**CLINICAL PHYSIOLOGISTS REGISTRATION BOARD**

**In association with**

**Society of Cardiopulmonary Technology NZ (SCT)**

**Competencies Required for Registration: Cardiac Physiologist**

Reviewed 15/3/18, replaces 27/9/13

Acknowledgement: Association of Clinical Scientists (ACS) UK.

|  |  |
| --- | --- |
| **COMPETENCIES REQUIRED FOR REGISTRATION** | **Cardiac Physiologist** |

|  |  |  |
| --- | --- | --- |
| **EXPERIENCE**: | The candidate should be able to demonstrate that he/she has worked in an environment that has enabled the individual to receive training and gain experience relevant to the competencies set out below. | |
| **GENERIC COMPETENCIES** | | **SPECIFIC COMPETENCIES** |
| Standards of Proficiency Code | **SCIENTIFIC** | Be able to demonstrate the rigorous application of scientific methods in his/her experience to date |
| 3a.1p | * understanding of the science that underpins the specialty (modality) and the broader aspects of medicine and clinical practice | * understanding of the principles of the techniques and investigative procedures undertaken within the discipline of cardiac physiology and in cardiac medicine * ability to advise on the choice of appropriate investigative and therapeutic procedures based on the clinical condition and presenting symptoms of the patient and the results of previous investigations where appropriate * familiarity with the evidence for and limitations of common investigative and therapeutic procedures relevant to cardiac physiology, used in the diagnosis and management of patients * familiarity with the basic knowledge of related disciplines in order to be able to integrate relevant results into an overall interpretation of the clinical condition |
| 3a.1g | * demonstrating a strong base of knowledge appropriate to the specialty and to the investigations and therapeutic options available |
| 2b.1g  2b.1p | * experience of searching for knowledge, critical appraisal of information and integration into the knowledge base |
| 2a.1p | * ability to identify the clinical decision which the test/intervention/procedure will inform |
| 2c.1p | * ability to make judgements on the effectiveness of procedures |
| 3a.2g | * application of the knowledge base to the specialty (modality) and to the range of procedures/investigations available |
| **Codes related to Clinical Physiologists Board General Standards of Proficiency (g=generic; p=profession specific)** | | |
| Achievement of: | For each speciality:   * an understanding of the principles, applications and limitations of the physiological measurement and diagnostic techniques employed in the practice of cardiac medicine * a detailed understanding of the application of different investigative, diagnostic and therapeutic procedures in the assessment of the cardiac system and the ability to recognise the necessity for performing specific test procedures where clinically appropriate * a critical understanding of the integration and interpretation of the results of specific investigative parameters in cardiac physiology with other diagnostic modalities (eg imaging, haematological, immunological) in the overall assessment of the patient | |
| Achieved through: | * enrolment in a discipline specific qualification such as the Post Graduate Diploma of Medical Technology (PGD MTEX), Diploma of Medical Ultrasound (DMU) or equivalent * participation in a recognised formal training element (e.g.MTEX, DMU, QUT) with appropriate practical training and assessment programmes conducted by specialist societies e.g. ( Certification of Cardiac Physiologists (CCP SCT), * continued self-endeavour (eg literature research and critical appraisal) under supervision of a registered Clinical Physiologist in cardiac physiology | |
| Assessed by: | * + a locally nominated supervisor - a registered Clinical Cardiac Physiologist with relevant speciality expertise in the relevant practice area | |

|  |  |
| --- | --- |
| **COMPETENCIES REQUIRED FOR REGISTRATION** | **Cardiac Physiologist** |

|  |  |  |
| --- | --- | --- |
| **EXPERIENCE**: | The candidate should be able to demonstrate that he/she has worked in an environment that has enabled the individual to receive training and gain experience relevant to the competencies set out below. | |
| **GENERIC COMPETENCIES** | | **SPECIFIC COMPETENCIES** |
| Standards of Proficiency Code | **CLINICAL** | Be able to demonstrate the following relevant to the contribution of his/her specialty to patient care: |
| 2b.1p | * ability to provide interpretation of data and a diagnostic (therapeutic) opinion, including any further action to be taken by the individual directly responsible for the care of the patient | * understanding of the normal functioning of the cardiac system and of the human body as a whole, as a foundation for the understanding of different disease processes that may be encountered within the discipline * understanding of the underlying mechanisms of the  Patho physiology of cardiac disease and the impact that systemic diseases may have on the functioning of the cardiac system * ability to recognise changes in relevant signs, symptoms and test results and relate them to the underlying pathology of specific diseases and conditions associated with the cardiac system * ability to recognise significant changes in relevant signs, symptoms and test results and understand the effects of diagnostic or therapeutic procedures in order to interpret any changes in the clinical condition * complies with relevant discipline specific protocols, policies and procedures * ability to contribute to the monitoring and ongoing management of patients with cardiac disease * ability to demonstrate clinical knowledge in order to be able to communicate effectively with clinical and other professional colleagues within the working environment |
| 3a.1p | * understanding of the wider clinical situation relevant to the patients presenting to his/her specialty |
| 2a | * ability to understand and appropriately process referrals based on urgency criteria |
| 2b.3p | * ability to develop/devise an investigation strategy taking into account the complete clinical picture |
| 1a.1b. | * ability to appropriately identify patients and obtain informed consent |
| 3a.2p | * understanding of the clinical applications of his/her specialty and the consequences of decisions made upon his/her actions/advice |
| 3a.2p | * awareness of the evidence base that underpins the use of the procedures employed by the service |
| **Codes related to Clinical Physiologists Board General Standards of Proficiency (g=generic; p=profession specific)** | | |
| Achievement of: | For each speciality:   * an understanding of the normal anatomy and physiology of the cardiac system and the effects of different disease processes on the functioning of the cardiac system as a whole * an understanding of the mode of action and efficacy of different therapies (both pharmacological and non-pharmacological) and the mechanisms by which they may modulate disease processes in clinical cardiac medicine * an understanding of the methods by which different investigative procedures may be utilised in order to achieve an appropriate clinical interpretation and assessment of the clinical condition | |
| Achieved through: | * enrolment in a discipline specific qualification such as the Post Graduate Diploma of Medical Technology (PGD MTEX), Diploma of Medical Ultrasound (DMU) or equivalent * participation in a recognised formal training element (e.g.MTEX, DMU, QUT) with appropriate practical training and assessment programmes conducted by specialist societies e.g. Certification of Cardiac Physiologists (CCP SCT) * participation in departmental seminars and clinical meetings, audit and clinical report evaluation * continued self-endeavour (e.g. literature research and critical appraisal) under supervision of a registered Clinical Physiologist in cardiac physiology | |
| Assessed by: | * + a locally nominated supervisor - a registered Clinical Cardiac Physiologist with relevant speciality expertise in the relevant practice area | |

|  |  |
| --- | --- |
| **COMPETENCIES REQUIRED FOR REGISTRATION** | **Cardiac Physiologist** |

|  |  |  |
| --- | --- | --- |
| **EXPERIENCE**: | The candidate should be able to demonstrate that he/she has worked in an environment that has enabled the individual to receive training and gain experience relevant to the competencies set out below. | |
| **GENERIC COMPETENCIES** | | **SPECIFIC COMPETENCIES** |
| Standards of Proficiency Code | **TECHNICAL** | Be able to demonstrate the following, relevant to the modality or area of specialisation in which he/she wishes to be recognised |
| 3a.2p | * understanding of the principles associated with a range of tests/techniques employed in the speciality | * detailed understanding of investigative techniques and therapeutic procedures (profession specific) with a knowledge of test protocols and recognised national/international standards of practice * competency (or able to provide proof of approved training) to perform, interpret and report on the findings of investigative and therapeutic investigations in cardiac physiology (including but not limited to lists below) using a variety of techniques in a range of patients across the spectrum of disease severity   Core techniques and procedures:  Electrocardiography (ECGs), Holter Monitor, event recorder and blood pressure monitor fitting and removal, exercise testing (ECG hook-up and recording), transducer set-up and calibration, cardiac catheterisation (adult diagnostic and interventional procedures) Holter Monitor analysis, supervised pacemaker follow-up and supervised echocardiography (cardiac ultrasound).  Additional techniques and procedures: tilt table testing, right and left heart catheterisation, cardiac output measurement (including thermodilution, oxygen uptake, haemoximetry), intra-aortic balloon pumping, intravascular ultrasound, pressure wire studies, temporary pacing, exercise testing (physiologist supervised), paediatric cardiac catheterisation, implantation and follow-up of pacemakers and implantable cardioverter defibrillators and other cardiac implantable devices, electrophysiology studies (including diagnostic, catheter and surgical ablation, 3D mapping).  .  **Core techniques and procedures (echo scope only)**  Adult +/- paediatric echocardiography (transthoracic and stress), 2D, 3D/4D, strain, M-mode and Doppler. |
| 3a.2p | * knowledge of the standards of practice expected from these tests/techniques |
| 2b.4p | * experience of performing these tests/techniques |
| 2a. | * knowledge of data storage and retrieval specific to each speciality |
| 3a. | * understanding of the safe operation of profession specific equipment |
| 2b.4p | * the ability to solve problems that might arise during the routine application of these tests/techniques (troubleshooting) |
| 1a. | * understanding and complying with the concepts of clinical ethical considerations |
| 2c.2g | * understanding of the principles of quality control and quality assurance |
| 2c.1p | * experience of the use of quality control and quality assurance techniques including restorative action when performance deteriorates |
| **Codes related to Clinical Physiologists Board General Standards of Proficiency (g=generic; p=profession specific)** | | |
| Achievement of: | For each speciality:   * an ability to perform a range of investigative tests/techniques and therapeutic procedures in cardiac medicine to the required standards of an operational protocol as defined for the purposes of laboratory accreditation or under the guidance of the recognised professional body (SCT) * a critical ability to review results and relate the findings to both disease Patho physiology and to quality control and assessment information used for measurement procedures within the cardiac technical department * a detailed understanding of the measurement principles involved in cardiac tests/procedures in order to facilitate troubleshooting and develop adequate procedures of preventative maintenance | |
| Achieved through: | * enrolment in a discipline specific qualification such as the Post Graduate Diploma of Medical Technology (PGD MTEX), Diploma of Medical Ultrasound (DMU) or equivalent * participation in a recognised formal training element (e.g.MTEX, DMU, QUT) with appropriate practical training and assessment programmes conducted by specialist societies e.g. Certification of Cardiac Physiologists (CCP SCT) * participation in departmental seminars and clinical meetings, audit and clinical report evaluation * continued professional development and self-endeavour (e.g. literature awareness) under supervision of a registered Clinical Physiologist in cardiac physiology | |
| Assessed by: | * + a locally nominated supervisor - a registered Clinical Cardiac Physiologist with relevant speciality expertise in the relevant practice area | |

|  |  |
| --- | --- |
| **COMPETENCIES REQUIRED FOR REGISTRATION** | **Cardiac Physiologist** |

|  |  |  |
| --- | --- | --- |
| **EXPERIENCE**: | The candidate should be able to demonstrate that he/she has worked in an environment that has enabled the individual to receive training and gain experience relevant to the competencies set out below. | |
| **GENERIC COMPETENCIES** | | **SPECIFIC COMPETENCIES** |
| Standards of Proficiency Code | **RESEARCH AND DEVELOPMENT** | Be able to demonstrate a training in research which should include: |
| 2b.1p | * ability to read and critically appraise relevant literature | * understanding of basic research methodology which allows comprehension and evaluation of data * possessing the knowledge of how to access appropriate databases for information * understanding of the ethics of human (medical) research including data protection, ethical approval and responsibility for anonymous data |
| 2b.1p | * ability to discuss various research methods and concepts |
| **Codes related to Clinical Physiologists Board General Standards of Proficiency (g=generic; p=profession specific)** | | |
| Achievement of: | For each speciality:   * a critical understanding of scientific and research methodology in order to successfully evaluate, develop and/or modify both current and emerging technologies as routine diagnostic tools in cardiac physiological measurement * the development of research skills and expertise sufficient to support supervised and collaborative research projects in cardiac physiology and for other related disciplines * the development of skills to perform an effective literature survey and to consolidate and evaluate the information obtained from all available sources | |
| Achieved through: | * participation in departmental seminars and clinical research meetings and evidence of supervised and collaborative research initiatives, potentially leading to a higher degree (MHSc/MPhil/PhD) * the presentation of outcomes of method evaluations or clinical investigations, protocol development and research projects of a standard suitable for publication * continued self-endeavour (eg literature research and critical appraisal) under supervision of a registered Clinical Physiologist in cardiac physiology | |
| Assessed by: | * + a locally nominated supervisor - a registered Clinical Cardiac Physiologist with relevant speciality expertise in the relevant practice area | |

|  |  |  |
| --- | --- | --- |
| **EXPERIENCE**: | The candidate should be able to demonstrate that he/she has worked in an environment that has enabled the individual to receive training and gain experience relevant to the competencies set out below. | |
| **GENERIC COMPETENCIES** | | **SPECIFIC COMPETENCIES** |
| Standards of Proficiency Code | **COMMUNICATION** | Be able to communicate in both the written and spoken media to colleagues, peers and patients: |
| 1b.2p | * ability to respond to enquiries regarding the service provided when dealing with clinical colleagues | * ability to communicate professionally and effectively with colleagues within the discipline and in the wider clinical community * understanding of patient rights in regards to healthcare * ability to present findings of clinical research projects in both written and oral communication through reports, scientific papers, posters, seminars and lectures * utilising a variety of media to communicate information effectively |
| 1b.4g | * ability to respectfully communicate with patients, carers, the public and other healthcare professionals |
| 1b.5p | * ability to communicate the outcome of problem solving and research and development activities |
| 2b.1p  1b.5p | * evidence of presentation of scientific material at meetings and in the literature |
| **Codes related to Clinical Physiologists Board General Standards of Proficiency (g=generic; p=profession specific)** | | |
| Achievement of: | For each speciality:   * an ability to communicate clearly and with confidence to clinical and other professional colleagues both within and outside the profession of cardiac medicine in both a formal and informal setting * an understanding of all aspects of information technology pertinent to service provision and support of a cardiac laboratory | |
| Achieved through: | * enrolment in a discipline specific qualification such as the Post Graduate Diploma of Medical Technology (PGD MTEX) , Diploma of Medical Ultrasound (DMU) or equivalent * participation in a recognised formal training element (e.g.MTEX, DMU, QUT) with appropriate practical training and assessment programmes conducted by specialist societies e.g. Certification of Cardiac Physiologists (CCP SCT) * presentations in both oral and written format within and outside the department through seminars, tutorials, posters and appropriate peer-reviewed publications * participation in local seminars and meetings, clinical audit and clinical report evaluation * self endeavour (e.g. competence in standard PC based applications) | |
| Assessed by: | * + a locally nominated supervisor - a registered Clinical Cardiac Physiologist with relevant speciality expertise in the relevant practice area | |

|  |  |
| --- | --- |
| **COMPETENCIES REQUIRED FOR REGISTRATION** | **Cardiac Physiologist** |

|  |  |  |
| --- | --- | --- |
| **EXPERIENCE**: | The candidate should be able to demonstrate that he/she has worked in an environment that has enabled the individual to receive training and gain experience relevant to the competencies set out below. | |
| **GENERIC COMPETENCIES** | | **SPECIFIC COMPETENCIES** |
| Standards of Proficiency Code | **PROBLEM SOLVING** | Be able to deal with the unexpected and thus be able: |
| 2a.2g  2c.1g | * ability to assess a situation | * ability to assess a situation and determine the nature and severity of problems relating to both equipment used in cardiac physiology measurement and those encountered during the testing procedure * knowledgeable and experienced to act accordingly in response to a problem encountered with the discipline or within the health care sector in general * ability to demonstrate personal initiative to resolve problems associated within discipline specific procedures or in the wider health care context |
| 2b.1g | * ability to determine the nature and severity of the problem |
| 2b.1g | * ability to call upon the required knowledge and experience to deal with the problem |
| 2b.1g | * ability to initiate resolution of the problem |
| - | * ability to demonstrate personal initiative |
| - | * ability to identify equipment faults and respond appropriately |  |
| - | * recognises and minimise biological, chemical and physical hazards in the workplace |  |
| **Codes related to Clinical Physiologists Board General Standards of Proficiency (g=generic; p=profession specific)** | | |
| Achievement of: | For each speciality:   * an ability to critically appraise a situation and implement the required action to resolve problems encountered both in the routine investigative and therapeutic procedures performed in cardiac physiology and in the wider health care context * an ability to critically appraise information supplied and implement the required action to resolve problems in the clinical aspects of a cardiac physiology service * an understanding of the hazards (environmental, biological, chemical, physical) associated with the operating of the cardiac technical department and knowledge of the appropriate controlling legislation and procedures for risk assessment | |
| Achieved through: | * enrolment in a discipline specific qualification such as the Post Graduate Diploma of Medical Technology (PGD MTEX) , Diploma of Medical Ultrasound (DMU) or equivalent * participation in a recognised formal training element (e.g.MTEX, DMU, QUT) with appropriate practical training and assessment programmes conducted by specialist societies e.g. Certification of Cardiac Physiologists (CCP SCT) * attendance at relevant scientific meetings * supervised experience of problem solving in the laboratory * supervised experience of problem solving in relevant aspects of profession (oral and written) * participation in local courses e.g. manual handing, fire and electrical safety, basic and hospital life support, VDU awareness * continued self-endeavour (e.g. literature research and critical appraisal) under supervision of a registered Clinical Physiologist in cardiac physiology | |
| Assessed by: | * + a locally nominated supervisor - a registered Clinical Cardiac Physiologist with relevant speciality expertise in the relevant practice area | |

|  |  |
| --- | --- |
| **COMPETENCIES REQUIRED FOR REGISTRATION** | **Cardiac Physiologist** |

|  |  |  |
| --- | --- | --- |
| **EXPERIENCE**: | The candidate should be able to demonstrate that he/she has worked in an environment that has enabled the individual to receive training and gain experience relevant to the competencies set out below. | |
| **GENERIC COMPETENCIES** | | **SPECIFIC COMPETENCIES** |
| Standards of Proficiency Code | **MANAGEMENT** | Understand the basic aspects of management of staff, financial and physical resources |
| - | * understanding of the structure and organisation of the department and how it fits into the local clinical setting | * understanding of the range of tasks and skills necessary for the effective management of the service including rostering and prioritisation * understanding of the role and contribution of the service in the wider clinical environment * understanding of the importance of economic use of healthcare resources * awareness of and understand health and safety issues related to the discipline * awareness of personal issues related to training and competence and an understanding of internal relationships within cardiac medicine |
| - | * demonstration of effective time management |
| 2c.2g  3a.3g  2c.2p | * understanding the relevance of health and safety issues, particularly of those relating to the service |
| 2c.2g  3a.3g  2c.2p | * understanding the importance of internal and external quality assurance programmes |
| 2c.2g  3a.3g  2c.2p | * understanding the training framework and to be familiar with the practical aspects of staff management and appraisal |
| **Codes related to Clinical Physiologists Board General Standards of Proficiency (g=generic; p=profession specific)** | | |
| Achievement of: | For each speciality:   * an understanding of the basic skills required for the management of the cardiac physiological measurement service * an understanding of the wider impact of the service provision in relation to other disciplines and the particular requirements of general practice * a knowledge of the legislation relevant to health and safety management and patient confidentiality and the methods employed to enact and adhere to such legislation * an understanding of the departmental structure, personnel assessment through appraisal systems and the identification of training needs * an understanding of the components of cost (from planning to test level) in the provision of a comprehensive cardiac measurement service and the ability to use the tools necessary to evaluate costs and financial management | |
| Achieved through: | * enrolment in a discipline specific qualification such as the Post Graduate Diploma of Medical Technology (PGD MTEX), Diploma of Medical Ultrasound (DMU) or equivalent * participation in a recognised formal training element (e.g.MTEX, DMU, QUT) with appropriate practical training and assessment programmes conducted by specialist societies e.g. Certification of Cardiac Physiologists CCP SCT) * observation at local forums and committee meetings (e.g. health and safety committee, management team, interview panel) | |
| Assessed by: | * + a locally nominated supervisor - a registered Clinical Cardiac Physiologist with relevant speciality expertise in the relevant practice area | |