

# Welcome



TRANSFUSIONISTS TALK



TRANSFUSION MADE BLOODY EASY

**June 19, 2024**

**9:30 to 10:10 a.m. (EDT) and 2:30 to 3:10 p.m. (EDT)**

[As needed, optional, additional 15 minutes for questions & discussion]

**Transfusion Reaction Patient Care:  
Just a Little Fever ...**

Donna Berta RN, BScN, Clinical Project Coordinator – Nursing, ORBCoN

# Presentation Information

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The presentation is being recorded.  
As of June 28, 2024, slides & recording will  
be posted on [www.transfusionontario.org](http://www.transfusionontario.org).

Click Resources tab,  
Select Presentation Library, and  
Scroll to Transfusionists Talk.



# Disclosure

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*“This video conferenced event will be recorded, archived, and excerpts may be used for educational purposes. By participating, you indicate your consent to recording, archiving and use for educational purposes.”*

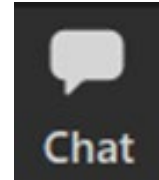


# Questions for Speaker

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During the presentation, enter comments & questions via the Zoom **Chat** function.



Following the presentation, the speaker will be available for an optional, additional 15 minutes to discuss any further questions.

If there are more questions than time permits, answers will be posted with the event recording at

[www.transfusionontario.org](http://www.transfusionontario.org)



# Practice Polling Question

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**What is your current role?**

- a) Front Line Nurse (RN, RPN).
- b) Nursing Educator.
- c) Transfusion Medicine Lab Technologist.
- d) Other.



# Transfusion Reaction Patient Care: Just a Little Fever ...

Donna Berta RN, BScN  
Clinical Project Coordinator – Nursing  
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June 19, 2024

# Speaker Disclosure

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- No commercial product conflicts of interest to declare.
- Transfusion Transmitted Injuries Surveillance System, member Education Committee.
- Canadian Society of Transfusion Medicine, member Standards Committee.



# Pre-Transfusion Knowledge Question 1

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Wilma, an 80-year-old female, day 2 post-surgery for a hip fracture has just received 1-unit RBC transfusion.

You are about to check her transfusion completed vital signs, when she tells you “My stomach is kind of upset, and my lower back is really sore”.

***You notify Wilma's physician of these post-transfusion comments.***

***The physician's reply: (select all applicable)***

- a) What are her vital signs right now compared to pre and during the transfusion?
- b) Those complaints are consistent with her post-surgery status (likely related to limited immobility, constipation), I am not concerned.
- c) Monitor vital signs q1h for 4 hours; report any changes ASAP.
- d) Notify TML, send TML the clamped empty blood bag, send blood samples for group & screen, CBC, bilirubin, LDH, AST, haptoglobin, reticulocyte count, blood film, send next voided urine for urinalysis.





# Pre-Transfusion Knowledge Question 2

Wilma:

Vital Signs	Temperature (°C)	BP (mmHg)	Pulse (per minute)	Respirations (per minute)	Oxygen Saturation (%)
25 minutes pre-transfusion	37	120/68	76	16	97
15 minutes after start transfusion	37.2	116/70	80	16	96
Transfusion completed	38	110/62	88	16	96

Your co-worker reports Wilma said she feels “chills” and has been given warm blankets.

***On review of vital signs & the symptoms, physician’s reply: (select all applicable)***

- a) Her temperature did not increase by greater than 1° C; this is not a transfusion reaction.
- b) Notify TML, send TML the clamped empty blood bag, send patient blood culture (from a different peripheral site).
- c) Initiate broad-spectrum IV antibiotics, immediately after patient blood culture drawn.
- d) Notify TML, send TML the clamped empty blood bag, send blood samples for group & screen, CBC, bilirubin, LDH, AST, haptoglobin, reticulocyte count, blood film, send next voided urine for urinalysis.



# Transfusion Reaction Patient Care: Just a Little Fever ...

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## Objectives:

- To recognize and understand the signs and symptoms of a transfusion reaction.
- To define nursing actions to manage fever during transfusion (patient care actions, and treatments; investigations, laboratory, and other tests; reporting).

## Outline:

- Transfusion reaction signs & symptoms
- If a transfusion reaction is suspected
- Transfusion and fever: indicative of ...
- Transfusion and fever: low risk verses high risk
- Summary: TTISS-ON Acute Transfusion Reaction Chart
- Take home message



# Patient Case - Pebbles

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Pebbles, a 33-year-old female, has almost completed induction chemotherapy for acute leukemia. Her clinical course is proceeding as anticipated.

Hb: 58 g/L. Order: Transfuse 1 unit RBC over 2 to 2 1/2 hrs.

Group & screen test: group A, Rh positive, antibody screen negative. Transfusion history: multiple RBC & platelet transfusions during this illness, all tolerated well; other than this, no previous transfusions.

TML issues RBC unit: group A, Rh positive at 0900 hrs.



# Pebbles: Question 1

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The RBC unit has been checked as per hospital policy & procedure.

***You then tell Pebbles (select all that apply):***

- a) “You’ve had lots of transfusions, you know the routine, only call me if you need me.”
- b) “Call me if you feel fevered or have chills, feel itchy or notice a rash, have any swelling, have any trouble breathing, feel short of breath, feel like you might throw up, have a headache or any new pain.”
- c) “Drink water, don’t have coffee or tea or anything with caffeine during the transfusion.”
- d) “I’ll be back to check on you throughout the transfusion but call me right away if you notice feeling any different than usual.”



# Transfusion Reaction Signs & Symptoms

Key signs and symptoms of a possible transfusion reaction are [SBE-4(p.47-67),44-6]:

1. FEVER
2. URTICARIA (Hives)
3. DYSPNEA
4. HYPOTENSION

Additional signs and symptoms of a possible transfusion reaction include [SBE-4(p.47-67),44-6]:

Airway or facial edema  
Anxiety  
Coughing  
Diffuse bleeding/oozing  
Hemoglobinuria  
Hypertension  
Itching  
Nausea/vomiting  
Pain (back, headache, IV site)  
Rash  
Shaking chills/rigors  
Subjective chills  
Tachycardia  
Urine colour– dark/red  
Wheezing

BEBA v3 p. 60

Unexpected, unusual or serious signs & symptoms must be recognized, patient care provided and followed up with TML.

## Key Signs & Symptoms

- Designated “key” based on how the reported reactions are categorized for hemovigilance data analysis (surveillance practices to monitor, report, investigate and analyze complication events; contributes to safety of the blood supply).

## Timeframe of Signs & Symptoms:

- May occur during the transfusion or within 4 hours following completion of the transfusion.
- Dyspnea reactions may occur during or up to 24 hours following completion of transfusion.



## Pebbles: Question 2 a

Time	Clinical Time Point	Volume infused	Temperature (°C)	BP (mmHg)	Pulse (per minute)	Respirations (per minute)	Oxygen Saturation (%)
0850	25 minutes pre-transfusion		36.9	115/60	60	12	98
0900	RBC unit issued from TML. RBC unit expires at 1300 hrs (must be completed or discard remainder)						
0915	Transfusion started at 50 mL/hr						
0930	15 minutes after start transfusion	12.5 mL	37	114/62	64	12	98
0930	Rate increased to 150 mL/hr						
→ 0945	Pebbles says she feels “warm”.						

Pebbles calls you 15 minutes after the rate was increased saying she feels “kind of warm”.



## Pebbles: Question 2 b

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***Your next step is (select all that apply):***

- a) Check her vital signs.
- b) Confirm her armband patient identification matches that on the transfusion label. Confirm the RBC's unit number matches that on the transfusion label.
- c) Stop the transfusion. Maintain IV access.
- d) Encourage Pebbles to drink ice water, remove her flannel blankets, and turn on the fan that is in her room.



# If a Transfusion Reaction is Suspected ...

The following actions should be taken IMMEDIATELY if a possible acute transfusion reaction is suspected

1. Stop the transfusion
2. Maintain IV access:
  - Either flush IV site with 0.9% sodium chloride flush syringes and then infuse an IV line with any IV solution TKVO
  - Or infuse 0.9% sodium chloride IV line TKVO  
[2CSA(11.4.11),3CSTM(5.9.4.4),11AC(22.6)]
3. Check vital signs
4. Verify that patient armband identification matches the transfusion label or tag
5. Verify that the blood component unit number/ blood product lot number matches the transfusion label or tag
6. Notify the prescriber but remain with the patient
7. Provide patient care as ordered by the prescriber
8. Report every reaction to Blood Bank/TML.  
If clarification is needed call Blood Bank/TML.  
[2CSA(18.1.1,18.2.1),3CSTM(5.9.4.11,7.2.1),11AC(26.0-1)]
9. Document the possible reaction on the patient's health record

BEBA v3 p. 61



Always stop the transfusion (# 1) & maintain IV access (# 2).

Use critical thinking skills to assess

- get more information (# 3)
- rule out when possible (# 4 & 5).

Confer with the prescriber (# 6).

Implement the plan (# 7).

Inform TML (# 8) – TML can help to ensure necessary testing is carried out.

Document per hospital policy/procedure (# 9).





## Pebbles: Question 3 a

Transfusion is stopped & IV access is maintained.  
Pebbles denies any other transfusion reaction symptoms.  
Her vital signs are assessed.

Time	Clinical Time Point	Volume infused	Temperature (° C)	BP (mmHg)	Pulse (per minute)	Respirations (per minute)	Oxygen Saturation (%)
0850	25 minutes pre-transfusion		36.9	115/60	60	12	98
0900	RBC unit issued from TML. RBC unit expires at 1300 hrs (must be completed or discard remainder)						
0915	Transfusion started at 50 mL/hr						
0930	15 minutes after start transfusion	12.5 mL	37	114/62	64	12	98
0930	Rate increased to 150 mL/hr						
0945	Pebbles says she feels "warm". Transfusion stopped & IV access maintained.						
0945	15 minutes after rate increased	50 mL (12.5+37.5)	38.2	118/60	62	12	97



## Pebbles: Question 3 b

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***You notify Pebbles' NP. The NP's reply: (select all applicable)***

- a) Give acetaminophen 1000 mg PO now, then reassess in 30 minutes.
- b) Notify TML, send TML the clamped blood bag, send blood samples for group & screen, CBC, bilirubin, LDH, AST, haptoglobin, reticulocyte count, blood film, send next voided urine for urinalysis.
- c) Discontinue this RBC unit and discard, request TML issue another RBC unit.
- d) Infuse 0.9% sodium chloride 500 mL IV over 20 minutes, then reassess in 30 minutes.



# Transfusion and Fever: Indicative of ...

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## What could be in blood that leads to a fever?

### *Some residual white blood cells*

- Patient inflammatory cytokines or antibodies against these white blood cells.

### *Contaminated with bacteria*

- Skin bacteria from venipuncture site, despite skin cleansing protocols & first 40 mL of blood collected from the donor is diverted into a pouch.
- Donor has bacteremia that has not been identified.
- From handling of the blood/the environment.

### *Incompatible blood*

- ABO incompatibility (clerical or labelling error or incorrect patient identification at sample collection or checking blood; testing error).
- Other blood group incompatibility (some 360 blood group antigens that patient could form an alloantibody against – alloimmunization; “clinically significant antibodies”).



# Pebbles: Continued

Time	Clinical Time Point	Volume infused	Temperature (° C)	BP (mmHg)	Pulse (per minute)	Respirations (per minute)	Oxygen Saturation (%)
0850	25 minutes pre-transfusion		36.9	115/60	60	12	98
0900	RBC unit issued from TML. RBC unit expires at 1300 hrs (must be completed or discard remainder)						
0915	Transfusion started at 50 mL/hr						
0930	15 minutes after start transfusion	12.5 mL	37	114/62	64	12	98
0930	Rate increased to 150 mL/hr						
0945	Pebbles says she feels "warm". Transfusion stopped & IV access maintained.						
0945	15 minutes after rate increased	50 mL (12.5+37.5)	38.2	118/60	62	12	97
0955	Acetaminophen 1000 mg PO given						
→ 1030	Reassess after Acetaminophen		37.5	110/58	60	12	97

## Reassess with NP

Order: Re-start transfusion at 125 mL/hour (250 mL RBC remains to be transfused, will be completed before expiry at 1300 hrs).

Monitor patient & check vital signs q 15 minutes x 2; then hourly until transfusion completed & for 4 hrs post-transfusion).



## Pebbles: Question 4 a

At the 15 minutes after re-start transfusion check, Pebbles has chills and starts shaking. Her vital signs are assessed. You immediately stop the transfusion, start 0.9% NaCl TKVO, call the NP from Pebbles' room.

Time	Clinical Time Point	Volume infused	Temperature (°C)	BP (mmHg)	Pulse (per minute)	Respirations (per minute)	Oxygen Saturation (%)
0850	25 minutes pre-transfusion		36.9	115/60	60	12	98
0900	RBC unit issued from TML. RBC unit expires at 1300 hrs (must be completed or discard remainder)						
0915	Transfusion started at 50 mL/hr						
0930	15 minutes after start transfusion	12.5 mL	37	114/62	64	12	98
0930	Rate increased to 150 mL/hr						
0945	Pebbles says she feels "warm". Transfusion stopped & IV access maintained.						
0945	15 minutes after rate increased	50 mL (12.5+37.5)	38.2	118/60	62	12	97
0955	Acetaminophen 1000 mg PO given						
1030	Reassess after Acetaminophen		37.5	110/58	60	12	97
1045	Re-start transfusion at 125 mL/hour (250 mL remains to be transfused, will be completed at 1245 hrs)						
→ 1100	15 minutes after re-start	81.25 mL (50+31.25)	39	90/50	108	14	97



## Pebbles: Question 4 b

***The NP's response: (select all applicable)***

- a) Infuse 0.9% sodium chloride 500 mL IV over 20 minutes.
- b) Assess patient (including urine output) and vital signs q 15 minutes.
- c) Notify TML, send TML the clamped blood bag, send patient blood culture (from a different peripheral site).
- d) Initiate broad-spectrum IV antibiotics, immediately after patient blood culture drawn.
- e) Notify TML, send TML the clamped blood bag, send blood samples for group & screen, CBC, bilirubin, LDH, AST, haptoglobin, reticulocyte count, blood film, send next voided urine for urinalysis.



# Pebbles: Possible Outcomes (1)

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*Serious, significant reaction to residual white blood cells in the RBC unit*

- Supportive care: antipyretics.
- Premedication: literature does not suggest prevents these reactions. In clinical practice for recurrent such reactions, possible trial of premedication.

*Serious, significant bacterial sepsis*

- Continue IV antibiotic until patient blood culture results known. If negative can discontinue antibiotic.
- Co-components from same donation tracked (quarantined/notification of MRP).
- Attributed to transfusion if identical bacteria is cultured from the blood & the patient.
- More frequently with platelet transfusion (stored at 20-24° C).



## Pebbles: Possible Outcomes (2)

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*Serious significant hemolysis (red blood cell breakdown) related to incompatibility*

- Supportive care: aggressive hydration for good urine output, IV fluid, vasopressors, oxygen, respiratory support. ABO incompatibility (clerical or labelling error or incorrect patient identification at sample collection or checking blood; testing error).
- Could lead to acute kidney injury, disseminated intravascular coagulation, even death.
- Pebbles might have formed an alloantibody via previous pregnancy, if this alloantibody level was not detectable, and then she was exposed to the corresponding antigen in this RBC transfusion, hemolysis could occur.

*Coincidental to transfusion*

- Symptoms are related to patient's underlying condition.





# General Question

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**If a patient has a fever prior to transfusion, can the transfusion be given?**

- a) Yes
- b) No

*A challenge, monitor closely!*

*Watch for trends in the fever, when was an antipyretic given.  
if fever increases, by how much.*



# Transfusion and Fever: Low Risk vs High Risk

SIGNS & SYMPTOMS	
<b>FEVER:</b> Temperature of at least 38° C and an increase of at least 1° C from pre-transfusion  <b>and/or</b>  Shaking Chills/Rigors  <b><u>NOTE:</u></b> Isolated symptom subjective chills, may consider as Low Risk	<b><u>Low Risk:</u></b> 38° C to 38.9° C but <b>NO</b> other symptoms
	<b><u>High Risk:</u></b> a) at least 38° C but <b>with</b> other symptoms  <b>or</b> b) 39° C or greater  <b>or</b> c) Shaking Chills/ Rigors

Excerpt from TTISS-ON Acute Reaction Chart

## Fever Defined

### Low Risk Fever:

- Give antipyretic & reassess.
- If blood is still viable, can re-start transfusion with close monitoring.

### High Risk Fever

- **DO NOT** re-start transfusion.
- Supportive patient care, including broad spectrum IV antibiotics.
- Serious reaction, notify TML immediately.
- Tests/investigations to determine/rule out the possible causes.



# TTISS-ON Acute Transfusion Reaction Chart (1)

## IMMEDIATE ACTIONS!

1. **STOP** the transfusion
2. Maintain **IV access**
3. Check **vital signs**
4. Verify **patient ID matches** transfusion label/tag
5. **Notify physician**
6. **Patient care per order, report every reaction to Transfusion Medicine Lab (TML), document per policy**



## TTISS-ON Acute Transfusion Reaction Chart

## SIGNS AND SYMPTOMS

FEVER, URTICARIA, DYSPNEA, HYPOTENSION

Airway or Facial Edema, Anxiety, Coughing, Diffuse bleeding/oozing, Hemoglobinuria, Hypertension, Itching, Nausea/Vomiting, Pain (Back, Headache, IV site), Rash, Shaking Chills/Rigors, Subjective chills, Tachycardia, Urine colour- dark/red, Wheezing

Consider Recommended Investigations and Suggested Treatment and Actions in the context of each patient's specific clinical scenario and blood component/product transfused. The initial presenting sign/symptom may evolve, if so re-contact TML. Close patient monitoring is essential.

For additional assistance, call TML at extension: \_\_\_\_\_

SIGNS & SYMPTOMS		TIMING	POSSIBLE ETIOLOGY	RECOMMENDED INVESTIGATIONS	SUGGESTED TREATMENT AND ACTIONS
<b>FEVER:</b> Temperature of at least 38° C and an increase of at least 1° C from pre-transfusion  <b>and/or</b>  Shaking Chills/Rigors  <b>NOTE:</b> Isolated symptom subjective chills, may consider as Low Risk	<b>Low Risk:</b> 38° C to 38.9° C but <b>NO</b> other symptoms  <b>High Risk:</b> a) at least 38° C but <b>with</b> other symptoms  <b>or</b> b) 39° C or greater  <b>or</b> c) Shaking Chills/Rigors	During or up to 4 hours post transfusion.  Often within first 15 minutes. During or up to 4 hours post transfusion.	Febrile non-hemolytic transfusion reaction  Febrile non-hemolytic transfusion reaction  Bacterial contamination  Acute hemolytic transfusion reaction	No testing required  <ul style="list-style-type: none"><li>• TML: Group &amp; Screen, DAT</li><li>• TML: Blood component culture</li><li>• Patient blood culture (from a different peripheral site)</li><li>• Urinalysis (first void post-reaction)</li><li>• Hemolysis work-up: CBC, bilirubin, LDH, AST, haptoglobin, reticulocyte count, blood film</li><li>• If indicated, assess for<ul style="list-style-type: none"><li>- AKI (Acute Kidney Injury) (electrolytes, creatinine)</li><li>- DIC (Disseminated Intravascular Coagulation) (INR, PTT, fibrinogen, D-dimer)</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Antipyretic</li><li>• With physician order and if blood still viable, may resume transfusion with close patient assessment</li><li>• If recurrent reactions, possible trial of antipyretic premedication</li></ul> <b>DO NOT restart transfusion</b> <ul style="list-style-type: none"><li>• Return blood to TML for clerical check &amp; culture</li><li>• Broad spectrum IV antibiotics; DO NOT wait for culture results</li><li>• Aggressive hydration; maintain good urine output</li><li>• Supportive care per physician's discretion: IV fluid, vasopressors, oxygen, respiratory support</li><li>• Monitor for hypotension, renal dysfunction, DIC {Disseminated Intravascular Coagulation}</li><li>• If severe rigors, consider meperidine (if no patient contraindications)</li><li>• <b>Serious reaction, call TML immediately</b></li></ul>
<b>URTICARIA (Hives)</b>  Rash  <b>or</b>  Itching	Less than 2/3 body surface but <b>NO</b> other symptoms  2/3 body surface or more but <b>NO</b> other symptoms  <b>With other symptoms, i.e.,</b> Airway or Facial Edema, DYSPNEA, HYPOTENSION	During or up to 4 hours post transfusion.  Often early in transfusion. During or up to 4 hours post transfusion.  Often early in transfusion. During or up to 4 hours post transfusion.	Minor allergic  Minor allergic (Extensive)  Anaphylactoid reaction /Anaphylaxis	No testing required  No testing required  <ul style="list-style-type: none"><li>• If also DYSPNEA: chest X-ray,</li><li>• If also hypoxia: blood gases</li><li>• Suggest consult Transfusion Medicine physician: explore if indication for<ul style="list-style-type: none"><li>- TML: Group &amp; Screen, DAT</li><li>- Haptoglobin</li><li>- IgA level (if pre-transfusion sample available)</li><li>- Anti-IgA testing (performed via Canadian Blood Services, TML will assist in sending samples)</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Antihistamine</li><li>• With physician order and if blood still viable, may resume transfusion with close patient assessment</li><li>• If recurrent/severe reactions, possible trial of antihistamine premedication</li></ul> <b>DO NOT restart transfusion</b> <ul style="list-style-type: none"><li>• Antihistamine; may require steroid if symptoms slow to resolve</li><li>• If recurrent/severe reactions, possible trial of antihistamine /steroid premedication</li><li>• If continued reactions with premedication, possible trial of washed/plasma depleted components</li></ul> <b>DO NOT restart transfusion</b> <ul style="list-style-type: none"><li>• <b>Epinephrine</b>; consider steroid, antihistamine</li><li>• Return blood to TML for clerical check</li><li>• Supportive care per physician's discretion: oxygen, respiratory support, vasopressors</li><li>• Pending outcome of investigations, washed/plasma depleted components</li><li>• <b>Serious reaction, call TML immediately</b></li></ul>

This document is intended for information purposes only. Hospitals may find this document provides guidance to be modified to align with their facility's policies and procedures.

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# TTISS-ON Acute Transfusion Reaction Chart (2)

SIGNS & SYMPTOMS		TIMING	POSSIBLE ETIOLOGY	RECOMMENDED INVESTIGATIONS	SUGGESTED TREATMENT AND ACTIONS
<b>DYSPNEA</b>  or  SpO <sub>2</sub> (oxygen saturation) of 90 % or less and a decrease of at least 5 % from pre-transfusion  or  intervention required to maintain SpO <sub>2</sub> (oxygen saturation)	With <b>Hypertension</b> , tachycardia, +/- FEVER	During or up to <b>12 hours</b> post transfusion	TACO* (Transfusion Associated Circulatory Overload)	<ul style="list-style-type: none"><li>TML: Group &amp; Screen, DAT</li><li>Consider chest x-ray: Findings - pulmonary edema, Kerley B lines, peri bronchial cuffing; may be pleural fluid</li><li>Cardiac biomarkers (as available)</li></ul>	<b>DO NOT restart transfusion</b> <ul style="list-style-type: none"><li>Oxygen, high fowler's position, diuretics (document fluid balance)</li><li><b>Future transfusion:</b> Slow transfusion rate Pre-transfusion diuretics ** Consider TML to divide unit (as available)</li></ul>
	<b>ACUTE DYSPNEA</b> With <b>HYPOTENSION</b> , tachycardia, +/- FEVER	During or up to <b>6 hours</b> post transfusion	TRALI (Transfusion Related Acute Lung Injury)	<ul style="list-style-type: none"><li>TML: Group &amp; Screen, DAT</li><li>Chest x-ray: Findings – bilateral interstitial /alveolar infiltrates without elevated pulmonary pressures</li><li>If also hypoxia: blood gases</li><li>Canadian Blood Services requires follow up information &amp; patient blood tests, contact TML, will assist in sending samples</li></ul>	<b>DO NOT restart transfusion</b> <ul style="list-style-type: none"><li>Supportive care per physician's discretion: oxygen, respiratory support, vasopressors (benefit uncertain for diuretics (document fluid balance), steroids, and bronchodilators)</li><li><b>Serious reaction, call TML immediately</b></li></ul>
	With FEVER +/- HYPOTENSION	Possible Etiology: Bacterial contamination, Acute hemolytic transfusion reaction <b>Consider/Follow FEVER, High Risk:</b> Timing, Recommended Investigations, Suggested Treatment and Actions			
	With URTICARIA, Airway or Facial Edema, HYPOTENSION	Possible Etiology: Anaphylactoid Reaction / Anaphylaxis <b>Consider/Follow URTICARIA, With other symptoms:</b> Timing, Recommended Investigations, Suggested Treatment and Actions			
<b>HYPOTENSION</b>  SBP (Systolic blood pressure) 80 mmHg or lower  <b>AND</b> from pre-transfusion SBP: - 30 mmHg or greater absolute decrease  <b>or</b> - 15 to 25 % or greater relative decrease  <b>or</b> - intervention required to maintain SBP	Mild respiratory symptoms that do not align with TACO or TRALI	During or up to <b>24 hours</b> post transfusion	TAD (Transfusion Associated Dyspnea)	<ul style="list-style-type: none"><li>Consider chest x-ray: Findings - normal/unchanged, no pulmonary edema, No bilateral interstitial/alveolar infiltrates</li></ul>	<b>DO NOT restart transfusion</b> <ul style="list-style-type: none"><li>Supportive care per physician's discretion: oxygen, respiratory support</li></ul>
	Alone or with facial flushing	During or up to 4 hours post transfusion	***Bradykinin mediated hypotension	No testing required	<b>DO NOT restart transfusion</b> <ul style="list-style-type: none"><li>Supportive care per physician's discretion: IV fluids</li><li>If taking ACE (angiotensin converting enzyme) inhibitor medication, consider an alternative anti-hypertensive agent prior to additional transfusion</li></ul>
	With FEVER, +/- DYSPNEA	Possible Etiology: Bacterial contamination, Acute hemolytic transfusion reaction <b>Consider/Follow FEVER, High Risk:</b> Timing, Recommended Investigations, Suggested Treatment and Actions			
	With URTICARIA, Airway or Facial Edema, DYSPNEA	Possible Etiology: Anaphylactoid Reaction / Anaphylaxis <b>Consider/Follow URTICARIA, With other symptoms:</b> Timing, Recommended Investigations, Suggested Treatment and Actions			
	With ACUTE DYSPNEA, tachycardia +/- FEVER	Possible Etiology: TRALI <b>Consider/Follow ACUTE DYSPNEA:</b> Timing, Recommended Investigations, Suggested Treatment and Actions			

\* TACO: Pre-transfusion assess patients for TACO risk factors: advanced age, history heart failure, history myocardial infarction, left ventricular dysfunction, renal dysfunction, positive fluid balance

\*\* Pre-transfusion diuretics: Furosemide PO: onset 30 to 60 minutes, maximal effect 1-2 hours, effect persists about 6-8 hours  
Furosemide IV: onset 5 minutes, maximal effect 20-60 minutes, effect persists about 2 hours

\*\*\* Bradykinin mediated hypotension  
Bradykinin is believed to have a major role in producing hypotension. Patients taking ACE (angiotensin converting enzyme) inhibitor medication - decreased bradykinin degradation related to increased angiotensin converting enzyme. Also, some individuals have genetic polymorphism leading to decreased bradykinin degradation.

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# TTISS-ON Acute Transfusion Reaction Chart (3)

## References

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# Transfusion Reaction Patient Care: Just a Little Fever ...

## Take Home Message

- Transfusion reactions are often complex, assume detective role.
- Patient care requires critical thinking, problem-solving skills.
- Prepare in advance for managing transfusion reactions.
- Presenting signs & symptoms may evolve quickly.
- Respect patient identification.
- When in doubt, refer to Acute Reaction Chart or call TML.
- Report reactions to TML.
- Document the details.





# Post-Transfusion Knowledge Question 1

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Wilma, an 80-year-old female, day 2 post-surgery for a hip fracture has just received 1-unit RBC transfusion.

You are about to check her transfusion completed vital signs, when she tells you “My stomach is kind of upset, and my lower back is really sore”.

***You notify Wilma's physician of these post-transfusion comments.***

***The physician's reply: (select all applicable)***

- a) What are her vital signs right now compared to pre and during the transfusion?
- b) Those complaints are consistent with her post-surgery status (likely related to limited immobility, constipation), I am not concerned.
- c) Monitor vital signs q1h for 4 hours; report any changes ASAP.
- d) Notify TML, send TML the clamped empty blood bag, send blood samples for group & screen, CBC, bilirubin, LDH, AST, haptoglobin, reticulocyte count, blood film, send next voided urine for urinalysis.



# Post-Transfusion Knowledge Question 2

Wilma:

Vital Signs	Temperature (°C)	BP (mmHg)	Pulse (per minute)	Respirations (per minute)	Oxygen Saturation (%)
25 minutes pre-transfusion	37	120/68	76	16	97
15 minutes after start transfusion	37.2	116/70	80	16	96
Transfusion completed	38	110/62	88	16	96

Your co-worker reports Wilma said she feels “chills” and has been given warm blankets.

***On review of vital signs & symptoms, physician’s reply: (select all applicable)***

- a) Her temperature did not increase by greater than 1° C; this is not a transfusion reaction.
- b) Notify TML, send TML the clamped empty blood bag, send patient blood culture (from a different peripheral site).
- c) Initiate broad-spectrum IV antibiotics, immediately after patient blood culture drawn.
- d) Notify TML, send TML the clamped empty blood bag, send blood samples for group & screen, CBC, bilirubin, LDH, AST, haptoglobin, reticulocyte count, blood film, send next voided urine for urinalysis.





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# Transfusion Reaction Patient Care: Just a Little Fever ...

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# Thank you!!

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Thank you to the organizing committee!!

Thank you for participating in this event!!



# Save the Dates!

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## Transfusionists Talk –

### Transfusion Made Bloody Easy

Discussion of challenging, unusual, interesting transfusion scenarios.

**Dates: September 18, 2024**  
**March 26, 2025**

**Times: 9:30 – 10:10 a.m. (EDT)**  
**2:30 – 3:10 p.m. (EDT)**

**To submit topics/cases, email:**

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