National Competency Framework
for the Profession of Respiratory Therapy

Part II
National Guidelines
Competencies Throughout Career Stages

August 2016
Introduction

Part II of the National Competency Framework (NCF) contains the expectations at key stages of the RT’s career, (not just at registration or entry to practice);

- the competencies are each expressed with the knowledge they require;
- the degree of mastery expected at each career stage is shown precisely; and
- it is competency-based rather than task-based, and patient-centred.

Please refer to Part I of the National Competency Framework for the national standards required for entry-to-practice.

Part II of the NCF serves as the pan-Canadian guidelines for the competencies relevant to respiratory therapy practice throughout the following career stages and supports career planning, development and progression.

Experienced

The Experienced Professional career stage requires a fluency of operation beyond entry to practice. Experienced Professionals can do everything the new entrant can, but with more mastery and a higher level of confidence. The timeframe of an RT progressing from entry to practice to Experienced Professional depends on experience, including hours worked, the complexity and variety of clinical situations, opportunities for on-the-job coaching and applied research opportunities. Typically, an RT who is exposed to the full scope of practice can be expected to progress from entry to practice to Experienced Professional with approximately 4,000 hours of practice.

Senior Professional

Some RTs take on the additional responsibilities of a Senior Professional in their organization. This requires enhanced core competencies to lead a team of colleagues, implying a strong understanding of the organization’s environment and the RT role, including the development and implementation of RT policies and strategies. It would normally include formal responsibility for a team and their actions. It does not necessarily require any enhanced clinical competencies above other Experienced Professionals. This career stage stretches from first level team leaders and supervisors up to senior managers with significant administrative duties. However the degree of mastery shown in the NCF is that expected for entry to the Senior Professional career stage. Senior Professionals often also develop an Expert role.

Expert

Some RTs become Experts by developing an expertise in one area of the profession such as paediatrics. Experts are invited to speak at events because of expertise in their area. They often work with their regulatory bodies and promote the improvement of practice standards. They participate in research and sometimes publish textbooks. To develop new strategies, policies or techniques for the profession requires expert clinical knowledge and experience, but most likely in a narrow range of expertise. It requires both strong technical expertise and promoting the adoption of improved practices by the RT profession. Experts may also take on a Senior Professional role.
How to Read the Detailed Performance and Knowledge Criteria

This NCF presents a detailed description of the competencies required for RTs entering practice and at other key points of their career. In addition, we have identified the Attitudes and Values that underpin the profession. To some extent, the practice (and therefore the competency) will depend on the circumstances surrounding the patient being cared for. Each competency is described using the following items:

This NCF presents a detailed description of the competencies required for RTs entering practice and at other key points of their career. In addition, we have identified the Attitudes and Values that underpin the profession. To some extent, the practice (and therefore the competency) will depend on the patient being cared for. Each competency is described using the following items:

Competency Statement
Each competency is defined using a short action statement describing what an RT must be able to do to be considered competent at an entry-to-practice level. The verb used gives an idea of the required level of performance. We have distinguished between three competency domains: Foundation Science, Core Competencies and Clinical Competencies.

Performance Criteria
The performance criteria section for each competency contains statements providing additional details on the required level of performance (to be deemed a competent person) and what is to be assessed. Competence requires all performance criteria to be met.

Range (clarification)
The range statements provide an explanation of words used in the performance criteria, or a clarification of the context for one or more performance criteria. Due to jurisdictional differences in scope of practice, for some competencies (for example, C5, C10) the range identifies the competencies RTs in one jurisdiction may perform, while RTs in other jurisdictions may assist other members of the health care team with the competency.

Knowledge
In many cases, especially for a science-based profession like RT, it is essential to have a grounding in facts and theories. There is a separate section for each competency that identifies any specific knowledge required for that particular competency. In addition, the Foundation Science competencies underpin all of the other competencies (particularly the Clinical Competencies). Because the Foundation Science competencies are knowledge-based, they consist primarily of the Knowledge section.

Degree of Mastery (Bloom’s Trajectory) of Knowledge, Skills and Attitudes (KSA)
The same competencies are used by an RT at different career stages. However, the degree of mastery of the competencies is very different for someone at entry to practice compared to someone who is an experienced professional, or who has become an expert in a particular area. We have used Bloom’s Trajectory as our measure of degree of mastery for each competency at each career stage – see Appendix 1. This identifies the degree of mastery for each of the three domains of knowledge, skills and attitudes. This classification makes it clear to the trainee or practicing RT exactly what proficiency is expected, and is of particular relevance for RT educators (identifying what learning experiences will be required) and assessors (indicating what types of assessment will be appropriate). Due to jurisdictional
differences in availability of clinical training and/or scope of practice, some competencies have been defined at skill level 2 for neonatal and paediatric patient groups. This level 2 accepts the “below-competent” level of the new graduate and recommends that further on-the-job training or certification is required before the RT can be considered fully competent for these specific competencies.

**Progression Path**

The new RT Framework contains four career stages: the national standard for Entry to Practice is outlined in Part I; national guidelines for the Experienced Professional, the Senior Professional and the Expert are outlined in Part II. The same competencies are required throughout the career; however, the degree of mastery of each competency will improve. The typical progression path from entry-to-practice to senior professional or expert is shown in the Progression Path section, which describes the increasing degree of mastery along Bloom’s Trajectory for the three domains of knowledge, skill and attitude.

The new RT Framework contains four career stages: the national standard for Entry to Practice is outlined in Part I; national guidelines for the Experienced Professional, the Senior Professional and the Expert are outlined in Part II. The same competencies are required throughout the career; however, the degree of mastery of each competency will improve. The typical progression path from entry-to-practice to senior professional or expert is shown in the Progression Path section, which describes the increasing degree of mastery along Bloom’s Trajectory for the three domains of knowledge, skill and attitude.

The performance criteria are those for entry to practice. In a few cases, additional performance criteria are expected for the Experienced Professional or Expert, in which case these are also shown.

The career stage Senior Professional does not require an increase in clinical competencies and so does not follow the progression path for the clinical competencies (C) and foundation science (S). Senior Professionals require higher degrees of mastery in several of the Core Competencies (notably B1 Professional, B2 Communication, B6 Administration) and the additional Core Competency (B8 Accountability), which are not required for those practising their profession as RTs.

The career stage Expert is unlike all the other career stages. It does not require the expert degree of mastery for all the competencies. It is sufficient to be an expert in a single competency (although it is more common to be an expert in several competencies). However, a competent expert does require enhanced core competencies for B2 Communication and B5 Critical Thinking & Reasoning. These are therefore shown as Essential, while others are shown as Optional.
### Attitudes and Values

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Duty to patients</td>
</tr>
<tr>
<td>A2</td>
<td>Duty to others</td>
</tr>
<tr>
<td>A3</td>
<td>Perform within competence</td>
</tr>
<tr>
<td>A4</td>
<td>Confidentiality</td>
</tr>
<tr>
<td>A5</td>
<td>Participate in continuous professional development</td>
</tr>
<tr>
<td>A6</td>
<td>Independence and impartiality</td>
</tr>
<tr>
<td>A7</td>
<td>Honesty and integrity</td>
</tr>
<tr>
<td>A8</td>
<td>Supervision of others</td>
</tr>
<tr>
<td>A9</td>
<td>Comply with codes of conduct and practice</td>
</tr>
<tr>
<td>A10</td>
<td>Professional liability insurance</td>
</tr>
<tr>
<td>A11</td>
<td>Conflicts with moral or religious beliefs</td>
</tr>
<tr>
<td>A12</td>
<td>Environment and sustainability</td>
</tr>
<tr>
<td>A13</td>
<td>Obligation to report unsafe or inappropriate practices</td>
</tr>
<tr>
<td>A14</td>
<td>Behaviour</td>
</tr>
</tbody>
</table>

### Core Competencies

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B0</td>
<td>Provide evidence-informed, patient-centred, respiratory care</td>
</tr>
<tr>
<td>B1</td>
<td>Demonstrate professional behaviour</td>
</tr>
<tr>
<td>B2</td>
<td>Communicate effectively</td>
</tr>
<tr>
<td>B3</td>
<td>Collaborate in the interdisciplinary health care team</td>
</tr>
<tr>
<td>B4</td>
<td>Optimize cardio-respiratory health and wellness of the community</td>
</tr>
<tr>
<td>B5</td>
<td>Demonstrate critical thinking and reasoning skills</td>
</tr>
<tr>
<td>B6</td>
<td>Perform administrative duties</td>
</tr>
<tr>
<td>B7</td>
<td>Implement preventive measures to ensure health and safety</td>
</tr>
<tr>
<td>B8</td>
<td>Demonstrate accountability appropriate to role in the health care team</td>
</tr>
</tbody>
</table>

### Clinical Competencies

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>Assess patient’s cardio respiratory status</td>
</tr>
<tr>
<td>C2</td>
<td>Optimize patient safety</td>
</tr>
<tr>
<td>C3</td>
<td>Administer medication and substances</td>
</tr>
<tr>
<td>C4</td>
<td>Manage airway</td>
</tr>
<tr>
<td>C5</td>
<td>Perform anaesthesia assistance</td>
</tr>
<tr>
<td>C6</td>
<td>Provide optimal ventilation assistance</td>
</tr>
<tr>
<td>C7</td>
<td>Execute resuscitation</td>
</tr>
<tr>
<td>C8</td>
<td>Administer cardio-pulmonary diagnostic tests</td>
</tr>
<tr>
<td>C9</td>
<td>Perform adjunct therapies</td>
</tr>
<tr>
<td>C10</td>
<td>Perform invasive vascular procedures</td>
</tr>
</tbody>
</table>

### Foundation Science

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>Apply knowledge of anatomy and physiology</td>
</tr>
<tr>
<td>S2</td>
<td>Apply knowledge of chemistry and biochemistry</td>
</tr>
<tr>
<td>S3</td>
<td>Apply knowledge of physics</td>
</tr>
<tr>
<td>S4</td>
<td>Apply knowledge of pharmacological principles</td>
</tr>
<tr>
<td>S5</td>
<td>Apply knowledge of microbiology</td>
</tr>
<tr>
<td>S6</td>
<td>Apply knowledge of pulmonary pathophysiology</td>
</tr>
<tr>
<td>S7</td>
<td>Apply knowledge of cardiovascular pathophysiology</td>
</tr>
<tr>
<td>S8</td>
<td>Apply knowledge of other diseases and disorders</td>
</tr>
</tbody>
</table>

*The degree of mastery is specified for each career level for all the Clinical Competencies and a few of the Core Competencies, where appropriate.*
Attitudes and Values of Respiratory Therapists

These attitudes and values are also incorporated within the detailed competency statements.

A1. Duty to patients
RTs owe a duty of care to patients and their families. They shall perform their duties in a safe and competent manner, being guided at all times by their concern for the health and well-being of the patient. They must display a positive, helpful, and sensitive attitude to patients, recognizing that they may not have a good understanding of their illness or its treatment. RTs must always be aware that the result of their treatments will directly affect the outcome of patients. They need to communicate with clarity and sensitivity. They must respect and protect the legal rights of the patient, including the right to informed consent and refusal or withdrawal of treatment.

A2. Duty to others
At the same time, RTs have a duty to their health care colleagues, employers, regulatory authorities, and the wider public. They must show proper care regarding expenditure of public money and must not compromise public health and safety.

A3. Perform within competence
RTs shall perform their duties within their own level of competence and respect the level authority assigned to them. Should the delivery of care extend beyond their level of competence, RTs must seek additional knowledge or assistance from another member of the health care team.

A4. Confidentiality
In accordance with relevant legislation, RTs must respect the confidentiality of individual patients’ personal information and ensure information about an individual is not disclosed improperly or without the informed consent of the individual.

A5. Participate in continuous professional development
RTs have a responsibility to maintain competency in their field of practice and must participate in continuous professional development throughout their working lives. Practitioners will keep their knowledge in their field of practice up to date and will extend their competencies as the demand for new services develops.

A6. Independence and impartiality
RTs must carry out their professional tasks with respect for the rights and dignity of all individuals and without any form of discrimination because of age, ancestry, colour, citizenship, disability, family status, gender, marital status, place of origin, political beliefs, religion, sexual orientation, or source of income. They have the right to exercise personal judgment in the context of their responsibilities after taking into account all relevant circumstances, without any application of external influence. Advice and treatment should be given impartially and objectively, without pressure from external sources and without conflicts of interest.

A7. Honesty and integrity
RTs are required to act with honesty and integrity in their relationships with patients and others, including professional colleagues. They must not engage in any activity or behaviour that creates or
appears to create a conflict of interest or would be likely to bring their organization or the profession into disrepute or undermine public confidence in the profession.

A8. Supervision of others
RTs who supervise others are required to ensure that any member of their team to whom a task is delegated has the competency (attitudes, knowledge, and skills) necessary to undertake that task effectively and efficiently. They should always provide appropriate supervision and support. The responsibility for a delegated task remains with the delegator.

A9. Comply with codes of conduct and practice
RTs must comply with the provisions of relevant legislation and the provisions of codes of practice and standards relating to the professional services they provide.

A10. Professional liability insurance
RTs have a professional responsibility to carry professional liability insurance at a level sufficient to ensure the patient will be adequately compensated in the event of a justified claim arising from professional practice. RTs also should have some personal liability insurance to cover their legal and other expenses related to these claims or any claims alleging professional misconduct. While some organizations provide their employees with some level of liability insurance, it is the responsibility of the RTs to ensure that the level of coverage is adequate for the protection of the public and of their professional rights.

A11. Conflicts with moral or religious beliefs
In the event of conflicts with moral or religious beliefs arising from a request for the provision of RT services, members of the profession have an obligation to provide information on where that service can most conveniently be obtained from a professional colleague. After agreeing to provide a service, RTs are bound to set aside any personal, religious, political, philosophical, or other convictions.

A12. Environment and sustainability
RTs should be aware of environmental issues; their actions should not lead to needless waste of energy, time, or other resources.

A13. Obligation to report unsafe or inappropriate practices
RTs have a responsibility to report unsafe or inappropriate practices to the relevant authorities. They should use the official procedures in the first instance, but should escalate or use other channels if the circumstances require. This obligation overrides any contractual or employment limitations. Those in authority have a duty to investigate such allegations fairly and without discrimination or recrimination.

A14. Behaviour
RTs shall be accountable for their practice, and will act professionally at all times. They shall strive to be a role model for other members of the health care team by demonstrating responsibility, cooperation, accountability and competence in meeting the health care needs of the public. RTs shall advocate their role as leaders in the promotion of health and the delivery of quality respiratory care.
CORE COMPETENCIES
CORE COMPETENCY

**B0**  *Provide evidence-informed, patient-centred, respiratory care*

**B0.1** Demonstrate empathy and respect towards the patient and family

**Performance criteria**

B0.1.1 Respect the rights, privacy and dignity of all individuals
B0.1.2 Consider and minimise the effects of psychosocial stress factors on the patient and family
B0.1.3 Establish a caring, supportive attitude and behaviour towards the patient and family
B0.1.4 Avoid any form of discrimination against patients and family, colleagues or others

**Range (clarification)**

a. psychosocial stress factors include: beliefs, concerns, expectations and illness experience
b. forms of discrimination may include, but are not limited to: age, ancestry, colour, citizenship, disability, family status, gender, marital status, place of origin, political beliefs, religion, sexual orientation, or source of income

**Knowledge**

- attributes associated with a supportive and caring professional attitude and behaviour
- the causes and effects of patient psychosocial stress factors and their impacts
- the psychosocial implications of particular situations, such as palliative care and disease stigmas
- human rights (as a basis for understanding patient rights, discrimination, etc.)
- provincial or national legislation pertaining to patient rights (for example: Charter of Rights and Freedoms, Provincial Human Rights Codes, privacy legislation)

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S5, A3</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>
B0.2 Establish partnerships with patients and families

Performance criteria
B0.2.1 Establish and maintain relationships
B0.2.2 Actively collaborate with patients and families in decision-making and care planning
B0.2.3 Support patients and families throughout the patient experience

Range (clarification)
- relevant information originates from assessment, chart review, other care providers, patient and family

Knowledge
- relevant legal aspects of the relationship between the health care worker and the patient/family
- appropriate techniques and conditions for establishing and maintaining relationships (for example, empathy, emotional intelligence, etc.)
- communication principles

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A3</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
<tr>
<td>Additional performance criteria for Experienced Professionals</td>
<td>B0.2.4 Participate in improving respiratory care policies and protocols</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B0.3 Plan respiratory care

Performance criteria
B0.3.1 Synthesize relevant information
B0.3.2 Considering patient goals and expectations, identify opportunities to improve patient outcomes
B0.3.3 Develop respiratory care plans, taking into account patient goals and expectations
B0.3.4 Implement respiratory care plans
B0.3.5 Monitor and evaluate patient outcomes resulting from implementation of respiratory care plans

Range (clarification)
- respiratory care plan includes intervention, procedures, medication
- patient goals and expectations: includes end of life

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
<tr>
<td>Additional performance criteria for Experienced Professionals</td>
<td>B0.3.6 Develop respiratory treatment protocols</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
B0.4  Apply evidence to practice

Performance criteria
B0.4.1 Use the best available evidence in making decisions about patient care
B0.4.2 Identify the patient's unique health state, their individual risks and benefits from potential interventions
B0.4.3 Identify the patient's preferences and values

Knowledge
- different research designs and the strengths and limitations of each
- sources of current information on relevant research

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A2</td>
<td>K5, S5, A3</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>
CORE COMPETENCY

B1  Demonstrate professional behaviour

B1.1  Exhibit professional behaviour

B1.2  Adhere to the scope of practice

B1.3  Adhere to professional clinical, legal, and ethical guidelines/regulations

B1.4  Adhere to institutional/organizational policies and procedures

B1.5  Participate in professional development

B1.6  Participate in quality improvement processes

These elements of Competency apply to all the Clinical Competencies.

B1.1  Exhibit professional behaviour

Performance criteria
B1.1.1  Use professional language
B1.1.2  Behave in a professional manner in accordance with the standards of the profession
B1.1.3  Wear professional attire in accordance with clinical requirements in all situations
B1.1.4  Provide advice and treatment impartially and objectively, without pressure from external sources and being aware of conflicts of interest
B1.1.5  Act with honesty and integrity, avoiding behaviour likely to bring the organization or profession into disrepute or undermine public confidence in the profession

Range (clarification)
  a.  professional behaviour with patients, their families, members of the health care team, the general public

Knowledge
  •  conflicts of interest, conflict resolution

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S5, A3</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>

B1.2  Adhere to the scope of practice

Performance criteria
B1.2.1  Identify actions that would be outside the scope of practice
B1.2.2  Advise the appropriate people of any potential needs outside the scope of practice
B1.2.3 Identify and refer to appropriate persons who can provide the out-of-scope requirements

Range (clarification)
  a. the appropriate people/persons: the patient, the patient’s representative, health care professionals, inter-professional team, colleagues, employer
  b. scope of practice: employment, personal, legislative

Knowledge
  • the relevant domains of practice (nationally) and sources of relevant provincial information
  • the standards of practice per applicable regulatory body
  • professional responsibilities and accountabilities as it pertains to the profession
  • relevant professional responsibilities and capabilities of related professions

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S5, A4</td>
<td>K5, S5, A4</td>
<td>K6, S5, A4</td>
</tr>
</tbody>
</table>

B1.3 Adhere to professional clinical, legal and ethical guidelines/regulations

Performance criteria
B1.3.1 Understand relevant guidelines/regulations
B1.3.2 Apply the guidelines/regulations
B1.3.3 Take action to prevent relevant guidelines/regulations being ignored

Knowledge
  • professional guidelines/regulations: clinical, legal and ethical
  • relevant legislation

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A4</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>

B1.4 Adhere to institutional/organizational policies and procedures

Performance criteria
B1.4.1 Remain current with relevant institutional/organizational policies and procedures
B1.4.2 Adhere to all applicable policies and procedures
B1.4.3 Help ensure that the applicable policies and procedures are adhered to by all
B1.4.4 Report unsafe or inappropriate practices to the relevant authorities
B1.4.5 Be aware of relevant environmental issues and avoid needless waste of resources

Range (clarification)
  a. institutional/organizational: employer, department, agency
  b. resources: personnel, energy, time, finance, equipment, material and other physical resources
Knowledge
- departmental, institutional/organizational and regulatory policies and procedures

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S5, A4</td>
<td>K5, S5, A4</td>
<td>K5, S6, A4</td>
</tr>
</tbody>
</table>

B1.5 Participate in professional development

Performance criteria
- B1.5.1 Set personal goals and formulate a plan for personal professional development
- B1.5.2 Identify opportunities for professional development
- B1.5.3 Participate in appropriate professional development/continuing education activities

Range (clarification)
- a. opportunities: informal (both outside work and at work), formal programs (education and training), assessment, gaining a qualification

Knowledge
- the role and importance of professional development
- opportunities for continuing training and development

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A3</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>

B1.6 Participate in quality improvement processes

Performance criteria
- B1.6.1 Participate constructively in the organization’s quality improvement process
- B1.6.2 Develop awareness of strengths and scope for improvement
- B1.6.3 Learn from feedback offered through the process
- B1.6.4 Modify practice in response to the process

Range (clarification)
- a. quality improvement process: reflective practice, surveys, organizational procedures, informal feedback

Knowledge
- the organization’s performance evaluation process
- the elements essential for an effective job performance appraisal

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A3</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>
CORE COMPETENCY

B2 Communicate effectively

B2.1 Demonstrate effective verbal and non-verbal communication skills

Performance criteria
B2.1.1 Show respect and empathy and communicate in a manner that is respectful of individual diversity
B2.1.2 Use effective methods, including appropriate interview techniques, to obtain the patient’s complete medical history and assess their level of health literacy
B2.1.3 Employ active listening techniques to understand the needs of others
B2.1.4 Convey information on investigations and treatments with the level of clarity appropriate to each patient’s health literacy to allow for mutual understanding and informed consent
B2.1.5 Use a variety of communication tools and techniques to enhance and assess understanding on the part of patients and their families
B2.1.6 Use appropriate communication techniques to provide accurate and timely transfer of information at all transition points
B2.1.7 Demonstrate insight into one’s own communication style with patients and team members in various situations, and adjust this style appropriately to provide safe care

Range (clarification)
a. communicate with patients, their families, members of the health care team, the general public
b. interview techniques: for example, structured interview questionnaire, open-ended questions, paraphrasing, summarizing, focusing, using silence, non-verbal encouragement
c. transition points: care transitions where clients experience a change in team membership or location
d. communication styles: for example, direct and indirect
e. various situations: ordinary, crisis, stressful

Knowledge
• terms and abbreviations used in RT
• moral and legal requirements related to patient diversity
• structured interview techniques (including patient-centred and clinician-centred steps)
• communication styles and methods to adapt
• communication techniques, channels and devices

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>K4, S4, A3</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>

B2.2 Communicate effectively through documentation

Performance criteria
B2.2.1 Provide appropriately detailed, legible and clear entries to the patient health record, following every intervention with the patient
B2.2.2 Clearly, legibly and accurately document patient care orders and prescriptions
B2.2.3 Use appropriate and safe communication techniques in requests, reports and in correspondence outside the health record
B2.2.4 Document and provide rationale for deviations from established processes or guidelines

Range (clarification)
- a. communicate with patients, their families, members of the health care team, the general public
- b. documentation: written, recorded or drawn and stored on paper, digitally or a recording device
- c. appropriate and safe communication techniques: includes timely delivery and techniques ensuring patient privacy and confidentiality

Knowledge
- documentation standards
- jurisdictional requirements for documentation
- types of documentation and messages

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>K4, S4, A3</td>
<td>K5, S5, A4</td>
<td>K6, S5, A4</td>
</tr>
</tbody>
</table>

B2.3 Use information communication technologies

Performance criteria
B2.3.1 Use information communication technologies appropriately and effectively to provide safe care to patients

Knowledge
- the benefits, limitations and professional care responsibilities—including the confidentiality risks—of using information communication technologies (for example, electronic medical records, computerized professional order entries, telephone, fax, email) including, but not limited to, organizational policies related to use of personal devices, communication services, security protocols and social media
### B2.4 Manage conflict and difficult behaviour

**Performance criteria**
- **B2.4.1** Understand conflict and difficult behaviour exhibited
- **B2.4.2** Identify who needs to be involved in resolving the conflict
- **B2.4.3** Address underlying issues
- **B2.4.4** Resolve conflict

**Range (clarification)**
- a. conflict and difficult behaviour: with patients, families, the health care team, the general public

**Knowledge**
- conflict management principles and techniques, adult learning principles, providing effective feedback, critical conversations theory
- employer practice and policy, Standards of Practice, Code of Ethics and other relevant guidelines

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S5, A3</td>
<td>K5, S5, A4</td>
<td>K6, S5, A4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A3</td>
<td>K5, S5, A4</td>
<td>K5, S6, A4</td>
</tr>
</tbody>
</table>
CORE COMPETENCY

B3 Collaborate in the interdisciplinary health care team

B3.1 Collaborate in professional consultation in an inter-professional health care team

B3.2 Apply therapeutic and diagnostic procedures based on research data, methods and results

These elements of Competency apply to all the Clinical Competencies.

B3.1 Collaborate in professional consultation in an inter-professional health care team

Performance criteria
B3.1.1 Negotiate overlapping of responsibilities to support a collaborative approach to patient care

Range (clarification)
  a. collaborate with: patient, patient’s representatives and families, physicians, other colleagues in the health care professions, community partners, and health system stakeholders

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A3</td>
<td>K5, S5, A4</td>
<td>K6, S5, A4</td>
</tr>
</tbody>
</table>

B3.2 Apply therapeutic and diagnostic procedures based on research data, methods and results

Performance criteria
B3.2.1 Discuss pertinent data
B3.2.2 Review published research and select relevant data

Knowledge
  • research methods

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S4, A4</td>
<td>K5, S5, A4</td>
<td>K6, S5, A4</td>
</tr>
</tbody>
</table>
CORE COMPETENCY

**B4  Optimize cardio-respiratory health and wellness of the community**

B4.1  Provide cardio-respiratory health education

Performance criteria
B4.1.1  Provide education to support development of self-management skills
B4.1.2  Engage in activities that would enable people to increase control over their cardio-respiratory health

Range (clarification)

a. provide education to, and engage in, activities with patients/clients, family members, community, advocates, caregivers, colleagues and health care professionals

Knowledge

- educational methods for enhancing comprehension, retention and assessment of self-management skills
- determinants of cardio-respiratory health
- methods for promoting a healthy cardio-respiratory lifestyle
- benefits of cardio-respiratory health
- smoking/vapour cessation methods

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A3</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>

For the Expert career stage, possible supplemental certifications include: Certified asthma educator, Certified COPD educator, Certified respiratory educator and Certified tobacco educator.

B4.2  Participate in addressing cardio-respiratory health needs of the community

Performance criteria
B4.2.1  Provide RT services in a community setting
B4.2.2  Provide outreach services to the community

Range (clarification)

a. community setting: primary care clinics, self-management clinics
b. outreach services: telemedicine, pulmonary rehabilitation
Knowledge

- purpose, strategies, and goals of community health programs

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A3</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>

For the Expert career stage, possible supplemental certifications include: Certified asthma educator, Certified COPD educator, Certified respiratory educator and Certified tobacco educator.
CORE COMPETENCY

**B5  Demonstrate critical thinking and reasoning skills**

---

**B5.1  Analyze the data pertinent to the clinical situation in order to make a decision**

**Performance criteria**
- B5.1.1 Collect data
- B5.1.2 Distinguish and compare the elements of the situation
- B5.1.3 Review hypotheses and reflect on the validity of arguments, statements and data

**Range (clarification)**
- a. this also applies to equipment

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>

**B5.2  Prioritize clinical activities according to the analysis of the situation**

**Performance criteria**
- B5.2.1 Establish a work plan
- B5.2.2 Manage time and resource constraints
- B5.2.3 Demonstrate prioritization and task planning skills
- B5.2.4 React properly to unforeseen situations

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>
B5.3  Manage problems

Performance criteria
B5.3.1  Identify the problem
B5.3.2  Demonstrate problem-solving skills
B5.3.3  Apply appropriate safety measures
B5.3.4  Adjust reasoning to task requirements
B5.3.4  Assess the outcome of a decision to guide future actions

Range (clarification)

a.  applies to clinical issues, system issues that directly impact the care and safety of the patient, and equipment-related problems

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>
CORE COMPETENCY

B6  Perform administrative duties

B6.1 Use relevant computer and electronic data applications

Performance criteria
B6.1.1 Use relevant computer systems and standard applications software effectively
B6.1.2 Understand the importance of data collection and analysis in the health care setting
B6.1.3 Record and access data in a data management system
B6.1.4 Analyze data in a data management system

Range (clarification)
a. computer systems: desktop and laptop personal computers, tablets, smart phones and other communication devices
b. standard applications software: computer operating system, intranet, internet browser, word processing, spreadsheet and analysis programs, messaging
c. data management systems: biomedical request, computerized protocol, electronic payroll, workload measurement system, Management Information Systems in Canadian Health Service Organizations (MIS Standards)

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A3</td>
<td>K5, S4, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>

Additional performance criteria for Experts

B6.1.5 Develop new computer applications

These elements of Competency apply to all the Clinical Competencies.
B6.2 Participate in institutional or professional meetings

Performance criteria
B6.2.1 Know the goals sought by committees operating at various levels: institutional, provincial and national
B6.2.2 Participate in a meeting or on a committee

Range (clarification)
   a. institutional or professional meetings: professional body, professional association, committee meetings

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A3</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>

B6.3 Demonstrate responsible use of resources to minimize costs

Performance criteria
B6.3.1 Understand the impact of your practice on the cost of care
B6.3.2 Reduce waste

Range (clarification)
   a. waste of resources: time waiting, defects/mistakes, unnecessary movement and transportation, over-production, over-processing, expired/damaged inventory

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A3</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional performance criteria for Senior Professional and Experts</th>
</tr>
</thead>
<tbody>
<tr>
<td>B6.3.3 Establish or assist in the establishment of a budget</td>
</tr>
<tr>
<td>B6.3.4 Identify applicable measures to manage costs</td>
</tr>
<tr>
<td>B6.3.5 Manage physical resources of staff, equipment and space</td>
</tr>
</tbody>
</table>

B6.4 Complete administrative reports

Performance criteria
B6.4.1 Recognize the role of reporting in the health care setting
B6.4.2 Assemble the required information
B6.4.3 Complete and submit administrative reports accurately and on time
B6.4.4 Review administrative reports and compare with previous reports to identify trends and exceptions, and provide feedback
B6.4.5 Complete and submit health and safety reports

**Range (clarification)**
- administrative reports: broken equipment reports, requisitions, discharge summaries, incident reports, workload measurement reports
- health and safety reports includes: hazards, incident and accident reports

**Knowledge**
- role of reporting
- format and application for reporting

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>K3, S3, A2</td>
<td>K5, S4, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>

B6.5 Perform assessments other than those related to patients

**Performance criteria**
- B6.5.1 Assess the health care working environment
- B6.5.2 Evaluate the performance of staff

**Range (clarification)**
- assessments other than those related to patients: for example, environment, risk management, resources, demographic data, personnel
- respiratory care environment: for example, workplace health and safety, risk management, incident/accident reporting

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>K4, S4, A3</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>

B6.6 Assess peer/student competence and performance

**Performance criteria**
- B6.6.1 Assess practice based on job description
- B6.6.2 Establish clear, specific goals and objectives
- B6.6.3 Perform the evaluation in accordance with the appropriate guide (for example, guide from a teaching institution, guide provided by the employer)

**Range (clarification)**
- appropriate assessment guide: for example, guide from a teaching institution, guide provided by the employer

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>K4, S3, A3</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>
**B6.7 Facilitate student and new staff orientation**

**Performance criteria**
B6.7.1 Assist the on-boarding of students and new staff in accordance with the program in effect
B6.7.2 Develop a student and new staff orientation program and guide

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A3</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>
CORE COMPETENCY

**B7 Implement preventive measures to ensure health and safety**

B7.1 Analyze the risk posed by a clinical situation

B7.2 Apply infection prevention and control precautions

B7.3 Manage biohazardous materials

B7.4 Handle dangerous substances and materials

B7.5 Adhere to Canadian Standards Association (CSA) standards for medical equipment

B7.6 Handle medical gases/liquids safely

B7.7 Exercise the role of an RT in the event of an institutional disaster and mass casualty

B7.8 Use respiratory care equipment and supplies safely

B7.9 Apply the principles of the Occupational Safety, Health and Wellness (OSH&W) program

B7.10 Manage stress

*These elements of Competency apply to all the Clinical Competencies.*

---

**B7.1 Analyze the risk posed by a clinical situation**

**Performance criteria**

B7.1.1 Recognize a situation posing a risk

B7.1.2 Assess the components’ potential for harm and their probability

B7.1.3 Identify the causes and effects and how to mitigate them

B7.1.4 Identify any alternative strategies that could avoid the risk

B7.1.5 Plan and implement preventive measures

**Knowledge**

- the measures to apply when faced with a risky situation

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>

Part II – National Competency Framework - 2016
**B7.2 Apply infection prevention and control precautions**

**Performance criteria**
- B7.2.1 Use proper technique for hand hygiene
- B7.2.2 Perform a point of care risk assessment
- B7.2.3 Apply infection prevention and control and personal protective equipment (PPE) procedures for various types of precautions
- B7.2.4 Clean and disinfect equipment

**Range (clarification)**
- a. various types of precautions including, but not limited to: contact, droplet, airborne

**Knowledge**
- the levels of precaution and personal protective equipment required in relation to the type of care being provided for various types of micro-organisms
- the selection and effective use of equipment to prevent infection, including the function and use of bacteria filters and negative pressure rooms
- the purpose and indications for culture and sensitivity testing in respiratory care
- the methods used to clean and disinfect equipment and the issues related to each method

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>

**B7.3 Manage biohazardous materials**

**Performance criteria**
- B7.3.1 Handle and safely dispose of biohazardous materials

**Knowledge**
- common types of biohazardous materials
- safe management and handling of biohazardous materials, including storage and elimination

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S4, A4</td>
<td>K5, S4, A4</td>
<td>K5, S4, A4</td>
</tr>
</tbody>
</table>

**B7.4 Handle dangerous substances and materials**

**Performance criteria**
- B7.4.1 Handle dangerous substances and materials in a safe manner

**Range (clarification)**
- a. in a safe manner: as outlined in Workplace Hazard Information and Material System 2015, (WHMIS 2015)
Knowledge
- categories of hazardous/dangerous substances and materials
- handling and manipulation of hazardous/dangerous substances and materials with respect to WHMIS 2015 and OSH&W
- initial procedure for injuries occurring in the workplace

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S4, A4</td>
<td>K5, S4, A4</td>
<td>K6, S4, A4</td>
</tr>
</tbody>
</table>

Additional performance criteria for Senior Professionals

B7.4.2 Determine the priority and follow-up procedures for injuries occurring in the workplace

B7.5 Adhere to Canadian Standards Association (CSA) standards for medical equipment

Performance criteria
B7.5.1 Utilize medical equipment in accordance with CSA norms and safety standards

Knowledge
- the role and responsibilities of the CSA with respect to medical equipment and patient safety
- general electrical safety guidelines

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S4, A4</td>
<td>K5, S4, A4</td>
<td>K6, S4, A4</td>
</tr>
</tbody>
</table>

B7.6 Handle medical gases/liquids safely

Performance criteria
B7.6.1 Utilize and store medical gases and liquids in a safe manner

Range (clarification)
- a. in a safe manner: according to Transport Canada regulations

Knowledge
- sizes and formats of medical gases/liquids containers and their respective content
- the DOT/CTC regulations and procedures for handling and storing medical gases/liquids

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>
B7.7 Exercise the role of RT in the event of an institutional disaster and mass casualty

Performance criteria
B7.7.1 Apply the procedures according to the institutional disaster and mass casualty plan

Knowledge
- existing codes
- the role of the RT

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K4, S4, A3</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
<td></td>
</tr>
</tbody>
</table>

B7.7.2 Manage human and material resources when a disaster or mass casualty plan is in effect

B7.8 Use respiratory care equipment and supplies safely

Performance criteria
B7.8.1 Prepare and assemble equipment and supplies for use
B7.8.2 Perform required preventive maintenance and quality control procedures
B7.8.3 Select the best available equipment for the required intervention
B7.8.4 Verify respiratory equipment, including alarms, according to best practice guidelines

Knowledge
- the indications, contra-indications, advantages and complications of respiratory care equipment
- the safety standards related to respiratory care equipment
- formats of delivery for medical gases, including the safety features
- the care and maintenance program for equipment utilized in respiratory care, including calibration procedures and operational checks

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K5, S5, A3</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td></td>
</tr>
</tbody>
</table>

B7.9 Apply the principles of the Occupational Safety, Health and Wellness (OSH&W) program

Performance criteria
B7.9.1 Apply preventive measures to maximise health and safety
Range (clarification)
a. preventive measures including, but not limited to: lifts and transfers of patients, ergonomics, vaccination, violence in the workplace

Knowledge
• OSH&W measures

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A3</td>
<td>K5, S4, A4</td>
<td>K5, S4, A4</td>
</tr>
</tbody>
</table>

B7.10 Manage stress

Performance criteria
B7.10.1 Recognize and anticipate stressful situations
B7.10.2 Identify effective resources and strategies available for managing stress
B7.10.3 Apply strategies for reducing and managing stress
B7.10.4 Help others to reduce and manage stress and avoid conflict

Range (clarification)
a. stressful situations: at work, at home, physical and psychological circumstances that might impair judgement, performance and decision-making
b. others: patients, families, health care professionals, inter-professional team, colleagues, employer

Knowledge
• major stress factors commonly encountered
• the impact of stress associated with the demands of professional practice
• strategies for stress management

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S4, A3</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>
CORE COMPETENCY

B8  Demonstrate accountability appropriate to role in the health care team

B8.1 Engage in projects and professional initiatives

Performance criteria
B8.1.1 Involve team members to achieve objectives
B8.1.2 Plan activities, programs and resources
B8.1.3 Monitor progress and impact
B8.1.4 Adapt to changes

Knowledge
- standard resource and project planning principles and techniques

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A3</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
<tr>
<td>Additional performance criteria for Experts</td>
<td>B8.1.5 Drive progress and evolution of professional practice</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B8.2 Facilitate change

Performance criteria
B8.2.1 Identify opportunities for change
B8.2.2 Understand drivers of and obstacles to change
B8.2.3 Apply change management principles and techniques
B8.2.4 Monitor and evaluate the change process

Range (clarification)
- change: includes change of practice, change of protocols, change of organizational culture

Knowledge
- change management principles, techniques, drivers and obstacles

These elements of Competency apply to all the Clinical Competencies.
• organizational and professional values

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K3, S4, A3</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
<tr>
<td>Additional performance criteria for Experts</td>
<td>B8.2.5 Drive progress and evolution of professional practice</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### B8.3 Support and develop the team

**Performance criteria**

- B8.3.1 Motivate team members
- B8.3.2 Give team members support when they need it, especially during periods of setback and change
- B8.3.3 Encourage members to express their ideas, opinions and concerns
- B8.3.4 Build mutual trust by being fair, reliable, consistent and credible

**Range ( clarification )**

- a. this competency is very wide ranging and expands the scope of all other competencies where the RT is working with others, including those from other professions
- b. for the Expert, the team should be considered wider than the immediate work colleagues, to include other RTs in the organization and beyond

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K3, S3, A3</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
<tr>
<td>Additional performance criteria for Senior Professionals</td>
<td>B8.3.5 Encourage team members to take responsibility for their own development needs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CLINICAL COMPETENCIES
CLINICAL COMPETENCY

C1 Assess patient’s cardio respiratory status

C1.1 Collect pertinent information
C1.2 Analyze the collected information
C1.3 Interpret the collected data

C1.1 Collect pertinent information

Performance criteria
C1.1.1 Obtain a comprehensive patient history
C1.1.2 Observe the clinical manifestations
C1.1.3 Utilize invasive and non-invasive monitoring
C1.1.4 Take note of pertinent diagnostic tests

Range (clarification)
   a. non-invasive monitors including, but not limited to: transcutaneous O₂ and CO₂, end-tidal CO₂, pulse oximetry, ventilatory parameters, blood pressure
   b. invasive monitoring including, but not limited to: hemodynamics, ventilatory parameters
   c. comprehensive patient history: patient charts, co-morbidities, patient and family interview, shift reports
   d. relevant diagnostic results including, but not limited to: diagnostic imaging, laboratory, pulmonary function, sleep studies, ECG, walking oximetry test

Knowledge
   • the differences between objective and subjective data and between signs and symptoms
   • normal and abnormal findings related to head to toe inspection, palpation, percussion (if applicable) and auscultation (examples: respiratory pattern and rate, digital clubbing, level of consciousness, cyanosis)
   • appropriate sites used to assess pulse and blood pressure
   • normal and abnormal values related to pulse and blood pressure
   • non-invasive blood pressure measurement using both manual and automatic techniques
   • the technical and clinical characteristics of a normal and abnormal chest radiograph
   • correct position of an artificial airway device on a chest radiograph
   • the abnormalities in a chest radiograph in common diseases/disorders
   • pulmonary imaging techniques (examples: computed tomography, magnetic resonance imaging and angiography, ultrasound)
   • normal and abnormal findings measures obtained from non-invasive monitoring
   • the appropriate application sites for non-invasive monitoring
   • the applications, indications and contraindications of each intervention, procedure or medication given to the patient
   • the complications of the interventions, procedures or medication and their corrective action
### C1.2 Analyze the collected information

#### Performance criteria
C1.2.1 Compare obtained information with normal values

#### Knowledge
- normal values

### C1.3 Interpret the collected data

#### Performance criteria
C1.3.1 Establish a relationship between the data and the patient’s clinical status
C1.3.2 Assess the accuracy and quality of the data

### Additional performance criteria for Experienced Professionals

C1.3.2 Develop respiratory treatment protocols
CLINICAL COMPETENCY

C2  Optimize Patient Safety

C2.1  Contribute to a culture of patient safety

Performance criteria
C2.1.1  Apply evidence-informed practice
C2.1.2  Maintain and enhance quality of practice through ongoing learning
C2.1.3  Refer to guidelines for optimal practice in the administration of care

Knowledge
- recognized terminology associated with the area of patient safety
- terminology that optimizes patient safety and difference between policies, guidelines, and protocols
- fundamental elements of patient safety

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>

C2.2  Manage patient safety risks

Performance criteria
C2.2.1  Identify situations or environments involving risks to patient safety
C2.2.2  Recognize the factors that can affect RT performance and impact the patient
C2.2.3  Implement solutions to these patient safety issues
C2.2.4  Assess the effectiveness of these solutions and make corrections as needed
C2.2.5  Where indicated, use technology to optimize practice

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>

Additional performance criteria for Experts
C2.2.6  Identify process or system gaps involving risks to patient safety
C2.3  Respond to and report patient safety incidents

**Performance criteria**
C2.3.1  Manage immediate risks for patients and others affected
C2.3.2  Disclose the occurrence of a patient safety incident. This may include the patient, supervisor, employer, relevant authorities to the patient and/or their families in keeping with relevant legislation
C2.3.5  Take part in timely event analysis, reflective practice and planning to prevent recurrence

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S4, A3</td>
<td>K5, S5, A4</td>
<td>K6, S5, A4</td>
</tr>
</tbody>
</table>
C3.1 Determine appropriateness and safety of medication and substances

Performance criteria
C3.1.1 Verify that the medication order or prescription is complete or that the patient meets inclusion criteria for use of protocol
C3.1.2 Assess appropriateness of the prescribed medication for the patient
C3.1.3 Verify patient has no known allergy or previous adverse response to the medication

Range (clarification)
- medication: for example, bronchodilators, benzodiazepines, narcotics, prostacyclins, antibiotics, etc
- substance: for example, blood, plasma crystalloid substance
- protocol: includes algorithm and pathway
- routes of enteral and parenteral administration, such as substances by inhalation, instillation, orally, transdermal, topical, injection and infusion

Knowledge
- elements of a valid prescription or medical order
- indications and contraindications of medications and substances
- adverse responses to medications and substances
- the available formats and methods of administration

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S4, A4</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>

Part II – National Competency Framework - 2016
C3.2 Prepare medications and substances for administration

Performance criteria
C3.2.1 Perform dosage calculations
C3.2.2 Safely prepare medications following monograph and workplace hazard best practice guidelines
C3.2.3 Ensure proper labeling and handling of prepared medications and substances according to best practice standards

Range (clarification)
a. administration of: substances by inhalation, instillation, orally, topical, transdermal, injection and infusion
b. monograph: information provided by the drug manufacturer to the health care team
c. workplace hazard best practice guidelines: Global Harmonization System (formerly Workplace Hazard Information and Material System)

Knowledge
- dosages and concentrations of medications and substances
- independent double check

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S4, A4</td>
<td>K5, S4, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>

C3.3 Administer medications and substances

Performance criteria
C3.3.1 Verify the right client, right medication or substance, right reason, right dose, right frequency, right route, right site, right time and right documentation
C3.3.2 Administer substance using the appropriate format, method of administration and proper technique
C3.3.3 If client or legal guardian administers medication or substance, assess that medication is administered correctly
C3.3.4 Perform appropriate documentation of medication or substance administration

Range (clarification)
a. administration of: substances by inhalation, instillation, orally, transdermal, injection, infusion
b. includes administration of medical gases and surfactants
c. medical gases do not apply to inhaled anaesthetic agents, because these are covered under the Anaesthesia Competency
d. according to provincial and territorial scope of practice, “surfactants” may be either “administered” or the RT may “assist” with administration

Knowledge
- indications, contraindications and complications
- technique and dosages for surfactant administration
• recommended applications and administration procedure for each medical gas
• delivery systems for various medical gases (for example, oxygen, nitric oxide, heliox)

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>

C3.4 Evaluate response to medication or substance administration

Performance criteria
C3.4.1 Assess the patient’s response
C3.4.2 Adjust medication or substance dose or rate according to order or protocol

Range (clarification)
  a. protocol: includes algorithm and pathway

Knowledge
• responses to medications: desired effects, side effects, allergic responses

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>
CLINICAL COMPETENCY

C4  Manage airway

C4.1  Manage artificial airway devices

C4.2  Ensure patency of the airway

C4.1  Manage artificial airway devices

Performance criteria
C4.1.1  Select the appropriate artificial airway device
C4.1.2  Optimize patient position
C4.1.3  Insert the artificial airway device correctly
C4.1.4  Maintain artificial airway devices
C4.1.5  Remove artificial airway device at the appropriate time
C4.1.6  Assist with inserting an artificial airway device using specialized and complementary techniques, if necessary
C4.1.7  Assist with airway device change if necessary, while maintaining patent airway and adequate ventilation
C4.1.8  Perform surgical airway care, including tracheostomy care
C4.1.9  Apply a speaking valve

Range (clarification)

a.  artificial airway devices, for example: endotracheal tube, tracheostomy tube, laryngeal mask, oropharyngeal and nasopharyngeal airway, laryngectomy
b.  context for application of speaking valves: clinical setting, at home

Knowledge

- procedures and techniques for inserting artificial airway devices in various clinical situations, including changing the airway
- techniques and equipment (laryngoscope, video laryngoscope, bougie or any equipment used when inserting an artificial airway device)
- indicators of proper tube placement
- possible complications and corrective actions to take with airway management
- indicators for the need to change or remove an artificial airway device
- procedures and techniques for removing an artificial airways device
- situations and corrective actions related to difficult airway situations
- tracheostomy procedure
- technique for tracheostomy care
- procedures for tracheostomy weaning and corking
- procedures for laryngectomy and laryngectomy weaning
- methods used to allow patients with a tracheotomy to communicate
C4.2 Ensure patency of the airway

Performance criteria
C4.2.1 Optimize broncho-pulmonary hygiene
C4.2.2 Perform lung volume recruitment techniques
C4.2.3 Provide humidity therapy
C4.2.4 Assist with bronchoscopy procedures

Range (clarification)
   a. with or without an artificial airway

Knowledge
- techniques used in selected suction therapy (nasopharyngeal, oropharyngeal, endotracheal)
- methods used to obtain sputum samples
- positions used to facilitate broncho-pulmonary hygiene
- directed cough, assisted cough, percussion and postural drainage technique
- mechanical or pneumatic devices (for example: PEP devices, Cough Assist, Intrapulmonary Percussive Ventilation (IPV))
- physiological techniques (for example, breath stacking)
- pneumatic techniques (for example, IPPB, modified resuscitator device)
- the physiological importance of humidity and the significance of a humidity deficit in the respiratory tract
- the physiological effects of heated or non-heated humidification
- sample collection
- purpose of various drugs commonly used during a bronchoscopy
- methods of obtaining and preparing samples during a bronchoscopy
- modifications required for an intubated patient
CLINICAL COMPETENCY

C5 Perform anaesthesia assistance

C5.1 Assist with anaesthesia
C5.2 Manage homeostasis of a patient during anaesthesia
C5.3 Manage the patient during sedation

C5.1 Assist with anaesthesia

Performance criteria
C5.1.1 Assess patient general status (American Society of Anesthesiologists (ASA) status) and verify urgency of procedure
C5.1.2 Evaluate patient airway prior to induction
C5.1.3 Assist in positioning patient for surgery
C5.1.4 Monitor patient during anaesthesia
C5.1.5 Prepare the patient for emergence
C5.1.6 Assist the anaesthesiologist during emergence

Range (clarification)
  a. in the operating room or satellite areas (for example, radiology suite, birthing center)
  b. anaesthesia includes regional, general, induction, maintenance and emergence

Knowledge
  • differences between general and regional anaesthesia procedures, including clinical indications and contraindications
  • complications associated with general and regional anaesthesia procedures and corrective actions
  • pre-analgesic preparation
  • changes to anaesthesia management for patients with specific considerations (for example, heart disease, pregnancy, full stomach and day surgery cases)
  • differences between various surgical positions and influence on anaesthetic techniques
  • positions for the different surgeries
  • precautions per specific location and environment when anaesthetic procedure is performed outside of operating room, as well as with staff untrained in anaesthetic considerations
  • elements of emergence from anaesthesia, including potential complications and corrective action
  • drugs and dosages for medication used during emergence
C5.2 Manage homeostasis of a patient during anaesthesia

Performance criteria
C5.2.1 Adjust fluid and blood administration in anaesthetized patients per surgical requirement
C5.2.2 Apply appropriate devices to maintain thermal regulation

Range (clarification)
- according to provincial and territorial scope of practice, “manage homeostasis” may mean “to assist with” in some jurisdictions

Knowledge
- physiological monitoring of patients during anaesthesia according to Canadian Anaesthesiologist Society (CAS) guidelines
- physiological response to anaesthesia or surgical stimulation
- changes to anaesthesia management for patients with specific considerations (for example, heart disease, pregnancy and day surgery cases)
- drug dosages to provide a steady state of anaesthesia
- fluid requirements according to the type of surgery
- types of fluid/blood replacement
- clinical indications and complications associated with blood products
- blood product administration procedure, including cross match and compatibility testing
- complications from anaesthesia and their treatment (for example, hypovolemia, anaphylaxis, malignant hyperthermia, transfusion reaction)

C5.3 Manage the patient during sedation

Performance criteria
C5.3.1 Assess patient’s general status
C5.3.2 Evaluate patient’s airway prior to sedation
C5.3.3 Assist anaesthesiologist during sedation or perform analgesic sedation

Range (clarification)
- according to provincial and territorial scope of practice, “manage the patient” may mean “to assist with” in some jurisdictions
Knowledge

- analgesic sedation anaesthesia, including its specific applications and potential complications
- anaesthetic drugs commonly utilized in analgesic sedation and their dosages

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S4, A4</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>
CLINICAL COMPETENCY

C6  Provide optimal ventilation assistance

C6.1  Perform manual ventilation

Performance criteria
C6.1.1  Select the appropriate mask and/or artificial airway device
C6.1.2  Utilize proper technique for manual ventilation
C6.1.3  Verify effective ventilation
C6.1.4  Perform manual ventilation in a manner appropriate to the clinical situation

Range (clarification)
  a. resuscitator: self-inflating, flow-inflating, T-piece resuscitator
  b. manual ventilation: via mask, via artificial airway device using a resuscitator

Knowledge
• factors affecting the delivered oxygen concentration and lung volume when ventilating a patient with a manual resuscitator
• techniques for manual ventilation using a mask or an artificial airway device using a manual resuscitator
• application of manual ventilation using a self-inflating manual resuscitator versus that of a flow-inflating manual resuscitator, T-piece resuscitator

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>

C6.2  Provide optimal invasive and non-invasive mechanical ventilation support

Performance criteria
C6.2.1  Initiate Positive Pressure Ventilation (PPV)
C6.2.2  Maintain PPV
C6.2.3  Wean from PPV
C6.2.4  Monitor and interpret ventilator waveforms and pulmonary mechanics
C6.2.5 Initiate and maintain alternative modes of mechanical ventilation

Range (clarification)
- a. applies to non-invasive mechanical ventilation (NIPPV), invasive mechanical ventilation
- b. applies to all patient groups, including neonates
- c. includes all those modes that are appropriate to the patient group and the clinical situation, such as: assist-control ventilation (A/C), pressure-control ventilation (PCV), pressure support ventilation (PSV), synchronized intermittent mandatory ventilation (SIMV), volume support (VS), pressure regulated volume controlled ventilation (PRVC), airway pressure release ventilation (APRV), CPAP, bi-level ventilation
- d. functional characteristics of ventilator waveforms and pulmonary mechanics such as: auto-peep, air trapping, lower and upper inflection points, auto triggering, patient triggering, plateau pressure, static and dynamic compliance, resistance, expiratory pause, occlusion pressure
- e. alternative modes of mechanical ventilation, such as: high frequency oscillatory ventilation (HFOV), Jet ventilation, neurally-adjusted ventilatory assist (NAVA), proportional assist ventilation (PAV)

Knowledge
- how PPV affects patient physiology
- PPV set-up and strategies as they apply to treatment of respiratory patho-physiologies
- conventional modes of PPV
- the control schemes of a mechanical ventilator
- the fundamental elements associated with spontaneous breathing and positive pressure breaths, the initiation and termination of a positive pressure breath
- methods used to measure flow, pressure and volume in a PPV device
- set parameters of the different modes of ventilation
- how changes in patient conditions (for example, compliance and resistance) affect ventilation when using distinct modes of PPV
- the concept of compressible volume loss in a circuit and the implication in ventilation
- the indicators to predict success for weaning and discontinuation from PPV
- the functional characteristics of the lungs and airways that can be determined from specific waveforms and pulmonary mechanics
- methods utilized to evaluate pulmonary mechanics

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K3, S3, A4</td>
<td>K5, S5, A4</td>
<td>K6, S5, A4</td>
</tr>
<tr>
<td>C6.2.5</td>
<td>K5, S5, A4</td>
<td>K6, S5, A4</td>
<td></td>
</tr>
</tbody>
</table>

C6.3 Perform non-invasive lung volume recruitment techniques

Performance criteria
C6.3.1 Determine goals and strategies for lung volume recruitment manoeuvres
C6.3.2 Perform lung volume recruitment on patients using the chosen technique
Knowledge

- indications, contraindications and complications
- incentive spirometry technique
- physiological techniques (for example, breath stacking)
- pneumatic techniques (for example, IPPB, modified resuscitator device)

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>
CLINICAL COMPETENCY

C7  Execute Resuscitation

C7.1  Perform distinction, assessment and rapid intervention as per resuscitation guidelines

C7.2  Perform basic life support (BLS) protocols according to the current standards of the Heart and Stroke Foundation of Canada

C7.3  Perform adult advanced life support (ACLS) protocols according to the current standards of the Heart and Stroke Foundation of Canada

C7.4  Perform paediatric advanced life support (PALS) protocols according to the current standards of the Heart and Stroke Foundation of Canada

C7.5  Perform neonatal resuscitation program (NRP) protocols according to the current standards of the Canadian Paediatric Society

Note: There are no performance criteria or knowledge statements for this competency, as it is all covered within the above certifications.

C7.1  Perform distinction, assessment and rapid intervention as per resuscitation guidelines

Range (clarification)

a.  Examples may include: ATLS, STABLE, ACORN, PALS/APLS, BLS, ACLS, and NRP

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S4, A4</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>

C7.2  Perform basic life support (BLS) protocols according to the current standards of the Heart and Stroke Foundation of Canada

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>
**C7.3 Perform adult advanced life support (ACLS) protocols according to the current standards of the Heart and Stroke Foundation of Canada**

<table>
<thead>
<tr>
<th>Degree of Mastery</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
<td></td>
</tr>
</tbody>
</table>

**C7.4 Perform paediatric advanced life support (PALS) protocols according to the current standards of the Heart and Stroke Foundation of Canada**

<table>
<thead>
<tr>
<th>Degree of Mastery</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
<td></td>
</tr>
</tbody>
</table>

**C7.5 Perform neonatal resuscitation program (NRP) protocols according to the current standards of the Canadian Paediatric Society**

<table>
<thead>
<tr>
<th>Degree of Mastery</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
<td>K6, S6, A4</td>
<td></td>
</tr>
</tbody>
</table>
CLINICAL COMPETENCY

C8  Administer cardio-pulmonary diagnostic tests

C8.1  Perform and interpret electrocardiograms
C8.2  Perform and interpret pulmonary function testing
C8.3  Perform diagnostic tests for sleep related breathing disorders

C8.1  Perform and interpret electrocardiograms

Performance criteria

C8.1.1 Perform an electrocardiogram to accepted standards
C8.1.2 Assess the validity and quality of the results and recognize any artifact(s)
C8.1.3 Interpret results

Range (clarification)

a. ECG: 3-Lead, 5-Lead, 12-Lead, Holter monitoring, cardiac stress tests

Knowledge

• see S7: cardiovascular pathophysiology

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S4, A4</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>

C8.2  Perform and interpret pulmonary function testing

Performance criteria

C8.2.1 Perform pulmonary function testing to accepted standards
C8.2.2 Assess the validity and quality of the results
C8.2.3 Interpret the results

Range (clarification)

a. Lung volume testing: for example, flow transducer, impulse oscillation system

Knowledge

• See S6: pulmonary pathophysiology
<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A4</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>

**C8.3 Perform diagnostic tests for sleep related breathing disorders**

*Performance criteria*
- C8.3.1 Prepare the patient for appropriate monitoring
- C8.3.2 Assess the validity and quality of the results
- C8.3.3 Interpret the results

*Range (clarification)*
- a. basic sleep studies: for example, overnight oximetry, portable monitoring

*Knowledge*
- parameters recorded during a sleep study and their significance
CLINICAL COMPETENCY

C9  Perform Adjunct Therapies

C9.1  Insert oesophageal or gastric tubes

Performance criteria
C9.1.1  Perform the insertion of an oesophageal tube in a patient and ensure safe positioning
C9.1.2  Perform gastric suction/drainage in patients
C9.1.3  Remove the oesophageal tube from patients

Range (clarification)
   a.  insertion of a NAVA probe
   b.  oesophageal balloon
   c.  oro/nasogastric tubes

Knowledge
   •  indications, contraindications and complications
   •  the physiological effects of gastric suction/drainage
   •  indicators of proper tube positioning

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K3, S4, A4</td>
<td>K3, S4, A4</td>
<td>K3, S4, A4</td>
</tr>
</tbody>
</table>

C9.2  Assist in thoracic suction or drainage therapy

Performance criteria
C9.2.1  Prepare the patient for thoracic suction or drainage
C9.2.2  Assist in the insertion of a chest tube or drain
C9.2.3 Maintain thoracic suction or drainage in patients

Knowledge
- indications, contraindications and complications
- thoracic suction/drainage equipment
- physiological effects associated with thoracic suction and drainage
- thoracentesis techniques and urgent needle decompression technique
- chest tube/drain insertion technique
- procedure for inserting a chest drain

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S4, A4</td>
<td>K5, S4, A4</td>
<td>K5, S4, A4</td>
</tr>
</tbody>
</table>

C9.3 Provide thermal regulation

Performance criteria
C9.3.1 Use various methods to regulate body temperature

Range (clarification)
- this applies to all practice settings: for example, OR, ER, ICU

Knowledge
- the benefits and drawbacks of various thermoregulation devices: for example, incubators, warming tables, heated humidifiers

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A4</td>
<td>K4, S4, A4</td>
<td>K4, S4, A4</td>
</tr>
</tbody>
</table>

C9.4 Manage transport of a patient

Performance criteria
C9.4.1 Prepare a patient for transport
C9.4.2 Monitor and maintain patient throughout transport
C9.4.3 Ensure safe delivery/handover of the patient post-transport

Range (clarification)
- patient: ventilated, non-ventilated
- internal, external transports

Knowledge
- necessary precautions and contingency plans required when transporting a patient
<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S4, A4</td>
<td>K5, S4, A4</td>
<td>K6, S6, A4</td>
</tr>
</tbody>
</table>

Part II – National Competency Framework - 2016
C10 Perform invasive vascular procedures

C10.1 Manage vascular access through invasive procedures

Performance criteria
C10.1.1 Explain the procedure to the patient
C10.1.2 Select and use appropriate equipment in relation to the clinical situation
C10.1.3 Perform the procedure appropriately

Range (clarification)
- according to provincial and territorial scope of practice, “manage” may include “inserting, withdrawing, repositioning”
- may include: intravenous, intra-osseous, umbilical venous catheter

Knowledge
- sites, procedures and techniques for vascular access
- complications
- equipment or technique to facilitate the procedure

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K4, S4, A3</td>
<td>K5, S4, A4</td>
<td>K5, S4, A4</td>
</tr>
</tbody>
</table>

C10.2 Manage arterial lines

Performance criteria
C10.2.1 Explain the procedure to the patient
C10.2.2 Select and use appropriate equipment in relation to the clinical situation
C10.2.3 Perform the procedure appropriately
Knowledge
- the sites, procedure and positioning for insertion of arterial lines or arterial puncture
- complications
- the equipment or technique to facilitate the procedure

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S4, A4</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>

C10.3 Perform an arterial, venous or capillary puncture

Performance criteria
C10.3.1 Select and use the appropriate equipment and prepare site
C10.3.2 Perform the procedure appropriately

Knowledge
- the methods and sites for obtaining a blood sample from capillary, venous or arterial puncture
- complications
- the equipment or technique to facilitate the procedure

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S4, A4</td>
<td>K5, S5, A4</td>
<td>K5, S5, A4</td>
</tr>
</tbody>
</table>

C10.4 Assist with vascular access through central lines/pulmonary artery catheter

Performance criteria
C10.4.1 Prepare the patient for central line/ pulmonary artery (PA) line insertion
C10.4.2 Select and prepare the appropriate equipment and sterile field
C10.4.3 Manage equipment to ensure proper function
C10.4.4 Assist with performance, as required

Knowledge
- conscious sedation anaesthesia, including its specific applications
- sites and techniques for central line cannulation and pulmonary artery catheterization
- complications
- the equipment or technique to facilitate the procedure
- the normal values and calculations related to central venous and pulmonary artery catheters
- ventilatory effect on the various pulmonary hemodynamic pressures
- different hemodynamic pressure waveforms
C10.5 Collect samples using an indwelling catheter

Performance criteria
C10.5.1 Prepare the patient
C10.5.2 Select and use the appropriate equipment
C10.5.3 Perform the procedure appropriately

Range
a. indwelling catheter: arterial, pulmonary artery, central venous or umbilical

Knowledge
- methods for obtaining samples from indwelling catheters, including zeroing and levelling of the transducer
- complications with sampling from indwelling catheters, and treatment of complications
- methods used for transporting blood samples
- quality control for blood gas analysis
- procedure used to perform sample analysis
- handling samples

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Experienced Professional</th>
<th>Senior Professional</th>
<th>Expert (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Mastery</td>
<td>K5, S4, A4</td>
<td>K5, S4, A4</td>
<td>K5, S4, A4</td>
</tr>
</tbody>
</table>
FOUNDATION SCIENCE
FOUNDATION SCIENCE

S1  Apply knowledge of anatomy and physiology

S1.1  Apply the appropriate scientific knowledge relating to the organization and function of the human body

S1.2  Apply the appropriate scientific knowledge relating to the stages of prenatal development

S1.3  Apply the appropriate scientific knowledge relating to skin, bones and muscles

S1.4  Apply the appropriate scientific knowledge relating to the nervous system: its regulation and integration of the physiological processes

S1.5  Apply the appropriate scientific knowledge relating to homeostasis and the role of each contributing system

S1.6  Apply the appropriate scientific knowledge relating to the urinary system

S1.7  Apply the appropriate scientific knowledge relating to fluid equilibrium, electrolytes and acid-base balance

S1.8  Apply the appropriate scientific knowledge relating to the endocrine system

S1.9  Apply the appropriate scientific knowledge relating to the pulmonary system

S1.10 Apply the appropriate scientific knowledge relating to pulmonary ventilation

S1.11 Apply the appropriate scientific knowledge relating to the neurological control of breathing and respiratory compensation

S1.12 Apply the appropriate scientific knowledge relating to the functional physiology of blood

S1.13 Apply appropriate scientific knowledge relating to gas exchanges

S1.14 Apply the appropriate scientific knowledge relating to the functional physiology of the cardiovascular system

S1.15 Apply appropriate scientific knowledge relating to the electrophysiology of the heart

Knowledge
  •  chemical processes needed for the function of human physiology
  •  the cellular mechanism as a fundamental and essential unit
  •  the functions of the principal human tissues
S1.2 Apply the appropriate scientific knowledge relating to the stages of prenatal development

Knowledge
- the stages of pregnancy and delivery
- the events of embryonic and fetal development
- the newborn’s adaptation to extra-uterine life

S1.3 Apply the appropriate scientific knowledge relating to skin, bones and muscles

Knowledge
- the integumentary system
- the structure and function of the bones
- the structure and function of the muscles
- the changes and consequences of aging on the bones and muscles

S1.4 Apply the appropriate scientific knowledge relating to the nervous system: its regulation and integration of the physiological processes

Knowledge
- the structure and physiology of the nervous tissue
- the function of the central nervous system
- the function of the peripheral nervous system and the reflex activity
- the function of the autonomic nervous system
- the changes and consequences of aging on the nervous system

S1.5 Apply the appropriate scientific knowledge relating to homeostasis and the role of each contributing system

Knowledge
- the composition and characteristics of venous and arterial blood
- the functions of the lymphatic system
- the functions of the immune system
- the overall function of digestive system
- the metabolism and function of the liver
- the thermoregulatory mechanism with emphasis on the newborn

S1.6 Apply the appropriate scientific knowledge relating to the urinary system

Knowledge
- the anatomy of the kidney
- the mechanism of urine formation
- the functions of the urinary system in relation to the maintenance of homeostasis
S1.7  Apply the appropriate scientific knowledge relating to fluid equilibrium, electrolytes and acid-base balance

Knowledge
- the regulation of water balance
- the regulation of electrolytes: sodium, potassium, calcium, magnesium and anions
- acid-base balance: chemical buffer systems, respiratory regulation and renal mechanisms

S1.8  Apply the appropriate scientific knowledge relating to the endocrine system

Knowledge
- the major endocrine organs
- the functional role of the major endocrine organs: pituitary, thyroid, parathyroid, adrenal, pineal and thymus glands

S1.9  Apply the appropriate scientific knowledge relating to the pulmonary system

Knowledge
- each component of the pulmonary system
- the relationship between the pulmonary system and the other systems
- the changes to the pulmonary system throughout the course of life

S1.10  Apply the appropriate scientific knowledge relating to pulmonary ventilation

Knowledge
- the principles of physics in relation to pulmonary ventilation
- the functionality of inhalation and exhalation during one breath cycle
- the function of external respiration
- lung volumes and lung capacities

S1.11  Apply the appropriate scientific knowledge relating to the neurological control of breathing and respiratory compensation

Knowledge
- the regulation of breathing
- the types of respiratory patterns
- the reflect actions triggered by blood and pulmonary receptors
- other factors which influence respiratory frequency and amplitude
- the various mechanisms known to contribute to respiratory compensation
S1.12 Apply the appropriate scientific knowledge relating to the functional physiology of blood

Knowledge
- the biochemical profile of venous and arterial blood
- the composition of plasma and its components
- the mechanism of blood coagulation
- the principle of blood transfusion, cell saving and restoration of blood volume
- the flow and function of the pulmonary circulation and the systemic circulation

S1.13 Apply appropriate scientific knowledge relating to gas exchanges

Knowledge
- the composition of atmospheric gases, alveolar gases and blood gases
- gas exchange between blood, the lungs and the tissues
- how gases are transported in the blood
- anatomical and physiological factors known to affect gas exchange

S1.14 Apply the appropriate scientific knowledge relating to the functional physiology of the cardiovascular system

Knowledge
- the anatomy and function of the heart as an integral part of the cardiovascular system
- the electromechanical physiology pertaining to each functional phase of a cardiac cycle
- the physiology of blood circulation during one complete cardiac cycle
- the changes and consequences of aging on the cardiovascular system

S1.15 Apply appropriate scientific knowledge relating to the electrophysiology of the heart

Knowledge
- the neuro-chemical control of the cardiovascular system
- the intrinsic conduction system and the extrinsic innervation of the heart
- graphic recording of electrical changes on an electrocardiogram during various heart activities
S2.1 Apply the appropriate scientific knowledge relating to chemical terms and concepts as they pertain to Respiratory Therapy

Knowledge
- element, atom, nucleus, proton, neutron, electron, valence and isotope
- atomic number, atomic weight, molecular weight
- chemical compound, molecule
- ion, cation, anion, electrolyte and salt
- chemical bonds - ionic and covalent compounds
- oxidation and reduction
- kinetic energy, potential energy and gradient
- anabolism and catabolism
- organic, inorganic compounds
- equilibrium
- reversible reaction
- law of mass action
- water as a universal solvent, physical characteristics of water and hydrogen bonding
- hydrolysis reaction
- dissociation
- enzyme
- pH, acid and base
- cathode, anode, electrode, voltage, current and resistance

S2.2 Apply the appropriate scientific knowledge relating to biochemical terms and concepts as they pertain to Respiratory Therapy

Knowledge
- mixture, solution, solvent, solute, crystalloid, colloid and suspension
- strong acid, strong base
- acidosis and acidemia
- alkalosis and alkalemia
- fixed acid
• volatile acid
• buffers – chemical buffers, closed buffer systems and open buffer systems
• conjugate base
• amphoteric compound or molecule
• law of electro-neutrality and anion gap
• gradient, diffusion, osmosis, facilitated diffusion, filtration and active transport
S3.1 Apply the appropriate scientific knowledge relating to the behaviour of gases

Knowledge
- potential and kinetic energy
- Avogadro’s law
- Boyle’s, Charles’, Gay-Lussac’s laws
- Combined and Ideal Gas laws
- pressure: units of measure and conversion factors
- volume: units of measure and conversion factors

S3.2 Apply the appropriate scientific knowledge relating to the states of matter and change of state

Knowledge
- melting point and boiling point
- critical temperature, critical pressure and filling density
- evaporation, surface area and contact time
- vapour and vapour pressure
- latent heat of vaporisation (fusion)
- humidity, absolute humidity, relative humidity and humidity deficit
- condensation and dew point
• STPD, ATPS and BTPS

S3.3  Apply the appropriate scientific knowledge relating to surface tension

Knowledge
• Laplace’s law
• capillary action
• cohesion and adhesion

S3.4  Apply the appropriate scientific knowledge relating to gas diffusion

Knowledge
• atmospheric composition and its gases
• Dalton’s law of partial pressures
• Graham’s law
• Henry’s law
• solubility co-efficient
• Fick’s law of diffusion

S3.5  Apply the appropriate scientific knowledge relating to fluid dynamics and gas mixing/entrainment

Knowledge
• Poiseuille’s law
• Reynold’s number
• laminar and turbulent Flow
• Bernoulli principle
• Venturi effect
• Coanda effect

S3.6  Apply the appropriate scientific knowledge relating to the behaviour of aerosols

Knowledge
• Stoke’s law of sedimentation
• stability and particle size
• gravitational forces
• inertial impaction
• penetration
• retention
• deposition
• clearance

S3.7  Apply the appropriate scientific knowledge relating to other physical principles
Knowledge
- Beer’s law and light absorption
- Doppler effect
- Hooke’s law, elasticity and compliance
S4.1 Apply the appropriate scientific knowledge relating to the application of medications

Knowledge
- basic sources of medications
- classification system of medications: chemical, experimental, generic official and trade
- characteristics of the following formulations: oral, injectable, aerosol, micronized powder, suppository, sublingual transdermal and topical
- advantages and disadvantages of the following routes of administration: enteral, parenteral, topical and inhalational

S4.2 Apply the appropriate scientific knowledge relating to the pharmacologic response of adrenergic and cholinergic drugs

Knowledge
- drug classification based on the autonomic nervous system (ANS) divisions
- location and action of adrenergic receptors
- adrenergic and anti-adrenergic drug action
- location and action of cholinergic receptors
- cholinergic and anti-cholinergic drug action

S4.3 Apply the appropriate scientific knowledge relating to each class of medications

Range (clarification)
- the indications, mechanism of action, routes of administration, side effects
Knowledge
- sympathomimetic and para sympathomimetic bronchodilators
- xanthine bronchodilators
- mucolytic agents
- anti-inflammatories
- anti-asthmatic medications
- anti-histamine drugs
- antibiotic, anti-viral and anti-fungal drugs
- diuretics

S4.4 Describe the characteristics of specific classes of cardiovascular medications

Range (clarification)
a. indications, mechanism of action, routes of administration, side effects

Knowledge
- cardiotonic agents
- antianginal agents
- diuretic agents
- antiarrhythmic agents
- antihypertensive agents
- antithrombotic and thrombolytic agents

S4.5 Apply the appropriate scientific knowledge relating to drugs utilized in anaesthesia

Range (clarification)
a. indications, mechanism of action, routes of administration, side effects

Knowledge
- general principles of intravenous anaesthetic drugs, including their pharmacokinetics
- narcotics and narcotic antagonists
- benzodiazepines, barbiturates and benzodiazepine antagonists
- depolarizing and non-depolarizing muscle relaxants, including their neuromuscular transmission, structure, metabolism and excretion
- cholinesterase inhibitors, including their physical structure and role as reversal agents
- muscarinic antagonists, including their physical structure and their use in conduction with cholinesterase inhibitors
- local anaesthetics

S4.6 Apply the appropriate scientific knowledge relating to inhalational anaesthetic agents

Range (clarification)
a. pharmacokinetics, pharmacodynamics
Knowledge

- inhalational anaesthetic agents
- diffusion hypoxia, solubility, second gas effect, compartments of anaesthesia, balanced anaesthesia and interaction with CO2 absorbents
- characteristics of inhalational anaesthetic agents
- factors which alter the effects of inhaled anaesthetic agents
- effects of inhalational agents on pulmonary ventilation
- effects of inhalational agents on the cardiovascular system
FOUNDATION SCIENCE

*S5  Apply knowledge of microbiology*

S5.1 Apply the appropriate scientific knowledge relating to the mechanisms of infectious diseases

Knowledge
- host, infectious disease, colonization, microflora, virulence, pathogen and saprophyte
- concept of host-microorganism interaction
- incidence and prevalence among endemic, epidemic and pandemic
- stages of an infectious disease
- systemic manifestations of infectious disease
- mechanisms and significance of antimicrobial and antiviral drug resistance
- actions of intravenous immunoglobulin and cytokines in treatment of infectious diseases

S5.2 Apply the appropriate scientific knowledge relating to agents of infectious diseases

Knowledge
- structural characteristics and mechanisms of reproduction for viruses, bacteria, rickettsia, chlamydia, fungi and parasites
- modes of transmission
- mechanism of infectious diseases using incidence, portal of entry, source of infection, symptomatology, disease source, site of infection, agent and host characteristics
S6.1 Apply the appropriate scientific knowledge relating to the pathophysiology of diseases and disorders of the pulmonary system

Knowledge
- respiratory (oxygenation) failure in acute and chronic states
- ventilatory (hypercapnic) failure in acute and chronic states

S6.2 Apply appropriate scientific knowledge relating to obstructive processes of the lung

Knowledge
- factors that produce obstruction such as: dynamic compression, loss of radial traction (tethering), inflammation, foreign bodies, secretions, hypertrophy and spasm
- factors affecting air flow in the lower airways (i.e. below the glottis): airway lumen size, elastic recoil of the lung, physical properties of the inhaled gas
- the characteristics of airway obstruction, including: change in lung volumes/flows and gas exchange abnormalities
- upper and lower airway obstructions

S6.3 Apply the appropriate scientific knowledge relating to obstructive airway disorders

Knowledge
- the following disorders:
  - asthma
  - bronchiectasis
bronchiolitis
- bronchogenic neoplasm
- broncho-pulmonary dysplasia (BPD)
- choanal atresia
- chronic obstructive pulmonary disease (COPD) : chronic bronchitis and emphysema
- croup
- cystic fibrosis
- epiglottitis
- laryngo/tracheo/bronchomalacia
- foreign body aspiration
- meconium aspiration syndrome (MAS)
- obstructive sleep apnea (OSA)
- Pierre Robin syndrome
- pulmonary interstitial emphysema (PIE)
- vascular ring
- vocal cord dysfunction

- the basic principles of sleep studies and screening
  - the stages of sleep and sleep study screening
  - sleep related disorders
  - the three categories of Sleep Apnea Syndrome (SAS)
  - the signs, symptoms and diagnostic procedures for the evaluation of SAS

S6.4 Apply the appropriate scientific knowledge relating to the restrictive processes of the respiratory system

Knowledge
- the restrictive processes of the respiratory system in terms of origin: extra-pulmonary versus intra-pulmonary
- the effects of restrictive processes on pulmonary function:
  - decreased compliance
  - decreased lung volumes
  - diffusion impairment
  - airway re-modeling
  - gas exchange abnormalities
  - pulmonary hypertension

S6.5 Apply the appropriate scientific knowledge relating to extra-pulmonary disorders

Knowledge
- broncho-pleural fistula
- pleural effusion
• pneumothorax
• thoracic cage disorders
• traumatic chest wall injuries

S6.6 Apply the appropriate scientific knowledge relating to the intra-pulmonary disorders

Knowledge
• acute respiratory distress syndrome (ARDS)
• atelectasis
• collagen disorders
• diaphragmatic hernia
• hyaline membrane disease / respiratory distress syndrome (RDS)
• hypersensitivity pneumonitis
• pulmonary fibrosis
• inhalation of toxic gases
• neoplasms
• oxygen toxicity
• pharmacological toxicity
• pneumoconiosis
• pneumonia
• pneumonitis
• pulmonary contusion/hemorrhage
• pulmonary edema
• sarcoidosis
• transient tachypnea of the newborn (TTN)
S7.1 Apply the appropriate scientific knowledge relating to coronary atherosclerotic heart disease

Knowledge
- coronary atherosclerotic disease

S7.2 Apply the appropriate scientific knowledge relating to valvular heart disorders

Knowledge
- tricuspid stenosis, incompetence, regurgitation
- mitral stenosis, incompetence, regurgitation
- aortic stenosis, incompetence, regurgitation
- pulmonary stenosis, incompetence, regurgitation

S7.3 Apply the appropriate scientific knowledge relating to inflammatory heart disorders

Knowledge
- pericarditis
- endocarditis
- myocarditis
- cardiomyopathies: dilated; hypertrophic; restrictive

S7.4 Apply the appropriate scientific knowledge relating to peripheral vascular disorders

Knowledge
- arterial
  - arteriosclerosis
  - arterial thrombosis and embolism
  - aneurysm
o aortic dissection
o arterioplastic disease (Raynaud’s)
o pulmonary embolism

- venous
  o thrombophlebitis
  o deep venous thrombosis
  o varicose veins

**S7.5 Apply the appropriate scientific knowledge relating to congenital heart defects**

**Knowledge**
- atrial septal defect
- aortic stenosis
- coarctation of the aorta
- hypoplastic left/right ventricle
- patent ductus arteriosus
- pulmonary stenosis
- right ventricular outflow tract obstruction
- Tetralogy of Fallot
- total anomalous pulmonary venous return
- transposition of the great vessels
- tricuspid atresia
- truncus arteriosus
- ventricular septal defect

**S7.6 Apply the appropriate scientific knowledge relating to types of shock**

**Knowledge**
- anaphylactic
- cardiogenic
- distributive
- hypovolemic
- neurogenic
- septic

**S7.7 Apply the appropriate scientific knowledge relating to cardiovascular abnormalities**

**Knowledge**
- hypertension
- myocardial infarction
- congestive heart failure
- rheumatic heart disease
- dissemination intravascular coagulation
FOUNDATION SCIENCE

S8  Apply knowledge of other diseases and disorders

S8.1 Apply the appropriate scientific knowledge relating to disorders of the central nervous system

Knowledge
- central apnea syndromes
- cerebrovascular accident
- cerebral arterial-venous malformation
- intraventricular hemorrhage
- periventricular leukomalacia
- Reye’s syndrome
- space occupying lesions
- sudden infant death syndrome (SIDS)
- thermal instability
- trauma
- brain death

S8.2 Apply the appropriate scientific knowledge relating to the disorders of the peripheral nervous system

Knowledge
- amyotrophic lateral sclerosis (ALS)
- diaphragmatic paralysis
- Guillain Barre syndrome
- muscular dystrophy
myasthenia gravis
multiple sclerosis
post-polio syndrome
spinal muscular atrophy disorders

S8.3 Apply the appropriate scientific knowledge relating to renal failure

Knowledge
- acute renal failure
- chronic renal failure

S8.4 Apply the appropriate scientific knowledge relating to specific metabolic disorders

Knowledge
- diabetes
- nephritis

S8.5 Apply the appropriate scientific knowledge relating to particular conditions that impair human physiology

Knowledge
- inhalation injuries
- electrical and surface burn injuries
- hyperthermia and hypothermia
- drowning and near-drowning
- hypobarism and hyperbarism
- multiple organ dysfunction syndrome (MODS)
- obesity
- hepatitis A & C
- cancers

S8.6 Apply the appropriate scientific knowledge relating to systemic infections

Knowledge
- influenza (flu)
- H1N1 flu virus
- HIV/AIDS
- pneumonia (pneumococcal)
- poliomyelitis
- tuberculosis
- SARS
- blastomycosis
- ebola
- other current or relevant diseases
### Appendix 1 - Bloom’s Trajectory

#### Examples of the Use of Bloom’s Trajectory - Learning to drive a car

<table>
<thead>
<tr>
<th>Stage of Learning</th>
<th>Knowledge Mastery</th>
<th>Skills Mastery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before you start, you know that you want to learn, and that you have not yet done it all, nor do you know the theory.</td>
<td>‘conscious incompetence’ (K0)</td>
<td>‘conscious incompetence’ (S0)</td>
</tr>
<tr>
<td>Before your first practical lesson you learn the theory, rules and basic sequences, either from a handbook or from the instructor.</td>
<td>‘remembering’ (K1)</td>
<td>‘readiness’ (S1), leading to ‘understanding’ (K2)</td>
</tr>
<tr>
<td>Your first practical lesson is driving around a marked track. You very slowly and carefully carry out each move in accordance with the sequence you have learned by heart. You consciously adjust the throttle, depress the brake pedal, etc. Initially you do this when driving in a straight line, then you practise as you negotiate bends. You maneuver for parallel parking and changing lanes.</td>
<td>‘attempting’ (S2)</td>
<td></td>
</tr>
<tr>
<td>After sufficient practice you achieve some mastery/fluency and are allowed onto a public road with other traffic. You are encountering new situations and have to think how to respond and then do it. But you still concentrate on every move you make.</td>
<td>‘applying’ (K3)</td>
<td>‘basic proficiency’ (S3)</td>
</tr>
<tr>
<td>Considerable and varied practice so that your movements achieve greater mastery / fluency. You no longer have to concentrate to the exclusion of everything else, maneuvering the car is no longer a series of separate actions but has become a single process. You achieve acceptable performance levels.</td>
<td></td>
<td>‘expert proficiency’ (S4)</td>
</tr>
<tr>
<td>With further practice your movements become so natural that you no longer think about them consciously.</td>
<td></td>
<td>‘unconscious competence’/ ‘adaptable proficiency’ (S5)</td>
</tr>
</tbody>
</table>

There is a similar trajectory for most learning. For some competencies, certain stages appear to be omitted. For example some people have learned their interpersonal skills unconsciously without being taught, without any theory, and so neither ‘remembering’ (K1) nor ‘understanding’ (K2). Whereas many others have had to be explicitly taught these skills at college or in the work-place. But with sufficient practice, most will progress to ‘adaptable proficiency’ (S5).
## Bloom’s Trajectory

### Knowledge Domain

<table>
<thead>
<tr>
<th>Name</th>
<th>Level descriptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>K0 Awareness</td>
<td>‘Conscious incompetence’</td>
</tr>
<tr>
<td>K1 Remembering</td>
<td>‘Know what’. Recall data or information; quote rules, definitions, laws</td>
</tr>
<tr>
<td>K2 Understanding</td>
<td>‘Know why’. Understand the meaning, translate, interpolate, and interpret instructions and problems. State a problem in one’s own words.</td>
</tr>
<tr>
<td>K3 Applying</td>
<td>Know how to use a concept in a new situation or unprompted use of an abstraction. Apply what was learned in the classroom into novel situations in the workplace. Put a theory into practical effect; demonstrate, solve a problem, manage an activity.</td>
</tr>
<tr>
<td>K4 Analyzing</td>
<td>Know how to examine information in order to understand, explain or predict. Separate material or concepts into component parts so that its organisational structure may be understood. Distinguish between facts and inferences. Interpret elements, organizational principles, structure, construction, internal relationships. Determine quality, reliability of individual components.</td>
</tr>
<tr>
<td>K5 Evaluating</td>
<td>Know how to weigh up ideas and make a judgement. Make judgments about the value of ideas or materials. Assess effectiveness of whole concepts, in relation to values, outputs, efficacy, and viability. Exercise critical thinking. Conduct strategic comparison and review; make judgements relating to external criteria.</td>
</tr>
<tr>
<td>K6 Creating</td>
<td>Know how to bring information together in order that something can be decided or acted upon. Build a structure or pattern from diverse elements. Put parts together to form a whole, with emphasis on creating a new meaning or structure. Create new patterns/concepts, structures, systems, models, approaches, ideas.</td>
</tr>
</tbody>
</table>

### Skills Domain (including mental skills as well as physical dexterity)

<table>
<thead>
<tr>
<th>Level Name</th>
<th>Level descriptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>S0 Awareness</td>
<td>‘Conscious incompetence’</td>
</tr>
<tr>
<td>S1 Readiness</td>
<td>Know and be ready to act upon a sequence of steps in a process. Recognize one’s abilities and limitations (health &amp; safety).</td>
</tr>
<tr>
<td>S2 Attempting</td>
<td>Imitation: Observe and pattern behaviour after someone else, following instructions and practising. Performance may be of lower quality. Guided Response: Learn a complex skill (early stages) including imitation and trial and error. Adequacy of performance is achieved by practising.</td>
</tr>
<tr>
<td>S3 Basic proficiency</td>
<td>Learned responses have become habitual and the movements can be performed with some confidence, precision and proficiency. A few minor errors are apparent. Conscious competence.</td>
</tr>
<tr>
<td>S4 Full proficiency</td>
<td>Skilful performance involves complex patterns. Proficiency is indicated by a quick, accurate, and highly coordinated performance, requiring a minimum of energy. Coordinate and integrate a series of actions, achieving harmony and internal consistency. This category includes performing without hesitation and automatic performance.</td>
</tr>
<tr>
<td>S5 Adaptable proficiency</td>
<td>‘Unconscious competence’. A high level performance becomes natural, without needing to think much about it. Skills are well developed and the individual can modify movement patterns to fit special requirements. Respond effectively to unexpected experiences. For example: Modify instruction to meet the needs of the learners. Use equipment to perform a task it was not originally intended to do (equipment is not damaged and there is no danger in performing the new task).</td>
</tr>
<tr>
<td>S6 Creative proficiency</td>
<td>Create new routines to fit a particular situation or specific problem. Learning outcomes emphasize creativity based upon highly developed skills. Develop new techniques and/or procedures.</td>
</tr>
</tbody>
</table>
## Attitudes (and Values) Domain

<table>
<thead>
<tr>
<th>Level Name</th>
<th>Level descriptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>A0</td>
<td>Alertness</td>
</tr>
<tr>
<td>A1</td>
<td>Complying</td>
</tr>
<tr>
<td>A2</td>
<td>Valuing</td>
</tr>
<tr>
<td>A3</td>
<td>Relating</td>
</tr>
<tr>
<td>A4</td>
<td>Commitment</td>
</tr>
</tbody>
</table>