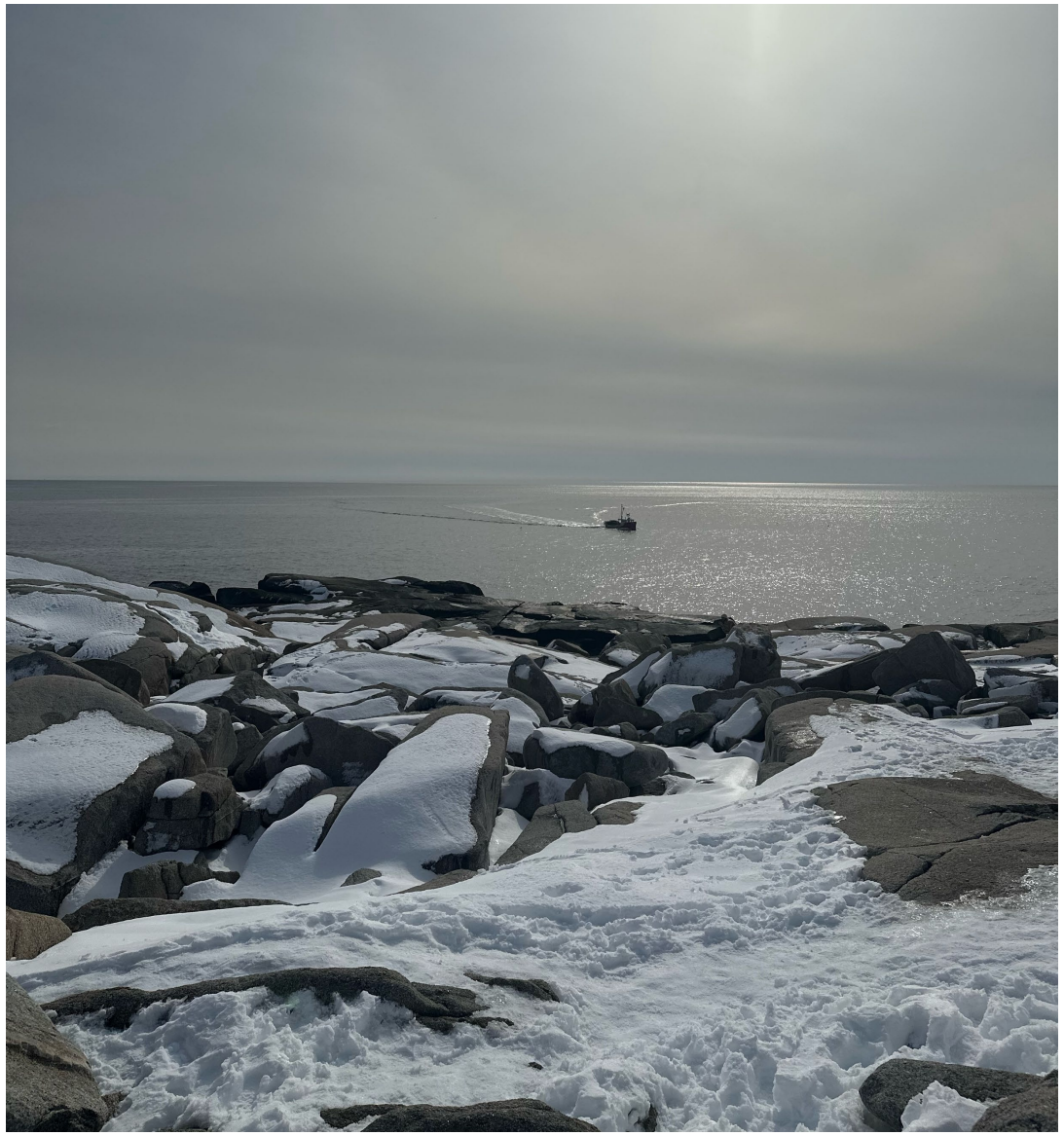
ABCs of Blood Product Transfusion

Joanne Delaney, MD MHPE FRCPC

Pediatric Hematologist/Oncologist, IWK Health

APPHON Educational Session – October 28, 2026



Land Acknowledgement

Disclosures

None

Learning Objectives

We will not cover information specific to IVIg, plasma, or other blood products today

At the end of today's session, you should feel more comfortable:

- Knowing when to transfuse
  - Review indications for pRBC and platelet transfusion in pediatric patients
- Knowing how to prepare for transfusion
  - Review principles of crossmatching, consenting, and ordering blood products
- Recognizing and responding to a transfusion reaction
  - Discuss how to identify, manage, & prevent common transfusion reactions
- Appreciate special considerations for specific populations
  - Leukoreduction, irradiation, extended crossmatch, etc.

Case Presentations

Case #1

Janet is a 16-year-old girl with T-cell acute lymphoblastic leukemia (T-ALL), currently in the delayed intensification (DI) phase of her chemotherapy treatment.

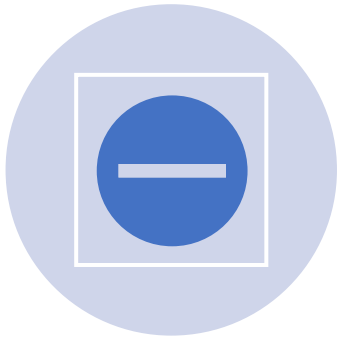
She is at home in Moncton and presents to her local hospital for a routine CBC. She is tired and pale but feels generally well. She has had no bleeding. She is afebrile and her vital signs are stable.

Her results show: WBC 0.9 x 10^9/L, Hb 68 g/L, Plt 9 x 10^9/L, and ANC 0.21 x 10^9/L

Does Janet need any blood products?



YES



NO

Case #2

Kevin is a 12-year-old boy with sickle cell disease. He is currently admitted to the pediatric unit in Charlottetown with a vaso-occlusive crisis involving his left knee. He has had no concurrent fever or respiratory distress.

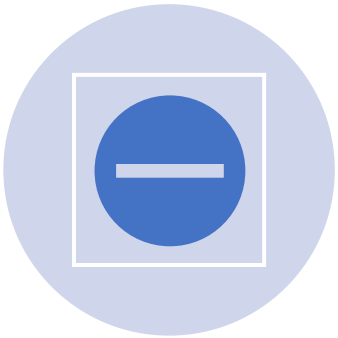
He is now day 4 of his admission. His pain has resolved and he is preparing for discharge.

His CBC today shows: WBC 10.4 x 10^9/L, Hb 65 g/L, Plt 387 x 10^9/L, & ANC 7.2 x 10^9/L

Does Kevin need a blood transfusion?



YES



NO



MORE INFO NEEDED

Case #3

Peter is a 22-month-old boy who is brought to the ED in Sydney because he has been eating dirt on the playground at daycare.

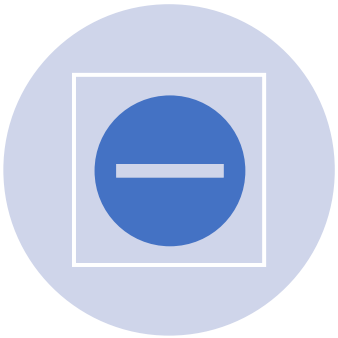
On examination, he is extremely pale but active and playful. He is afebrile, has mild tachycardia, and is normotensive.

His CBC shows: WBC 9.2 x 10^9/L, Hb 26 g/L, Plt 650 x 10^9/L, and ANC 6.4 x 10^9/L

Does Peter need a blood transfusion?



YES



NO



MORE INFO NEEDED

Transfusion Basics

What Constitutes a Blood Product?

Product	Purpose
pRBCs	Increase oxygen-carrying capacity
Platelets	Support primary hemostasis
Plasma	Replace selected coagulation factors
Cryoprecipitate	Replace fibrinogen
IVIg/SCIg	Replace immune globulin
Factor concentrates	Replace a specific factor (i.e. FVIII, FXI)

Government of Canada | Gouvernement du Canada

Canadian Blood Supply

- Health Canada regulates blood collection, processing, and distribution
- Health Canada Blood Regulations – hospital must follow national standard guidelines
- Blood collected via Canadian Blood Services (CBS) and Héma-Quebec from unpaid volunteer donors

Canadian Blood Services

HÉMA-QUÉBEC

Canadian Blood Supply

- Donors screened using:
  - Donor questionnaire
  - Donor hemoglobin

■ Donor units tested for:

Donor Units Tested For:	Specific Agents	Tests Used
Blood groups	ABO and Rhesus (Rh) D Red cell alloantibodies	Blood group serology
Viruses	HIV 1 and 2 Hepatitis B Hepatitis C HTLV I and II West Nile Virus	Antibody and nucleic acid testing Surface antigen, core antibody and nucleic acid testing Antibody and nucleic acid testing Antibody testing Nucleic acid testing (seasonal)
Bacteria	Syphilis Bacterial contamination	Serology Bacterial culture (Platelets only)
Parasites	Chagas Disease (at risk donors only)	Antibody testing

Bloody Easy 5, 2023

Adult vs. Pediatrics

Limited evidence for transfusion thresholds, indications, etc. in pediatrics - guidelines extrapolated from adult data, expert opinion

Indications/recipient types (mostly) similar in adults vs. peds

Things to consider:

- Differences in lab reference ranges across the age spectrum
- Blood products ordered by weight (mL/kg)

Reference Ranges

Table 2: Normal hemoglobin values for infants and children

Age	Sex	Hemoglobin concentration (g/l) (mean (-2 SD))
0.5 to 2 years	Both	120 (105)
2 to 6 years	Both	125 (115)
6 to 12 years	Both	135 (115)
12 to 18 years	Female	140 (120)
	Male	145 (130)
> 18 years	Female	140 9120)
	Male	155 (135)

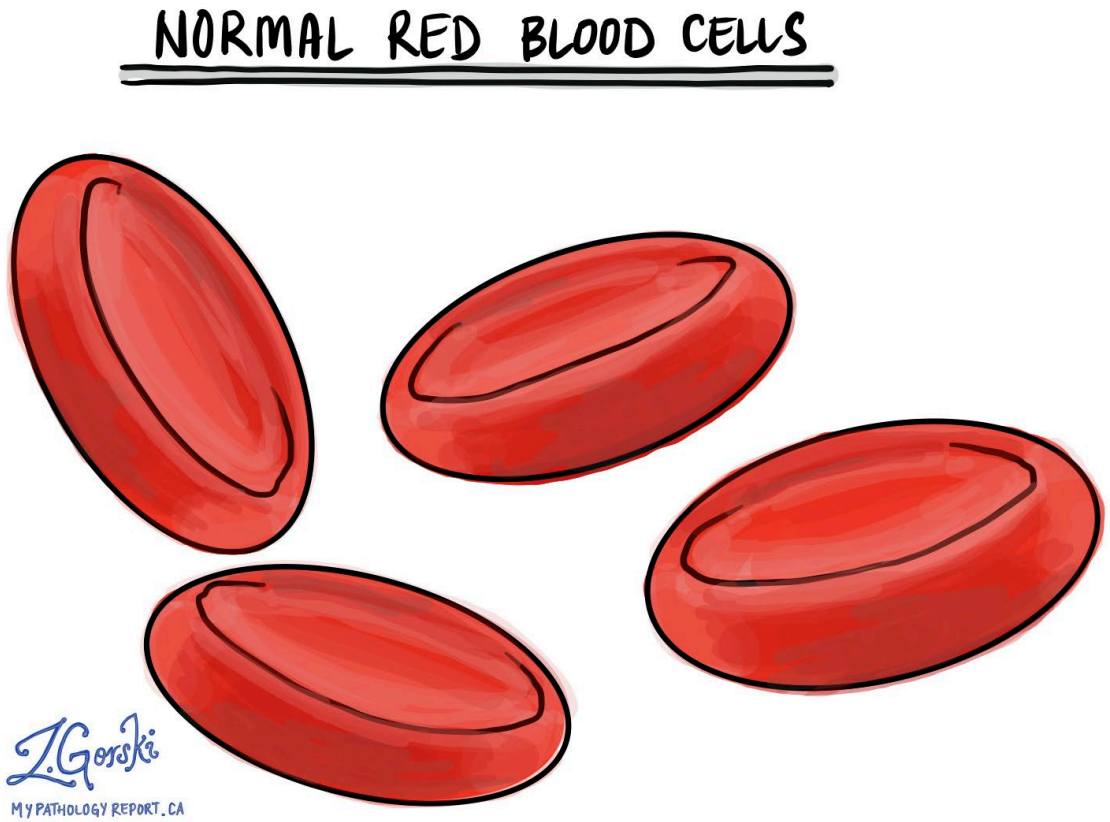
This table was extracted with permission from Nathan and Oski's Hematology of Infancy and Childhood, 7th Edition (2008).[1]

Lau, 2024

Blood Product Dosing

Product	Pediatric Dose (ml/kg)	Typical Adult Dose
RBC	10-15 ml/ kg	1 Unit ≈ 280-300 mL
Platelets	10-15 ml/kg	1 Unit ≈ 250-350 ml
Plasma	10-15 ml/kg	3-4 Units ≈ 750-1000ml
Cryoprecipitate*	1-2 U/10 kg	Adult Pool 150-200ml

Packed Red Blood Cells



Red Cells

- produced in the bone marrow
- life span is 120 days
- flexible, biconcave disc shape

Red cells carry oxygen from the lungs to the tissues and help return carbon dioxide back to the lungs.

Hemoglobin is an iron-rich protein inside the cell that binds to O2 in the lungs and releases it into tissues.

Causes of Anemia

- Decreased production
- Increased destruction
- Blood loss

Symptoms of Anemia

- Tachycardia
- Pallor
- Fatigue
- Headache
- Hypotension (if severe)

- Usually symptomatic with Hb <70-80 g/L
- May be asymptomatic with chronic anemia, even if Hb severely low

When to Transfuse?

Table 6: Guidelines for transfusion of red blood cells in pediatric patients more than four months of age

1. Acute blood loss >15% total blood volume
2. Hemoglobin <70 g/l with symptoms of anemia
3. Significant preoperative anemia when other corrective therapy is not available
4. Hemoglobin <130 g/l on extracorporeal membrane oxygenation
5. Chronic transfusion programs for disorders of red blood cell production (such as β-thalassemia major and Diamond-Blackfan syndrome unresponsive to therapy)
Adapted from *Paediatric Transfusion: A Physician's Handbook* (2009)[12] and Roseff et al. (2002).[13]

Lau, 2024

Hemoglobin Thresholds

General principle: transfuse based on symptoms rather than on a hemoglobin value

Hemoglobin Thresholds

- PICU (stable, non-cyanotic) - 70 g/L
- Oncology – 70 g/L
- Perioperative non-cardiac surgery – 70 g/L

- Chronic anemia – patient-dependent

CHOOSE WISELY

Don't transfuse RBCs to an asymptomatic, non-bleeding, inpatient with a hemoglobin level above 70 g/L!

Bloody Easy 5, 2023

Minimizing blood loss and need for transfusions in newborns

Test Your Knowledge

Posted: Nov 12, 2025

Hemoglobin Thresholds in Neonates

TABLE 1
Suggested hemoglobin levels and hematocrit thresholds for transfusing infants with anemia of prematurity

Postnatal age	Respiratory support*	No respiratory support
Week 1	115 (35)	100 (30)
Week 2	100 (30)	85 (25)
Week 3 and older	85 (25)	75 (23)

Mitra, 2025

Ordering pRBCs

Volume:

- 10-15 mL/kg
- Can consider up to 20 mL/kg in specific clinical circumstances
- Be mindful of fluid overload, hyperviscosity (i.e., in patient with high WBC, SCD, etc.) when choosing your volume

Duration:

- Infuse over 3-4 hours IV

Blood Product Dosing

Product	Pediatric Dose (ml/kg)	Typical Adult Dose
RBC	10-15 ml/ kg	1 Unit ≈ 280-300 mL
Platelets	10-15 ml/kg	1 Unit ≈ 250-350 ml
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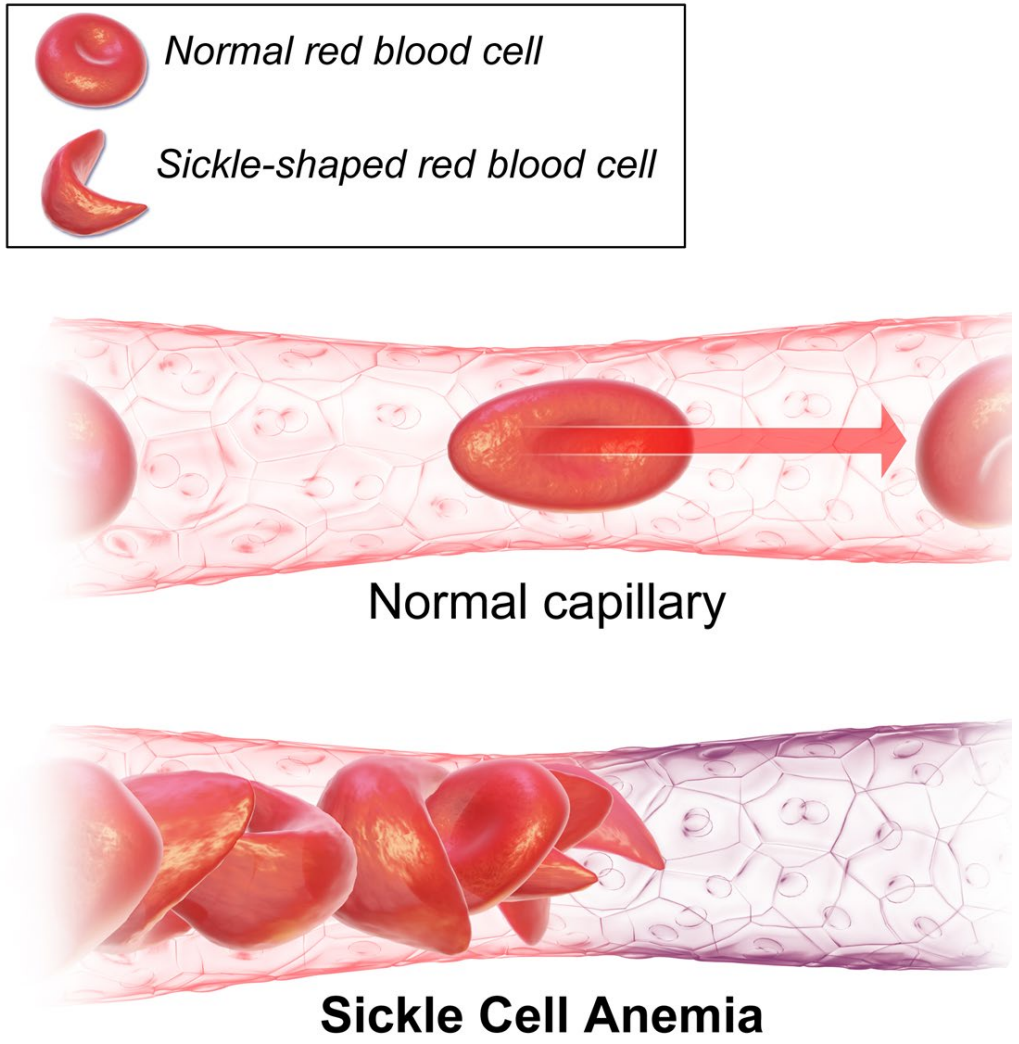
Special Populations

- Oncology/post-BMT patients
- Sickle cell disease
- Iron deficiency anemia
- Chronic anemia (i.e. thalassemia, Diamond-Blackfan anemia)
- Autoimmune hemolysis
- Cardiac disease

Sickle Cell Disease

- Characterized by presence of HbS
- Red cells have a curved, rigid shape
- Two main processes:
  - Vaso-occlusion → bony pain, acute chest, stroke, priapism, etc.
  - Chronic hemolysis → anemia

- Baseline Hb usually below lower limit of normal – varies across patients



Sickle Cell Disease

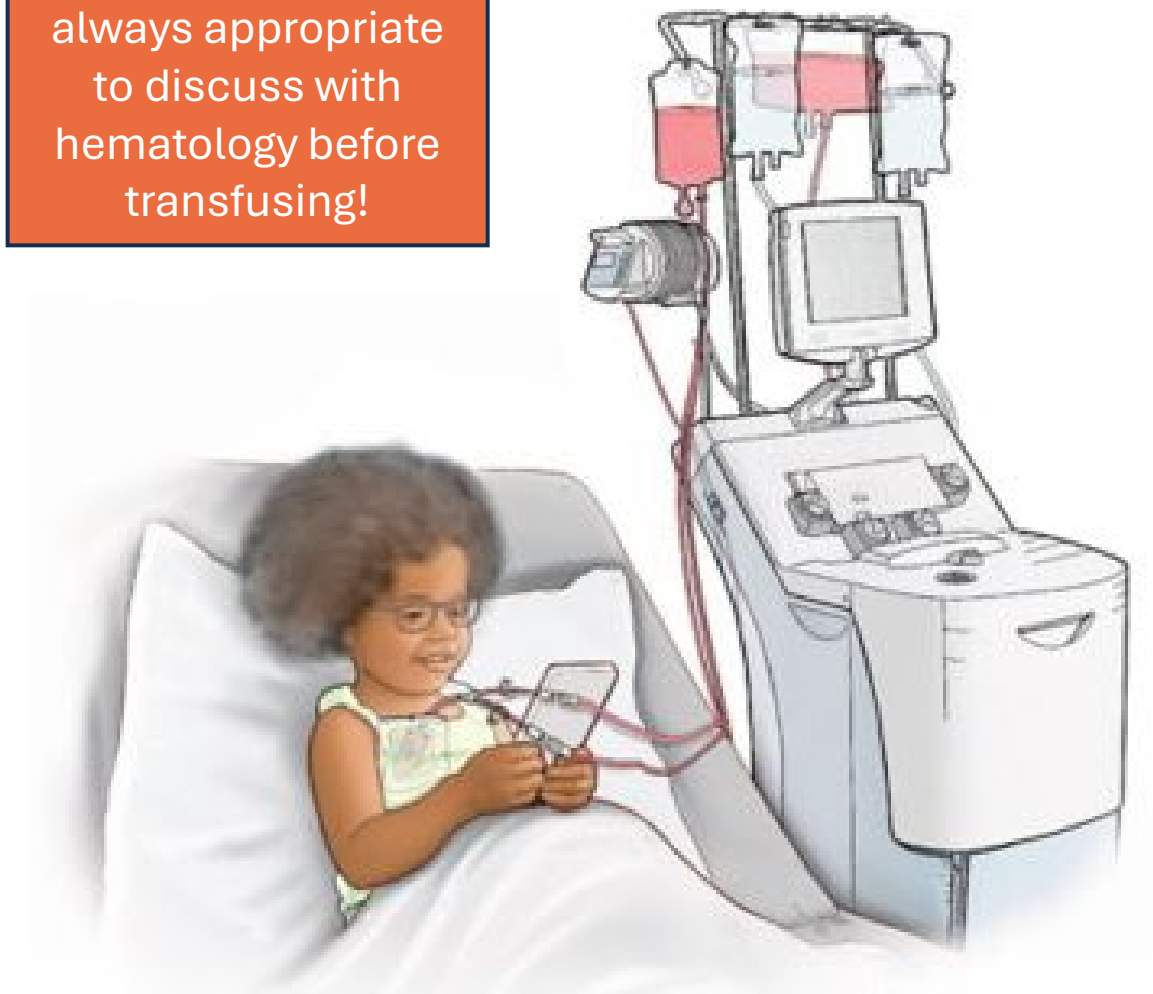
Transfusion Indications:

- Acute chest syndrome
- Acute stroke
- Primary & secondary stroke prevention
- Severe, acute anemia (aplastic crisis)
- Perioperatively

Complications*:

- Hemolytic transfusion reaction
- Alloimmunization → SCD patients require phenotypic matching

always appropriate to discuss with hematology before transfusing!



together.stjude.org

Iron Deficiency Anemia

- Extremely common in pediatrics
- Clues for diagnosis: toddlers, ++ milk intake, picky eaters, low Hb, low MCV – usually pale but well-appearing
- Gradual process → chronic anemia
- Compensated hemodynamics

- Can also correct the problem slowly
- PO elemental iron 6 mg/kg/day
- IV iron in some cases

CHOOSE WISELY



Don't transfuse red blood cells for iron deficiency anemia in asymptomatic pediatric patients when there is no evidence of hemodynamic instability or active bleeding.

*American Society of Hematology - American Society of Pediatric Hematology/Oncology

Bloody Easy 5, 2023

*Use local age-adjusted reference ranges when available

CLASSIFY IDA: MILD, MODERATE OR SEVERE

CAUTION!
There is no hemoglobin threshold below which a transfusion is required in an asymptomatic patient

Mild
(Hb > 100 g/L)

Start PO iron

Follow up in 2 – 4 weeks with repeat CBC, reticulocytes, ferritin

Moderate
(Hb 70 - 100 g/L)

Start PO iron
OR
If symptomatic, a single IV iron dose may produce a more rapid Hb response than PO iron alone

Follow up in 2 – 4 weeks (or 1-2 weeks if received IV iron) with repeat CBC, reticulocytes, ferritin

Severe
(Hb < 70 g/L)

Assess for signs of hemodynamic instability: hypotension, weak central pulses, ↓ LOC, ↓ urine output, lactic acidosis

STABLE

Start PO iron
OR
Consider IV iron if significant symptom burden (extreme fatigue, syncope/ presyncope) or concerns about adherence to PO iron (tolerance, adherence, absorption)

UNSTABLE

Contact Pediatric Referral Centre/PICU/ Transport Team

Transfuse PRBCs 5 mL/ kg/dose over 2-4 hrs

PO or IV iron supplementation required once stable

Admit to hospital if: signs of CHF, uncontrolled bleeding, severe malnutrition, need for inpatient investigations, concern regarding ability to follow-up.

Stable patients who are able to take oral iron can be discharged home.

Follow up in 1-2 weeks with repeat CBC, reticulocytes, ferritin. Consider referral to Pediatrics/Peds Hematology, if available.

trekk TRANSLATING EMERGENCY KNOWLEDGE FOR KIDS

Treatment Risks

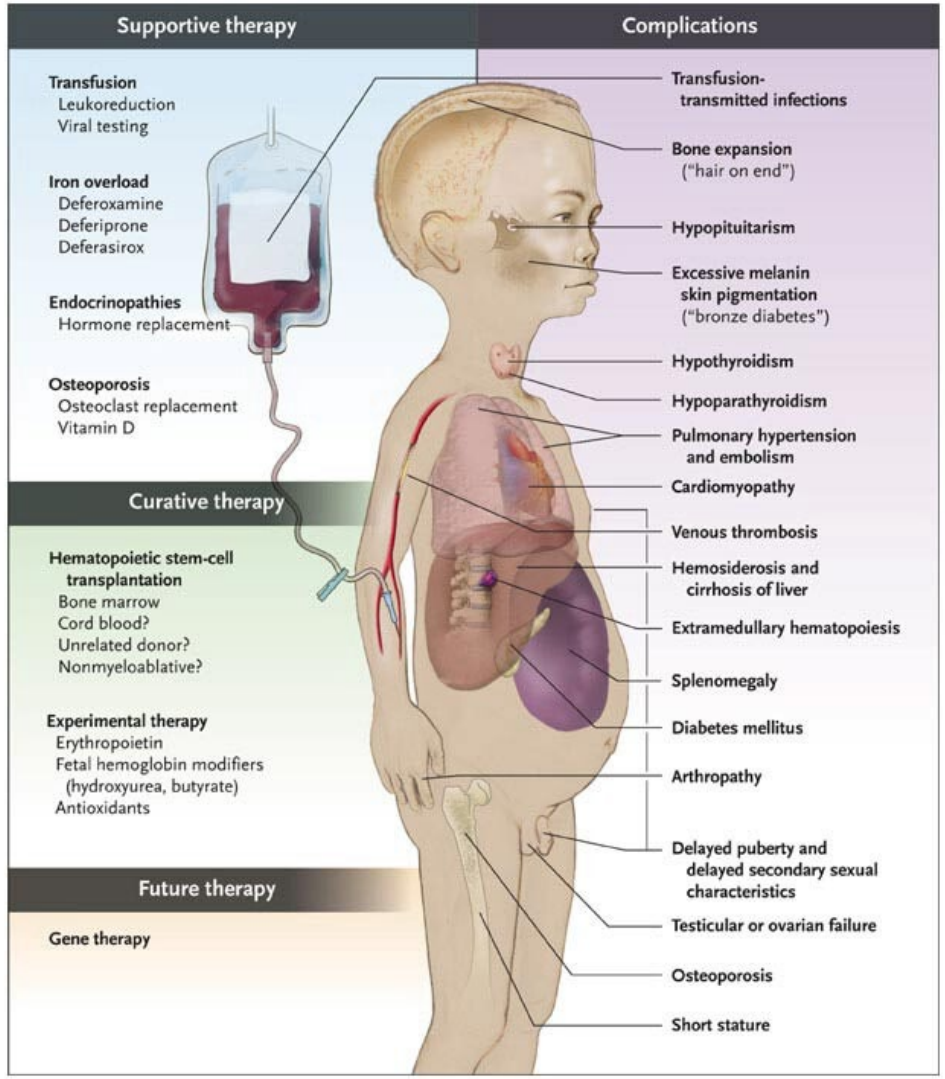
Transfusion: fever, Transfusion-Associated Circulatory Overload (TACO), allergic reaction, hemolysis, alloantibody formation, infection

IV iron: flushing, infusion reaction; anaphylaxis precautions required

PO iron: GI upset, constipation, teeth staining

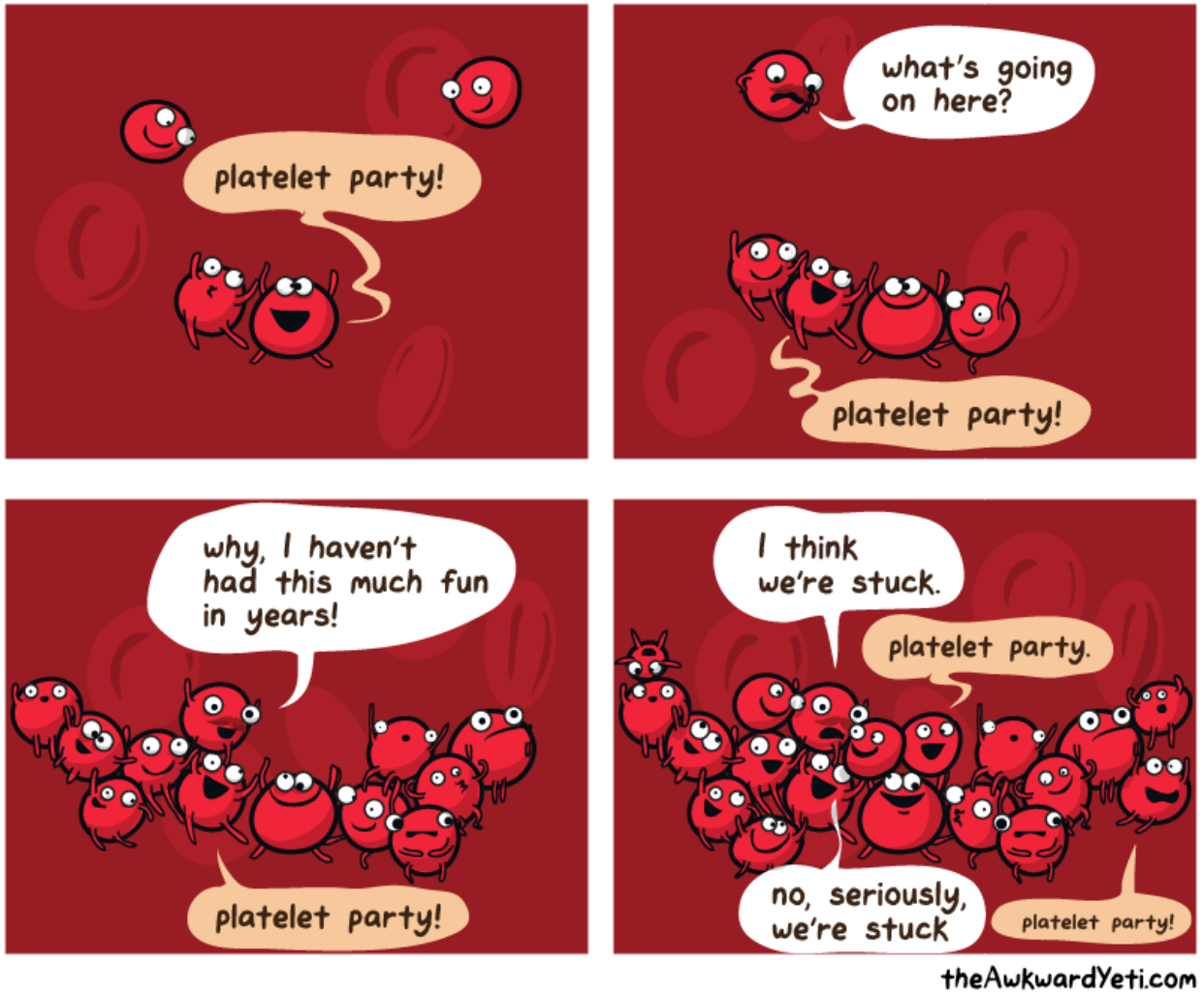
Chronic Transfusions

- Children who cannot make sufficient, sustainable, and/or functional red blood cells may require regular transfusions
- Hb thresholds may be different depending on underlying diagnosis and the individual
- Goal: maintain adequate Hb to support growth, development, and overall function
- Monitor & treat for iron overload



Rund, 2025

Platelets


platelet party!
what's going on here?
platelet party!
why, I haven't had this much fun in years!
platelet party!
I think we're stuck.
platelet party.
no, seriously, we're stuck
platelet party!
theAwkwardYeti.com

What do platelets do?

Platelets contribute to primary hemostasis by:

- Adhering to sites of vascular injury
- Activating and recruiting other platelets and key players
- Aggregating to form a platelet plug

Platelets are just one component of a complex hemostatic system

There are qualitative and quantitative platelet disorders

Causes of Thrombocytopenia

Decreased Production

- Myelosuppression due to chemotherapy/radiation
- Bone marrow failure

Increased Destruction

- Immune thrombocytopenia (ITP) / other immune-mediated processes
- Disseminated intravascular coagulation

Sequestration

- Splenic sequestration / splenomegaly

Symptoms of Thrombocytopenia

- Easy bruising
- Petechiae
- Purpura
- Mucocutaneous bleeding – epistaxis, gingival bleeding, prolonged bleeding from cuts
- Heavy menstrual bleeding
- Blood in urine and/or stool

Platelet Thresholds

Indications based largely on adult data, but these thresholds are used in both children and adults.

- Prophylactic transfusion is usually recommended for Plt 10 × 10^9/L
- Higher thresholds may be used with fever, instability, bleeding, and/or prior to a surgery or procedure

Bloody Easy 5, 2023

C Indications & Infusion Recommendations

PLT (x 10^9/L)	Clinical Setting	Suggest
<10	Non-immune thrombocytopenia	Transfuse 1 pool of platelets[15]
<10	Non-immune thrombocytopenia & HLA-alloimmunized	Transfuse 1 unit of HLA selected platelets[16]
<20	Low risk procedures (e.g., central line placement, lumbar puncture, paracentesis)	Transfuse 1 pool of platelets[17]
<30	High risk procedures in patients with cirrhosis	Transfuse 1 pool of platelets[17]
<30	Patient on anticoagulants that should not be stopped	Transfuse 1 pool of platelets[5,55]
<50	Procedures associated with blood loss or major surgery (>500 mL expected blood loss)	Transfuse 1 pool immediately before procedure[14,17,55]
<50	Immune thrombocytopenia	Transfuse platelets only with life-threatening bleeding[56]
<50-80	Epidural anesthesia	Transfuse 1 pool of platelets[57,58]
<100	Pre-neurosurgery or head trauma	Transfuse 1 pool of platelets[55,59]
Any	Platelet dysfunction and marked bleeding (e.g., post cardiopulmonary bypass). **Exception: Transfusing platelets for intracranial hemorrhage (ICH) not requiring surgical management in patients on antiplatelet agents leads to increased morbidity**	Transfuse 1 pool of platelets[14,60]

Platelets for Neonates

- Lots of interesting research about appropriate thresholds for platelet transfusion in neonates
- Still many questions remaining

- Generally, thresholds are slightly higher in the neonatal period (with some exceptions)



Pediatrics – Platelet Transfusion Guidelines for Neonates

Platelet Count (x 10⁹/L)	Clinical Indication	Dose
<25	Stable, non-bleeding[35,61,62]	up to 10 mL/kg of Pooled Platelets Psoralen Treated, and up to one standard adult dose.
<30	Neonatal Alloimmune Thrombocytopenia without severe bleeding[63]	up to 10 mL/kg of Pooled Platelets Psoralen Treated, and up to one standard adult dose.
<50	Bleeding, pre-surgery, coagulopathy[35]	up to 10 mL/kg of Pooled Platelets Psoralen Treated, and up to one standard adult dose.
<50	Neonatal allo-immune thrombocytopenia with intracranial hemorrhage and/or previously affected sibling with ICH[63]	up to 10 mL/kg of Pooled Platelets Psoralen Treated, and up to one standard adult dose.
<100	Major bleeding, neuraxial or ocular surgery[35]	up to 10 mL/kg of Pooled Platelets Psoralen Treated, and up to one standard adult dose.

When NOT to transfuse

CHOOSE WISELY

Don't transfuse platelets in the following situations:

- Platelet count above 10 x 10^9/L with no bleeding in anticipation of a drop to less than 10 x 10^9/L
- For patients with ITP without major hemorrhage, even when platelet count <10 x 10^9/L
- For patients undergoing procedures more than 6 hours later (give as close to procedure as feasible)
- For minor procedures with platelet counts >20 x 10^9/L (e.g., paracentesis or thoracentesis)

CHOOSE WISELY



ASH-ASPO 2019 CWC Pediatrics*

Don't transfuse platelets in an asymptomatic (i.e., non-bleeding) pediatric patient (e.g., aplastic anemia, leukemia, etc.), with a platelet count > 10x10^9/L unless other signs and/or symptoms for bleeding are present, or if the patient is to undergo an invasive procedure.

Ordering Platelets

Volume:

- 10 mL/kg
- Can consider up to 15-20 mL/kg in specific clinical circumstances

Duration:

- Infuse over 30-60 minutes IV

Blood Product Dosing

Product	Pediatric Dose (ml/kg)	Typical Adult Dose
RBC	10-15 ml/ kg	1 Unit ≈ 280-300 mL
Platelets	10-15 ml/kg	1 Unit ≈ 250-350 ml
Plasma	10-15 ml/kg	3-4 Units ≈ 750-1000ml
Cryoprecipitate*	1-2 U/10 kg	Adult Pool 150-200ml

Irradiation

Why Irradiate?

To prevent transfusion-associated graft-versus-host disease (TA-GVHD)

Irradiation specifically targets T-lymphocytes but does not damage any other components of the product.

TA-GVHD occurs when donor lymphocytes from transfused blood engraft in the recipient and cause disease. TA-GVHD can occur 10-14 days post transfusion with clinical features of fever, skin rash, hepatitis, diarrhea and pancytopenia. Very rare but believed to have high mortality.

Who Needs Irradiated Products?

Most patients receiving chemotherapy do NOT require irradiated blood products!

Important Canadian NAC indications include:

- Post-allogeneic BMT until >6 months post-BMT and off immunosuppression
- Post-autologous BMT until > 3 months
- Post-CART until >6 months
- For 7 days prior to a stem cell harvest
- Severe aplastic anemia receiving ATG
- Hodgkin Lymphoma
- Receiving fludarabine, cladribine, clofarabine, bendamustine, and nelarabine
- Certain congenital T-cell immunodeficiencies
- Intrauterine transfusion and specified subsequent neonatal transfusions

NAC Guidelines, 2023

Platelets no longer need irradiation

Pathogen-Reduced Platelets / Psoralen-Treated Platelets

- New pathogen inactivation technology for platelets implemented by CBS
- Amotosalen is a synthetic psoralen and an active photoreactive compound that intercalates with DNA/RNA of bacterial organisms and viruses. The compound is added to the platelets and becomes activated through exposure to ultraviolet A.
- Very effective in reducing pathogens
- Does not impact the efficacy or longevity of the platelets
- Effectively inactivates leukocytes as well, so irradiation is not required for these products

Blais-Normandin et al., 2022

Directed Donations

- Directed donations are units donated for a specific transfusion recipient, usually by a family member
- Currently in Canada, directed blood donations are recommended only for patients with rare blood types
  - In these cases, directed donations can be organized by CBS/HQ
- This is indicated only in RARE circumstances and should not be collected for routine indications
- The process is still subject to CBS/HQ protocol and donors (& units) must undergo the same rigorous screening processes

Prescribing & Administering

Before Ordering

Confirm:

- The indication and intended clinical endpoint
- Patient identity, weight and current clinical status
- Relevant laboratory results and transfusion history
- Consent or documented discussion as required
- Special requirements: irradiation, antigen matching or other modifications
- Correct product, dose, urgency and infusion plan

Consent

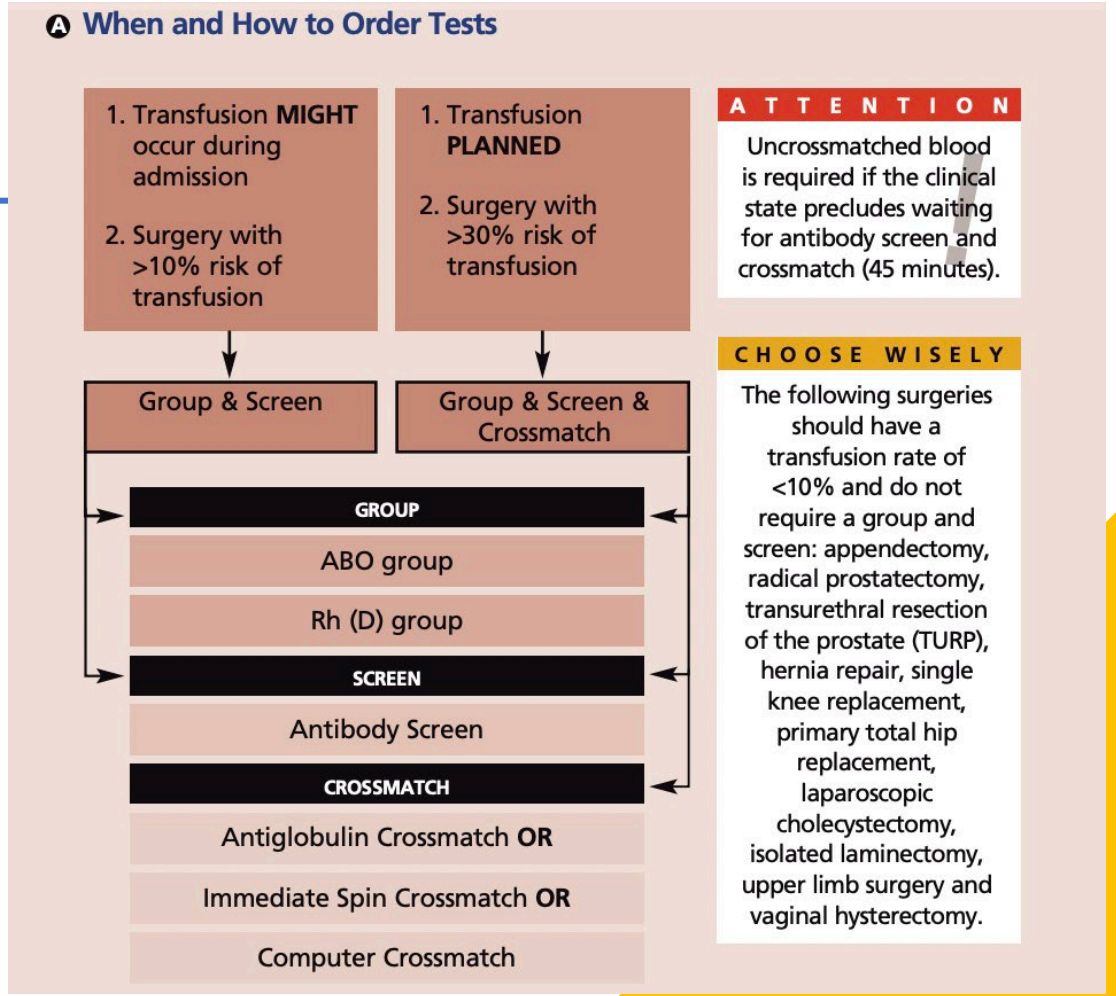
Consent is mandated by Transfusion Medicine Standards

Consent discussions should include:

- Description of blood or blood product
- Benefits of transfusion
- Risks of transfusion
- Alternative options
- An opportunity to ask questions

Compatibility

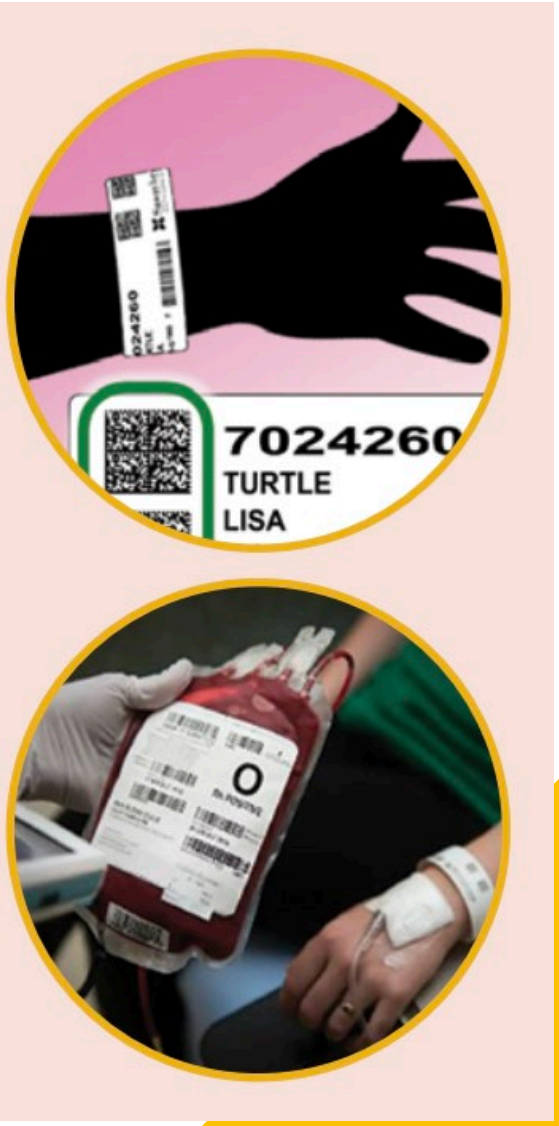
Test	Time (min)	Information
ABO group	5	Patient RBCs tested for A and B antigen.
Rh (D) group	5	Patient RBCs tested for D antigen.
Antibody Screen	45	Screens for RBC alloantibodies formed as a result of prior transfusion or pregnancy.
Antiglobulin Crossmatch	45	Mandatory for patients with RBC alloantibodies. Involves incubation of donor RBCs, recipient plasma/serum, and anti-IgG.
Immediate Spin Crossmatch	5	Testing involves mixing of donor RBCs and recipient plasma/serum. Used to verify ABO compatibility only.*
Computer Crossmatch	2	Computer selects appropriate unit (donor units must have been re-tested to confirm ABO group and recipient specimen must be tested twice). Used to verify ABO compatibility only.*



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Bedside Safety Checklist

- Right patient, right product, right dose
- T&S/Crossmatch samples must be correctly labeled with patient identification
- Before starting a transfusion, two team members must verify the patient's identity



Administration



Pediatrics [19,21]
For pediatric patients, transfuse slowly (1 mL/kg/h, up to 50 mL/h) for the first 15 minutes. Usual administration rate is 5 mL/kg/h, up to 150 mL/h.

Follow institutional guidelines for safe transfusion practices:

- RBCs must be transfused through a blood administration filter
- RBCs are compatible ONLY with normal saline
- Check vital signs before starting, 15 minutes after each unit, at end of transfusion (per institutional policy)
- Reassess promptly if any new symptoms of concern
- Transfuse slowly for the first 15 minutes
- 22-25G IV access recommended for pediatric patient

Transfusion Reactions

Types of Reactions (by symptom)

Fever
Acute hemolytic transfusion reaction
Febrile non-hemolytic transfusion reaction (FNHTR)
Bacterial sepsis or contamination

Dyspnea
Transfusion-related acute lung injury (TRALI)
Transfusion-associated circulatory overload (TACO)

Types of Reactions (by symptom)

Urticaria/Allergic Reaction

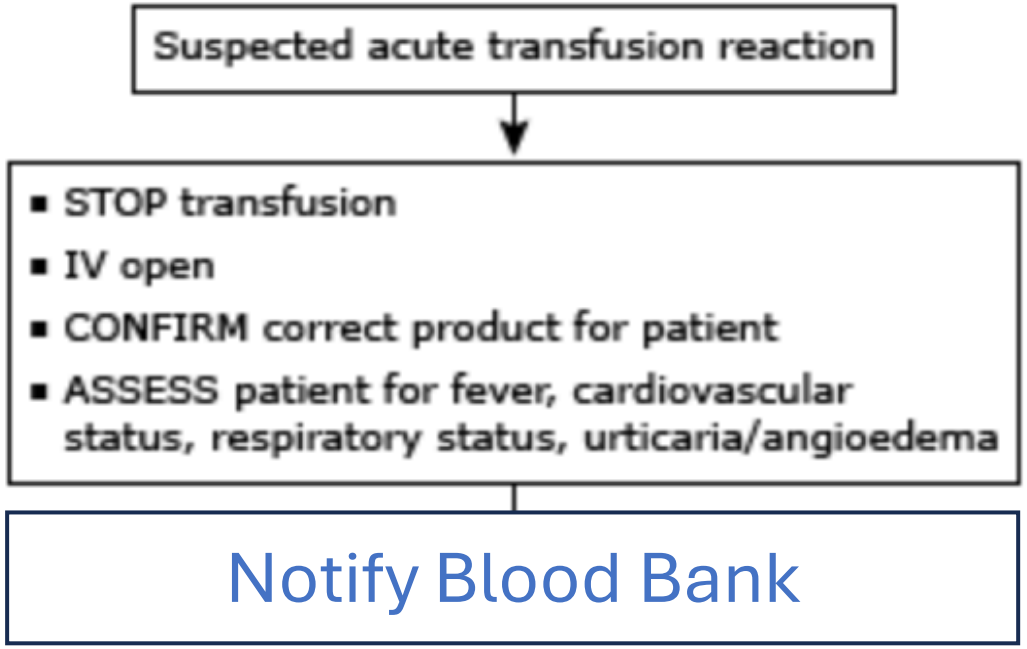
Minor allergic reaction / urticaria

Anaphylaxis

Hypotension

Bradykinin mediated hypotension

Approach to Suspected Reactions

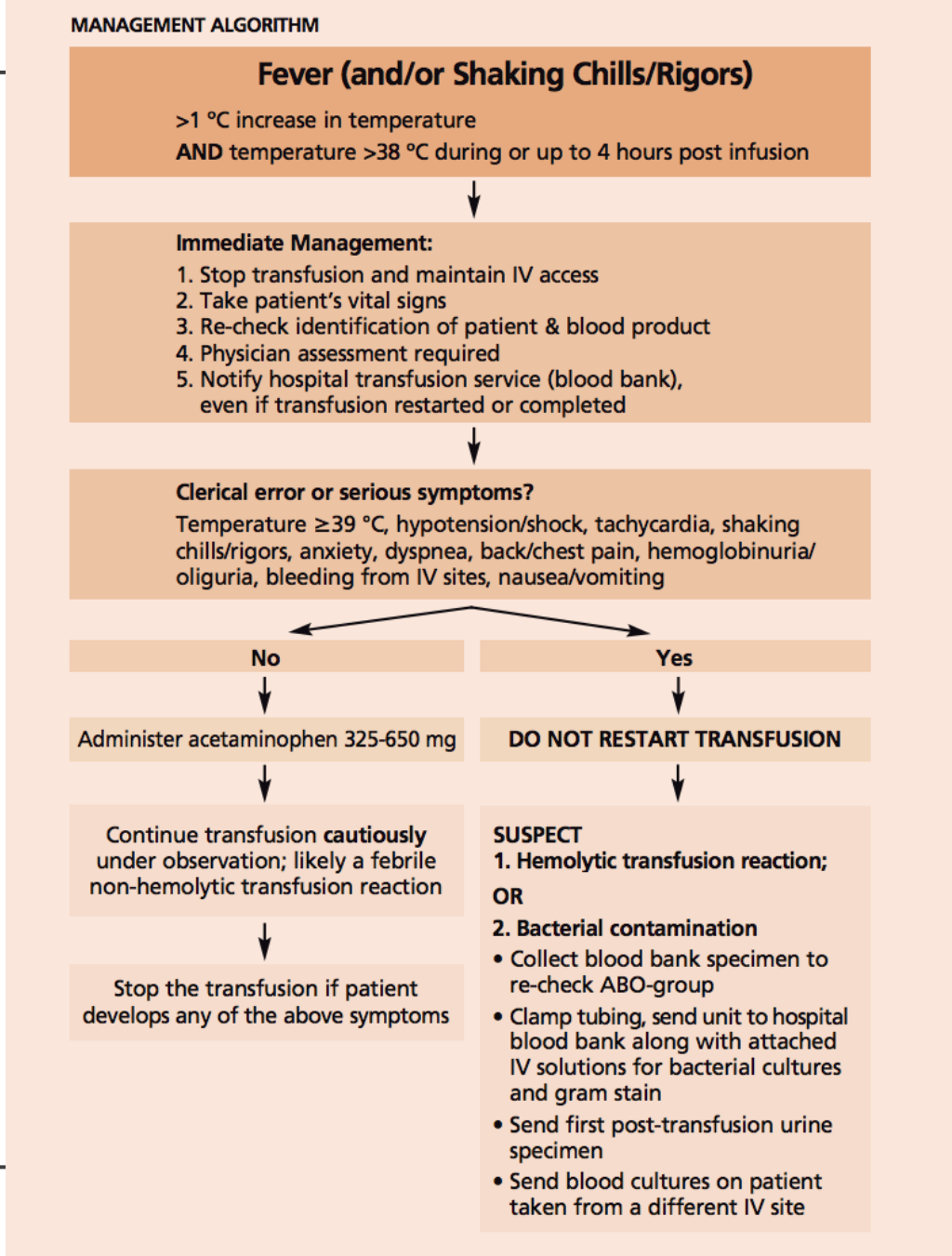


Fever

Bacterial sepsis

Acute hemolytic transfusion reaction

Febrile non-hemolytic transfusion reaction (FNHTR)



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Infection

Blood components can be contaminated by:
Skin commensals from the donor
- Unrecognized bacteremia in the donor
- Contamination from the environment/handling

Most of the time – gram-positive organisms

More common with platelets (stored at RT)

INCIDENCE[85,93,94,95,96,97]

	Bacterial Contamination	Symptomatic septic reactions	Fatal bacterial sepsis
Non-pathogen reduced platelet unit	1 in 2,500	1 in 10,000	1 in 200,000
1 unit of RBC	1 in 50,000	1 in 250,000	1 in 500,000

- Bacterial sepsis accounts for at least 10% of transfusion-associated fatalities.[98]
- Bacterial sepsis occurs most frequently with platelets due to their storage at 20-24 °C for preservation of function.

Gram-positive	Gram-negative
Bacillus species[a]	Klebsiella species
	Serratia species[a]
Streptococcus species	Escherichia coli[a]
Staphylococcus species[a]	Acinetobacter species
	Enterobacter species
Propionibacterium acnes	Providencia rettgeri
	Yersinia enterocolitica

[a]*Some of which are biofilm-producing species.*

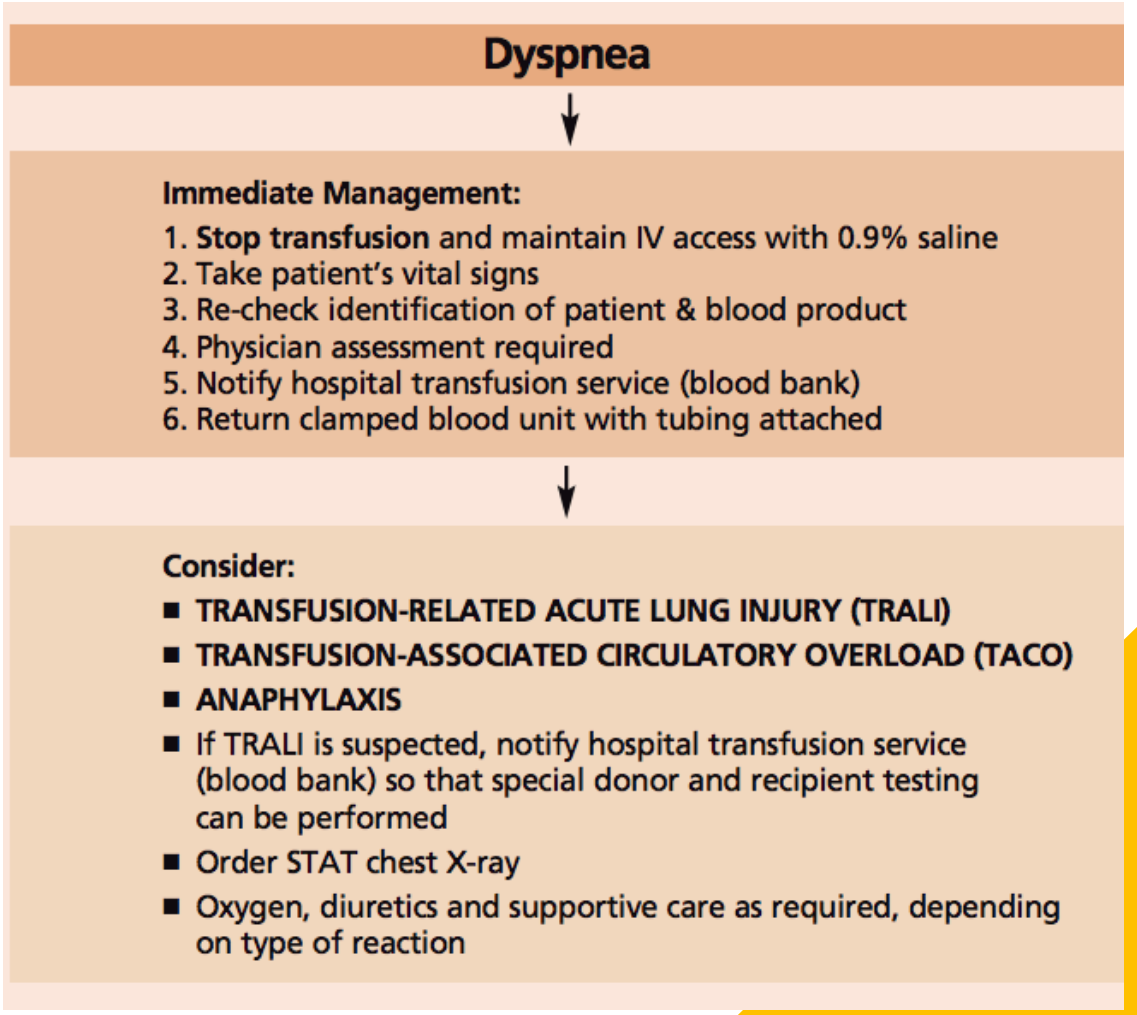
Bloody Easy 5, 2023

Dyspnea

TACO = Transfusion-Related Circulatory Overload

TRALI = Transfusion-Related Acute Lung Injury

Many overlapping features, but important to clinically distinguish as management strategies are different



Bloody Easy 5, 2023

TACO

Most common respiratory complication

Characterized by pulmonary edema and signs of fluid overload

Risk Factors:

- Large amount transfused over short interval
- Pre-existing cardiac/renal disease
- Small stature / low body weight
- Extremes of age (< 3 years or > 60 years)
- Hypoalbuminemia

Management – largely supportive:

1. Stop the transfusion
2. Supplemental O_2
3. Fluid mobilization (diuretics)
4. Assisted ventilation PRN

Prevention:

1. Avoid unnecessary transfusion
2. Transfuse smaller volumes
3. Transfuse slowly
4. Consider diuresis post/mid transfusion for some patients

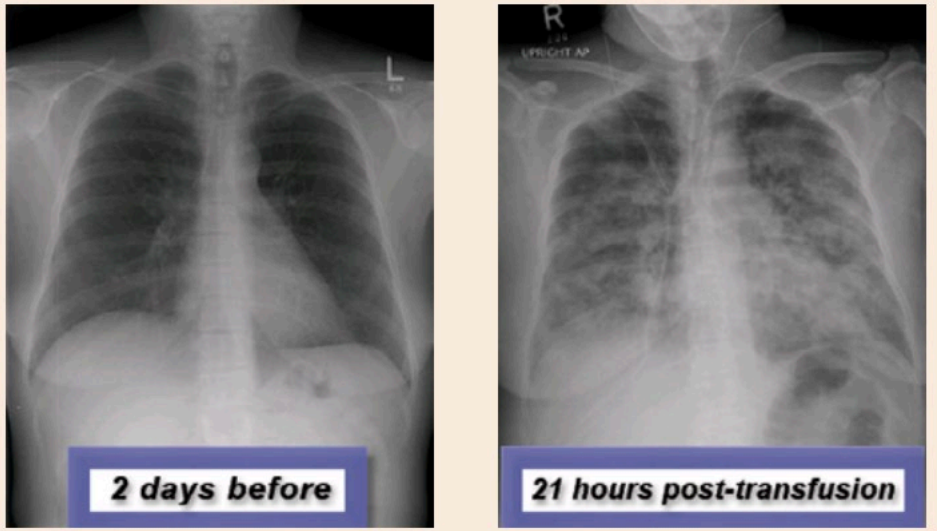
TRALI

- Rare but potentially fatal complication
- Pathophysiology complex and poorly understood

Risk factors:
- Cardiac surgery
- Sepsis
- Mechanical ventilation
- Critically ill patients (ICU)

Presentation: hypoxemia, hypotension

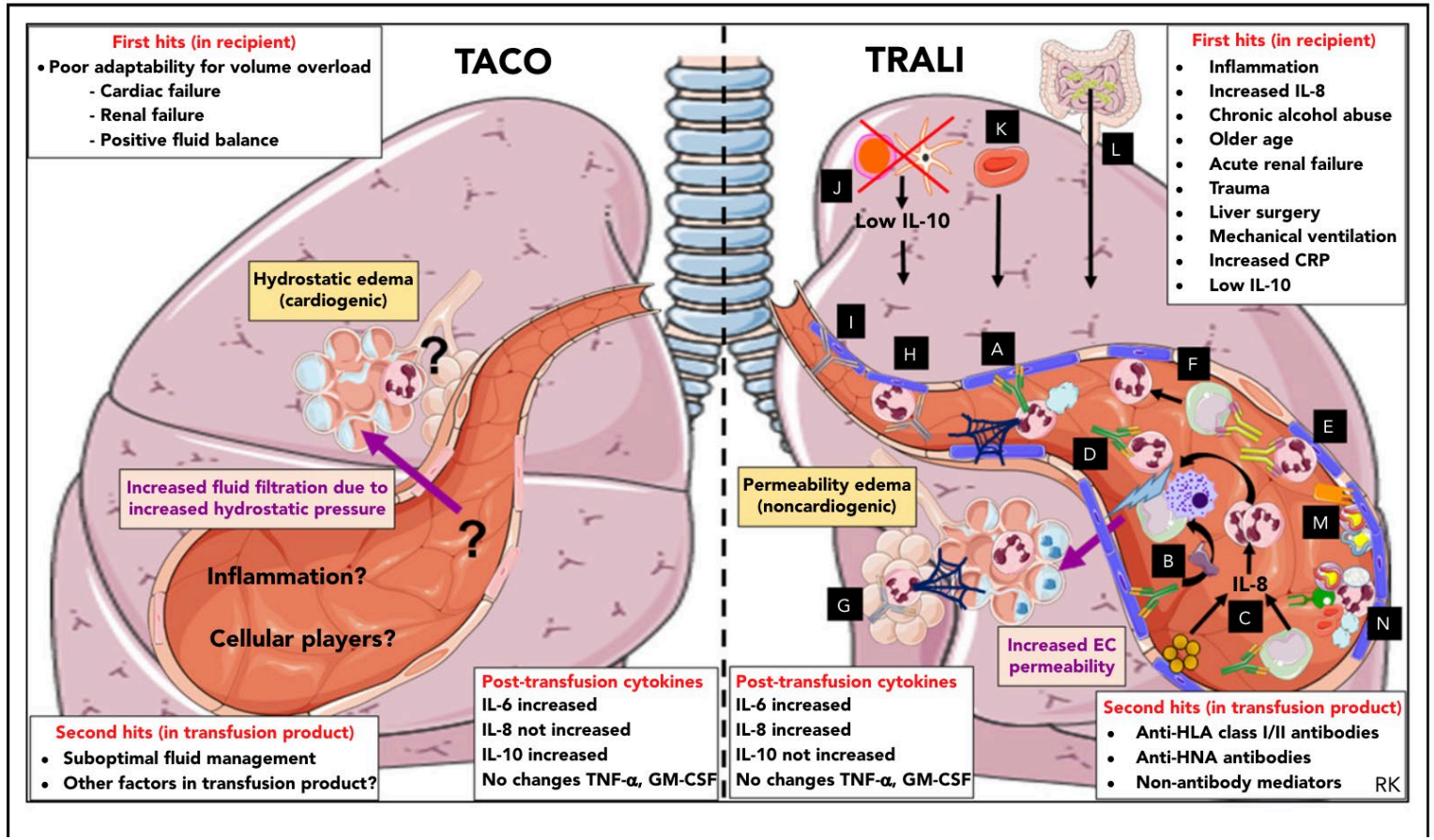
Chest X-ray of a patient before and during an episode of transfusion-related acute lung injury (TRALI)



Management:
1. Stop the transfusion
2. Notify blood bank
3. Supportive care
    1. Supplemental O2
    2. Ventilation if indicated
    3. Hypodynamic support

Bloody Easy 5, 2023

TACO vs TRALI



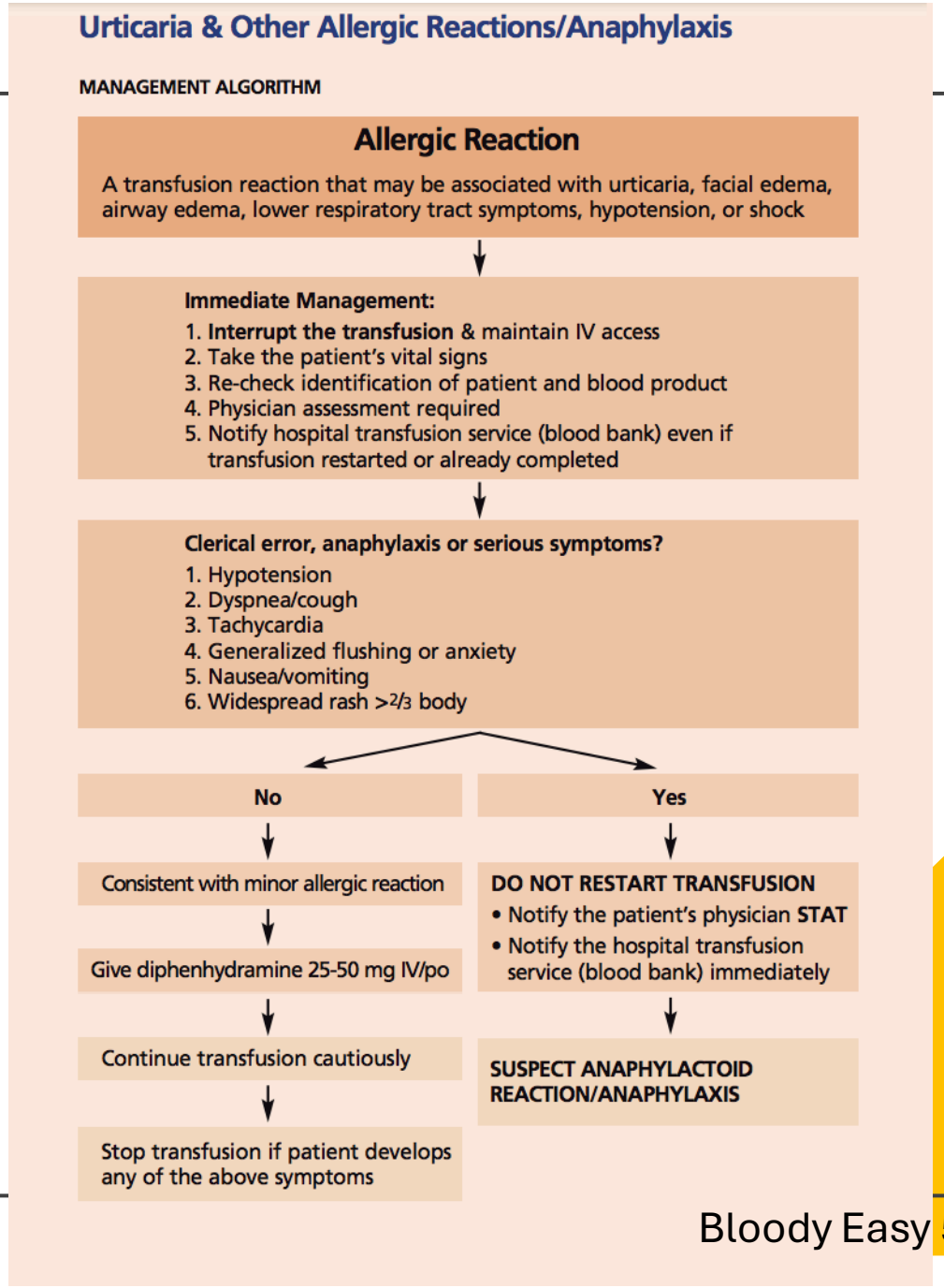
Semple et al., 2019

Allergic Reaction

Isolated, mild skin reaction:
- Give cetirizine
- Continue transfusion unless progression of symptoms

Suspicion for anaphylaxis:
- Stop transfusion, do not restart
- Treat anaphylaxis (epinephrine, etc.)

Future transfusions:
- Premedication



Bloody Easy 5, 2023

Hypotension



Pediatrics

Hypotension in children is defined as:

- Infants, children and adolescents (1 year to less than 18 years old):
  - Greater than 25% drop in systolic BP from baseline.
- Neonates and small infants (less than 1 year old OR any age and less than 12 kg body weight):
  - Greater than 25% drop in baseline value using whichever measurement is being recorded (e.g., mean BP).

Hypotension

>30 mmHg drop in systolic or diastolic blood pressure*

↓

Immediate Management:

1. **Stop the transfusion and maintain IV access**
2. Take patient's vital signs
3. Re-check identification of patient & blood product
4. Consider differential diagnosis
5. Physician assessment required

↓

Consider:

1. Acute hemolytic transfusion reaction
2. Bacterial sepsis
3. Severe febrile non-hemolytic transfusion reaction
4. Bradykinin mediated hypotension
5. Transfusion-related acute lung injury
6. Anaphylaxis

No unrelated to transfusion	**Yes**
↓	↓
Possibly resume transfusion after reassessing	Do not restart transfusion. Refer to appropriate sections.

** Definition refers to adult patients only*

Case #1

Janet is a 16-year-old girl with T-cell acute lymphoblastic leukemia (T-ALL), currently in the delayed intensification (DI) phase of her chemotherapy treatment.

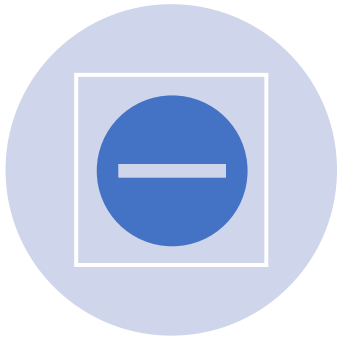
She is at home in Moncton and presents to her local hospital for a routine CBC. She is tired and pale but feels generally well. She has had no bleeding. She is afebrile and her vital signs are stable.

Her results show: WBC 0.9 x 10^9/L, Hb 68 g/L, Plt 9 x 10^9/L, and ANC 0.21 x 10^9/L

Does Janet need any blood products?



YES



NO

Case #2

Kevin is a 12-year-old boy with sickle cell disease. He is currently admitted to the pediatric unit in Charlottetown with a vaso-occlusive crisis involving his left knee. He has had no concurrent fever or respiratory distress.

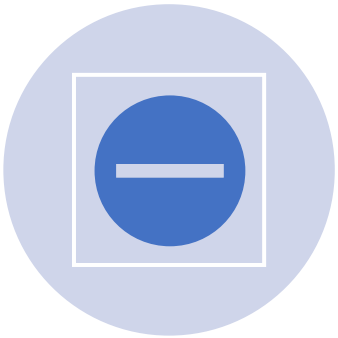
He is now day 4 of his admission. His pain has resolved and he is preparing for discharge.

His CBC today shows: WBC 10.4 x 10^9/L, Hb 65 g/L, Plt 387 x 10^9/L, & ANC 7.2 x 10^9/L

Does Kevin need a blood transfusion?



YES



NO



MORE INFO NEEDED

Case #3

Peter is a 22-month-old boy who is brought to the ED in Sydney because he has been eating dirt on the playground at daycare.

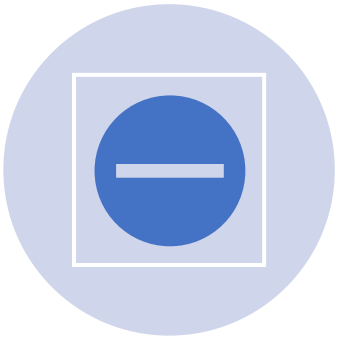
On examination, he is extremely pale but active and playful. He is afebrile, has mild tachycardia, and is normotensive.

His CBC shows: WBC 9.2 x 10^9/L, Hb 26 g/L, Plt 650 x 10^9/L, and ANC 6.4 x 10^9/L

Does Peter need a blood transfusion?



YES



NO



MORE INFO NEEDED

Recap

At the end of today's session, you should feel more comfortable:

-Knowing when to transfuse

- -Review indications for pRBC and platelet transfusion in pediatric patients

-Knowing how to prepare for transfusion

- -Review principles of crossmatching, consenting, and ordering blood products

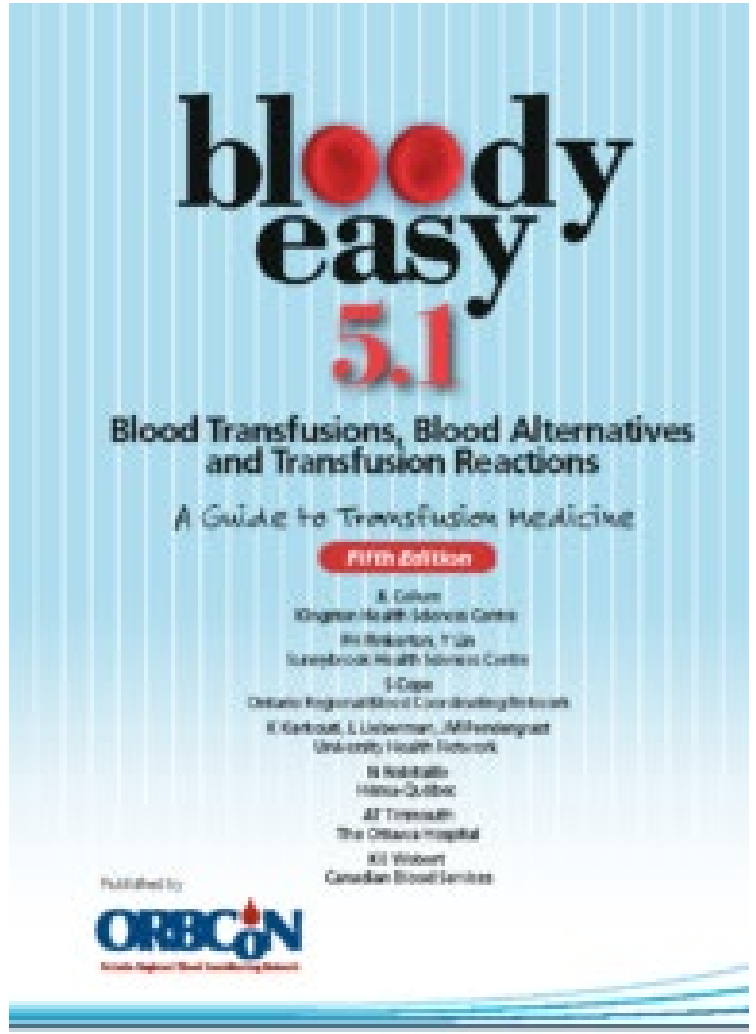
-Recognizing and responding to a transfusion reaction

- -Discuss how to identify, manage, & prevent common transfusion reactions

-Appreciate special considerations for specific populations

- -Leukoreduction, irradiation, extended crossmatch, etc.

Useful Resource



Thank You! Questions?

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