Table of Contents

NOTE: Standards include details specific to components and products separately at times. At times, standards include information for components and products collectively.

SHALL: The use of the term “shall” in the standards implies that the standard stated is mandatory. Failure to implement and comply with such standards means that the TS does not meet current acceptable expectations for the practice of transfusion medicine.

1. Pre-Transfusion Checks - Transfusionist

Transfusion order
CSA Z902-20 (11.4.3-4)

11.4.3

Transfusions shall be prescribed by a physician or other authorized prescriber and administered in accordance with operating procedures.

Note: *Authorization for this purpose should be based on the establishment's professional requirements in addition to the applicable regulatory and licensing requirements.*

11.4.4

The rate or duration of infusion should be specified either by a physician or other authorized prescriber, or in the SOP for transfusion.

Note: *Authorization for this purpose should be based on the establishment's professional requirements in addition to the applicable regulatory and licensing requirements.*

CSTM v5 2021 (5.9.1.4)

5.9.1.4

Transfusion of **blood components and blood products** shall be prescribed by an authorized prescriber. 11.4.3

The transfusion order shall specify:

a. recipient's first and last name and unique identification number
b. specific blood component or blood product required
c. amount, volume, dosage and/or concentration of the blood component or blood product
d. the date of the transfusion
e. the rate or duration of infusion, if not in the standard operating procedure for transfusion 11.4.4
f. the sequence in which multiple blood components or blood products are to be transfused
g. any modification to the blood component e.g., washing
h. special transfusion requirements e.g., irradiated
i. the use of a blood warmer or rapid infusion device, except for clinical areas where there is an established hospital policy and procedure 11.5
j. pre/post-transfusion medication orders related to the transfusion 10.2.1

Informed Consent
CSA Z902-20 (11.2.1)

11.2.1

A policy shall be in place for obtaining informed consent of the recipient prior to the transfusion of blood components or the administration of blood products. Information given to the recipient shall include

a) a description of the blood component or blood product;

b) the associated risks and benefits, including life-threatening risks; and
c) alternatives, if appropriate to clinical circumstances, including benefits and risks.

Note: *Policies for informed consent are usually developed and maintained by the health care facility as a whole. This Clause is intended to ensure that essential information about transfusion is included when blood components or blood products are involved.*

CSTM v5 2021 (5.9.1.1)

5.9.1.1

A policy shall be established to ensure that patients are appropriately informed before receiving **blood components and blood products** including informing the patient the following:

a. the blood component or blood product

b. transfusion risks and benefits

c. clinically appropriate alternatives to transfusion, including benefits and risks

The policy shall describe the process of obtaining recipient informed consent including the opportunity for recipients to ask questions and receive satisfactory answers. 11.2.1

IV established/patent

Components

CSA Z902-20 (11.4.6)

11.4.6

The transfusion of red blood cells shall be completed within 4 h of removing the unit from its controlled-temperature location.

CSTM v5 2021 (5.9.5.1)

5.9.5.1

Administration of red cells shall be completed within four hours from the time of removal from a temperature-controlled environment. 11.4.6

BEBA v3 (p. 28, 37)

Prior to obtaining the blood component from TML, ensure IV access site for the transfusion is established and patent. IV access must be dedicated to transfusion.

The time frame for transfusion is limited. Blood component transfusion must be completed within 4 hours of the time of issue (removal from the temperature controlled environment).

Products

CSA Z902-20 (14.1.2)

14.1.2

If a transfusion service is responsible for blood products, it shall have operating procedures for the receipt, handling, storage, preparation for administration (if applicable), and administration of those products. The procedures shall be designed to ensure that the blood product manufacturer's instructions are followed for each of the functions performed in the facility and that the performance of these functions is documented. The procedures shall be maintained as specified in Clause 4.6.1.6.

BEBA v3 (p. 39)

When blood product packaging/seal is opened, the product should be administered without delay, according to the manufacturer's instructions. Products in vials/glass bottles can be transfused for a maximum of 4 hours from the time that vial/ bottle was entered/spiked.

2. Pre-Transfusion Checks – Transfusion Service (TS)

Issuing/Transfusion Medicine (TM) patient identifiers
CSA Z902-20 (10.2.4, 10.10.3, 11.1.2.2, 14.4.3)

Components

10.2.4

The operating procedures for the issuing of blood components shall include steps to ensure there is sufficient information to link the blood component with the request and the intended recipient. Blood components shall not be issued by the transfusion service without the necessary information on the pick-up slip, which shall include at least the following:

a) the first and last names of the recipient;
b) the unique identification number of the recipient;
c) the recipient's location;
d) the blood component; and
e) the required quantity of the blood component or product being issued.

10.10.3

The transfusion service shall ensure that it has complete documentation for the blood component, including all records needed for identification and tracking.

11.1.2.2

A transfusion label or tag with the following information shall be attached securely to the container:

a) recipient's first and last name(s);
b) recipient's unique identification number;
c) recipient's ABO group;
d) recipient's RhD group (for red cells, granulocytes, and platelets);
e) recipient's compatibility status (for red cells and granulocytes);
f) date and time of issue (may appear on the tag/label, on the issue voucher, or on both the tag/label and issue voucher);
g) unit number or pooled unit number; and
h) volume, if different from the volume on the blood centre label (e.g., for pooled or split components), or quantity.

Products

14.3 Requests

Requests for blood products shall be documented and shall contain sufficient information to allow for unequivocal identification of the recipient.

The request shall include at least the following information:

a) the first and last names of the recipient;
b) the unique identification number of the recipient;
c) the recipient's location;
d) the blood product; and
e) the required quantity of the product.

CSTM v5 2021 (5.8.4.1, 5.8.2.6, 5.8.4.2)

5.8.4.1

A pickup slip shall be provided to the TS when **blood components or blood products** are requested to be issued. The information on the pickup slip shall include the recipient's location and the following information which shall be checked against the compatibility tag and label on the blood component or blood product prior to issue:
a. recipient's first and last name
b. recipient's unique identification number
c. type of blood component or blood product requested
d. required amount, volume, dosage and/or concentration if applicable 10.2.4
Discrepancies will be resolved before the blood component or blood product is issued.

5.8.2.6

The date and time of issue shall be readily available to the transfusionist.

5.8.4.2

The information on the compatibility label/tag shall be checked against the information on the **blood component or blood product**. When the information does not agree, the blood component or blood product shall not be issued for transfusion and the discrepancy shall be resolved. 11.3.2

3. Transfusion

Component/Product type received from TS matches that ordered
Checks done in the presence of the patient, at the bedside
CSA Z902-20 (11.3.1, 14.5)

Components

11.3.1

Before any transfusion of blood components, there shall be unequivocal identification of the recipient and of the component to be transfused to ensure they match the information in the documented request for blood components, as detailed in Items a) to f) in Clause 10.2.1. The person performing the transfusion shall confirm and document that all relevant information associating the blood component with the proposed recipient has been matched and verified in the physical presence of the recipient, as defined in the operating procedures.

Note: *Information matching and verification take place in the physical presence of the recipient so that a direct comparison can be made between the blood component request (see Clause 10.2.1) and the available visual information (e.g., on the recipient's identification band) or verbal information (from a conscious and competent recipient).*

Products

14.5 Administration

The procedures for administration of blood products shall address the same aspects as those for blood components in Clauses 11.1 to 11.4, including the requirements for informed consent.

At the time of administration, the recipient's medical chart shall be updated with the
a) lot number or identification number traceable to the lot number;
b) name of the product administered and volume/quantity;
c) date and time (both start and finish) of administration; and
d) identity of the person who administered the product.

Note: *The requirement to address the same aspects recognizes that certain specific requirements applying to blood components, for example storage times and conditions, cannot be directly applied to blood products; however, the transfusion service needs to be aware of the allowable storage times and conditions of the blood products it handles, and take these into account as part of its procedures.*

CSTM v5 2021 (5.9.3.1, 5.9.3.3)

5.9.3.1

Policies, processes, and procedures shall be established to ensure continuous and unequivocal identification of the recipient from the sample collection through to transfusion. 10.2.6/ 10.3/ 11.3.1/12.4.

5.9.3.3

In the presence of the recipient, the transfusionist shall confirm and document that all identifying information linking the recipient and the **blood component or blood product** matches. This includes confirming: 11.3.1

a. the authorized prescriber's order
b. recipient's identification band or approved alternate identification
c. transfusion label/tag

4. Patient Identification Checks

Verify TM patient identifiers
CSA Z902-20 (11.3.1, 12.4.3, 14.5)

Components

11.3.1

Before any transfusion of blood components, there shall be unequivocal identification of the recipient and of the component to be transfused to ensure they match the information in the documented request for blood components, as detailed in Items a) to f) in Clause 10.2.1. The person performing the transfusion shall confirm and document that all relevant information associating the blood component with the proposed recipient has been matched and verified in the physical presence of the recipient, as defined in the operating procedures.

Note: *Information matching and verification take place in the physical presence of the recipient so that a direct comparison can be made between the blood component request (see Clause 10.2.1) and the available visual information (e.g., on the recipient's identification band) or verbal information (from a conscious and competent recipient).*

12.4.3

An operating procedure shall be in place to ensure the accurate identity of the transfusion recipient. Clause 11.3 shall apply.

Products

14.5 Administration

The procedures for administration of blood products shall address the same aspects as those for blood components in Clauses 11.1 to 11.4, including the requirements for informed consent.

At the time of administration, the recipient's medical chart shall be updated with the

a) lot number or identification number traceable to the lot number;
b) name of the product administered and volume/quantity;
c) date and time (both start and finish) of administration; and
d) identity of the person who administered the product.

Note: *The requirement to address the same aspects recognizes that certain specific requirements applying to blood components, for example storage times and conditions, cannot be directly applied to blood products; however, the transfusion service needs to be aware of the allowable storage times and conditions of the blood products it handles, and take these into account as part of its procedures.*

CSTM v5 2021 (5.9.3.1, 5.9.3.3-4)

5.9.3.1

Policies, processes, and procedures shall be established to ensure continuous and unequivocal identification of the recipient from the sample collection through to transfusion. 10.2.6/ 10.3/ 11.3.1/12.4.

5.9.3.3

In the presence of the recipient, the transfusionist shall confirm and document that all identifying information linking the recipient and the blood component or blood product matches. This includes confirming: 11.3.1

a. the authorized prescriber's order
b. recipient's identification band or approved alternate identification
c. transfusion label/tag

5.9.3.4

Should any discrepancy be found in the identifying information the transfusion shall not be initiated until the discrepancy is resolved. 11.3.2

BEBA v3 (p. 35)

For all transfusion policies, processes and procedures, recipient identifiers include patient's surname, first name and unique hospital identification number.
Some hospitals utilize bar-code scanning (positive patient identification) systems.
Patient must be wearing an identification armband.

5. a) Component Checks

Verify ABO/Rh(D) blood groups (as appropriate for the component being transfused) of the patient and the component are identical or compatible
Red blood cells
CSA Z902-20 (10.7.1, 10.7.3, 10.9.3.1)

10.7.1

Recipients shall be transfused with ABO group-specific whole blood or ABO group-compatible red blood cells.

10.7.3

RhD positive recipients may receive red blood cells that are either RhD positive or RhD negative. RhD negative recipients should receive Rh-negative red blood cells. An RhD negative individual may be transfused with RhD positive red blood cells in circumstances of massive transfusion or when RhD negative blood components are in short supply, provided that the decision or policy has been approved by the medical director.

Note: *See Clause 11.9.7 for requirements relating to Rh Immune globulin.*

CSTM v5 2021 (5.4.2.1-3)

5.4.2.1

Recipients shall receive ABO compatible red cell components. 10.7.1

5.4.2.2

RhD negative and RhD unknown recipients should be transfused with RhD negative red cells. There shall be an established policy for the transfusion of RhD positive red cells to any RhD negative recipient. 10.7.3

5.4.2.3

RhD negative and RhD unknown females 45 years and younger of childbearing potential should receive RhD negative red cells, unless the situation is life-threatening and RhD negative red cells are not available. 10.r7.3/ 10.9.3.1

Plasma and platelets
CSA Z902-20 (10.7.6,10.7.8)

10.7.6

Plasma selected for transfusion shall be ABO compatible with the recipient's red blood cells but does not require compatibility testing. A policy shall be in place concerning group substitution when compatible plasma is not available.

10.7.8

The donor plasma in platelets should be ABO compatible with the recipient's red cells. A policy shall be in place concerning group substitution when compatible platelets are not available.

CSTM v5 2021 (5.4.3.1, 5.4.3.4)

5.4.3.1

Recipients should be transfused with plasma that is ABO compatible with their own red cells. 10.7.6

5.4.3.4

Recipients should be transfused with platelet concentrates in which the plasma is ABO compatible with the recipient's red cells. There shall be an established policy for ABO/RhD group substitution, including when platelets with group compatible plasma are not available. 10.7.8

Verify unit number
CSA Z902-20 (11.3.1)

11.3.1

Before any transfusion of blood components, there shall be unequivocal identification of the recipient and of the component to be transfused to ensure they match the information in the documented request for blood components, as detailed in Items a) to f) in Clause 10.2.1. The person performing the transfusion shall confirm and document that all relevant information associating the blood component with the proposed recipient has been matched and verified in the physical presence of the recipient, as defined in the operating procedures.

Note: *Information matching and verification take place in the physical presence of the recipient so that a direct comparison can be made between the blood component request (see Clause 10.2.1) and the available visual information (e.g., on the recipient's identification band) or verbal information (from a conscious and competent recipient).*

CSTM v5 2021 (5.9.3.2)

5.9.3.2

Immediately before transfusion, the transfusionist shall confirm that the **blood component or blood product** matches the transfusion label/tag. 11.3.1

Verify Expiry Time
CSA Z902-20 (11.4.5-6)

11.4.5

Blood components shall be maintained in a controlled environment at optimal temperature until released for transfusion. Table 2 shall apply.

11.4.6

The transfusion of red blood cells shall be completed within 4 h of removing the unit from its controlled-temperature location.

CSTM v5 2021 (5.8.2.6, 5.9.5.1)

5.8.2.6

The date and time of issue shall be readily available to the transfusionist.

5.9.5.1

Administration of red cells shall be completed within four hours from the time of removal from a temperature-controlled environment. 11.4.6

BEBA v3 (p. 37)

The Canadian Blood Services label includes the component expiry date.
This expiry date is based on the component being stored in its required temperature controlled environment. When a blood component is issued to a patient care area, it is no longer in a temperature controlled environment. The transfusion must be completed within 4 hours of the time of issue (removal from the temperature controlled environment).
Validate the expiry time based on the issue time [documented on component's TS label/tag on the blood bag and /or "chart" information record/label/tag (the information record/label/tag that will be added to the patient's health record to document the transfusion)].

5. b) Product Checks

Verify lot number
CSA Z902-20 (14.5)

14.5 Administration

The procedures for administration of blood products shall address the same aspects as those for blood components in Clauses 11.1 to 11.4, including the requirements for informed consent.

At the time of administration, the recipient's medical chart shall be updated with the

a) lot number or identification number traceable to the lot number;
b) name of the product administered and volume/quantity;
c) date and time (both start and finish) of administration; and
d) identity of the person who administered the product.

Note: *The requirement to address the same aspects recognizes that certain specific requirements applying to blood components, for example storage times and conditions, cannot be directly applied to blood products; however, the transfusion service needs to be aware of the allowable storage times and conditions of the blood products it handles, and take these into account as part of its procedures.*

CSTM v5 2021 (5.8.2.6, 5.9.3.2)

5.8.2.6

A transfusion label/tag shall be securely attached to all blood products issued from the TS.
This shall identify:
a. recipient's first and last name
b. recipient's unique identification number
c. lot/unique blood product identification number
d. type of blood product
e. volume/unit of dosage
The date and time of issue shall be readily available to the transfusionist.

5.9.3.2

Immediately before transfusion, the transfusionist shall confirm that the **blood component or blood product** matches the transfusion label/tag. 11.3.1

Verify Expiry Time
CSA Z902-20 (14.6.1)

14.6.1

Blood products shall be stored and transported in accordance with the environmental and handling conditions specified in the manufacturer's instructions. Blood products shall not be used after their expiration date unless it is with the documented approval of a physician.

CSTM v5 2021 (5.1.2.6)
5.1.2.6
Blood products shall be stored and reconstituted according to the manufacturer's instructions.

BEBA v3 (p. 39)
Blood product packaging includes the expiry date. The manufacturer's product label affixed to the vial or bottle also displays the product's expiry date.
This expiry date is based on the date the product was manufactured and sealed in its packaging. When the product packaging/seal is opened, the product should be administered without delay. Products in vials/bottles can be infused for a maximum of 4 hours from the time that vial/ bottle was entered/spiked.
Administer reconstituted products without delay. Some reconstituted products may be stable for a specified time period. Refer to the product package insert monograph.

6. Procedure Checks

Prepare the patient
BEBA v3 (p. 41)
Inform the patient of what to expect during the transfusion, including signs and symptoms of a transfusion reaction to be reported (shortness of breath/difficulty breathing, fever/chills, hives/itching, any feeling differing from usual).

Components
IV tubing and IV fluid
CSA Z902-20 (11.4.8-9)

11.4.8

Blood components shall be transfused through a sterile, pyrogen-free transfusion set that has a filter designed to retain particles potentially harmful to the recipient. See Clause 11.8 for filters for transfusion of granulocytes.

11.4.9

Before the infusion of blood components, the administration line and filter shall be primed with the blood component or a compatible solution. A sterile and non-pyrogenic 0.9% sodium chloride (NaCl) solution for intravenous use is recommended.

CSTM v5 2021 (5.9.4.1, 5.9.4.6)

5.9.4.1

Blood components shall be transfused through a standard sterile, pyrogen-free administration set that has a filter designed to retain particles potentially harmful to the patient (Adults: 170-260 microns, Pediatrics: refer to established hospital policy and procedure for filter size or standard administration set). For blood products refer to the product insert for filter requirement and size.) 11.4.8/ 11.4.12

5.9.4.6

A 0.9% sodium chloride solution for intravenous use or the blood component shall be used if the administration set requires priming for blood components. 11.4.9/ 11.4.11

Infusion rate

BEBA v3 (p.43)

For each unit, start transfusion at a slow rate (adults: 50 mL/hr; neonates/pediatrics: 1 mL/kg/hr, to maximum 50 mL/hr) for the first 15 minutes; can be deferred if acute bleeding /patient unstable

Reassess the patient after 15 minutes, if no indication of a transfusion reaction, then increase to the rate as ordered

Vital signs

CSA Z902-20 (11.4.15)

11.4.15

Recipient vital signs shall be recorded at least before transfusion, within 15 min after the start of transfusion, and after transfusion.

CSTM v5 2021 (5.9.4.10)

5.9.4.10

Recipient vital signs shall be monitored and documented before, at 15 minutes, and after transfusion. The recipient shall be monitored by qualified personnel for suspected adverse reactions during and after the transfusion. If direct medical monitoring is not possible after transfusion, the recipient or a responsible caregiver shall be given instructions concerning possible adverse reactions. 11.4.15/ 11.4.16

BEBA v3 (p.41, 44)

Vital signs and monitoring:

Minimum: within 30 minutes prior to starting, 15 minutes after starting, upon completion

Parameters: temperature, BP, pulse, respiratory rate, oxygen saturation; if Transfusion Associated Circulatory Overload risk, chest auscultation

Products

CSA Z902-20 (14.1.2)

14.1.2

If a transfusion service is responsible for blood products, it shall have operating procedures for the receipt, handling, storage, preparation for administration (if applicable), and administration of those products. The procedures shall be designed to ensure that the blood product manufacturer's instructions are followed for each of the functions performed in the facility and that the performance of these functions is documented. The procedures shall be maintained as specified in Clause 4.6.1.6.

Transfusion reactions
CSA Z902-20 (11.4.16)

11.4.16

The recipient shall be observed during the transfusion and for an appropriate time thereafter for suspected adverse events. Instructions concerning possible adverse events shall be provided to the recipient or to a responsible caregiver, when direct medical observation or monitoring of the recipient will not be available after transfusion.

Note: *See Clause 18 for information and requirements related to adverse events.*

CSTM v5 2021 (5.9.4.11)

5.9.4.11

In the event the patient exhibits signs of an adverse transfusion reaction, the transfusionist shall follow established hospital policy and procedure for management of adverse reactions. 18.1.1

7. Post-Transfusion

TS Label/Tag Label
CSA Z902-20 (11.3.3)

11.3.3

All identifying information attached to the blood bag shall remain attached at least until completion of the transfusion.

CSTM v5 2021 (5.9.3.5)

5.9.3.5

The transfusion label/tag shall remain attached to the blood component or blood product at least until completion of the transfusion. 11.3.3

Documentation and completing transfusion
CSA Z902-20 (11.1.2.2-4, 11.4.17, 14.5)

Components

11.1.2.2

A transfusion label or tag with the following information shall be attached securely to the container:

a) recipient's first and last name(s);
b) recipient's unique identification number;
c) recipient's ABO group;
d) recipient's RhD group (for red cells, granulocytes, and platelets);
e) recipient's compatibility status (for red cells and granulocytes);
f) date and time of issue (may appear on the tag/label, on the issue voucher, or on both the tag/label and issue voucher);
g) unit number or pooled unit number; and
h) volume, if different from the volume on the blood centre label (e.g., for pooled or split components), or quantity.

11.1.2.3

A blood transfusion record shall be completed for each blood component, or pooled or mixed component. It shall contain the information on the transfusion label or tag as specified in Clause 11.1.2.2. In addition, the transfusion record shall indicate the date and time of transfusion, the identity of the individual who administered the blood component, and any adverse reactions to the product transfused.

11.1.2.4

At the time of transfusion, the recipient's medical chart shall be updated with the following information:

a) unit number;
b) type of blood component transfused;
c) date and time (both start and finish) of transfusion; and
d) identity of the individual who administered the transfusion.

11.4.17

Following the transfusion, the blood transfusion record shall be added to the recipient's medical record. Clause 11.1.2.3 shall apply.

Products

14.5 Administration

The procedures for administration of blood products shall address the same aspects as those for blood components in Clauses 11.1 to 11.4, including the requirements for informed consent.

At the time of administration, the recipient's medical chart shall be updated with the

a) lot number or identification number traceable to the lot number;
b) name of the product administered and volume/quantity;
c) date and time (both start and finish) of administration; and
d) identity of the person who administered the product.

Note: *The requirement to address the same aspects recognizes that certain specific requirements applying to blood components, for example storage times and conditions, cannot be directly applied to blood products; however, the transfusion service needs to be aware of the allowable storage times and conditions of the blood products it handles, and take these into account as part of its procedures.*

Components / Products

CSTM v5 2021 (5.9.6.1)

5.9.6.1

A transfusion record shall be entered on the recipient's medical chart to include:

a. recipient's first and last name and unique identification number
b. recipient and donor ABO and RhD group (as appropriate for component)
c. recipient compatibility status (as appropriate for component)
d. unit/ lot number of blood component or blood product
e. type of blood component or blood product
f. volume/dose transfused
g. date and time of issue
h. start and finish date and time of transfusion
i. identity of the transfusionist
j. any adverse transfusion reactions11.1.2.2/ 11.1.2.3/ 11.1.2.4/ 11.4.17

Complete References

CSTM v5 2021
Canadian Society for Transfusion Medicine (CA) Standards for hospital transfusion services. Markham ON; 2021 Dec; cited 2022 Jun 14. 110 p. Report No.: Version 5.
Available from: http://www.transfusion.ca/Resources/Standards

CSA Z902-20
National Standard of Canada Canadian Standards Association (CA) Blood and blood components. Toronto ON; 2020 Mar 24; cited 2022 Jun 14. 162 p. Report No.: CAN/CSA-902:20.
Available from: https://community.csagroup.org/docs/DOC-126295

BEBA v3
Ontario Regional Blood Coordinating Network. Bloody easy blood administration. version 3. Toronto: Ontario Regional Blood Coordinating Network; 2020 [cited 2022 Jun 14]. 146p.
Available from: https://transfusionontario.org/en/category/bloody-easy-e-tools-publications/bloody-easy-blood-administration/