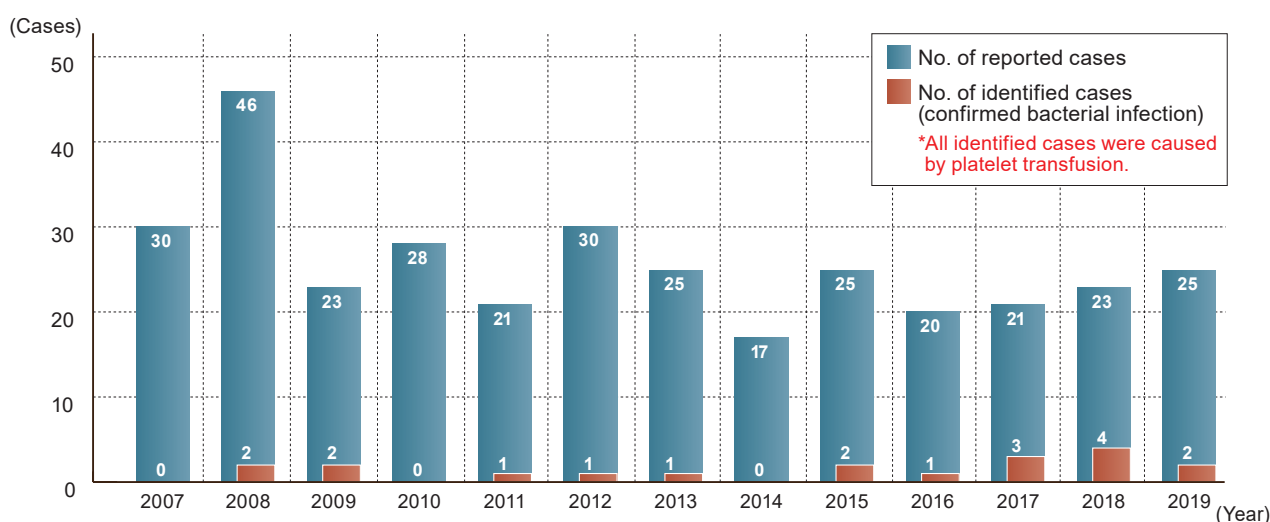


Transfusion-Transmitted Bacterial Infection (Cautions for platelet transfusion)

The Japanese Red Cross Society (JRCS) takes safety measures to prevent transfusion-transmitted bacterial infection (TTBI), such as enhanced donor interviews, thorough skin disinfection, diversion of the initial blood flow, pre-storage leukocyte reduction, and visual inspection of the blood components. In addition, the shelf life for platelets is set shorter compared to other countries. However, complete elimination of bacterial contamination in the blood bags is a challenging issue, and several cases of TTBIs are confirmed every year.

During the 13 years from 2007, when pre-storage leukocyte reduction and diversion of the initial blood flow were introduced for blood components, to 2019, TTBI was identified in 19 cases. All of these cases involved platelet transfusion. Six of these cases with aggregates or decreased flow rate at transfusion are described here, and the cautions for platelet transfusion are summarized.

Changes in the number of suspected TTBI cases (2007 to 2019)



Summary of TTBI case reports with abnormalities (aggregates, decreased flow rate)

Blood components (administration date)	Primary disease	Sex	Age	Onset time (After starting administration)	Detected bacteria	Details at transfusion
Ir-PC (2008.8)	Burkitt's lymphoma, etc.	M	50s	40 min	<i>Streptococcus dysgalactiae</i> subsp. <i>equisimilis</i> (Group G Haemolytic streptococcus)	Aggregates were noted in the blood bag 40 min after the start of transfusion, and the transfusion was discontinued.
Ir-PC-LR (2015.6)	Neuroblastoma	F	< 10 yrs	Unknown	<i>Staphylococcus aureus</i>	A clogged filter was noted during transfusion 2 hrs and 5 min after the bag had been dispensed, and the transfusion was discontinued. (Volume transfused: 17-18 mL)
Ir-PC-LR (2017.3)	MDS → AML	M	80s	5 hrs	<i>Lactococcus garvieae</i>	Dripping failure was noted 1 hr and 50 min after the start of transfusion, but the transfusion was continued. Deposits were noted in the line 2 hrs and 40 min after the start of transfusion. The transfusion was then discontinued 7 min later.
Ir-PC-HLA-LR (2017.12)	AML	F	30s	30 min	<i>Klebsiella pneumoniae</i>	White precipitates were noted in the blood bag and the line 15 min after the start of transfusion, and the transfusion was discontinued.
Ir-PC-LR (2019.4)	B-cell lymphoma	F	50s	Next day	<i>Staphylococcus aureus</i>	Decreased dripping rate was noted 5 min after the start of transfusion, and white precipitates were noted in the blood bag. The transfusion was thus discontinued.
Ir-PC-LR (2019.9)	MDS	M	40s	2 hrs 30 min	<i>Staphylococcus aureus</i>	Decreased flow rate was noted after the start of transfusion, and the transfusion was discontinued. Transfusion was restarted from another port of the same bag, and then the rest of the blood was administered.

Handling in case the flow rate decreases during transfusion

Change in appearance or precipitated aggregates may develop within a very short time. Stop the transfusion immediately when abnormalities such as decreased flow rate etc. are noted during the transfusion.

- **Check the vital signs of the patient** and report the results to the responsible physician.
- **Do not restart the transfusion** of the same components if any events of suspected bacterial contamination are noted.
- Even if no symptoms have been noted on the day of the transfusion, the patient must be followed up to check for the presence of bacterial infection symptoms for a few days.

Events of suspected bacterial contamination

Blood bag

- Abnormal color
- Aggregates, suspended matter, precipitates

Drip cylinder, filter

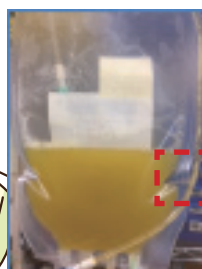
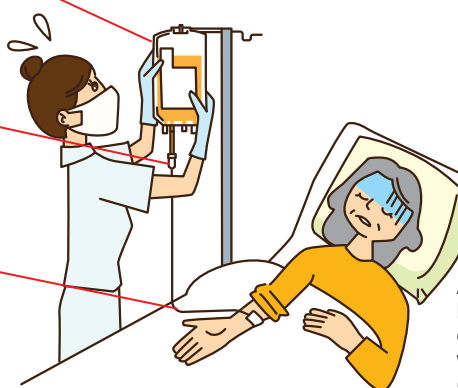
- Aggregates, precipitates
- Clogging

Transfusion line

- Aggregates, precipitates

Check for abnormalities in the general condition

Abnormalities of vital signs (high fever, blood pressure decreased [with a temporary increase], tachycardia), dyspnea, myalgia, etc.



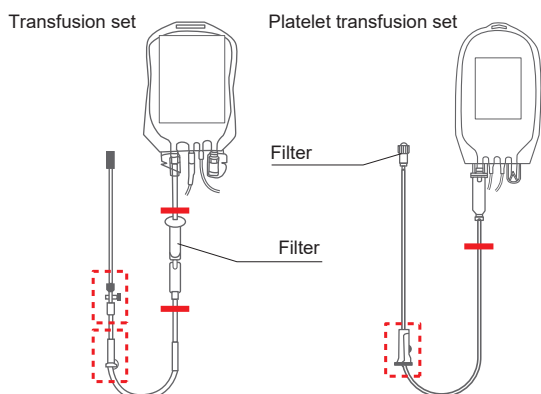
A case of white precipitates that formed in the line

No abnormalities were noted on visual inspection at the time of dispatch from the blood transfusion department, but precipitates were noted 15 min after the start of the transfusion. (The image was taken 45 min after the start of the transfusion.)

Handling in case bacterial infection is suspected

- Collect blood samples from the patient for blood culture, and then start proper antibiotic therapy.
- Bacterial culture test on the residual bag should be performed only when the specimen can be collected under aseptic conditions.

Storing residual bags



* The position of filters varies depending on the type of transfusion set.

Procedure for storing of residual bags

Red frame: Tighten the clamp and the three-way stopcock.

Red line: Seal the tube with a tube sealer (or forceps).
(If these items are not available, ligate the tube tightly.)

The residual bag must be put in a clean plastic bag and stored in a refrigerator (do not freeze).

In case of any adverse reactions and/or infections related to transfusion of blood components, please notify the medical representatives of your local JRC blood center immediately. Please provide the residual products, the recipient pre- and post-transfusion samples, and any other related materials; it is helpful to investigate and/or identify the cause. For storage of residual products and the recipient samples, refer to the "Guidelines for lookback studies of blood products."

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* For more information, please contact the medical representatives of your local JRC blood center.

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For blood products and transfusion information

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