

Perfusionist initials(circle): \_\_\_\_\_

Type of surgery  (0= CABG only; 1=Valve only; 2=CABG + valve; 3=Other cardiac surgery or comb. thereof)

Date of admit \_\_\_\_\_ (m/d/yy)

Date of Surgery \_\_\_\_\_ (m/d/yy)

**USE ADDRESSOGRAPH if possible**

First Name \_\_\_\_\_

Last name \_\_\_\_\_

DOB \_\_\_\_\_

Medical record number \_\_\_\_\_

**Cardioplegia Methods**

Aortic cross clamp .....  (0=yes, cardioplegia; 1=yes, w/ischemia or fib arrest; 2=no XC)

Type of CPS .....  (1=1:1; 2=2:1; 3= 4:1; 4= 8:1; 5= crystalloid; 6= comb; 7= none; 8=microplegia)

Induction dose .....  (1= standard CPS; 2=Buckberg CPS)

Induction CPS temp .....  (0≤28C; 1=28-34C; 2≥35C)

Maintance CPS temp.....  (0≤28C; 1=28-34C; 2≥35C; 3=combination)

Routing.....  (0= antegrade; 1=retrograde; 2=both)

Timing of dose .....  (longest interval, in minutes; use “999” for continuous CPS)

Proximal technique .....  (0=with AoXC off; 1=with AoXC on; 2=combination; 3= Non-CABG; 4=IMA(s) only)

“Hot shot” used .....  (0=no; 1=yes, standard CPS; 2=yes, Buckberg CPS; 3= yes, blood only; 4=yes, combination)

Total volume used of.....  cardioplegia, inc. bld only (in mls)

**Fluid volumes and blood products**

Static circuit volume .....  (in ml)

Asanguineous prime vol. ..  (in ml)

Total priming vol.....  (in ml)

Blood prime?.....  (number of units of PRBC's)

Pre-bypass sequestration used? .....  (estimated number of ml)

Ultra-filtration used? .....  (number of mls removed)

Pre-bypass fluid total.....  (in ml)

Fluids added on bypass ....  (in ml)

RAP technique used? .....  (volume, in ml, 0=not used)

Leukodepletion used? .....  (0=no; 1=yes)

    If yes, Bank Blood?.....  (0=no; 1=yes)

    If yes, Cell Saver blood?  (0=no; 1=yes)

    If yes, Cardioplegia? .....  (0=no; 1=yes)

    If yes, Arterial?.....  (0=no; 1=yes)

Albumin used? .....  (0=no; 1=yes)

    If yes, In prime \_\_\_\_\_ (gm), On bypass \_\_\_\_\_ (gm)

Transfusion on bypass.....  (number of units of PRBC's)

If yes, Primary reason? ....  (0=no trans.; 1=anemia; 2=blood loss; 3=poor O<sub>2</sub> transport)

Jehovah's Witness .....  (0=no; 1=yes)

Hematocrit values (%):

Post intubation	First on CPB	Lowest on CPB	Last on CPB

**Details of Perfusion**

Core temperature (C°): fill in all that apply

	Bladder	NP	Esoph	Jugular Bulb	Rectal	Other
Lowest						
Highest						

Highest blood temperature  (arterial flow, C°)

Last serum K+ on CPB ....  (last value prior to initial weaning from CPB)

Lowest venous saturation  (@37 degrees)

Total heparin .....  (USP units, inc. prime)

Reperfusion time .....  (minutes)

Ventricular activity during XC .....  (0=no; 1=yes)

Type of Pump: .....  (0= Roller, 1=Centrifugal)

Oxygenator type: .....  (0= hollow-fiber; 1=sheet; 2=other)

Coated circuit .....  (0=no; 1=partial; 2=all but cannula; 3=Tip-to-tip)

If yes, Type of coating .....  (1=X, 2=COBE; SMARxT; 3= Carmeda; 4= Trillium; 5=Duraflo II; 6=Sorin Mimesys.; 7=GISH; 8=Other; 9=combination)

Cardiotomy suckers used .  (0=no; 1=yes, with cell saver; 2= yes, without cell saver)

pH Management.....  (0=alpha stat; 1=pH stat; 2=both)

Arterial cannulation.....  (0=aorta; 1=femoral; 2=axillary; 66=other)

Filter pore size: Art. \_\_\_\_\_ Cardio. \_\_\_\_\_ VenRes. \_\_\_\_\_ (state size)

Venous cannulation .....  (0=right atrium; 1=bicaval; 2= femoral; 3=jugular;4=SVC; 66= other)

Venous return .....  (0=gravity; 1=primed venous w/ VAVD; 2=dry venous w/VAVD; 3=KAVD)

Where was CII started?.....  (Pre-op; 2=Intra-op; 3=none)

Insulin given on bypass? ...  (0=no; 1=yes, bolus; 2=yes, drip; 3=yes,both)

OR Glucose measurements

	1st	Highest	Last

Lactate .....

Cerebral monitoring (circle Y=yes, N=no) In comment box indicate: 0=no aberrations in values, 1=aberrations in values w/o practice change, 2=aberrations in values with subsequent practice change. In all others boxes check all actions taken that apply.

	Com-ment	Cann. site	Incr BP	Incr flow	Incr FiO <sub>2</sub>	Incr pCO <sub>2</sub>	RBC transf	Reposition heart	Other
NIRS									
Y N									
TCD									
Y N									
SVC									
Y N									

## DEFINITION OF TERMS

**Perfusionist:** print or circle initials. "Other." Students should be coded under the responsible staff perfusionist.

**Type of surgery: Other cardiac surgery or comb. thereof:** may be other procedures (VSD, ASD, ablation, AICD, or any significant cardio-vascular surgery not included in this list), w/ or w/o CABG or valve(s).

**Cardioplegia type: 6=Combination:** For those procedures during which multiple ratios are used. **7=None:** For any procedure in which neither AoXC nor cardioplegia is used, or standard CABG in which the AoXC is used but cardioplegia is not (ischemic or fibrillatory arrest). **8=Microplegia:** Use for blood cardioplegia with minute amounts of highly-concentrated additives, such as Harvard pump technique.

**Induction dose:** Very first dose of cardioplegia given, typically 500cc, *before any changes in composition or temperature are made*, and after which infusion may continue. Buckberg CPS includes such additives as aspartate and glutamate.

**Timing of doses:** Longest interval between doses (end of one dose to the start of next dose).

**Proximal technique:** With AoXC off or on, or a combination of the two. Score 3 or 4 as appropriate for non-CABGs, or CABGs done only with IMA(s).

**Total volume used:** Total volume of cardioplegia given, i.e., the volume of crystalloid plus blood. For example, if 400 cc of crystalloid cardioplegia stock solution is used at 4:1, then the total volume to be recorded is 2,000 cc. If blood only is used for any reason, such as hot shot, add in the amount of blood used.

**Static circuit volume:** The minimum volume of fluid necessary to prime a given bypass circuit from tip to tip at a no-flow state and minimal acceptable reservoir level to initiate bypass. This value is independent of the net priming volume after RAP, draining the venous line or other maneuvers to minimize hemodilution.

**Asanguineous prime volume:** Total amount of asanguineous fluid used to initiate bypass. Should inc. crystalloid, colloid and medications, but not blood or such volumes as removed by RAP or other strategies used to minimize hemodilution.

**Total priming volume:** Total amount of fluid used to initiate bypass. Should inc. crystalloid, colloid, blood and medications, but not such volumes as removed by RAP or alternative strategies to minimize hemodilution.

**Blood prime:** If a blood prime was used, how many units of PRBCs? Enter "0" if none.

**Pre-bypass sequestration used:** Give an estimate of the amount of blood sequestered, either by Anesthesia or via CPB venous line. Enter "0" if none.

**Ultrafiltration used:** If an ultrafilter was used, how much volume was removed? Enter "0" if none.

**Pre-bypass fluid total:** Total amount of crystalloid and colloid given by Anesthesia prior to initiation of CPB.

**Fluids added on bypass:** Total amount of fluid given on bypass as reflected in final fluid total. Include blood products and amount of crystalloid cardioplegia stock given.

**RAP technique used:** If RAP or other similar technique was used, indicate "yes" or "no" and estimate volume of prime removed.

**Leukodepletion used:** If leukodepletion filters were used, indicate "yes" and location at which such filter(s) were used.

**Albumin used:** If albumin was given in the prime or on bypass, indicate number of grams used (not ml's).

**Transfusion on bypass:** If blood was added on CPB, how many units of PRBCs? Enter "0" if none. Do not include PRBCs in blood prime here.

**Primary reason for transfusion:** 0=no transfusion indicated, or withheld on MD's order; 1=anemia related to primary hemodilution, inc. low pt. hct., small pt. size, and/or anesthesia and/or CPB fluids; 2=blood loss at the surgical field necessitates adding blood and other fluids to the pump to maintain hct. and circulating volume. Patient may be anemic due to fluid addition to keep up with hemorrhage, but blood loss is the precipitating event; 3=poor O<sub>2</sub> transport. Blood is given in response to a low mVO<sub>2</sub> sat. or other clinical marker of poor tissue oxygenation. Hct. would otherwise be considered acceptable.

**Hematocrit values: Post intubation-** from ABG or other patient sample drawn after the insertion of the E-T tube in the OR, or post-induction if the patient arrives intubated. **First on CPB-** First measured hct. after institution of CPB. Should be drawn within the first 15" of bypas.

**Lowest on CPB-** Lowest measured value, prior to transfusion (if any), during initial pump run. **Last on CPB-** Last hct. prior to weaning from initial pump run. May be an estimate if patient has been recently transfused but not re-sampled.

**Core temperature:** Specify highest and lowest readings at any or all corporeal temperature monitoring site(s) used.

**Highest Blood Temperature:** Highest temperature reached by the arterial inflow during re-warming.

**Last serum potassium on CPB:** Last potassium level prior to weaning from initial pump run.

**Lowest venous saturation:** Lowest mVO<sub>2</sub> sat. during sustained "normal" arterial flow @37°C. Do not record values during periods of hypoperfusion secondary to low flows at the surgeons' request.

**Total heparin:** Total amount of heparin (in USP units) used for CPB, inc. prime.

**Reperfusion time:** Time from point of AoXC removal to initial separation from bypass.

**Ventricular activity during XC:** V-fib or spontaneous, organized ventricular contraction observed while the AoXC is on and after cardioplegia has been administered, but before "hot shot," if any, is begun; ventricular activity which occurs during that period of time when the heart is expected to be quiescent.

**Coated circuit:** If a "biocompatible" circuit was used, characterize extent of coating and type/brand.

**Cardiotomy suckers used:** Indicate if pump suckers were used, w/ or w/o concomitant Cell Saver.

**pH Management:** Specify pH-stat and/or alpha-stat.

**Arterial cannulation:** Placement of arterial cannula to initiate bypass (may be relocated later).

**Filter size:** Specify approximate pore size of filter used for the arterial filter and the venous reserve filter.

**Venous cannulation:** Placement of venous cannula to initiate bypass (may be relocated later).

**Venous return:** Specify type of venous assist (if any). Vacuum option may include "dry (unprimed) venous" technique.

**CI=** continuous insulin infusion

**Cerebral monitoring:** Please circle yes(Y) or no(N) of any technique used either by Perfusion or Anesthesia. If yes, in comment box used coding given and then

**In Comment Box:** NIRS aberration = NIRS<=20% drop from baseline or any value below 40%

**If any process changes based on cerebral monitoring values:** Check off ALL appropriate boxes BASED UPON FEEDBACK FROM CEREBRAL MONITORING. **Process changes** = "Any change in above processes of delivering care related to values from monitoring equipment listed above. Example: increasing pCO<sub>2</sub> based on a low NIRS RSO<sub>2</sub> value".