The Canadian Society of Clinical Perfusion | La Société Canadienne de Perfusion Clinique

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BASIC STANDARDS OF PRACTICE

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BASIC STANDARDS OF PRACTICE
OF CLINICAL PERFUSION

BOARD APPROVED JANUARY 27, 1990
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MISSION

Our mission is to safeguard the public right to quality care during extracorporeal circulation and/or any other services provided by the members of the Canadian Society of Clinical Perfusion.

VISION

Our vision is to promote the highest standards of safe health care as it relates to the practice of clinical perfusion.

OBJECTIVES

The primary objective of the CSCP is the promotion of high standards of professional skill and knowledge of health care practitioners known as Clinical Perfusionists, who are responsible for providing safe, efficient and effective Extracorporeal Circulation and other related procedures.

The goals of the CSCP are to:

1. Promote a high standard of professional skill and knowledge. The maintenance of standards of practice, certification by examination and recertification processes will be used as measures;

2. Provide leadership within the discipline as well as with other health care professionals;

3. Promote accredited perfusion education training programs and continuing education for practicing perfusionists;

4. Promote communication among the members, other perfusion organizations and health care professionals;

5. Promote preparation, presentation and submission of teaching materials and scientific documents;

6. Promote professional responsibility and accountability to the patient, the team and the employer.

The specific criteria developed in this Standards document shall provide the means by which the clinical perfusionist will take part in the delivery of safe, high quality care to the patient.

These Standards will assist the perfusionist in evaluating the performance and patient care outcomes in relation to perfusion practice.

SCOPE OF PRACTICE OF THE CLINICAL PERFUSIONIST

The Clinical Perfusionist is an integral and essential member of the health care team primarily practicing within the scope of Cardiovascular Surgery.

The high level of skill, decision making, monitoring and operation of mechanical devices play a major part in the successful outcome of the patient.

Each perfusionist has the direct responsibility to achieve and maintain a high level of current knowledge and technique through accredited and recognized academic and clinical education and practice.

Knowledge and expertise shall allow the perfusionist to assist related health care practitioners with various medical/surgical procedures requiring partial or complete extracorporeal circulation and other related mechanical support mechanisms.

In depth knowledge of extracorporeal physiology and mechanics, of both the adult and the child, are a critical component of perfusion practice. Supportive knowledge of infection control, hemodynamics, laboratory testing, biochemistry and the administration of appropriate types and quantities of pharmaceutical preparations is essential to the delivery of care to the patient.

The ability to work long hours with short notice, under intensive stress and yet maintain accurate concentration may be required of the perfusionist. Recognition of the devastating consequences of error must be foremost. A high degree of discretion, judgement and consultation with attending physicians is essential in the frequent, critical decisions that are necessary. Manual dexterity and mental acuity must remain at a high level for patient safety. Effective communication skills with the health care team are essential. The perfusionist must have the decisive ability to make frequent and potentially serious decisions in dealing with technical problems that may arise.

Professional attitudes, responsibility and accountability are critical in the consultation and advising of physicians regarding the most effective and safe action to be taken related to extracorporeal support.

Detailed accurate documentation is a requirement of the effective accountable practices.

Awareness of medical/legal responsibilities and accountability of perfusion practice is an integral aspect of daily activity.

CLINICAL PERFUSIONIST'S STANDARDS OF PRACTICE

STANDARD 1
KNOWLEDGE AND SKILLS

The perfusionist, using unique knowledge and skills to meet a patient's needs, practices patient focused care in partnership with other health care providers, to achieve positive health outcomes.

The perfusionist:

1.1 Interprets patient data and employs that interpretation in applying perfusion specific interventions;

1.2 Identifies and integrates such factors as lifestyle, co-morbid states and drug regimens into the plan for safe extracorporeal circulation;

1.3 Practices in a manner that prevents vascular damage and/or complications such as air embolization and/or infection;

1.4 Consults with other health care professionals in determining the best course of action to optimize patient outcome;

1.5 Monitors, maintains and evaluates perfusion equipment and related items to ensure high quality and proper performance parameters for the patient;

1.6 Provides a safe technical environment by ensuring all safety devices are operational, current and in use;

1.7 Strives to be current in knowledge, technological change, innovations, practice changes and literature;

1.8 Participates in research, laboratory testing and skills.

STANDARD 2
LEGAL AND ETHICAL

The perfusionist practices within legal/ethical principles and standards of practice, demonstrates professional integrity and acts to uphold professional standards of practice.

The perfusionist:

2.1 Obtains and maintains certification and membership in good standing with the CSCP;

2.2 Abides by the code of ethics as set out by the CSCP;

2.3 Shows respect for the dignity of the patient;

2.4 Abides by the standards of practice set out by the CSCP;

2.5 Abides by standards of other jurisdictions involved such as the Canadian Standards Association (CSA), Infection Control, the Operating Room and other regulatory agents;

2.6 Practices in accordance to written, current and approved hospital policy and procedure;

2.7 Ensures all records are complete, accurate and legible;

2.8 Accepts responsibility for his or her actions and decisions;

2.9 Has a duty to voice concern for patient safety through the appropriate route;

2.10 Deals appropriately and effectively with performance and competency issues in a timely manner.

STANDARD 3
CONFIDENTIALITY

The perfusionist respects and protects the patient's right to confidentiality.

The perfusionist:

3.1 Respects the confidences of the patient and protects the information received as privileged communication between a patient and a health care provider;

3.2 Follows legislative requirements for privacy of information;

3.3 Uses patient records and information as intended, respecting confidentiality mandates;

3.4 Ensures records are maintained in a secure and confidential manner.

STANDARD 4
RESPONSIBILITY AND ACCOUNTABILITY
POLICIES AND PROCEDURES

The perfusionist has an obligation to ensure policies, procedures and standards are in place and followed, and that self-performance and that of colleagues meets the requirements.

The perfusionist:

4.1 Establishes and maintains approved current and dated policy and procedure manuals;

4.2 Follows established dress codes, aseptic procedures and sterilization protocols required for safe patient care;

4.3 Maintains statistics and information for standard records, reviews, analysis and statistical and research requirements;

4.4 Participates in fiscal, budget and inventory practices that provide a high standard of safe care in an economical and responsible manner;

4.5 Contributes to orientation materials and programs;

4.6 Mentors students and colleagues in current perfusion practice;

4.7 Participates in, contributes and presents continuing education sessions for colleagues and other health care professions;

4.8 Contributes to a positive, safe work environment;

4.9 Ensures staffing patterns and skill set is appropriate to patient needs and situations;

4.10 Establishes personal goals and monitors personal achievement and performance;

4.11 Accepts constructive, objective performance and conduct suggestions from health team members.

STANDARD 5
QUALITY ASSURANCE

The perfusionist applies knowledge, principles and skill in the establishment and ongoing contribution of perfusion based quality assurance activities.

The perfusionist:

5.1 Establishes and maintains a written and oral communication system for personnel, in order to support quality service;

5.2 Critically analyzes and evaluates clinical practice with colleagues;

5.3 Establishes procedures and protocols to measure quality of safe practice and records the data;

5.4 Participates in quality assurance activities of related health care members;

5.5 Remains current with literature on quality assurance activities that improve patient care and perfusion practice.

APPENDIX i

SAMPLE: POSITION DESCRIPTION

POSITION: Staff Perfusionist (Chief Perfusionist)

TITLE: Clinical Perfusionist 1 (II)

HOURS OF WORK: 37.5-hour work week (from 0700 – 1500) Monday to Friday basic hours worked. Must be available 24 hours a day 7 days per week. On call schedules alternate among all employed perfusionists.

FUNCTION: Assists the Department of Cardiovascular and Thoracic Surgery and related specialties with any medical and/or surgical procedure requiring the utilization of extracorporeal circulatory support and related procedures.

GENERAL RESPONSIBILTY:

1. Must competently maintain adequate extracorporeal physiology of the adult or pediatric patient requiring assisted circulatory support while undergoing surgical and related interventions.

2. Consultation with the attending physician and other health care professionals regarding patient care.

3. Operation and maintenance of all equipment necessary to perform at the highest possible level of efficiency.

4. Properly record all data related to the procedures and techniques utilized to safely conduct and maintain an adequate level of extracorporeal physiology.

5. Have a working knowledge of the medical and/or surgical procedures proposed and be able to assess the type of perfusion intervention or methodology necessary.

6. Must have a thorough knowledge of, but not limited to: anatomy, physiology, pathophysiology, pharmacology, haematology, rheology, cardiology, surgery, physics, mathematics, and circuitry.

SPECIFICATIONS:

1. **EDUCATION:**

   Must be a graduate of an accredited training institution of clinical perfusion and be a certified or certification eligible perfusionist.

2. **EXPERIENCE:**

   Must meet guidelines established by the Canadian Society of Clinical Perfusion (CSCP) and also be a member in good standing with the CSCP.

3. **PERSONAL ATTRIBUTES:**

   a) ability to work effectively under stress.
   b) ability to work effectively as a team member.
   c) attentive to detail.
   d) innovation in preparing, responding to and adapting equipment and procedures to unusual needs or surgical procedures.
   e) possess good verbal communication skills.

4. **KNOWLEDGE REQUIREMENTS:**

   Must possess skill and knowledge in a wide variety of extracorporeal circulation and related techniques for the adult and pediatric patients.

   Must have a thorough working knowledge but not limited to the following equipment:

   -heart-lung machines
   -heat exchange devices
   -intra-aortic balloon pumps
   -blood salvage devices
   -blood coagulation testing equipment
   -hemodynamic monitoring equipment

   Must have a basic knowledge of:

   -cardiac monitoring
   -pulmonary artery catheters
   -temperature monitors
   -blood gas analyzers
   -vaporizers
   -flow meters
   -computer technology

5. **PHYSICAL DEMANDS:**

   Should be able to work long hours under stressful conditions.

6. **WORK ENVIRONMENT:**

Usual area of work may include but is not limited to the surgical suites, although additional areas of responsibility may include: Intensive Care Units, Radiology, and Emergency Departments.

7. **POSITION DESCRIPTION:**

This position description indicates representative responsibilities and specification of the position only and should not be considered to necessarily represent all responsibilities and specifications of the position.

APPENDIX ii

GUIDELINES FOR PERFUSION RECORD

Please refer to the Policy and Procedures Manual for Clinical Perfusion Technology at your Institution for further and more specific information.

The perfusion record is utilized during cardiopulmonary bypass, it should be developed in a format that is approved by the institution and should contain the following as a minimum standard:

(a) Patient information – demographics and patient specific data;

Name, hospital number, age, gender, height, weight, flow parameters, diagnosis, operation performed/therapeutic intervention, blood type, pre-operative blood work. (i.e. CBC, Chemistry, etc.)

(b) Equipment Information – a list of devices used during bypass.

Oxygenator -type, serial number and lot number
Reservoirs -type
Filters -type
Cannulation -position and type
Special Devices -hemoconcentrators, cell salvage devices, intra-aortic balloon pumps, etc.

(c) Techniques

Prime fluids used
Cardioplegia devices, solutions and ratios
Drugs, solutions and blood products administered during bypass
Blood gas results
Parameters during bypass to be periodically recorded;
- -blood pressure
- -temperatures
- -ACT or other anticoagulation measurements
- -blood flows
- -type of bypass (eg. partial, total, etc.)

Flow technique
- -pulsatile
- -nonpulsatile
- -centrifugal

(d) Personnel and other data

Surgeon – may include assistants
Perfusionist – may include assistant or student

Anaesthetist – may include assistant
Perfusion record should be dated
Bypass and anoxic times should be recorded
Fluid balances should be recorded

(e) The pre-bypass checklist should contain:

1) Function of all mechanical, electrical and safety devices.

2) Sterility of supplies verified.

3) Proper attachment of all devices.

4) Integrity of all tubing and connections.

5) Adequate de-bubbling of all circuits.

6) Adequate anticoagulation pre-bypass verified.

7) Signature of perfusionist on checklist.

8) Adequate functional gas supply.

9) Activation of all safety devices.

10) Any other pertinent data as deemed necessary by the hospital policy.

APPENDIX iii

PERFUSION SKILLS

The CSCP requires that a certified clinical perfusionist be able to care for, operate and perform the following minimum skills:

1. Selection, preparation, assembly, use, disassembly, cleaning, maintenance and storage of cardiopulmonary perfusion machines and related equipment.

2. Establishment and maintenance of intra-aortic balloon support.

3. Autotransfusion procedures and rapid infusion.

4. Hemodynamic monitoring and assessment.

5. Assessment of blood gas test results.

6. Monitoring and assessment of urine output.

7. Monitoring and assessment of ECG.

8. Sample, perform and interpret coagulation tests associated with bypass.

9. Preparation and dose calculation of pertinent pharmaceutical agents.

10. Assessment of the need for and the administration of blood and blood products.

11. Application of appropriate infection control procedures.

12. Management of induced hypothermia.

13. Appropriate management of special need patients such as, but not limited to:

    -malignant hyperthermia
    -cold agglutinins
    -accidental hypothermia
    -pregnancy
    -aortic dissections
    -sickle cell anemia

The CSCP supports the expanded role of the clinical perfusionist as technological and surgical advances are made to include, but not be limited to:

1. Use of computers.
2. Intensive hemodynamic monitoring.
3. Pacemaker insertions.
4. Surgical assistance.
5. Anaesthetic assistance.
6. Artificial hearts and transplantation.
7. Extensive ventricular support (RVAD/LVAD/BIVAD).
8. Long term membrane oxygenation (ECMO) (ECLS).
9. Isolated limb perfusion.
10. Liver transplantation.
11. Cardiopulmonary supported angioplasty.

APPENDIX iv

ORIENTATION PROGRAM CONTENTS

The CSCP expects the clinical perfusionist be provided with an orientation program upon commencement of employment, which shall include but not be limited to:

1. General orientation to hospital and affiliated facilities.

2. General orientation to surgical suites.

    a) scrub, gown and glove technique
    b) aseptic technique principles
    c) dress codes and regulations
    d) supply management systems
    e) facility policy and procedures
    f) department tour
    g) occupational health support

3. Planned orientation for perfusionist

    a) Department orientation
        i) blood bank
        ii) laboratories
        iii) diagnostic imaging
        iv) cardiovascular laboratories
        v) emergency department
        vi) intensive care units

    b) Orientation to cardiovascular surgeons and anesthetists

        i) bypass methods used
        ii) procedures and techniques
        iii) expectations
        iv) use of blood/blood products and various pharmacological agents

    c) Orientation to consulting physicians

        i) expectations
        ii) use of blood/blood products and various pharmacological agents

    d) Orientation to operating room

        i) nursing expectations

ii) policies and procedures relevant to theatre practice
iii) roles and specifications of positions

e) Orientation to infection control practices

i) aseptic techniques
ii) cleaning practices and agents
iii) sterilization practices
iv) sterile storage

f) Orientation to waste management, handling of Bio-hazardous materials

g) Orientation to emergency procedures

i) cardiac/respiratory arrest
ii) fire
iii) threats to life and safety

APPENDIX v

GUIDELINES FOR WRITING PROCEDURES

The CSCP expects that clinical perfusion departments follow current guidelines while performing specific procedures. Individual departments should follow a well-structured procedure format, which includes but is not limited to:

NAME OF PROCEDURE:

DESCRIPTION OF PROCEDURE:

SKILLS REQUIRED BEFORE PERFORMING PROCEDURE:

SUPPLIES

STERILE UNSTERILE

PROCEDURE SET-UP

1.
2.
3. RATIONALE (IF NECESSARY)
4.
5.

PRECAUTIONS:

DIAGRAMS:

REFERENCES:

ORIGINAL DATE:

REVISION DATES:

AUTHORIZING SIGNATURE:

APPENDIX vi

PERFUSION STAFFING PATTERNS

The CSCP recommends the following staffing patterns for clinical perfusion.

1) A minimum of two Canadian certified, or certification eligible, perfusionists per cardiac program.

2) The number of perfusionists employed by an institution must be enough to allow the individual perfusionist sufficient time to accomplish all assigned tasks within their normal work day, emergent and urgent situations notwithstanding.

3) Sufficient perfusionists should be immediately available to assist with the implementation of ancillary procedures such as but not limited to: IABP, Cell salvage, VAD, etc.

APPENDIX vii

RECERTIFICATION REQUIREMENTS

The CSCP requires that each holder of a certificate maintain the validity of the Certificate by completing the recertification process every second year, on the first day of July following the second anniversary of the original certification date or the latest subsequent recertification date.

The requirements for recertification are as follows:

1. **Clinical Activity**

   The Certified Perfusionist must complete eighty (80) clinical cases as primary perfusionist in the two year certification period.

2. **Continuing Education Activity (C.E.)**

   The Certified Perfusionist must accumulate a total of three (3) (C.E.) credits in the two year certification period from the following activities:

Group A – Three (3) C.E. Credits

Full attendance at any perfusion related meetings equivalent to at least three full days duration. Half-day sessions may be accumulated to equal a full day.

Acceptable Meetings: Canadian Society of Clinical Perfusion Annual General Meeting and Scientific Sessions, Pathophysiology and Perfusion Technology, AmSECT Annual Meetings, Mechanisms, American Academy of Cardiovascular Perfusion.

Meetings Not Listed may also be eligible for **Three (3) C.E. Credits** providing they are at least three days in duration, are related to the clinical practice of perfusion, and are approved by the Board of Directors of the CSCP.

Group B – Two (2) C.E. Credits

Partial Attendance of at least **two days** at one of the meetings from Group A, or any perfusion related meeting of at least two days in duration. Half-day sessions may be accumulated to equal a full day. i.e. AmSECT Region 1/Eastern Region of CSCP

Seminars or courses on specific perfusion related topics of at least two days duration. i.e. Cell salvaging, ECMO course, etc.

Meetings or seminars not listed here may also be eligible for **Two (2) C.E. Credits** providing they are at least two days in duration, are related to the clinical practice of Perfusion, and are approved by the Board of Directors of the CSCP.

Group C – One (1) C.E. Credit

Partial Attendance of at least **one day** at one of the meetings in Group A, or any perfusion related meeting of at least one day in duration. i.e. OSCP meeting

One (1) C.E. Credit available for each of the following activities:

Acting as clinical site coordinator for accredited perfusion technology programs (maximum of one C.E. credit per filing period for this activity)

Seminars or courses of one day duration on perfusion related topics

Authorship or a scientific paper or poster presentation

Publication of a scientific paper

Participation on a committee of the CSCP or membership on the board of directors of the CSCP (maximum of one C.E. credit per filing period for this activity)

Delivery of inservices or lectures on perfusion related topics to other health professions (maximum of one C.E. credit per filing period for this activity)

RESOURCE MATERIAL

Operating Room Technique; Nancymarie Fortunato, Ninth edition, 2000.

Cardiopulmonary Bypass, Principles and Practice; Gravlee et al, 2nd Edition, Chapter 27, 2000.

American Society of Extracorporeal Technology Inc.; Guidelines for Perfusion Practice; Adopted 1980, Revised 1989 and 1994.

Operating Room Nurses Association of Canada, Recommended Standards for Perioperative Nursing Practice, 4th Edition, 1998.

The Canadian Anaesthesiologist Society Inc., Guidelines for the Basic Standards of Practice 2000.

Paula Cyderman, Developing Policy and Procedure Manuals, February 1981.