

GUIDELINE FOR INITIATING OUTPATIENT BLOOD TRANSFUSIONS

Developed by the “Community Pathways of Care Group” A collaborative effort between The Everett Clinic, Group Health, and Western Washington Medical Group, North Sound Emergency Medicine and Providence Regional Medical Center Everett to promote evidence based best care for our patients.

1. Is transfusion really indicated? The Puget Sound Blood Center guidelines reflect current evidence based literature we should endeavor to follow at PRMCE:

- Reasonable in almost all patients if Hgb/Hct < 7/21
- Almost never indicated if Hgb/Hct > 10/30
- For Hgb between 7 and 10 (Hct between 21 and 30)—**based on evidence of organ dysfunction and underlying ability to handle inadequate oxygenation.***
- Up to Hgb 10 if:
 - Mixed venous O₂ sat < 70%
 - Respiratory failure, inadequate cardiac output, inadequate oxygenation

*Although not further elaborated on in PSBC guideline the following info on symptoms should be considered: Symptoms should be severe enough, and clearly related to the anemia vs. other medical condition. Symptoms of anemia include symptoms of myocardial ischemia, and orthostatic hypotension or tachycardia unresponsive to fluid replacement. Exertional symptoms are generally not considered indications for red cell transfusion. Similarly, chronic anemia can present with symptoms such as irritability, weakness, and exercise intolerance. These symptoms of anemia are nonspecific and often not considered sufficient indications for transfusion

2. Is transfusion urgent/emergent such that it needs to be initiated in ED or patient admitted to observation? If the following criteria are met transfusion should be safe to arrange as outpatient:

- Patients who are otherwise stable and for whom Hgb >7
- No evidence of impaired organ dysfunction or inadequate oxygenation
- Reliable follow up can be arranged
- No active bleeding

BACKGROUND INFORMATION:

Over the past 20 years mounting evidence has accumulated supporting a restrictive strategy with regards to PRBC transfusion (Proceedings of the Blood Management Practice Guidelines Conference, 1995). “Restrictive” means setting lower thresholds for transfusion and when initiating transfusion - transfusing to lower targets than previously accepted. In the past a liberal transfusion strategy was more the norm, transfusing for symptomatic anemia or even non symptomatic or vaguely symptomatic anemia if Hgb <10 or Hct <30.

A common theme in multiple different professional society guidelines is the need to balance the benefits of treating anemia with the desire to avoid unnecessary transfusion with its associated costs and potential harms. When considering transfusion in anemic patients in the ED two general questions arise:

1: Is transfusion really indicated based on most up to date evidence?

2: Is transfusion urgent/emergent? (This has implications for tying up ED bed for 6hrs or more or admitting patient to hospital vs. making arrangements at outpatient infusion center)

Is transfusion really indicated?

It's worth pointing out that there have been a lot of good studies to guide decision making with respect to **inpatient** transfusions in medical and surgical patients (Carson JL N. H., 2002) (Wu WC, 2007). Unfortunately this is not the case for ambulatory patients, where in the absence of acute blood loss symptoms may be different as there is time for compensatory mechanisms to occur. The optimal transfusion threshold for ambulatory patients has not been established. Nevertheless, lessons learned from inpatient care can offer some guidance.

Different professional society guidelines generally agree that transfusion is not generally indicated for a Hgb >10. These same societies generally set the lower limit for transfusion somewhere between 6-8. (Carson JL G. B., 2012) There is strong evidence including Cochrane review to support a transfusion threshold of 7 g/dl (Hg) for otherwise healthy adults who are without significant symptoms. (Carson JL C. P., Transfusion thresholds and other strategies for guiding allogeneic red blood cell transfusion., 2012) More will be said with respect to significant symptoms below. Likewise there is reasonable evidence to support a transfusion threshold of 8 g/dl (Hg) in adults who are not actively bleeding, but who suffer from preexisting CAD. (Carson JL B. M., 2013) Studies done with post-operative patients suggested increases in morbidity starting with Hgb levels <7 and significantly increasing with hemoglobin levels <6. (Carson JL N. H., 2002) Again we need to appreciate the differences in clinical scenarios here when applying this to ambulatory patients with subacute to chronic anemia.

There is general agreement that transfusion for **symptomatic** anemia is reasonable even if the above lower limit thresholds are not reached. However, symptoms should be severe enough, and clearly related to the anemia vs. other medical condition. Symptoms of anemia include symptoms of myocardial ischemia, and orthostatic hypotension or tachycardia unresponsive to fluid replacement. Exertional symptoms are generally not considered indications for red cell transfusion. Similarly, chronic anemia can present with symptoms such as irritability, weakness, and exercise intolerance. These symptoms of anemia are nonspecific and often not considered sufficient indications for transfusion.

The above is reflected in Puget Sound Blood Center guidelines for adults (not actively bleeding), which should serve as an appropriate guideline for both our inpatient and ED teams:

- Reasonable in almost all patients if Hgb/Hct < 7/21
- Almost never indicated if Hgb/Hct > 10/30
- For Hgb between 7 and 10 (Hct between 21 and 30)—based on evidence of organ dysfunction and underlying ability to handle inadequate oxygenation.
- Up to Hgb 10 if:
 - Mixed venous O₂ sat < 70%
 - Respiratory failure, inadequate cardiac output, inadequate oxygenation

Is transfusion urgent of emergent?

Based on the above, it could be reasonably argued that patients who are otherwise stable and for whom transfusion is being considered can reasonably pursue this as an outpatient if their Hgb is > 7. This assumes no evidence of impaired oxygen delivery to tissues and/or overtly symptomatic anemia (Tachycardia, hypotension, cardiac ischemia, hypoxia, etc.). This also assumes reliable follow up can be arranged.

As in all cases guidelines are just that – guidelines. Individual patient characteristics and symptoms as well as clinical context and judgment go into all decisions on if transfusion is needed and urgency.

Where may they receive the injectable iron?

Providence Region Medical Center – Anemia Clinic

Shannon Leach, ARNP

425-404-5345

Cancer Partnership (Oncology patients, Everett Clinic patients) – Anemia management

Renee Curtis, Pharm.D., BCOP

425-297-5579

Proceedings of the Blood Management Practice Guidelines Conference. (1995). *Am J Surg*, 170(Suppl):6A.

Carson JL, B. M. (2013). Liberal versus restrictive transfusion thresholds for patients with symptomatic coronary artery disease. *Am Heart J*.

Carson JL, C. P. (2012). Transfusion thresholds and other strategies for guiding allogeneic red blood cell transfusion. *Cochrane Database Syst Rev*. .

Carson JL, G. B. (2012). Red blood cell transfusion: a clinical practice guideline from the AABB*. *Ann Intern Med*. , 157(1):49.

Carson JL, N. H. (2002). Mortality and morbidity in patients with very low postoperative Hb levels who decline blood transfusion. *Transfusion*, 42(7):812.

Wu WC, S. T. (2007). Preoperative hematocrit levels and postoperative outcomes in older patients undergoing noncardiac surgery. *JAMA*, 297(22):2481.

Original draft 2013

Reviewed March 2015, May 2016

Authors: Kyle Shephard, MD and Kevin Clay, MD

Contact: Kevin Clay, MD (kclay@everettclinic.com)