PERForm v5.0 Data Collection Form

Demographics and Case Details

(#502041) Site Patient ID _________________ (#30) Medical Record Number _________________
(#5) Patient Last Name ________________________________________________________________
(#10) Patient Middle Name __________________________________________________________
(#15) Patient First Name _____________________________________________________________
(#20) Date of Birth _____/_____/_______  (#25) Sex: M □  F □  Unknown □
(#45) Date of Admission _____/_____/_______  (#50) Date of Surgery _____/_____/_______
(#0) PERForm Registry Version: 5.0
(#51) Patient Expired in the O.R.: Yes □  No □
(#40) STS Record ID _________________________
(#55) Hospital (Name and NPI #) _____________________________________________________
(#65) Surgeon (Name and NPI #) _____________________________________________________
(#85) Perfusionist—Primary __________________________________________________________
(#86) Second Perfusionist ____________________________________________________________

Procedure Type

(#115) Procedure Type:  CABG □  Valve □  CABG + Valve □  Other □
(#117) CPB Utilization:  None □  Combination □  Full □

Circuit & Bypass Thumbprint

(#119) Plateletpheresis: Yes □  No □

(#119.1) Plateletpheresis Products Produced:  PRP □  PPP □  Platelet Gel □

(#119.2) PRP Utilized: Radial Artery Harvest Site □  Saphenous Vein Harvest Site □
Sternotomy Site □  Thoracotomy Site □  Other □

(#119.3) PPP Utilized: Radial Artery Harvest Site □  Saphenous Vein Harvest Site □
Sternotomy Site □  Thoracotomy Site □  Other □

(#119.4) Platelet Gel Utilized: Radial Artery Harvest Site □
Saphenous Vein Harvest Site □  Sternotomy Site □  Thoracotomy Site □  Other □
(#120) Heart-Lung Machine

- CenturyTM - Heart Lung Machine
- Getinge - HL 20
- LivaNova - C5
- LivaNova - S3
- LivaNova - S5
- LivaNova – SC
- Medtronic Performer
- Sarns – 5000
- Sarns -- 8000
- Sarns -- 9000
- Spectrum Quantum
- Terumo – Advanced Perfusion System
- Other

(#125) Perfusion Electronic Medical Record

- No Perfusion EMR
- LivaNova – DMS
- LivaNova - Connect [PerfusionPRO]
- Perfusion.com - On Cloud
- Epic
- Getinge – Metavision
- Terumo – Tlink
- Talis-ACG Perfusion
- Spectrum Medical
- General Electric -- Centricity
- Other

(#130) Heart-Lung Machine Safety Devices:

- Arterial Line Pressure Monitoring
- Cardioplegia Delivery System Pressure Monitoring
- Venous Reservoir Pressure Monitoring
- Arterial Bubble Detector
- Level Sensor
- Arterial Outflow Temperature Monitoring
- Arterial Line Filter
- 1-Way valve (Vent Line)
- 1-Way Valve (Arterial Line for Centrifugal Pump)
- Hard Stop Detent Controls
- Electronically Activated Clamps
- Low Speed Alarm
- Anesthetic Gas Scavenge Line
- Hand Crank
- Backup Gas Supply
- Backup Battery Supply
- Functioning Flashlight

(#135) Heater Cooler Device Type:

- CardioQuip - MCH-1000(i)
- CardioQuip - MCH-1000(m)
- Cincinnati Sub-Zero – Hemotherm
- LivaNova - 3T
- Medtronic – Biocal
- Sarns - HX2
- Sarns – TCM
- Sarns - TCM2
- Sarns – 11160
- Terumo - Dual Heater Cooler
- Other
(140) Inline Blood Gas Trending Device
- LivaNova - BCare5
- arterial only
- venous only
- arterial & venous
- Medtronic – BioTrend
- Spectrum – Viper:
- arterial only
- venous only
- arterial & venous
- Terumo - CDI-500:
- Other
- None

(145) Cerebral Oximetry Device
- No Cerebral Oximeter
- CASMED - FORE-SIGHT Elite
- Covidien - INVOS 5100C
- Nonin - SensSmart X-100
- CDI-550
- Other

(150) Anticoagulation Monitoring Device
- Abbot - iStat
- Accriva - Hemochron
- Accriva – Hemochron Jr.
- Medtronic – Hepcon HMS
- Medtronic – HMS Plus
- Medtronic – ACT Plus
- Other

(155) Autotransfusion Device
- Fresenius – CATS
- Haemonetics: Cell Saver V
- Cell Saver V+
- Elite
- Elite +
- LivaNova: Bratt II
- Electa
- Xtra
- Medtronic: Autolog
- Other
- None

(160) Oxygenator
- Getinge – Quadrox
- LivaNova: Apex HP
- KiDS D100
- KiDS D101
- LivaNova: Inspire 6
- Inspire 8
- PrimO2x
- Synthesis
- Medtronic: Affinity – NT
- Fusion
- Pixie Pediatric
- Terumo: Capiox FX15
- Capiox FX25
- Terumo: Capiox RX15
- Capiox RX25
- Capiox NX19
- Sorin – Inspire
- Other

(165) Arterial Filter Pore Size (Microns)
- 20
- 25
- 27
- 30
- 32
- 33
- 37
- 38
- 40
- 43
- Other

(170) BioCoating Area
- None
- All but Cannula
- Limited Components
- Tip to Tip

(175) BioCoating Type
- Baxter – Duraflo
- Gish – GBS
- Jostra – Bioline
- LivaNova: PHISIO
- SMARTx
- Maquet – Safeline
- Medtronic: Balance
- Cortiva
- Trillium
- Terumo – Xcoating
- Other

(180) System Type: Open
- Closed
- No Venous Reservoir

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(185) Arterial Pump Device

Roller pump □
Jostra – Rotaflow □
LivaNova: Revolution □ CP5 □
Medtronic: Affinity CP Centrifugal Blood Pump □ Medtronic – Biomedicus □
Medtronic: BP50 Pediatric Bio-pump □ BPX80 Adult Bio-pump □
Sarns - Disposable Centrifugal Pump □
Terumo: CAPIOX SP Centrifugal Pump □ CAPIOX ICP Centrifugal Pump □
Other □

(190) Leukocyte Depleting Filter Used: Yes □ No □

(195) Pulsatile Perfusion Used: Yes □ No □

(200) Augmented Venous Drainage: None □ Vacuum □ Kinetic □

(205) Acid-Base Management Strategy: Alpha-Stat □ Combination □ pH-Stat □

(210) If pH-Stat or Combination is chosen, was Cooling Phase pH Stat Used: Yes □ No □

(215) pH-Stat Management—Temperature for Combination, Cooling: __________ °C

Anticoagulation Management

(226) Anticoagulation Type: Direct Thrombin Inhibitor □ Heparin □

(227) Direct Thrombin Inhibitor Specified: Bivalirudin □ Argatroban □ Other □

(230) Method for Monitoring Anticoagulation

ACT □
Heparin concentration (e.g., HMS, heparin-protamine titration) □
PT/PTT □
Other □

(235) If “ACT” selected, Target ACT __________ seconds

(240) Viscoelastic Testing Used

No □
Yes—Prior to CPB onset □
Yes—During CPB □
Yes—After CPB cessation □

(245) Method of Determining Initial Heparin Dose

Fixed Weight-Based □
Heparin Dose Response □

(250) Initial Heparin Dose Given: ________________ units

(251) Total Heparin Dose for CPB: ________________ units

(252) Thrombate/AT-III used: Yes □ No □
Method for Calculating Initial Protamine Dose

- Fixed dose
- Heparin protamine titration
- Ratio dose of heparin given
- Protamine not given
- Other

Total Protamine Dose: ________ mg

Cardiotomy Suction: Yes [ ] No [ ]

Timing of Pump Sucker Termination

- Prior to, or at initiation of, protamine delivery
- 1-25% of protamine given
- 26-49% of protamine given
- >50% of protamine given

Evidence of Clotting in the Circuit: Yes [ ] No [ ]

Prime Volumes

- Static Volume: _____________________________ ml
- Saline Volume: _____________________________ ml
- Lactated Ringer’s Volume: _____________________________ ml
- Balanced Electrolyte Solution Volume: _____________________________ ml
- Other Prime Solution Volume: _____________________________ ml
- 5% Albumin Volume: _____________________________ ml
- Starch Volume: _____________________________ ml
- 25% Albumin Volume: _____________________________ ml
- Heparin Dose: _____________________________ units
- Heparin Volume: _____________________________ ml
- Mannitol Dose: _____________________________ grams
- Mannitol Volume: _____________________________ ml
- Sodium Bicarbonate Dose: _____________________________ meq
- Sodium Bicarbonate Volume: _____________________________ ml

Prime meds (drop-down menu): Doses & Volumes

Prime RBC Units: ___ (Prime FFP Units: ___)
Cryoprecipitate Units (bags): ___

Total Prime Volume: Auto-calculated
Bypass Details

(#520) Pump Time: ____________minutes  (#525) Cross-Clamp Time: ____________minutes

(#530) Clamp/Arrest Type: Yes, Cardioplegia □  Yes, V-fibrillation □  None □

Cardioplegia

(#535) Cardioplegia Solution

- None □  Variable □
- 1:1 □  Crystalloid (custodial) □
- 2:1 □  Microplegia □
- 4:1 □  Del Nido □
- 8:1 □  KBC □
- Other □

(#545) Cardioplegia Regime: Intermittent □  Continuous □  Single Dose □
If Intermittent—(#555) # of C.P. Doses: ____ (#560) Max Interval Between Doses: _______ mins
If Intermittent—(#575) Maintenance Cardioplegia Dose Temp: Cold □  Tepid □  Warm □
If Intermittent—(#580) Route of Additional Cardioplegia Doses

- Antegrade-aortic root □
- Antegrade-coronary ostium (left, right or both) □
- Antegrade - bypass graft □
- Retrograde □

(#550) Topical Cooling—Heart: Yes □  No □
(#565) Cardioplegia Induction Temperature: Cold □  Tepid □  Warm □
(#570) Route of Cardioplegia Induction Dose

- Antegrade-aortic root □
- Antegrade-coronary ostium □
- Retrograde □

(#585) Hot Shot Used?

- No □
- Yes: Standard CPS □  Buckberg CPS □  Blood only □  Combination □  Microplegia □
(#562) Additional Cardioplegia Administered for Electrical Activity? Yes □  No □
(#587) First Dose Cardioplegia Volume: _______ ml (#590) Total Cardioplegia Volume: _______ ml
(#595) Proximal Technique Used: Single Clamp □  Reperfusion □  None □
(#625) Core Highest Temperature: _______ °C  (#630) Core Lowest Temperature: _______ °C
Hematocrits

(#720) First in O.R.: ___________________
(#735) Last Pre-PCB: _________________%
(#725) First on CPB: _________________%
(#740) Lowest on CPB: _________________%
(#750) Prior to Circulatory Arrest: _________________%
(#730) Last on CPB: _________________%
(#747) Last in O.R.: ___________________

(#755) Last Pre-CPB Lactate: _____________
(#763) Last Lactate in O.R.: _____________

(#765) RBC’s Given: Yes ☐ No ☐
(#770) Intraop CPB RBC Units: _______
(#775) Intraop Non-CPB RBC Units: _______

(#780) FFP Given: Yes ☐ No ☐
(#785) Intraop CPB FFP Units: _______
(#790) Intraop Non-CPB FFP Units: _______

(#795) Platelets (PLT) Given: Yes ☐ No ☐
(#800) Intraop CPB PLT Units: _______
(#805) Intraop Non-CPB PLT Units: _______

(#810) Cell Saver Volume (CSV) Given: Yes ☐ No ☐
(#815) Intraop CPB CSV: _________ml
(#820) Intraop Non-CPB CSV: _________ml

(#806) Cryoprecipitate (CRYO) Given: Yes ☐ No ☐
(#807) Intraop CPB CRYO Units: _______
(#808) Intraop Non-CPB CRYO Units: _______

(#825) Whole Blood (WBL) Given: Yes ☐ No ☐
(#830) Intraop CPB WBL Volume: _____ml
(#835) Intraop Non-CPB WBL Units: _____ml

(#840) Was RB volume washed with autotransfusion device prior to administration?: Yes ☐ No ☐
(#845) Hematocrit prior to first RBC unit transfused: _____________%
Reason for first RBC unit transfused (select all that apply):

- Hematocrit level
- Low SVO2
- Low Reservoir Level
- Pressor Requirements
- Cerebral Oximetry
- Patient Age
- Cerebrovascular Disease
- Acute Hemorrhage
- Maintain DO2 Delivery
- Other

Hematocrit prior to second RBC unit transfused: __________ %

Reason for second RBC unit transfused (select all that apply):

- Hematocrit level
- Low SVO2
- Low Reservoir Level
- Pressor Requirements
- Cerebral Oximetry
- Patient Age
- Cerebrovascular Disease
- Acute Hemorrhage
- Maintain DO2 Delivery
- Other

Bypass Volumes

- 0.9% Normal Saline: ________ ml
- Cardioplegia Crystalloid Vol.: ________ ml
- Lactated Ringer’s: ________ ml
- Albumin 5%: ________________ ml
- Balanced Electrolyte: ________ ml
- Albumin 25%: ________________ ml
- Other Solutions: ____________ ml
- Starch Solution: ______________ ml

Total Volume: autocalculated

Circulatory Arrest

- Total Circulatory Arrest Time: __________ minutes
- Duration of Cooling: __________ minutes
- Topical Cooling of Patient’s Brain: Yes ☐ No ☐
- Direction of Cerebral Perfusion
  - None ☐ Antegrade ☐ Retrograde ☐ Both ☐
  - Antegrade Target Flow Rate: ________ ml
  - Antegrade Actual Flow Rate: ________ ml
  - Retrograde Target Flow Rate: ________ ml
  - Retrograde Actual Flow Rate: ________ ml
- Route of Cerebral Perfusion (select all that apply)
  - Axillary ☐ Innominant graft ☐ Innominant Direct ☐ Left carotid direct ☐ Other ☐
Pre-Circulatory Arrest Medications given:  Yes ☐  No ☐

If pre-circulatory arrest meds given, select all that apply:

Magnesium: ☐  Mannitol: ☐  Steroid bolus: ☐  Other: ☐

Return to Bypass

Return to Bypass:  Yes ☐  No ☐  Additional Bypass Mins: _______ mins

Reason(s) for return to bypass (select all that apply)

Hemodynamic Instability  Technical—Bleeding
Respiratory Insufficiency  Technical—Valve
Technical—Graft Revision  Protamine Reaction
Other  “Other” reason: ______________________________________

Medications Given on Bypass

Furosemide Total Dose: _______ mg  Sodium Bicarb Total Dose: _______ mg

Vasopressors Given During CPB:  Yes ☐  No ☐

If Vasopressors given, select all that apply

☐ Vasopressin  Dose: _______ units
☐ Norepinephrine  Dose: _______ µg (micrograms)
☐ Phenylephrine  Dose: _______ mg (milligrams)

Volume Management

Urine Volumes

Pre-CPB Vol.: _____ ml  CPB Vol.: _____ ml  Post-CPB Vol.: _____ ml

Residual Pump Volume

Direct Infusion: _____ ml  Centrifugation: _____ ml  Ultrafiltration: _____ ml

Autologous Circuit Prime:  Yes ☐  No ☐  Autologous prime volume: _____ ml

Ultrafiltration:  Yes ☐  No ☐

Zero-Balance UF:  Yes ☐  No ☐


Post-op Ultrafiltration:  Yes ☐  No ☐

Ultrafiltrate CPB Volume: _____ ml  Ultrafiltrate Non-CPB Volume: _____ ml

ANH Blood Harvest:  Yes ☐  No ☐  ANH Blood Harvest Volume: _____ ml

ANH Vol. Returned:  Pre-CPB: _____ ml  Post-CPB: _____ ml
Glucose Management

(#1225) First Intraoperative: _________mg/dL
(#1230) Highest Intraoperative: ______mg/dL
(#1235) Last Intraoperative: _________mg/dL
(#1240) Intraoperative Insulin Used: Yes ☐  No ☐

Inotrope Usage

(#1245) Inotropes Used to Wean from CPB?: Yes ☐  No ☐  (#1250) How Many?: ________
(#1255) Number of Inotropes Upon ICU Arrival: __________
(#1260) Number of Inotropes 4 Hours Post-Op: __________
(#1265) Number of Inotropes 48 Hours Post-Op: __________

Patient Safety

(#1300) Perfusion Checklist: Yes ☐  No ☐
(#1305) Perfusion Transfer of Care: Yes ☐  No ☐
   (#1310) Timing of Transfer of Care: Prior to CPB: ☐  During CPB: ☐  After CPB: ☐
(#1313) Adverse Safety Event? Yes ☐  No ☐
   (#1315) If “Yes” (select all that apply)
   ☐ Arterial Air  ☐ Electrical Failure
   ☐ Oxygenator Failure  ☐ Gas Supply Failure
   ☐ Pumpphead Failure  ☐ Thrombus
   ☐ Level Sensor  ☐ Air Lock
   (#1316) If an Oxygenator Failure Occurred, Did it require Oxygenator Change-Out: Yes ☐  No ☐
(#1317) Post-Operative Debrief: Yes ☐  No ☐

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