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 ☐ Heart Transplant ☐
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
- ☐ LivaNova Essenz
- ☐ 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
☐ Maquet Jostra -HCU 30
☐ Other

(#140) Inline Blood Gas Trending Device

☐ LivaNova - BCare5 ☐ arterial only ☐ venous only ☐ arterial & venous
☐ LivaNova – B-Capta
☐ Medtronic – BioTrend
☐ Spectrum – Viper
☐ Terumo - CDI-500
☐ Terumo – CDI-550
☐ Other
☐ None

(#145) Cerebral Oximetry Device Device

☐ No Cerebral Oximeter
☐ CASMED - FORE-SIGHT Elite
☐ Covidien - INVOS 5100C
☐ Nonin - SensSmart X-100
☐ Masimo-Root with O3
☐ 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 ☐ Fresenius Kabi CATSmart System ☐
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 ☐ 41 ☐ 43 ☐
Other ☐

(#170) BioCoating Area

None ☐ All but Cannula ☐ Limited Components ☐ Tip to Tip ☐

(#175) BioCoating Type

Baxter – Duraflow ☐ Gish – GBS ☐ Jostra – Bioline ☐
LivaNova: PHISIO ☐ SMARTx ☐
Maquet – Safeline ☐
Medtronic: Balance ☐ Cortiva ☐ Trillium ☐
Terumo – Xcoating ☐
Other ☐

(#180) System Type: Open ☐ Closed ☐ No Venous Reservoir ☐

(#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

(#251) Initial Heparin Dose for CPB: _____ **units**

(#251.1) Total Heparin Dose given during CPB: _____ **units**

(#252) Thrombate/AT-III used: Yes ☐ No ☐

(#255) Method for Calculating Initial Protamine Dose

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

(#260) Total Protamine Dose: _____**mg**

(#1220) Cardiotomy Suction: Yes ☐ No ☐

(#265) 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

(#270) Evidence of Clotting in the Circuit: Yes ☐ No ☐

Priming Volumes

(#275) Static Volume: _____**ml**

(#280) Saline Volume: _____**ml**

(#285) Lactated Ringer's Volume: _____**ml**

(#290) Balanced Electrolyte Solution Volume: _____**ml**

(#300) Other Prime Solution Volume: _____**ml**

(#305) 5% Albumin Volume: _____**ml**

(#310) Starch Volume: _____**ml**

(#315) 25% Albumin Volume: _____**ml**

(#330) Heparin Dose: _____**units**

(#335) Heparin Volume: _____**ml**

(#345) Mannitol Dose: _____**grams**

(#350) Mannitol Volume: _____**ml**

(#360) Sodium Bicarbonate Dose: _____**meq**

(#365) Sodium Bicarbonate Volume: _____**ml**

(#375, #385, #400, #415, #430, #445) Prime meds (drop-down menu): Doses & Volumes

(#500) Prime RBC Units: ___ **(#505)** FFP Units: ____**(#506)** Cryoprecipitate Units (bags): _____

(#620) Total Prime Volume: **Auto-calculated**

Bypass Details

(#520) Pump Time: _____minutes **(#525)** Cross-Clamp Time: _____minutes

(0) Oxygen Delivery (DO2) data collected during the CPB period? Yes ☐ No ☐

(0) Oxygen Delivery Data Collection Intervals: Missing ☐ Intermittently ☐ Continuous ☐

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

Cardioplegia

(#535) Cardioplegia Solution

- ☐ None
- ☐ 1:1
- ☐ 2:1
- ☐ 4:1
- ☐ 8:1
- ☐ Variable
- ☐ Crystalloid (custodial)
- ☐ Microplegia
- ☐ Del Nido
- ☐ 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**

(#635) Core Temperature Site

☐ Bladder
☐ Nasopharnygeal
☐ Esophageal
☐ Jugular bulb
☐ Rectal
☐ Tympanic
☐ Other

(#705) Highest Arterial Inflow Blood Temp: _____**°C**

(#710) Target CPB Separation Temp: ____**°C** **(#715.2)** Actual CPB Separation Temp: ____**°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: _____

Yes ☐ No ☐

(#825) Whole Blood (WBL) Given:

(#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: _____**%**

(#850) Reason for *first* RBC unit transfused (select all that apply):

- ☐ Hematocrit level
- ☐ Low SVO_2
- ☐ Low Reservoir Level
- ☐ Pressor Requirements
- ☐ Cerebral Oximetry
- ☐ Patient Age
- ☐ Cerebrovascular Disease
- ☐ Acute Hemorrhage
- ☐ Maintain DO_2 Delivery
- ☐ Other

(#890) Hematocrit prior to *second* RBC unit transfused: _____**%**

(#895) Reason for *first* RBC unit transfused (select all that apply):

- ☐ Hematocrit level
- ☐ Low SVO_2
- ☐ Low Reservoir Level
- ☐ Pressor Requirements
- ☐ Cerebral Oximetry
- ☐ Patient Age
- ☐ Cerebrovascular Disease
- ☐ Acute Hemorrhage
- ☐ Maintain DO_2 Delivery
- ☐ Other

Bypass Volumes

(#900) 0.9% Normal Saline: _____**ml** **(#920)** Cardioplegia Crystalloid Vol.: _____**ml**
(#905) Lactated Ringer's: _____**ml** **(#925)** Albumin 5%: _____**ml**
(#910) Balanced Electrolyte: _____**ml** **(#930)** Albumin 25%: _____**ml**
(#920) Other Solutions: _____**ml** **(#935)** Starch Solution: _____**ml**

Total Volume: **autocalculated**

Circulatory Arrest

(#1005) Total Circulatory Arrest Time: _____**minutes**

(#1010) Duration of Cooling: _____**minutes**

(#1015) Topical Cooling of Patient's Brain: Yes ☐ No ☐

(#1015) Topical Cooling of Patient's Brain: Yes ☐ No ☐

(#1035) Direction of Cerebral Perfusion

None ☐ Antegrade ☐ Retrograde ☐ Both ☐

(#1036.1) Antegrade Target Flow Rate: _____ml

(#1036.2) Antegrade Actual Flow Rate: _____ml

(#1036.3) Retrograde Target Flow Rate: _____ml

(#1036.4) Retrograde Actual Flow Rate: _____ml

(#1040) Route of Cerebral Perfusion (select all that apply)

Axillary☐ Innominate graft☐ Innominate Direct☐ Left carotid direct☐ Other☐

(#1027) Pre-Circulatory Arrest Medications given: Yes☐ No☐

(#1030) If pre-circulatory arrest meds given, select all that apply:

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

Return to Bypass

(#1045) Return to Bypass: Yes☐ No☐ **(#1050)** Additional Bypass Mins: _____**mins**

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

(#1055) Hemodynamic Instability **(#1060)** Technical—Bleeding

(#1065) Respiratory Insufficiency **(#1070)** Technical—Valve

(#1075) Technical—Graft Revision **(#1076)** Protamine Reaction

(#1080) Other **(#1085)** "Other" reason: _____

Medications Given on Bypass

(#1100) Furosemide Total Dose:_____**mg** **(#1105)** Sodium Bicarb Total Dose:_____**mg**

(#1107) Vasopressors Given During CPB: Yes☐ No☐

(#1110) If Vasopressors given, select all that apply

☐Vasopressin **(#1105)** Dose: _____**units**

☐Norepinephrine **(#1105)** Dose: _____**µg (micrograms)**

☐Phenylephrine **(#1105)** Dose: _____**mg (milligrams)**

Volume Management

Urine Volumes

(#1130) Pre-CPB Vol.: _____**ml** **(#1135)** CPB Vol.: _____**ml** **(#1137)** Post-CPB Vol.: _____**ml**

Residual Pump Volume

(#1150) Direct Infusion: ____**ml** **(#1155)** Centrifugation: ____**ml** **(#1137)** Ultrafiltration: _____**ml**

(#1165) Autologous Circuit Prime: Yes☐ No☐ **(#1170)** Autologous prime volume: ____**ml**

(#1175) Ultrafiltration: Yes☐ No☐

(#1180) Zero-Balance UF: Yes☐ No☐

(#1181) Zero-Balance UF Vol. Added: ____**ml** **(#1182)** Zero-Balance UF Vol. Removed:____**ml**

(#1185) Post-op Ultrafiltration: Yes☐ No☐

(#1190) Ultrafiltrate CPB Volume: _____**ml** **(#1195)** Ultrafiltrate Non-CPB Volume: _____**ml**

(#1200) ANH Blood Harvest: Yes ☐ No ☐ **(#1205)** ANH Blood Harvest Volume: _____**ml**

ANH Vol. Returned: **(#1210)**Pre-CPB: ___**ml** **(#1215)**Pre-CPB: ___**ml** **(#1216)**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
- ☐ Oxygenator Failure
- ☐ Pumphead Failure
- ☐ Level Sensor
- ☐ Electrical Failure
- ☐ Gas Supply Failure
- ☐ Thrombus
- ☐ Air Lock

(#1316) If an Oxygenator Failure Occurred, Did it require Oxygenator Change-Out: Yes ☐ No ☐

(#1317) Post-Operative Debrief: Yes ☐ No ☐