

BLOOD PRODUCTS

STRATEGIES FOR SCARCE RESOURCE SITUATIONS Highest relevance: 1) P=pandemic 2) W=weather 3) MCI

Conventional Capacity – The spaces, staff, and supplies used are consistent with daily practices within the institution. These spaces and practices are used during a major mass casualty incident that triggers activation of the facility emergency operations plan.		Contingency Capacity – The spaces, staff, and supplies used are not consistent with daily practices, but provide care to a standard that is functionally equivalent to usual patient care practices. These spaces or practices may be used temporarily during a major mass casualty incident or on a more sustained basis during a disaster (when the demands of the incident exceed community resources.		Crisis Capacity – Adaptive spaces, staff, and supplies are not consistent with usual standards of care but provide sufficiency of care in the setting of a catastrophic disaster (i.e., provide the best possible care to patients given the circumstances and resources available). Crisis capacity activation constitutes a significant and adjustment to standards of care (Hick et al, 2009).			
Category	RECOMMENDATIONS	Healthcare Facility	Blood Center	Strategy	Conventional	Contingency	Crisis
A. All Blood Products	1. Increase donations and consider local increase in frozen reserves P 2. Increase O positive levels P, W, MCI 3. Consider maintaining a frozen blood reserve if severe shortage P 4. Increase recruitment for specific product needs		✓	Prepare			
	5. Consider adjustment to donor HGB/HCT eligibility/ explore FDA variance*		✓	Adapt			
	6. Relax travel deferrals for possible malaria and BSE (bovine spongiform encephalitis)*P, MCI		✓	Prepare			
B. Whole Blood Products	6a. Consider using ABO-type specific whole blood if components cannot be produced MCI, P, W						
C. Packed Red Blood Cells	7. Use cell-saver and auto transfusion to degree possible** P, W, +/- MCI	✓		Re-use			
	8. Limit O negative use to women of child-bearing age P,W, MCI	✓		Conserve			
	9. Use O positive in emergent transfusion in males or females who are no longer childbearing, to conserve O negative** (Seattle Children’s and Mary Bridge Children’s currently uses O neg in males < 18 yrs)	✓		Conserve			
	10. Change donations from whole blood to 2x RBC apheresis collection if specific shortage of PRBC’s (Cascade has current capability)	✓	✓	Adapt			
	11. Use aliquots from parent product for several children when possible P, W, MCI	✓		Conserve			
	12. Encourage use of blood sparing protocols for all patients P,W,MCI	✓		Adapt			
	13. Consider use of erythropoietin (EPO) for chronic anemia in appropriate patients	✓		Adapt			
	14. Prioritize freshest blood for infants and small children	✓		Conserve			
	15. More aggressive crystalloid resuscitation prior to transfusion in shortage situations (blood substitutes may play future role) Use RBC:Plasma in 1:1 ratio in Trauma cases. P, W, MCI	✓		Conserve			

C. Packed Red Blood Cells (cont.)	16. Long-term shortage, collect autologous blood pre-operatively and consider crossover transfusion P	✓		Conserve			
	17. Implement lower hemoglobin triggers for transfusion P, W, MCI	✓	✓**	Conserve			
	18. Consider limiting high-consumption elective surgeries (select cardiac, orthopedic, spinal, etc.)** (procedures likely to require blood transfusions) P, W, +/- MCI	✓	✓**	Conserve			
	19. Consider use of EPO in patients with anticipated acute blood loss P, W, MCI						
	20. Further limit PRBC use, if needed, to active bleeding states, consider subsequent restrictions including transfusion for treatable shock states only** (modification of transfusion thresholds) W, P, MCI	✓	✓**	Re-allocate			
	21. Consider Minimum Qualifications for Survival (MQS) limits on use of PRBCs (for example, only initiate for patients that will require <6 units PRBCs and/or consider stopping transfusion when >6 units utilized), specific MQS limits should reflect available resources at facility. ** P, W, MCI	✓	✓**	Re-allocate			
	22. Reduce or waive usual 56 days inter-donation period * based upon pre-donation hemoglobin/ explore FDA variance* P, MCI		✓	Adapt			
	23. Reduce weight restrictions for 2x RBC apheresis donations according to instruments used and medical director guidance * W, P, MCI		✓	Adapt			
D. Plasma	24. Consider increase in red cell: Plasma ratio (3:1) in massive transfusion protocols in consultation with blood bank medical staff** W, P	✓		Conserve			
	25. Encourage early use of plasma in trauma with anticipated massive hemorrhaging and/or brain injury. Thaw early and use blood warmer.	✓		Conserve			
	26. Switch community inventory to liquid plasma P, W, MCI		✓**	Adapt			
	27. Consider using Group A Plasma P, W, MCI		✓**	Adapt			
	28. Accept female donors without white cell antibody testing. P, W, MCI		✓**	Adapt			
	29. Though not true substitute, consider use of fibrinolysis inhibitors or other modalities to reverse coagulopathic states (tranexamic acid, aminocaproic acid, activated coagulation factor use, fibrinogen concentrate, prothrombin complex concentrate, or other appropriate therapies) MCI, P, W	✓		Substitute			
	30. Obtain FDA variance to exceed 24 collections per year for critical types* P +/-W (e.g. Group AB) P, W, MCI		✓	Adapt			
E. Cryoprecipitate	31. Encourage early use of cryo in trauma with anticipated massive hemorrhaging and/or brain injury. Thaw early and use blood warmer.	✓		Conserve			
	32. Though not true substitute, consider use of fibrinolysis inhibitors or other modalities to reverse coagulopathic states (tranexamic acid, aminocaproic acid, activated coagulation factor use, fibrinogen concentrate, prothrombin complex concentrate, or other appropriate therapies). MCI, P, W	✓		Substitute			
	33. Obtain FDA variance to exceed 24 collections per year for critical types* P +/-W (e.g. Group AB). P		✓	Adapt			

F. Platelets	34. Though not true substitute, consider use of desmopressin (DDAVP) to stimulate improved platelet performance in renal and hepatic failure patients MCI, P, W	✓		<i>Substitute</i>			
	35. Consider aliquoting from apheresis platelets. For children, consider splitting whole blood platelets for more than one recipient. P, W, MCI		✓	<i>Adapt</i>	Leukoreduced	Nonleukoreduced	
	36. Convert whole blood donors to apheresis donors. Standard Practice. W, P, MCI		✓	<i>Adapt</i>			
	37. Transfuse platelets only for active bleeding, further restrict to life-threatening bleeding if required by situation P, W, MCI	✓		<i>Conserve</i>			
	38. No prophylactic use of platelets. P, W, MCI	✓		<i>Adapt</i>			
	39. Accept female platelet donors regardless of HLA antibody, W, P, MCI		✓	<i>Adapt</i>			
	40. Consider changing bacterial detection strategy. MCI, P. Potentially W		✓	<i>Adapt</i>			
	41. Obtain FDA variance to allow new Pool and Store sites to ship across state lines* P, W, MCI		✓	<i>Adapt</i>			
	42. Apply for variance of 5 day outdate requirement *. W, P, MCI		✓	<i>Adapt</i>			

Adapted from the Minnesota Department of Health, Office of Emergency Preparedness

*FDA approval/variance required via American Association of Blood Banks (AABB)

**Education and/or experience is necessary in the setting of a community-wide critical shortage

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