THE MISSOURI PERFUSION SOCIETY PERFUSION PROGRAM CHALLENGE
SELF-ASSESSMENT SCORE

Self-assessment Total Possible Score___125___

125-119: Meets greater than 95% of current standards.

118-106: Meets 85 - 94% of current standards of practice. Minor improvements needed to meet current standards of practice.

105 or less: Meets less than 85% of current standards of practice. Major improvements needed to meet current standards of practice.

Certain items may not apply to your specific perfusion program. For example, in Assessment Section #1 the following question is based on programs that use centrifugal pumps and flow probes:

Perfusion Record: includes recorded lot #, if applicable:

☐ 26. Centrifugal pump head and flow probe

If your program does not use centrifugal pumps and flow probes, give yourself a point if you would record their lot numbers if you used them. In another example, Assessment Section #1:

Perfusion Record: includes multiple entry information for laboratory values at least every 30 minutes:

☐ 34. Venous oxygen saturation
☐ 36. Ionized calcium concentration
☐ 37. Sodium concentration
☐ 38. Anticoagulation monitoring

If your program does not record laboratory values directly on the Perfusion Record, but on a separate laboratory form that is part of the patient record, give yourself the points as long as the perfusionist has immediate access to the laboratory values for evaluation and review. However, do not give yourself the points if the testing is performed at intervals greater than 30 minutes even if they are recorded directly on the perfusion record.

The spirit of the Perfusion Program Challenge is that all items listed below are addressed in some way by the perfusionists involved. If you feel you have addressed a specific item, but in a manner different than that described by the PPC, then give yourself the point. However, an outside agency reviewing your program should be able to select any item from the checklist and confirm your program's compliance to the satisfaction of any reasonable assessor.

To make comments and suggestions, please contact The Missouri Perfusion Society.

Assessment Section #1 Possible Score 42

Perfusion Record: includes single entry information:

- ☐ 1. Hospital ID
- ☐ 2. Age
- ☐ 3. Gender
- ☐ 4. Height
- ☐ 5. Weight
- ☐ 6. Body Surface Area (BSA)
- ☐ 7. Allergies
- ☐ 8. Blood Type
- ☐ 9. Pre-op Laboratory Data
- ☐ 10. Diagnosis/History
- ☐ 11. Date
- ☐ 12. Procedure
- ☐ 13. Perfusionist(s)
- ☐ 14. Surgeon(s)
- ☐ 15. Anesthesia Personnel
- ☐ 16. Comments/Events
- ☐ 17. Prime volume and components
- ☐ 18. Signature of perfusionist

Perfusion Record: includes recorded lot #, if applicable:

- ☐ 19. Oxygenator
- ☐ 20. Cardiotomy reservoir
- ☐ 21. Tubing pack
- ☐ 22. Arterial filter
- ☐ 23. Cardioplegia set
- ☐ 24. Ultrafiltration set
- ☐ 25. Cell washing set
- ☐ 26. Centrifugal pump head and flow probe

Perfusion Record: includes multiple entry information at least every 15 minutes:

- ☐ 27. Blood flow rates
- ☐ 28. Arterial blood pressure
- ☐ 29. Central venous/Pulmonary artery pressure
- ☐ 30. At least one of the following patient temperatures:
  - Bladder
  - Esophageal
  - Rectal
  - Nasopharyngeal
  - Tympanic
- ☐ 31. At least one of the following system temperatures:
  - Venous blood
  - Arterial blood
  - Cardioplegia solution
  - Myocardium
  - Water bath(s)
- ☐ 32. Sweep gas flow rate and concentration

Perfusion Record: includes multiple entry information for laboratory values at least every 30 minutes:

- ☐ 33. Arterial or venous blood gases
- ☐ 34. Venous oxygen saturation
- ☐ 35. Potassium concentration
- ☐ 36. Ionized calcium concentration
- ☐ 37. Sodium concentration
- ☐ 38. Anticoagulation monitoring

Perfusion Record: includes intermittent information entry at the appropriate time:

- ☐ 39. Input fluid volumes including all of the following:
  - Blood products
  - Asanquineous fluids
  - Cardioplegia solution
  - Autologous components
- ☐ 40. Output fluid volumes including all of the following:
  - Urine output
  - Ultrafiltrate
  - Estimated irretrievable blood loss while on pump
- ☐ 41. Perfusionist administered medications
- ☐ 42. Perfusion record retained as part of medical record

Assessment Section #2 Possible Score___44___

Pre Bypass Checklist: Patient information

- ☐ 1. Patient/Hospital ID
- ☐ 2. Review of chart
- ☐ 3. Procedure verified

Pre Bypass Checklist: Sterility

- ☐ 4. Expiration/sterility of disposables verified
- ☐ 5. Heat exchangers leak tested

Pre Bypass Checklist: Pump

- ☐ 6. Speed controls operational
- ☐ 7. Roller heads smooth and quiet
- ☐ 8. Occlusions set
- ☐ 9. Flow meter calibrated & in correct direction
- ☐ 10. Flow rate indicator correct for patient and/or tubing size
- ☐ 11. Holders secure

Pre Bypass Checklist: Electrical

- ☐ 12. Power cords securely connected

Pre Bypass Checklist: Gas supply

- ☐ 13. Gas line securely connected
- ☐ 14. Flow meter/blender functional
- ☐ 15. Hoses leak-free
- ☐ 16. Gas exhaust unobstructed

Pre Bypass Checklist: Lines/pump tubing

- ☐ 17. Connections secure
- ☐ 18. Tubing direction traced and correct
- ☐ 19. No kinks noted
- ☐ 20. One-way valves in correct direction
- ☐ 21. De-bubbled/leak free
- ☐ 22. Patency of arterial line/cannula verified prior to the initiation of CPB

Pre Bypass Checklist: Cardioplegia

- ☐ 23. Cardioplegia solution checked for proper K^+ and additive content
- ☐ 24. Cardioplegia system de-bubbled/leak free

Pre Bypass Checklist: Safety mechanisms

- ☐ 25. Alarms operational and engaged
- ☐ 26. Arterial filter/bubble trap de-bubbled
- ☐ 27. Cardiotomy reservoir vented

Pre Bypass Checklist: Monitoring

- ☐ 28. Temperature probes in place and calibrated
- ☐ 29. Pump pressure monitors calibrated
- ☐ 30. In-line and/or on-line sensors calibrated
- ☐ 31. Sweep gas analyzer calibrated

Pre Bypass Checklist: Temperature control

- ☐ 32. Heater/cooler water source connected and functional

Pre Bypass Checklist: Supplies

- ☐ 33. Tubing clamps available; arterial and venous lines clamped when heart-lung machine is not in use.
- ☐ 34. Perfusion drugs available and properly labeled and must include the following:
  - Heparin
  - Sodium bicarbonate
- ☐ 35. Crystalloid IV solutions available
- ☐ 36. Blood available
- ☐ 37. Sampling syringes/laboratory tubes available

Pre Bypass Checklist: Anticoagulation

- ☐ 38. Heparin administration time and dose verified
- ☐ 39. Anticoagulation tested and reported before initiation of CPB

Pre Bypass Checklist: Backup systems

- ☐ 40. Hand cranks available
- ☐ 41. Emergency lighting available
- ☐ 42. Duplicate circuit components available

Pre Bypass Checklist: Perfusionist and document retention

- ☐ 43. Checklist signed and dated.
- ☐ 44. Checklist retained

Assessment Section #3 Possible Score__9__

Extracorporeal circulation shall be conducted by a knowledgeable and competent perfusionist.

- ☐ 1. Qualifications of staff perfusionists documented, including current state license, provisional license or registration if applicable in the state the perfusion program is located.
- ☐ 2. Perfusion assistance readily available
- ☐ 3. Perfusionist on-call at all times within 30 minutes

Perfusionists should participate in writing and review of :

- ☐ 4. Departmental policies including continuing education policy.
- ☐ 5. Department protocols/processes
- ☐ 6. Department procedures
- ☐ 7. Emergency and Catastrophic perfusion event management procedures
- ☐ 8. Policies and procedures reviewed periodically

Assessment Section #4 Possible Score___4___

The perfusionist shall monitor the anti-coagulation status of the patient according to established protocol.

- ☐ 1. An established procedure for monitoring the anti-coagulation status shall be followed.
- ☐ 2. Anticoagulation is monitored using one or more of the following:
  - Activated clotting time
  - Platelet count
  - Heparin/protamine assay
  - Prothrombin time
  - Partial thromboplastin time
  - Thromboelastogram
- ☐ 3. Patient specific heparin dose should be determined by one or more of the following methods:
  - Weight
  - Dose response curve, automated or manual
  - Blood volume
  - Body surface area
- ☐ 4. Additional doses of heparin during CPB should be determined by use of an ACT and/or heparin/protamine assay. The perfusionist may determine the protamine dose.

Assessment Section #5 Possible Score__2__

An appropriate gas exchange shall be maintained during extracorporeal circulation according to an established procedure.

- ☐ 1. An appropriate sweep gas flow rate and oxygen concentration should be determined using blood gas analysis which may include monitoring devices. Additional factors may include:
  - Oxygenator directions for use
  - Blood flow rate
  - Temperature
- ☐ 2. Blood gas analysis should be performed and recorded every 30 minutes or less as clinical conditions dictate.

Assessment Section #6 Possible Score___3___

The perfusionist shall maintain an appropriate blood flow rate during extracorporeal circulation according to an established procedure.

- ☐ 1. A calculated blood flow rate should be determined by the perfusionist based on established protocol prior to cardiopulmonary bypass using the patient's body surface area.
- ☐ 2. An appropriate blood flow rate used by the perfusionist should be determined once on CPB by evaluation of a combination of the following factors:
  - Venous oxygen saturation
  - Body surface area
  - Arterial blood pressure
  - Temperature
- ☐ 3. Additional parameters used by the perfusionist to guide blood flow rate may include one or more of the following:
  - Base excess
  - Oxygen consumption
  - Venous pO2
  - Arterial pO2
  - Circuit volume
  - Physician request
  - Body weight
  - Anesthetic level
  - Arterial oxygen saturation

Assessment Section #7 Possible Score__2___

The perfusionist shall maintain an appropriate blood pressure during extracorporeal circulation according to an established procedure.

- ☐ 1. Blood pressure should be monitored and recorded
- ☐ 2. Maintenance of arterial blood pressure at procedural levels may be influenced by factors other than the conduct of CPB but review of records should establish that arterial blood pressure is maintained at procedural levels 95% of the time.

Assessment Section #8 Possible Score___2__

The perfusionist shall maintain a safe operational volume in the extracorporeal circuit according to an established procedure.

- ☐ 1. A safe operational level for each perfusion circuit should be determined for each circuit used.
- ☐ 2. A method of safe level detection should be employed.

Assessment Section #9 Possible Score___5__

The perfusionist shall employ appropriate safety devices.

- ☐ 1. An arterial line filter or bubble trap with a one-way purge line.
- ☐ 2. Bubble detector
- ☐ 3. Level sensor
- ☐ 4. Anesthetic gas scavenge line
- ☐ 5. Additional safety devices or techniques may include one or more of the following:
  - One-way valve in the intracardiac vent/sump line
  - Oxygenator ventilating gas oxygen analyzer
  - Retrograde flow prevention valve with centrifugal pump

Assessment Section #10 Possible Score__7__

The perfusionist shall employ appropriate monitoring devices.

- ☐ 1. Blood flow indicator
- ☐ 2. Gas flow meter
- ☐ 3. Physiologic monitor (i.e. in-line SVO2 or SAO2 monitor or point-of-care analyzer)
- ☐ 4. Hematologic monitor (i.e. in-line hematocrit or hemoglobin monitor or point-of-care analyzer)
- ☐ 5. Temperature monitors
- ☐ 6. Timers
- ☐ 7. Other items may include:
  - Blood gas analyzer
  - Oxygen saturation monitor
  - Chemistry monitor

Assessment Section #11 Possible Score__2__

The perfusionist shall make a responsible effort at cost containment.

- ☐ 1. Active participation in a cost containment process
- ☐ 2. Active participation in a quality management process.

Assessment Section #12 Possible Score__4__

The perfusionist must assure that equipment used in the conduct of extracorporeal circulation is properly maintained and adjusted prior to use.

- ☐ 1. Roller pump occlusions set
- ☐ 2. Blood flow sensor properly set and calibrated
- ☐ 3. Regularly scheduled preventative maintenance performed within protocol/process established time frame.
- ☐ 4. Regularly schedule preventative maintenance is performed based on one of the following:
  - Manufacturer recommendations
  - External accrediting agency guidelines
  - Institutional requirements