



**THE  
CANADIAN  
SOCIETY OF  
CLINICAL PERFUSION  
(CSCP)**

# **THE CSCP NATIONAL CERTIFICATION EXAMINATION BLUEPRINT**

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**Prepared by the Accreditation, Certification, and Examination Committee  
with assistance from Jan White, Ph. D.**

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## **Blueprint Document Overview**

### **Introduction**

The foundation of a sound examination is the Blueprint document. In general, the Blueprint document provides a summary of the content to be assessed (what is tested), the structure of the examination (the method by which the content is to be tested), and the context of the examination (the situations within which the content is to be tested). In this case, the Blueprint document is essentially the recipe that outlines all the ingredients and their relative proportions for the Canadian Society of Clinical Perfusion (CSCP) National Certification Examination (hereafter referred to as the CSCP National Exam).

### **Blueprint Purposes**

The CSCP National Exam Blueprint document may serve the following purposes:

- Ensure the relevance of the CSCP National Exam by indicating links to the competency profile;
- Provide direction for content developers when writing new items for the National CSCP Exam;
- Facilitate evaluations of the appropriateness or effectiveness of the CSCP National Exam by content experts; and
- Assist candidates in preparing for the CSCP National Exam.

A competency-based Blueprint document advances the above purposes by definitively stating what will be assessed, for what purpose, to what extent, with what assessment tools, and in what contexts. Furthermore, it provides documentation of the processes leading to each of these decisions.

## **The Structure of the CSCP National Exam Blueprint**

The CSCP National Exam Blueprint document contains four types of information involving process, structure, content, and context of the examination.

### **1. Process**

- A clear statement of the purpose of the examination;
- The methodology employed for all key Blueprint activities; and
- The content experts involved in the Blueprint development process.

### **2. Structure**

- Item/Tool type (e.g., Multiple-Choice, Key Features, Short Answer, etc);
- Item format (medium and presentation);
- Examination length;
- Examination duration, booklets, and breaks;
- Examination aids permitted;
- Percentage of “new” content to appear on new versions of the exam (if applicable);
- Experimental items (if applicable); and
- Examination forms.

### **3. Content**

- Competencies to be assessed;
- Competency weightings; and
- Cognitive domain weightings.

### **4. Context**

- Patient type (e.g., individual, family, community);
- Patient age and gender;
- Patient health situation;
- Patient culture; and
- Occupational environment.

## **1. The CSCP National Exam Blueprint Process**

Process information provides important documentation of the methodology used to develop the content of the CSCP National Exam Blueprint. Process information is a key component for establishing the content validity of the CSCP National Exam.

### **The Purpose of the CSCP National Exam**

The CSCP has a role in educating and certifying clinical perfusionists to protect the public interest. Part of this role includes assuring the public that clinical perfusionists are competent at the time of entry-to-practice.

### **The Methodology Used to Develop the Blueprint Specifications**

The Committee on Accreditation, Competency and Examination (ACE) participated in the development of the Blueprint document. This committee consisted of content experts representing both pediatric and adult perfusion throughout Canada.

The ACE Committee systematically defined the specifications of this Blueprint document through consultation with a number of resources and group discussion. Primary resources included:

- The CSCP National Entry-Level Competency Profile for Clinical Perfusionists (2015);
- The Clinical Perfusionist Examination Blueprint (2009);

This Blueprint document is scheduled for review every 5-6 years to coincide with revision of the competency profile and/or when there is a significant change in clinical perfusion practice.

### **The Content Experts**

Brief biographies of the individuals involved in the development of the Blueprint document have been attached to demonstrate that those involved in the process are experienced and accomplished professionals who are qualified, as a group, to participate in performing this important assessment activity (See Appendix A).

## **2. The CSCP National Exam Structural Variables**

Structural variables include those characteristics that determine the general design and appearance of the CSCP National Exam. They define the format and presentation of the items and the length and duration of the CSCP National Exam. When structural variables require percentages to be allocated, these are expressed as ranges (e.g., 40-60%).

### **Item/Tool Type**

One type of item comprises the CSCP National Exam – the four-option multiple-choice item.

### **Item Presentation**

The multiple-choice items are presented as independent items (the text provided is used to answer only one item) and case-based items (more than one question is linked to a case text). Initially, the items will be presented and responded to in a pencil and paper format. Online test administration may become an option.

### **Examination Length**

The length of the examination is typically driven by the purpose of the exam, the number of competencies to be assessed, the assessment tools to be used, and practicality concerns. To ensure reliable results for the total score, the CSCP National Exam will be between 180 and 220 items.

### **Examination Duration, Books, and Breaks**

The duration of the examination depends on the length of the tools to be administered. A rule of thumb for multiple-choice items is to allow approximately 70 seconds per independent item and 90 seconds per case-based item. Based on the number of items presented above, the examination length will be 4.5 hours. There will be no break permitted. The examination will be presented in one booklet.

### **Examination Aids Permitted**

Non-programmable calculators (i.e., no data storage capabilities) will be permitted during the examination process and will be provided.

### **New Content**

When new versions of the CSCP National Exam are planned (e.g., to be administered in subsequent years) there is usually a need to have these versions vary somewhat from the original CSCP National Exam to protect the integrity of the instrument. When candidates become familiar with examination content, their resulting scores may

become contaminated by this knowledge and are no longer a pure assessment of their individual competence. In order to ensure consistency across various forms of the examination, a core percentage of items is selected to remain constant from one version to the next (typically those items with superior item statistics). Additional items are added that did not appear as operational on the last administration of the CSCP National Exam. The number of new items to appear on subsequent versions of the CSCP National Exam will be determined by the ACE Committee.

### **Experimental Items**

Experimental items are questions included on the CSCP National Exam for the purpose of gathering statistical information, but are NOT used in calculating candidates' scores. The number of experimental items is another Blueprint variable to be specified by the ACE Committee.

### **Forms of the Examination**

Most assessment programs specify a minimum of two forms of the assessment tool (English and French). Larger assessment programs may specify more than one English form of the assessment tool that differs only in the experimental items included. When multiple forms of the assessment are used, it is possible to assess many more experimental items each year for inclusion on subsequent versions of the examination. The number of CSCP National Exam forms will be specified by the ACE Committee.

### **3. The CSCP National Exam Content Variables**

The content variables specify the competencies that are to be assessed and define how these competencies will be sampled and to what extent. The relative importance of each competency (competency weighting) has been established through the results of the CSCP Competency Survey (May, 2015) and through content expert input from the ACE Committee to ensure that the CSCP National Exam measures those competencies that have the greatest impact on public safety and effective clinical perfusion practice. More specifically, the Blueprint document specifies the percentage of items on the CSCP National Exam that will be derived from each competency. Cognitive domains have also been identified and weighted by the ACE Committee. As with structural variables, when content variables require percentages to be allocated, these are expressed as ranges (e.g., 50-55%).

#### **Competencies to be Assessed**

Competency profiles are used for a variety of purposes in addition to credentialing assessments including: curriculum development, training, job descriptions, performance appraisals, employee selection, career planning, and the design of compensation programs. The competencies identified for certification of the clinical perfusionist are those that:

- Have the most direct impact on public safety;
- Influence effective and ethical practice; and
- Can be measured reliably and validly within clinical, academic, and/or simulated environments.

#### **The Competency Development Process**

The 2009 competency profile was updated and revalidated over the period of November, 2014 – June, 2015. The ACE Committee was responsible for the process, which was facilitated by Dr. David Cane of Catalysis Consulting.

The ACE Committee's priorities in updating the profile were established as follows:

- To develop a better articulated conceptual framework for the profile;
- To reflect current and projected-future perfusion practice with regard to both changing technology and the healthcare environment;
- To provide an improved balance of competency expectations across all areas of practice;
- To create a more concise, explicit and unambiguous standard; and

## *Blueprint Document*

- To include Assessment Environments (clinical, simulated, academic) that establish the minimum requirements for student competency assessment in education programs.

The Committee developed 105 proposed competencies through a combination of face-to-face and distance-based work using online meeting technology to reach consensus. For initial content the Committee drew upon the 2009 competency profile, competency profiles of related professions, the expertise of its members, and the knowledge of the consultant.

An online bilingual competency survey then was sent to CSCP's entire membership (N = 276). Nineteen percent of the members completed the survey (N = 53).

For each of the 105 proposed competencies, three questions were posed:

1. How important is performance of this competency in your practice?
2. How frequently do you personally perform this competency?
3. In your opinion, should proficiency in this competency be an expectation of perfusionists at entry-to-practice?

All but one of the competencies (i.e., TE21) were ranked as very important or important by the respondents. Rankings for frequency depended upon both the nature of the competency and the respondent's practice setting. All of the proposed competencies were ranked as entry-to-practice expectations by at least 33% of the respondents. Following Committee discussion, no proposed competencies were removed from the listing.

In addition to surveying the CSCP membership, three other stakeholder groups were consulted about the composition of the draft competency profile. Clinical perfusion departments were asked to provide input via an online survey, while physician and physician groups, as well as perfusion education programs, were directly consulted.

The consultation process was completed by the end of May, 2015, and all data received were analyzed by the consultant. The ACE Committee met face-to-face in June of 2015, reviewed the results, made adjustments to the proposed profile (See Appendix B), undertook an overall review, and finalized the document for recommendation to the CSCP Board. See Appendix C for the final version of the 2015 Clinical Perfusion Competency Profile.

The resulting list of 107 competencies expected of the entry-level clinical perfusionist was categorized as follows:

COMPETENCY CATEGORY	NUMBER OF COMPETENCIES
Safe Work Practice	6
Planning & Clinical Decision Making	12
Technical Expertise	26
Clinical Practice	38
Professional Responsibilities	25

### **Competency Weightings**

Competencies are weighted to determine the extent to which they are represented on the CSCP National Exam. Every competency is not necessarily included on every version of the CSCP National Exam; however, competency weightings ensure that the competencies that are the most important and frequently executed by the entry-level practitioner are assessed more thoroughly.

There are two general approaches for weighting competencies:

- Have a committee of content experts determine the relative importance and frequency of each competency; and
- Conduct a validation survey to assess each competency for importance and frequency.

In establishing the weighting system, the ACE Committee relied on both approaches.

Initially, each competency was placed into one of three groups according to its relative importance and frequency of execution as determined by the survey respondents.

**Group 1:** High importance and high frequency

**Group 2:** High importance and medium frequency

**Group 3:** High importance and low frequency

Each competency was assigned to a group in the following manner:

**Importance Criteria**

Those competencies that were ranked as very important or important by 66.7% or more of the respondents were considered to be of the highest importance.

Those competencies that were ranked as very important or important by more than 33% and fewer than 66.7% of the respondents were considered to be of medium importance.

Those competencies that were ranked as very important or important by 33% or fewer of the respondents were considered to be of the lowest importance.

**Frequency Criteria**

Those competencies that were ranked as very frequent or frequent by 66.7% or more of the respondents were considered to be of the highest frequency.

Those competencies that were ranked as very frequent or frequent by more than 33% and less than 66.7% of the respondents were considered to be of medium frequency.

Those competencies that were ranked as very frequent or frequent by less than 33% of the respondents were considered to be of the lowest frequency.

The ACE committee members discussed each competency using their personal knowledge of how heavily a competency should be weighted on the CSCP Exam. They also considered the survey respondents' ratings on relevance for the CSCP Exam (i.e., In your opinion, should proficiency in this task be an expectation for perfusionists at the point of entry-to-practice?).

The following group profile was established:

**Group 1:** 73 competencies are considered to be of high importance and high frequency

**Group 2:** 23 competencies are considered to be of high importance and medium frequency

**Group 3:** 11 competencies are considered to be of high importance and low

## *Blueprint Document*

frequency

The competencies allocated to Group 1 will receive the greatest weight on the examination. In contrast, competencies allocated to Group 3 will receive the smallest weighting.

Based on this weighting structure, and the discretion of the ACE Committee, the following guidelines will be used to determine the number of items per competency on the CSCP National Exam:

**Group 1:** 2-3 items per competency (146-219 items)(73-100% of exam)

**Group 2:** 1-2 items per competency (23-46 items) (12-23% of exam)

**Group 3:** 0-2 items per competency (0-22 items) (0-11% of exam)

See Appendix D for a list of the competencies categorized by group.

## **Cognitive Domain Weightings**

To ensure that competencies are measured at different levels of cognitive ability, each item will be classified into a cognitive taxonomy that is an adaptation of a taxonomy originally developed by Bloom in 1956.

**Knowledge/Comprehension (K/C):** The ability to recall facts, policies, procedures, standards, research findings, etc. (e.g., citing ethical guidelines when asked to do so).

**Application (AP):** The ability to apply knowledge/comprehension in a straightforward applied situation (e.g., recognizing the appropriate procedure to employ when faced with a routine, uncomplicated situation).

**Critical Thinking (CT):** The ability to apply knowledge/comprehension in complex applied situations. It requires analytical problem solving in addition to knowledge and application (e.g., selecting and prioritizing appropriate actions when faced with a complex problem, recognizing the relative importance of conflicting pieces of information, and using sound judgment to arrive at a conclusion).

Based on discussions of the purpose of the CSCP National Exam and the extent to which clinical perfusionists apply their cognitive skills in the practice setting, the following weighting system of cognitive domains was established:

<b>Cognitive Domain</b>	<b>% Range</b>
Knowledge/Comprehension	15-25%
Application	45-55%
Critical Thinking	25-35%

## **4. The CSCP National Exam Contextual Variables**

### **Contextual Variables**

Contextual variables qualify the content domain by specifying the contexts in which the examination items will be set (e.g., patient type, age and gender, patient culture, patient situation, and occupational environment). As with content and structural variables, contextual variables will be expressed as ranges (e.g., 15-25%).

### **Patient Type**

The identification of patient type ensures that the patients described in the CSCP National Exam represent the demographic characteristics of the population encountered in typical clinical perfusion practice.

### **Patient Age and Gender**

Specifying patient age and gender ensures that the individual patients described in the CSCP Exam represent the demographic characteristics of the population encountered in typical clinical perfusion practice. Patient gender will be monitored by the ACE Committee to ensure face validity of the CSCP National Exam. Age will be based on the following parameters:

0-18 years	5-15%
19-79 years	75-90%
80+ years	5-10%

### **Patient Health Situation**

Patient health situations on the CSCP National Exam will reflect the varied population encountered by the entry-level clinical perfusionist.

### **Patient Culture**

While the CSCP National Exam will not test candidates' knowledge of specific values, beliefs, and practices linked to individual cultures, it will measure awareness, sensitivity, and respect for cultural values, beliefs, and practices. As a result, cultural issues are integrated within the CSCP National Exam without introducing cultural stereotypes.

### **Occupational Environment**

Characteristics of the health care environment are only specified in the CSCP National Exam when such information is required in order to provide guidance to participants.

## Blueprint Summary Chart

### CSCP National Certification Examination Development Guidelines

Structure					
All Items: Medium	Paper & Pencil	Booklets (#):	1		
All Responses: Medium	Paper & Pencil	Breaks:	0		
M-C Items:	100%	New Content (%)	ACE to Determine		
Exam Length:	180-220 Items	Exptl Items (#):	ACE to Determine		
Exam Duration:	4.5 Hours	Forms (#):	ACE to Determine		
Assessment Aids:	Non-programmable Calculators				
Content					
Group 1 Weighting:	73-100%				
Group 2 Weighting:	12-23%				
Group 3 Weighting:	0-11%				
K/C:	15-25%	AP:	45-55%	CT:	25-35%
Context					
Individual Patients: 75-85%			Case-based Items: 15-25%		
0-18 years: 5-15%		19-79 years: 75-90%		80+ years: 5-10%	
Gender:			Patient gender will be monitored by the ACE Committee to ensure face validity of the CSCP National Exam.		
Health Situation:			Patient health situations will reflect the varied population encountered by the entry-level clinical perfusionist.		
Patient Culture:			The CSCP National Exam reflects awareness, sensitivity, and respect for cultural values, beliefs, and practices. Cultural issues are integrated without introducing cultural stereotypes.		
Environment:			Characteristics of the health care environment are specified only when such information is required to provide guidance to candidates.		

# **APPENDIX A**

## **ACE COMMITTEE BIOGRAPHIES**

## **Appendix A**

### **ACE Committee Biographies**

#### **Sarah Monfils Québec**

Sarah Monfils has a research background with both a Bachelor's degree and Master's degree in the field of Biomedical Science. A predominant research focus for Sarah during her education was cardiac metabolism. She also has a background in teaching, having taught biology during her educational years. After completing her Master's degree, she went on to complete the perfusion program in Montreal and successfully challenged the Canadian certification examination. She has been a certified Canadian Perfusionist since 2015 and is currently a Perfusionist at l'hôpital Sacré-Coeur de Montréal. Sarah is bilingual, with French as her first language, and is happy to bring forth her skills to aid the perfusion community. She became a member of the ACE Committee in 2017.

#### **Jackie Archibald Alberta**

Jackie graduated as a Respiratory Therapist from Fanshawe College in London, Ontario in 1999. She worked for five years as a Registered Respiratory Therapist at the University of Alberta Hospital and the Stollery Children's Hospital. In 2002 she became part of the Pediatric and Neonatal ECMO Team at the Stollery and in 2004 decided to return to school to study Perfusion. She attended the Michener Institute for Applied Health Sciences in Toronto and received a Post Diploma in Cardiovascular Perfusion in 2005. Jackie returned to work as a Perfusionist at the University of Alberta Hospital and the Stollery Children's Hospital. Jackie also worked for Maquet-Dynamed Inc. as a Clinical Application Specialist for their Cardiopulmonary and Mechanical Ventilation divisions from April 2009-Jan 2011. Jackie has experience with Neonatal, Pediatric and Adult perfusion and transplantation in addition to Pediatric and Adult mechanical assist devices. Her department received the 2008 CSCP Team Award and she was member of the 2010 Team Award for the ACE committee. Jackie is fluent in English and French.

#### **Brigitte Chappellaz Manitoba**

Brigitte completed her bachelor of nursing degree from the University of Manitoba in 2009. She started her nursing career in northern Manitoba. She continued on to take the critical care nursing education program in 2011 and worked in the cardiac surgery ICU until 2014 when she started the perfusion program at The Michener Institute. Brigitte completed her Graduate Diploma in Cardiovascular Perfusion in 2015 and was

awarded the gold medal of excellence for her class. She was certified by both the CSCP and ABCP in 2016 and has been working as a perfusionist in Winnipeg since completing her perfusion training. Brigitte is bilingual (French/English) and has been a member of the ACE committee since 2018.

**Kyle O'Scienny**  
**British Columbia**

Kyle completed his Bachelor of applied Science (Kinesiology) from Simon Fraser University in 2003, followed by a diploma in Respiratory Therapy from Thompson Rivers University in 2007. After graduation, Kyle joined the Respiratory therapy department at Royal Columbian hospital in 2007. He worked as a Respiratory Therapist for 5 years before returning to school to complete his Advanced Speciality Certificate in Cardiovascular Perfusion from British Columbia Institute of Technology (BCIT). A member of the 1st graduating class from BCIT in 2012, Kyle subsequently joined the Cardiovascular Perfusion department at Royal Columbian and has been working as a CSCP certified perfusionist since 2012. He recently joined the ACE committee in 2015. Kyle is the recipient of the CSCP 2013 Alec Thorpe Achievement Award.

**Marlee Parker**  
**Ontario**

Marlee completed her Bachelor of Science degree (Life Sciences) at the University of Ontario Institute of Technology in 2011. She then continued her education by working towards an Advanced Graduate Diploma in Cardiovascular Perfusion from the Michener Institute, which she completed in 2012. Marlee has been working as a pediatric perfusionist at The Hospital for Sick Children since 2013 and acquired both her CSCP and ABCP designations following the completion of the perfusion program. Marlee has been a member of the ACE Committee since 2015 and hopes to share the knowledge that she has gained from working at one of the largest pediatric centres in Canada.

# **APPENDIX B**

## **ACE COMMITTEE POST-SURVEY MODIFICATIONS TO THE COMPETENCIES**

**ACE Committee Post-Survey Modifications To Competencies**

<b>Original Wording</b>	<b>Post-Survey Wording</b>
SWP05: Handle biohazardous and dangerous materials safely.	SWP05: Handle biohazardous and dangerous materials.
QA04: Apply knowledge of physics and computer systems in equipment-related decisions.	PDM04: Apply knowledge of physics in planning and clinical decision making.
CP11: Determine and utilize appropriate priming solutions.	CP11: Select and utilize priming solutions.
CP26: Operate extracorporeal life support (ECLS) and extracorporeal membrane oxygenation systems (ECMO).	CP25: Operate extracorporeal life support (ECLS).
QA03: Inspect, calibrate and maintain perfusion-related equipment.	TE02: Inspect, calibrate and maintain perfusion-related equipment for quality assurance purposes.
PR10: Maintain awareness of and work within level of individual knowledge and skills.	PR10: Maintain awareness of and work within level of individual knowledge, skills and experience.
PR18: Pursue opportunities for ongoing education, self-development, and professional growth.	PR18: Participate in opportunities for ongoing education, self-development, and professional growth.

Note that two post-survey competencies were added as follows:

PR 24: Contribute to departmental quality assurance initiatives.

PR25: Practice and promote stewardship of material and financial resources.

Further, note that the importance and frequency ratings for the modified competencies are now void. Group ratings have been assigned to the modified competencies as well as to the new competencies at the ACE committee's discretion.

# **APPENDIX C**

## **COMPETENCY PROFILE**

## CLINICAL PERFUSIONIST COMPETENCY PROFILE

<b>Safe Work Practice</b>
SWP01: Maintain a safe and organized work area.
SWP02: Document and report unsafe situations which are beyond personal control.
SWP03: Apply universal precautions.
SWP04: Perform aseptic and sterile techniques.
SWP05: Handle biohazardous and dangerous materials.
SWP06: Clean, disinfect, and store equipment.
<b>Planning &amp; Clinical Decision Making</b>
PDM01: Apply knowledge of anatomy, physiology and pathophysiology in planning and clinical decision making.
PDM02: Apply knowledge of biochemistry and hematology in planning and clinical decision making.
PDM03: Apply knowledge of pharmacology in planning and clinical decision making.
PDM04: Apply knowledge of physics in planning and clinical decision making.
PDM05: Incorporate ethical principles into planning and clinical decision making.
PDM06: Obtain relevant data from patient records.
PDM07: Obtain relevant physiological data.
PDM08: Analyze and interpret data to guide perfusion plan.
PDM09: Respond to uncommon clinical presentations.

PDM10: Develop a patient-specific perfusion plan.
PDM11: Adapt plan in response to patient directives.
PDM12: Record patient information, perfusion plan and perfusion interventions performed.
<b>Technical Expertise</b>
TE01: Select equipment, supplies, and techniques to meet patient requirements.
TE02: Inspect, calibrate and maintain perfusion-related equipment for quality assurance purposes.
TE03: Contribute to the evaluation of new equipment and techniques.
TE04: Prepare cardiopulmonary bypass systems.
TE05: Prepare blood pumps (including centrifugal and roller pumps).
TE06: Prepare gas delivery and analyzing devices.
TE07: Prepare myocardial preservation devices.
TE08: Prepare and test safety devices.
TE09: Prepare temperature control equipment.
TE10: Prepare in-line monitors.
TE11: Prepare blood analyzers.
TE12: Prepare filters.
TE13: Prepare reservoirs.
TE14: Prepare coagulation monitoring devices.
TE15: Prepare ultrafiltration devices and hemodialyzers.

TE16: Prepare hemodynamic monitoring devices.
TE17: Prepare intra-aortic balloon catheter and pump.
TE18: Prepare autologous blood processing devices.
TE19: Prepare extracorporeal life support (ECLS).
TE20: Prepare ventricular assist devices (VADs).
TE21: Prepare equipment for minimally invasive cardiac surgery.
TE22: Prepare left heart bypass (LHBP) systems.
TE23: Prepare mechanical circulatory support devices and respiratory assist devices.
TE24: Prepare pharmacological agents and solutions.
TE25: Prepare vacuum assist venous drainage devices.
TE26: Complete pre-bypass checklist.
<b>Clinical Practice</b>
CP01: Operate cardiopulmonary bypass systems.
CP02: Operate blood pumps (including centrifugal and roller pumps).
CP03: Operate oxygenation devices.
CP04: Operate gas delivery and analyzing devices.
CP05: Operate myocardial preservation devices.
CP06: Operate safety devices.
CP07: Operate temperature control equipment.

CP08: Monitor and respond to perfusion system parameters.
CP09: Monitor and respond to cerebral monitoring devices.
CP10: Monitor and respond to blood analysis results.
CP11: Select and utilize priming solutions.
CP12: Handle and store blood products for clinical administration.
CP13: Administer blood products.
CP14: Determine and administer pharmacological agents and solutions via the extracorporeal circuit.
CP15: Perform calculations to assist in clinical decision making.
CP16: Operate and respond to in-line devices.
CP17: Operate blood analyzers.
CP18: Monitor filters.
CP19: Monitor reservoirs.
CP20: Operate coagulation monitoring devices.
CP21: Operate ultrafiltration devices and hemodialyzers.
CP22: Operate hemodynamic monitoring devices.
CP23: Operate intra-aortic balloon pumps.
CP24: Operate autologous blood processing devices.
CP25: Operate extracorporeal life support (ECLS).
CP26: Operate ventricular assist devices (VADs).

CP27: Operate left heart bypass (LHBP) systems.
CP28: Operate equipment for minimally invasive cardiac surgery.
CP29: Operate vacuum assist venous drainage devices.
CP30: Participate in the implementation and management of mechanical circulatory support devices and respiratory assist devices.
CP31: Participate in the implementation and management of uncommon procedures.
CP32: Participate in the implementation and management of deep hypothermia and circulatory arrest techniques (DHCA).
CP33: Participate in the implementation and management of cerebral perfusion.
CP34: Transport patient requiring cardiopulmonary support.
CP35: Take proactive action to maintain optimal functionality of equipment.
CP36: Communicate effectively during the procedure with all members of the health care team.
CP37: Respond to emergency situations.
CP38: Assist with overall evaluation of patient status.
<b>Professional Responsibilities</b>
PR01: Adhere to CSCP <i>Basic Standards of Practice</i> .
PR02: Adhere to CSCP <i>Code of Ethics</i> .
PR03: Maintain CSCP certification.
PR04: Treat others respectfully.

PR05: Communicate clearly, both orally and in writing.
PR06: Provide information to patient and support persons in a manner that assists in their understanding and decision making.
PR07: Respect patient's right to determine course of treatment.
PR08: Respect confidentiality of patient information.
PR09: Manage time and workload effectively.
PR10: Maintain awareness of and work within level of individual knowledge, skills and experience.
PR11: Accept responsibility for decisions and actions.
PR12: Participate effectively as a member of an interdisciplinary team.
PR13: Share knowledge to assist the learning of colleagues.
PR14: Engage in collaborative practice.
PR15: Respond constructively to feedback.
PR16: Apply basic conflict resolution strategies.
PR17: Reflect on individual performance and set goals for improvement.
PR18: Participate in opportunities for ongoing education, self-development, and professional growth.
PR19: Access and critically assess information in professional literature.

PR20: Apply new evidence-based knowledge and skills, and technological innovations, to practice.
PR21: Participate with colleagues in professional activities.
PR22: Follow institutional and departmental policies, procedures and protocols.
PR23: Contribute to the development and updating of policies, procedures and protocols.
PR24: Contribute to departmental quality assurance initiatives.
PR25: Practice and promote stewardship of material and financial resources.

# **APPENDIX D**

## **COMPETENCY PROFILE BY GROUP**

**Appendix D**  
**Clinical Perfusionist Competency Profile By Group**  
**Group 1 Competencies: High Importance/High Frequency:**  
**73-100% of Exam**

<b>Safe Work Practice</b>
SWP01: Maintain a safe and organized work area.
SWP03: Apply universal precautions.
SWP04: Perform aseptic and sterile techniques.
SWP05: Handle biohazardous and dangerous materials.
SWP06: Clean, disinfect, and store equipment.
<b>Planning &amp; Clinical Decision Making</b>
PDM01: Apply knowledge of anatomy, physiology and pathophysiology in planning and clinical decision making.
PDM02: Apply knowledge of biochemistry and hematology in planning and clinical decision making.
PDM03: Apply knowledge of pharmacology in planning and clinical decision making.
PDM05: Incorporate ethical principles into planning and clinical decision making.
PDM06: Obtain relevant data from patient records.
PDM07: Obtain relevant physiological data.
PDM08: Analyze and interpret data to guide perfusion plan.
PDM10: Develop a patient-specific perfusion plan.
PDM12: Record patient information, perfusion plan and perfusion interventions performed.
<b>Technical Expertise</b>
TE01: Select equipment, supplies, and techniques to meet patient requirements.
TE02: Inspect, calibrate and maintain perfusion-related equipment for quality assurance purposes.
TE04: Prepare cardiopulmonary bypass systems.
TE05: Prepare blood pumps (including centrifugal and roller pumps).
TE06: Prepare gas delivery and analyzing devices.
TE07: Prepare myocardial preservation devices.
TE08: Prepare and test safety devices.
TE09: Prepare temperature control equipment.
TE10: Prepare in-line monitors.
TE11: Prepare blood analyzers.
TE12: Prepare filters.
TE13: Prepare reservoirs.

TE14: Prepare coagulation monitoring devices.
TE15: Prepare ultrafiltration devices and hemodialyzers.
TE16: Prepare hemodynamic monitoring devices.
TE18: Prepare autologous blood processing devices.
TE24: Prepare pharmacological agents and solutions.
TE26: Complete pre-bypass checklist.
<b>Clinical Practice</b>
CP01: Operate cardiopulmonary bypass systems.
CP02: Operate blood pumps (including centrifugal and roller pumps).
CP03: Operate oxygenation devices.
CP04: Operate gas delivery and analyzing devices.
CP05: Operate myocardial preservation devices.
CP06: Operate safety devices.
CP07: Operate temperature control equipment.
CP08: Monitor and respond to perfusion system parameters.
CP09: Monitor and respond to cerebral monitoring devices.
CP10: Monitor and respond to blood analysis results.
CP11: Select and utilize priming solutions.
CP12: Handle and store blood products for clinical administration.
CP13: Administer blood products.
CP14: Determine and administer pharmacological agents and solutions via the extracorporeal circuit.
CP15: Perform calculations to assist in clinical decision making.
CP16: Operate and respond to in-line devices.
CP17: Operate blood analyzers.
CP18: Monitor filters.
CP19: Monitor reservoirs.
CP20: Operate coagulation monitoring devices.
CP21: Operate ultrafiltration devices and hemodialyzers.
CP22: Operate hemodynamic monitoring devices.
CP24: Operate autologous blood processing devices.
CP35: Take proactive action to maintain optimal functionality of equipment.
CP36: Communicate effectively during the procedure with all members of the health care team.
CP38: Assist with overall evaluation of patient status.
<b>Professional Responsibilities</b>
PR01: Adhere to CSCP <i>Basic Standards of Practice</i> .

PR02: Adhere to CSCP <i>Code of Ethics</i> .
PR03: Maintain CSCP certification.
PR04: Treat others respectfully.
PR05: Communicate clearly, both orally and in writing.
PR08: Respect confidentiality of patient information.
PR09: Manage time and workload effectively.
PR10: Maintain awareness of and work within level of individual knowledge, skills and experience.
PR11: Accept responsibility for decisions and actions.
PR12: Participate effectively as a member of an interdisciplinary team.
PR13: Share knowledge to assist the learning of colleagues.
PR14: Engage in collaborative practice.
PR15: Respond constructively to feedback.
PR18: Participate in opportunities for ongoing education, self-development, and professional growth.
PR22: Follow institutional and departmental policies, procedures and protocols.

**Clinical Perfusionist Competency Profile By Group**  
**Group 2 Competencies: High Importance/Medium Frequency:**  
**12-23% of Exam**

<b>Planning &amp; Clinical Decision Making</b>
PDM04: Apply knowledge of physics in planning and clinical decision making.
PDM09: Respond to uncommon clinical presentations.
PDM11: Adapt plan in response to patient directives.
<b>Technical Expertise</b>
TE03: Contribute to the evaluation of new equipment and techniques.
TE17: Prepare intra-aortic balloon catheter and pump.
TE19: Prepare extracorporeal life support (ECLS).
TE25: Prepare vacuum assist venous drainage devices.
<b>Clinical Practice</b>
CP23: Operate intra-aortic balloon pumps.
CP25: Operate extracorporeal life support (ECLS).
CP29: Operate vacuum assist venous drainage devices.
CP30: Participate in the implementation and management of mechanical circulatory support devices and respiratory assist devices.
CP32: Participate in the implementation and management of deep hypothermia and circulatory arrest techniques (DHCA).
CP33: Participate in the implementation and management of cerebral perfusion.
CP37: Respond to emergency situations.
<b>Professional Responsibilities</b>
PR06: Provide information to patient and support persons in a manner that assists in their understanding and decision making.
PR07: Respect patient's right to determine course of treatment.
PR16: Apply basic conflict resolution strategies.
PR17: Reflect on individual performance and set goals for improvement.
PR19: Access and critically assess information in professional literature.
PR20: Apply new evidence-based knowledge and skills, and technological innovations, to practice.
PR21: Participate with colleagues in professional activities.
PR23: Contribute to the development and updating of policies, procedures and protocols.
PR25: Practice and promote stewardship of material and financial resources.

**Clinical Perfusionist Competency Profile By Group**

**Group 3 Competencies: High Importance/Low Frequency: 0-11% of Exam**

<b>Safe Work Practice</b>
SWP02: Document and report unsafe situations which are beyond personal control.
<b>Technical Expertise</b>
TE20: Prepare ventricular assist devices (VADs).
TE21: Prepare equipment for minimally invasive cardiac surgery.*
TE22: Prepare left heart bypass (LHBP) systems.
TE23: Prepare mechanical circulatory support devices and respiratory assist devices.
<b>Clinical Practice</b>
CP26: Operate ventricular assist devices (VADs).
CP27: Operate left heart bypass (LHBP) systems.
CP28: Operate equipment for minimally invasive cardiac surgery.
CP31: Participate in the implementation and management of uncommon procedures.
CP34: Transport patient requiring cardiopulmonary support.
<b>Professional Responsibilities</b>
PR24: Contribute to departmental quality assurance initiatives.

\*Note that TE21 was ranked as **medium** importance/low frequency