-Mental State Examination
  - Montreal Cognitive Assessment

Other investigations

- Cardiac investigations:
  - 24-hour electrocardiogram monitoring
  - ECG
  - echocardiography
- Other laboratory tests:
  - C-reactive protein (CRP)
  - B12 level
  - erythrocyte sedimentation rate (ESR)
  - fasting lipids
  - HbA1c
  - serum angiotensin converting enzyme
  - thrombophilia screen

IMPORTANT SPECIFIC ISSUES

Advanced Trainees will identify important specialty-specific issues and the impact of these on diagnosis and management and integrate these into care.

- Overlap with other medical specialties, such as ophthalmology and otolaryngology / ear, nose, and throat (ENT) surgery, and when it is appropriate to refer
- Prognosis and implications of these disorders

KEY PRESENTATIONS AND CONDITIONS

Advanced Trainees will have a comprehensive depth of knowledge of these presentations and conditions.

Presentations

- Breathing difficulties / Shortness of breath
- Cardiac arrhythmia
- Confusion
- Fatigue
- Headaches
- Muscle cramps, spasms, and/or twitches
- Muscular difficulties, such as:
  - aching
  - coordination problems
  - difficulty walking
  - paralysis
  - stiffness
  - swelling
  - weakness
- Nausea and/or vomiting
- Numbness
- Pain
- Sciatica
- Sensory loss / sensitivity
- Vertigo
- Violaceous skin rash
- Vision problems, including:
  - pain
  - vision loss
- Weakness

Conditions – brain and brain stem

- Bell's palsy
- Central nervous system (CNS) inflammatory disease, including:
  - multiple sclerosis (MS)
  - myelin oligodendrocyte glycoprotein (MOG)
  - neuromyelitis optica spectrum disorder (NMOSD)
- Stroke

Conditions – muscle

- Dermatomyositis
- Myotonic dystrophy
- Polymyositis
- Rhabdomyolysis

For each presentation and condition, Advanced Trainees will **know how to:**

Synthesise

- recognise the clinical presentation
- identify relevant epidemiology, prevalence, pathophysiology, and clinical science
- take a comprehensive clinical history
- conduct an appropriate examination
- establish a differential diagnosis
- plan and arrange appropriate investigations
- consider the impact of illness and disease on patients[23] and their quality of life when developing a management plan

Manage

- provide evidence-based management
- prescribe therapies tailored to patients' needs and conditions
- recognise potential complications of disease and its management, and initiate preventative strategies
- involve multidisciplinary teams

Consider other factors

- identify individual and social factors and the impact of these on diagnosis and management

[23] References to patients in the remainder of this document may include their families, whānau, and/or carers.

Conditions – neuromuscular junction

- Botulism
- Post-synaptic neuromuscular disorders, including:
  - myasthenia gravis
- Pre-synaptic neuromuscular disorders, including:
  - Lambert–Eaton myasthenic syndrome

Conditions – peripheral nerves

- Chronic inflammatory demyelinating polyneuropathy (CIDP)
- Entrapment neuropathies
- Guillain–Barré syndrome
- Neuropathy:
  - nutritional
  - toxic
- Other acquired and inherited peripheral neuropathies
- Plexopathies
- Radiculopathies

Conditions – psychological

- Conversion disorder

Conditions – spinal cord

- Motor neurone disease
- CNS inflammatory disease, including:
  - MOG
  - MS
  - NMOSD
- Spinal cord compression

LESS COMMON OR MORE COMPLEX PRESENTATIONS AND CONDITIONS

Advanced Trainees will understand these presentations and conditions.

Advanced Trainees will understand the resources that should be used to help manage patients with these presentations and conditions.

Presentations

- Rapid fluctuation in weakness
- Sporadic weakness

Conditions

- Metabolic disorders, such as:
  - metabolic myopathies
- Paroxysmal weakness disorders, such as:
  - periodic paralysis
- Tetanus

EPIDEMIOLOGY, PATHOPHYSIOLOGY, AND CLINICAL SCIENCES

Advanced Trainees will have a comprehensive depth of knowledge of the principles of the foundational sciences.

- Neuroanatomy and neurophysiology of the sensory pathways and peripheral nerves
- Neuroanatomy, neuropharmacology, and neurophysiology of the:
  - motor pathways
  - neuromuscular junction
  - peripheral nerves
  - somatic musculature

INVESTIGATIONS, PROCEDURES, AND CLINICAL ASSESSMENT TOOLS

Advanced Trainees will know the scientific foundation of each investigation and procedure, including relevant anatomy and physiology. They will be able to interpret the reported results of each investigation or procedure.

Advanced Trainees will know how to explain the investigation or procedure to patients, families, and carers, and be able to explain procedural risk and obtain informed consent where applicable.

Cerebrospinal fluid (CSF) procedures and investigations

- Lumbar puncture (LP) and interpretation of investigation results, such as:
  - basic CSF analysis:
    - autoimmune and paraneoplastic antibodies
    - cell count
    - cytology / flow cytometry
    - glucose level
    - microbiological tests
    - protein level
    - xanthochromia
  - opening pressure
  - special tests:
    - oligoclonal bands
    - spectrophotometry

Clinical neurophysiology investigations

- EEG:
  - sleep-deprived EEG
  - standard EEG
  - video EEG
- Electromyography (EMG):
  - needle EMG
  - single-fibre EMG
- Evoked potentials:
  - brainstem
  - somatosensory
  - visual
- Nerve conduction studies (NCS):
  - motor and sensory studies
  - repetitive nerve stimulation
  - single fibre EMG

Neurogenetic investigations

- Genetic testing, including, but not limited to:
  - chromosomal testing, such as:
    - karyotype
    - microarray
  - genomic testing, including whole exome or genome sequencing
  - mitochondrial genome sequencing
  - targeted panel testing
- Referral to a neurogeneticist

Neuroimaging investigations

- CT, including:
  - CT angiography
  - perfusion
  - venography
- MRI, including:
  - functional (fMRI)
  - magnetic resonance:
    - angiography (MRA)
    - spectroscopy (MRS)
    - venogram (MRV)
  - with contrast
- Myelography
- Vascular imaging:
  - catheter angiography
  - Doppler ultrasound

Neuroimmunology investigations

- Autoantibody measurement:
  - anti-aquaporin 4 antibodies and MOG
  - autoantibodies associated with myasthenia gravis, such as:
    - anti-acetylcholine receptor antibodies
  - paraneoplastic antibodies
- Referral to a neuroimmunologist

Neuropathology investigations

- Biopsy:
  - muscle
  - nerve

Other investigations

- Cardiac investigations:
  - 24-hour electrocardiography monitoring
  - bedside spirometry
  - lung function tests
  - transoesophageal / transthoracic echocardiogram
  - vital capacity
- Serum tests:
  - acanthocytes
  - autoimmune panel
  - fasting lipid profile
  - HbA1c
  - heavy metals and other toxins
  - infective screen
  - myositis panel
  - paraneoplastic autoantibodies
  - serum angiotensin converting enzyme
  - serum free light chains
  - thrombophilia screen
  - urinary porphyrins
  - vasculitis panel
  - vitamin levels, including, but not limited to:
    - B1
    - B6
    - B12
    - vitamin E

IMPORTANT SPECIFIC ISSUES

Advanced Trainees will identify important specialty-specific issues and the impact of these on diagnosis and management and integrate these into care.

- Overlap with other allied health and medical specialties, such as geriatrics, immunology, medical genetics, physiotherapy, rehabilitation medicine, and speech pathology, and when it is appropriate to refer
- Prognosis and implications of these disorders

Knowledge guide 8 – Disorders of gait and balance, including disequilibrium, dizziness, and vertigo

Advanced Training in Neurology (Adult Medicine)

KEY PRESENTATIONS AND CONDITIONS

Advanced Trainees will have a comprehensive depth of knowledge of these presentations and conditions.

Presentations

- Ataxia / Imbalance / Incoordination
- Disequilibrium
- Dizziness
- Hearing problems, such as:
  - ear pressure
  - loss
  - tinnitus
- Vertigo

Conditions – brain

- Cerebral palsy
- Cerebrovascular disease
- Demyelination
- Drugs and toxins
- Functional neurological disorder
- Gait apraxia
- Genetic causes, such as:
  - spinocerebellar atrophy
- Migraine
- Neoplasm
- Normal pressure hydrocephalus
- Progressive supranuclear palsy

Conditions – labyrinthine, peripheral nerves, spinal cord, and vestibular pathways

- Benign positional vertigo
- Labyrinthitis, acute
- Menière's disease
- Neurofibromatosis:
  - type 1
  - type 2
- Peripheral nerve diseases, such as:
  - vitamin B12 deficiency
- Spinal cord neoplasm
- Transverse myelitis
- Vestibular causes

Conditions – non-neurological causes

- Cardiac arrythmia
- Syncope

Conditions – psychological

- Anxiety syndromes
- Conversion disorder
- Hyperventilation

For each presentation and condition, Advanced Trainees will **know how to:**

Synthesise

- recognise the clinical presentation
- identify relevant epidemiology, prevalence, pathophysiology, and clinical science
- take a comprehensive clinical history
- conduct an appropriate examination
- establish a differential diagnosis
- plan and arrange appropriate investigations
- consider the impact of illness and disease on patients[24] and their quality of life when developing a management plan

Manage

- provide evidence-based management
- prescribe therapies tailored to patients' needs and conditions
- recognise potential complications of disease and its management, and initiate preventative strategies
- involve multidisciplinary teams

Consider other factors

- identify individual and social factors and the impact of these on diagnosis and management

[24] References to patients in the remainder of this document may include their families, whānau, and/or carers.

LESS COMMON OR MORE COMPLEX PRESENTATIONS AND CONDITIONS

Advanced Trainees will understand these presentations and conditions.

Advanced Trainees will understand the resources that should be used to help manage patients with these presentations and conditions.

Conditions – labyrinthine, peripheral nerves, spinal cord, and vestibular pathways

- Cerebellar ataxia neuronopathy vestibular areflexia syndrome (CANVAS)
- Hereditary ataxias, including:
  - episodic ataxias
- Mal de debarquement syndrome
- Superior canal dehiscence syndrome

EPIDEMIOLOGY, PATHOPHYSIOLOGY, AND CLINICAL SCIENCES

Advanced Trainees will have a comprehensive depth of knowledge of the principles of the foundational sciences.

- Acute, chronic, common, and rare diseases that cause:
  - disequilibrium
  - disorders of gait and balance
  - dizziness
  - vertigo
- Neuroanatomy and neurophysiology of the:
  - neurological pathways involved in gait and balance
  - vestibular and cerebellar systems

INVESTIGATIONS, PROCEDURES, AND CLINICAL ASSESSMENT TOOLS

Advanced Trainees will know the scientific foundation of each investigation and procedure, including relevant anatomy and physiology. They will be able to interpret the reported results of each investigation or procedure.

Advanced Trainees will know how to explain the investigation or procedure to patients, families, and carers, and be able to explain procedural risk and obtain informed consent where applicable.

Assessments

- Audiogram
- Caloric testing
- Dix–Hallpike manoeuvre
- Head impulse test
- Rotatory chair vestibulo-ocular reflex testing

Cerebrospinal fluid (CSF) procedures and investigations

- Lumbar puncture (LP) and interpretation of investigation results, such as:
  - basic (CSF) analysis:
    - cell count
    - cytology
    - cytometry
    - immunological tests
    - microbiological tests
    - protein level
    - sugar level
    - xanthochromia
  - opening pressure
  - special tests:
    - 14-3-3 protein
    - oligoclonal bands
    - spectrophotometry

Clinical neurophysiology investigations

- Evoked potentials:
  - brainstem
  - somatosensory
  - visual
- Nerve conduction studies (NCS):
  - motor and sensory studies
  - repetitive nerve stimulation
- Vestibular function tests

Neurogenetic investigations

- Genetic testing, including but not limited to:
  - chromosomal testing, such as:
    - karyotype
    - microarray
  - genomic testing, including whole exome or genome sequencing
  - mitochondrial genome sequencing
  - targeted panel testing
- Referral to a neurogeneticist

Neuroimaging investigations

- CT, including:
  - CT angiography
  - perfusion
  - venography
- MRI, including:
  - functional (fMRI)
  - magnetic resonance:
    - angiography (MRA)
    - spectroscopy (MRS)
    - venogram (MRV)
  - with contrast
- Myelography
- PET
- Single photon emission computed tomography (SPECT)
- Vascular imaging:
  - catheter angiography
  - Doppler ultrasound

Neuroimmunology investigations

- Autoantibody measurement:
  - anti-aquaporin 4 (AQP-4) and myelin oligodendrocyte glycoprotein (MOG) antibodies
  - testing for:
    - angiotensin converting enzyme (ACE)
    - antinuclear antibodies (ANA)
    - anti-neutrophil cytoplasmic antibodies (ANCA)
    - double-stranded DNA (dsDNA)
    - extractable nuclear antigens (ENA) testing
    - paraneoplastic antibodies
- Referral to a neuroimmunologist

Neuropathology investigations

- Biopsy:
  - brain
  - nerve

Neuropsychological investigations

- Referral to a neuropsychologist

Other investigations

- Cardiac investigations:
  - 24-hour electrocardiogram monitoring
  - ECG
  - echocardiography
- Other laboratory tests:
  - acanthocytes
  - B12 level
  - fasting lipid profile
  - serum angiotensin converting enzyme
  - thrombophilia screen
  - urinary porphyrins

IMPORTANT SPECIFIC ISSUES

Advanced Trainees will identify important specialty-specific issues and the impact of these on diagnosis and management and integrate these into care.

- Overlap with other allied health and medical specialties, such as ear, nose, and throat specialists, neurosurgery, physiotherapy, and rehabilitation medicine, and when it is appropriate to refer
- Prognosis and implications of these disorders

KEY PRESENTATIONS AND CONDITIONS

Advanced Trainees will have a comprehensive depth of knowledge of these presentations and conditions.

Presentations – hyperkinetic

- Athetosis
- Ballism
- Chorea
- Dystonia
- Fasciculations
- Myoclonus
- Myokymia
- Myorhythmia
- Stereotypies
- Tics
- Tremor

Presentations – hypokinetic

- Bradykinesia
- Catatonia
- Freezing
- Parkinsonism
- Postural instability
- Rigidity

Conditions – other

- Functional neurological disorder
- Prion disease
- Stiff person syndrome

Conditions – psychological

- Conversion disorder
- Malingering

Conditions – specific hyperkinetic disorders

- Adult-onset focal dystonia
- Blepharospasm
- Cervical dystonia
- Episodic ataxia
- Facial dystonia
- Functional movement disorder
- Generalised dystonia
- Hemifacial spasm
- Huntington disease
- Myoclonus dystonia
- Tourette syndrome

For each presentation and condition, Advanced Trainees will **know how to:**

Synthesise

» recognise the clinical presentation
» identify relevant epidemiology, prevalence, pathophysiology, and clinical science
» take a comprehensive clinical history
» conduct an appropriate examination
» establish a differential diagnosis
» plan and arrange appropriate investigations
» consider the impact of illness and disease on patients[25] and their quality of life when developing a management plan

Manage

» provide evidence-based management
» prescribe therapies tailored to patients' needs and conditions
» recognise potential complications of disease and its management, and initiate preventative strategies
» involve multidisciplinary teams

Consider other factors

» identify individual and social factors and the impact of these on diagnosis and management

[25] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• Tremors:
	  » drug-induced
	  » dystonic
	  » essential
	  » essential tremor plus
	  » functional
	  » palatal
	  » systemic / metabolic causes
	• Wilson disease
	• Writer's cramp
	
	Conditions – specific hypokinetic conditions
	• Corticobasal syndromes
	• Dementia with Lewy bodies
	• Drug-induced Parkinsonism
	• Functional neurological disorder
	• Multiple system atrophy
	• Normal pressure hydrocephalus
	• Parkinson disease
	• Progressive supranuclear palsy
	• Stiff person syndrome
	• Vascular parkinsonism	

LESS COMMON OR MORE COMPLEX PRESENTATIONS AND CONDITIONS
 	
Advanced Trainees will understand these presentations and conditions.
 	
Advanced Trainees will understand the resources that should be used to help manage patients with these presentations and conditions.
	Conditions
	• Hereditary ataxia syndromes, including:
	  » spinocerebellar ataxias
	• Metabolic causes of movement disorders
	• Paroxysmal dyskinesias:
	  » exercise-induced
	  » kinesogenic
	  » non-kinesogenic	

EPIDEMIOLOGY, PATHOPHYSIOLOGY, AND CLINICAL SCIENCES Advanced Trainees will have a comprehensive depth of knowledge of the principles of the foundational sciences.	• Acute, chronic, common, and rare diseases that cause disorders of movement • Neuroanatomy, neuropharmacology, and neurophysiology of the motor pathways	

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    - cell count
    - cytology
    - cytometry
    - immunological tests
    - microbiological tests
    - protein level
    - sugar level
  - opening pressure
  - special tests:
    - 14-3-3 protein
    - real-time quaking induced conversion (RT-QuIC)

Neurogenetic investigations

- Genetic testing, including but not limited to:
  - chromosomal testing, such as:
    - karyotype
    - microarray
  - genomic testing, including whole exome or genome sequencing
  - mitochondrial genome sequencing
  - targeted panel testing
- Referral to a neurogeneticist

Neuroimaging investigations

- CT, including:
  - CT angiography
  - perfusion
  - venography
- Dopamine uptake transporter (DAT)
- MRI, including:
  - functional (fMRI)
  - magnetic resonance:
    - angiography (MRA)
    - spectroscopy (MRS)
    - venogram (MRV)
  - with contrast
- Myelography
- PET
- Single photon emission computed tomography (SPECT)
- Vascular imaging:
  - catheter angiography
  - Doppler ultrasound

Neuroimmunology investigations

- Autoantibody measurement:
  - antinuclear antibodies (ANA)
  - anti-amphiphysin, anti-GAD, and anti-glycine antibodies
  - anti-phospholipid antibody testing
  - double-stranded DNA (dsDNA)
  - extractable nuclear antigens (ENA) antibody testing
- Referral to a neuroimmunologist

Neuropathology investigations

- Brain biopsy

Neuropsychological investigations

- Cognitive screening:
  - Mini-Mental State Examination
  - Montreal Cognitive Assessment
- Referral to a neuropsychologist

Other investigations

- Other laboratory tests:
  - acanthocytes
  - B12 level
  - copper
  - fasting lipid profile
  - iron studies
  - serum angiotensin converting enzyme
  - thrombophilia screen
  - urinary porphyrins
- Polysomnography

IMPORTANT SPECIFIC ISSUES

Advanced Trainees will identify important specialty-specific issues and the impact of these on diagnosis and management and integrate these into care.

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- Prognosis and implications of these disorders