## B. Footnotes, Version VI (*Clarified*)

A. Dobutamine:

1. Start at 5 mcg/kg/min and increase by 5 mcg/kg/min increments at 15 minute intervals until ineffective circulation reversed (CI greater than or equal to 2.5 for PAC or fewer than 3 physical findings of ineffective circulation for CVP) or maximum dose of 20 mcg/kg/min reached.

2. Begin weaning 4 hours after ineffective circulation is reversed. Wean by greater than or equal to 25% of the stabilizing dose at intervals of less than or equal to 4 hours to maintain effective circulation

3. If a patient is on dobutamine as a result of an earlier cell assignment, dobutamine should be ignored for the purpose of subsequent cell assignment, but should continue to be weaned per protocol.

B. Furosemide

If the protocol instructs the use of furosemide, and furosemide is unavailable, then bumetanide should be substituted for furosemide, with a dose equivalency ratio of 40:1 (40mg of furosemide = 1 mg of bumetanide). As the protocol allows with furosemide, bumetanide can be delivered either via bolus or continuous infusion at the discretion of the physicians caring for the patient. If and when furosemide becomes available again, furosemide should be utilized to carry out protocol instructions.

1. Withhold if:

a. vasopressor or a fluid bolus given last 12 hours **OR**

b. renal failure present (dialysis dependence)* **OR**

c. oliguria with creatinine >3, **OR**

d. oliguria with creatinine 0-3 and urinary studies indicative of acute renal failure.

2. For cells 3, 7, and 8:
Begin continuous infusion of 3 mg/hour **OR** 20 mg bolus **OR** last known protocol specified effective dose. Reassess in 1 hour. Double dose hourly until urine output is greater than or equal to 0.5 ml/kg/hour **OR** maximum infusion of 24 mg/hour or maximum

bolus of 160 mg is reached. Discontinue furosemide if no response to maximum dose after 1 hour.

3. For cells 11, 15, 16, 18:
Begin continuous infusion of 3 mg/hour **OR** 20 mg bolus **OR** last known protocol specified effective dose. Reassess in 4 hours; if still in a cell for which furosemide is indicated then:

a. If intravascular pressure has declined by one or more pressure ranges (rows) repeat the same dose as before, and then reassess in 4 hours.

b. If intravascular pressure range has not declined by one or more pressure ranges (rows), and if average urine output over the preceding four hours is less than or equal to 3ml/kg/hr, double the preceding dose and reassess in 4 hours. If average urine output over the preceding four hours is greater than 3ml/kg/hr, then give the same dose as before and reassess within four hours. Maximum daily infusion dose = 24 mg/hour x 12 hours (3 four hour cycles); maximum bolus dose = 160 mg q 4 hours x 3 doses.

4. **If** either the maximum daily infusion (24mg/hr x 12 hrs) or maximum bolus dose sequence (160 mg x 3) is given, then do not give additional furosemide doses for 12 hours following the end of the 12 hour infusion or for 12 hours after the third 160 mg bolus.

. If at least one cell has passed that does NOT call for Lasix to be given, or at least 12 hours has passed from a sequence of maximum furosemide dosing, you can either start back at 20 mg, give the last known effective dose, or give any dose in between (as determined by the ICU team).

C. Fluid Bolus (Non-shock, except cell #19):

1. Administer 15 ml/kg PBW normal saline, Plasmalyte, or Ringer's lactate (rounded to the NEAREST 250 cc) or 1 unit of RBCs or 25 grams albumin (choice at discretion of physician) over less than or equal to 1 hour then reassess patient . For cells 5,6,9,10, reassess within one hour. For cells 13,14,19, reassess within four hours. Administer up to 3 boluses over 24 hours if indicated by protocol. This 24 hour period begins with the first protocol-mandated non-shock bolus OR the first protocol-mandated bolus following shock reversal.

2. Additional fluid boluses are allowed at the discretion of the physician.

D. Fluid Bolus (Cell #19 only):

1. Withhold fluid bolus if: Cardiac index (CI) is greater than or equal to 4.5 **OR** FiO2 is greater than or equal to 0.7.

2. Use 15 ml/kg PBW normal saline, Plasmalyte, or Ringer's lactate (rounded to the NEAREST 250 cc) or 1 unit of RBCs or 25 grams albumin (physicians discretion) over less than or equal to 1 hour then reassess patient within 4 hours. Administer up to 3 boluses over 24 hours if indicated by protocol. This 24 hour period begins with the first protocol-mandated non-shock bolus OR the first protocol-mandated bolus following shock reversal.

3. Additional fluid boluses are allowed at the discretion of the physician.

E. KVO IV:

1. Also minimize as much as possible all other fluid volume (e.g., for delivery of antibiotics etc.), except as required for nutrition support.

F. Guidelines for Management of Shock:

- Shock is defined as a MAP < 60 mmHg or a MAP > 60 while receiving vasopressors.
- Assessments during shock should be recorded at least every 4 hours and at the time of each new entry or exit from a shock cell (cells 1 and 2).
- Physicians have the choice of either fluid bolus and/or vasopressor therapy (in any order) as follows:

1. ***Fluid Bolus (Shock):***
Use 15 ml/kg PBW normal saline, Plasmalyte, or Ringers (rounded to the NEAREST 250 cc) or 1 unit of RBCs or 25 grams albumin (physicians discretion) over less than or equal to 1 hour then reassess patient.

2. ***Vasopressor Therapy:***
Choice of any single agent or any combination of the following:

a. Dopamine 5 mcg/kg/min, increase to a maximum of 25 mcg/kg/min.

b. Norepinephrine at 1 mcg/min, increase to a maximum of 100 mcg/min.

c. Epinephrine at 1 mcg/min, increase to a maximum of 20 mcg/min.

d. Phenylephrine at 10 mcg/min, increase to a maximum of 500 mcg/min.

e. Intravenous Vasopressin 0.005-0.04 international units/minute

3. ***Vasopressor Weaning (includes any dose of dopamine):***

a. When MAP > 60 mmHg on a stable dose of vasopressor, begin reduction of the vasopressor by greater than or equal to 25% of the stabilizing dose at intervals of less than or equal to 4 hours to maintain MAP greater than or equal to 60 mmHg.

b. Dopamine is considered "discontinued" for vasopressor use and cell assignment when it is weaned to less than or equal to 5 mcg/kg/min, but should continue to be weaned per protocol (footnote F.3.a. above).

G. Invalid PAOP

1. If a valid PAOP measurement cannot be obtained, use the pulmonary artery diastolic pressure to estimate the PAOP, based upon the most recently available relationship between PAOP and PADP, and assuming a stable arithmetic difference between the two values. For example, if the most recent prior valid measurements showed a PAOP = 10 and a PADP = 15, and the current PADP = 20 and a valid PAOP cannot be obtained, then assume a current PAOP = 15.

2. If neither a valid PAOP nor PADP can be obtained, then utilize the current CVP value.

* Renal Failure

a. Dialysis dependence is defined as the period from the initiation of dialysis to the time that continuous dialysis is discontinued or to the time following the last session of intermittent dialysis.

b. During this period of dialysis dependence, urine output is considered to be adequate for the purposes of cell assignment.