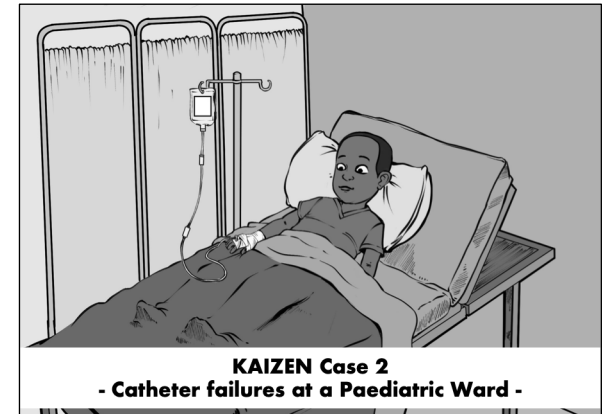


KAIZEN Case 2
- Catheter failures at a Paediatric Ward -

KAIZEN Case 2

Catheter failures at a Paediatric Ward



[Lines] 

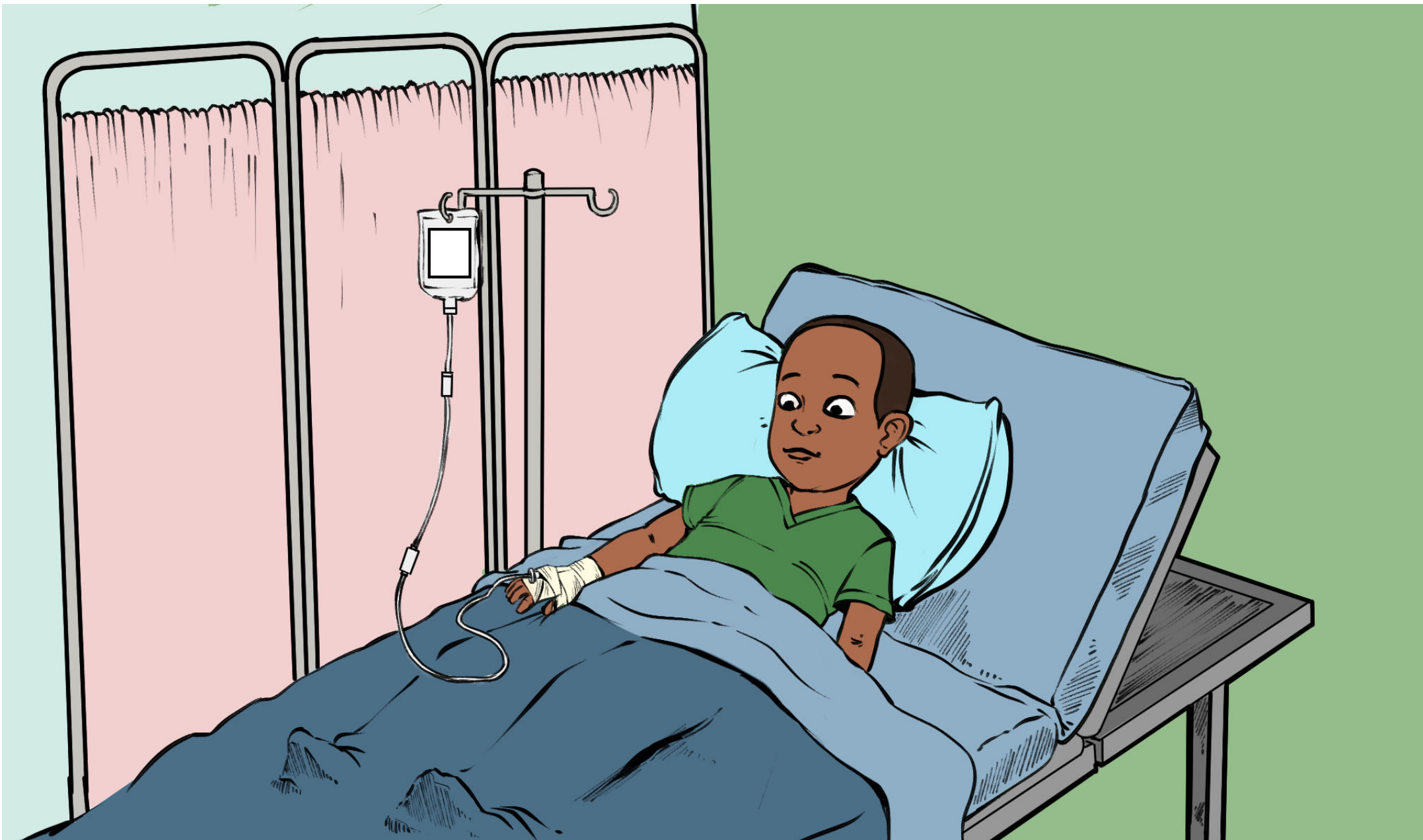
Hello, my name is Agnes. I'm a nurse working for a paediatric ward at ABC regional hospital. I'm also a member of the WIT, the work improvement team in this ward. Today, I'm going to share our experience in KAIZEN with you. As you can see from the title, we tackled the issue of catheter failures, which frequently happened in our ward.

[Tips]



This is a sort of monologue, so you can read the lines as if you are Agnes, who is a member of the WIT and carried out this KAIZEN project.

Setting: They began this KAIZEN project at the beginning of June 2020. They spent the first 2 months on steps 1-4, the next 2 months on step 5 and another 2 months on steps 6-7, for a total of 6 months to implement the project.



KAIZEN Case 2
- Catheter failures at a Paediatric Ward -

1



Step I: Theme selection

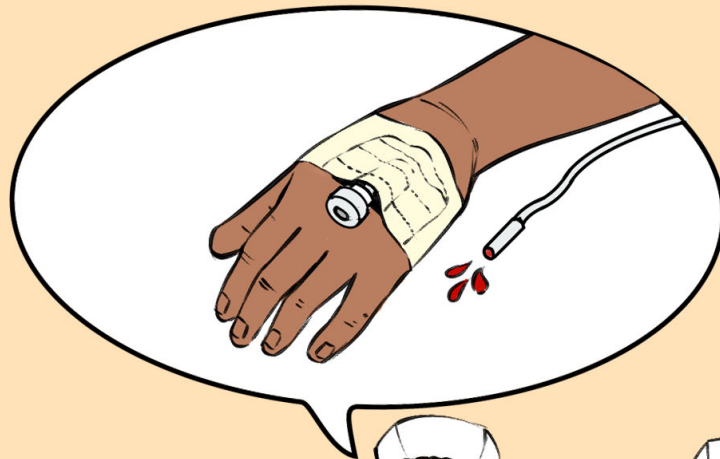
[Lines] 

It all started when we, the WIT members, were reading incident reports during a WIT meeting. We call these incident reports “hospital safety reports” and make good use of them to prevent the same incidents from happening again. One day, some of the members noticed that there seemed to be many incidents related to IVs, so we decided to review the reports of the last 2 months and classify the incidents by cause, so that we could compare the number of cases for each cause.

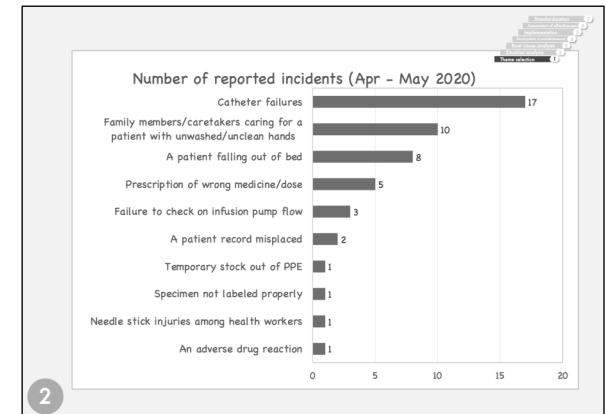


[Tips]

In this case, the KAIZEN theme was drawn from the incident reports, and they didn't use a matrix diagram to prioritize the issues as they regarded this issue as high priority.



Hospital Safety Report	
1. Date	9/1/1
2. Time	: (Am/Pm)
3. Dep. / Location	
4. Who was home - <u>un</u> ?	
<input checked="" type="checkbox"/> (1) Patient <input type="checkbox"/> (2) Hospital Staff <input type="checkbox"/> (3) Others	
5. Description of net <u>un</u> - <u>Pharm</u>	
<u>un</u> <u>un</u> <u>un</u> <u>un</u>	
6. Possible <u>un</u> - What does <u>un</u> <u>un</u> ?	
7. Type of <u>un</u> / <u>un</u> <u>un</u>	
(Please fill in <u>un</u> - <u>un</u>)	
<input type="checkbox"/> (1) <u>un</u> <input type="checkbox"/> (2) <u>un</u> <u>un</u>	
<input type="checkbox"/> (3) <u>un</u> <input checked="" type="checkbox"/> (4) <u>un</u> <u>un</u>	
8. Cont <u>un</u> <u>un</u> <u>un</u> <u>un</u>	



Step I: Theme selection

[Lines] 

And this is the result of our review: The bar chart shows that catheter failure is the leading cause of incidents in our ward, followed by care given with unwashed hands and falls from the bed.

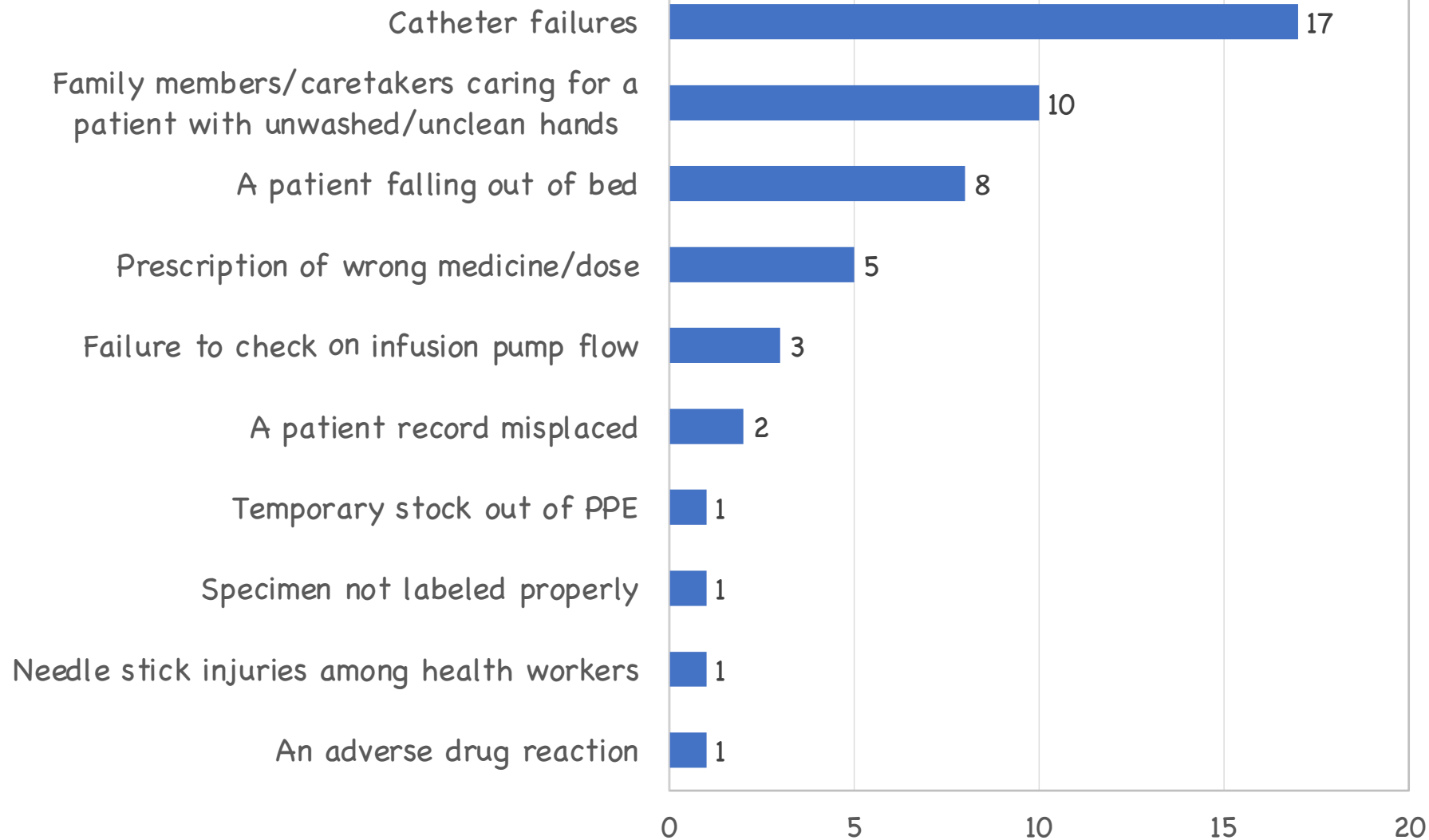
So we decided to take up the issue of catheter failure as the topic of our next KAIZEN activity. We decided that our KAIZEN theme would be “The number of incidents caused by catheter failure is reduced”. (*I)



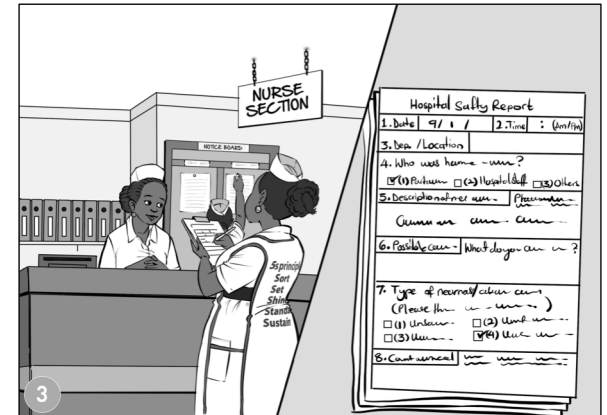
[Tips]

*I: Once you select the topic for your KAIZEN activity, you need to rephrase it into a positive statement. In this case, they did not set specific numerical targets (e.g. reduced by XX%), but it is recommended to do so if possible.

Number of reported incidents (Apr – May 2020)



Step 2: Situation analysis



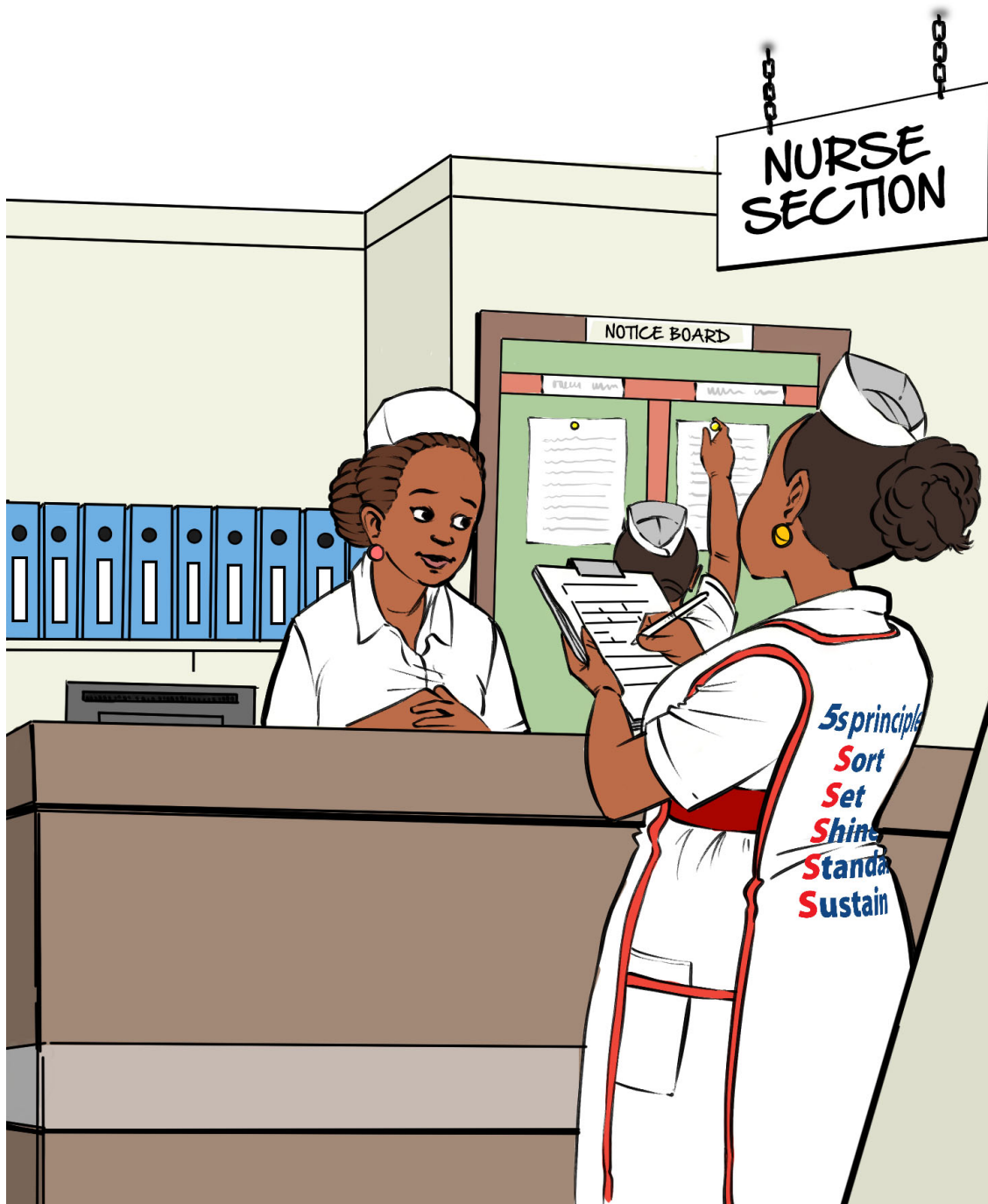
[Lines] 

What we needed to do next was to collect more information on catheter failures that happened in our ward, in order to know exactly what happened and why. We interviewed some nurses and also read the reports again carefully to find out the symptoms and complications patients might have experienced, and the circumstances of the incidents.



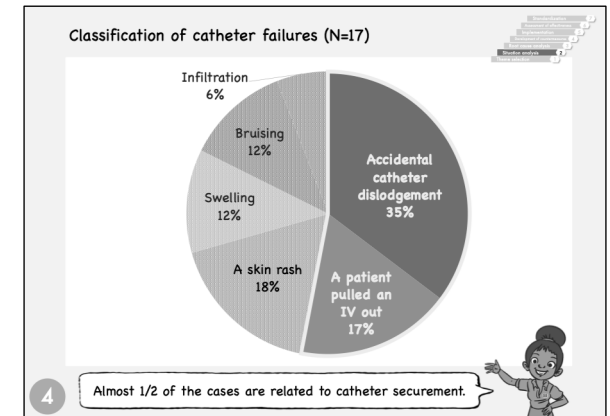
[Tips]

The data source depends on what you want to see. In this case, the incident reports gave them detailed information on catheter failures, such as patients' symptoms and possible causes, and interviews helped to corroborate the findings.



Hospital Safety Report			
1. Date	9/ 1 /	2. Time	: (Am/Pm)
3. Dep. / Location			
4. Who was home-run?			
<input checked="" type="checkbox"/> (1) Patient <input type="checkbox"/> (2) Hospital Staff <input type="checkbox"/> (3) Others			
5. Description of the run		Patient	
Run in run run			
6. Possible cause		What does the run?	
7. Type of neonatal/abuse case (Please fill in run)			
<input type="checkbox"/> (1) Unseen		<input type="checkbox"/> (2) Unknown	
<input type="checkbox"/> (3) Unknown		<input checked="" type="checkbox"/> (4) Unknown	
8. Continued		run run run	

Step 2: Situation analysis



[Lines] 

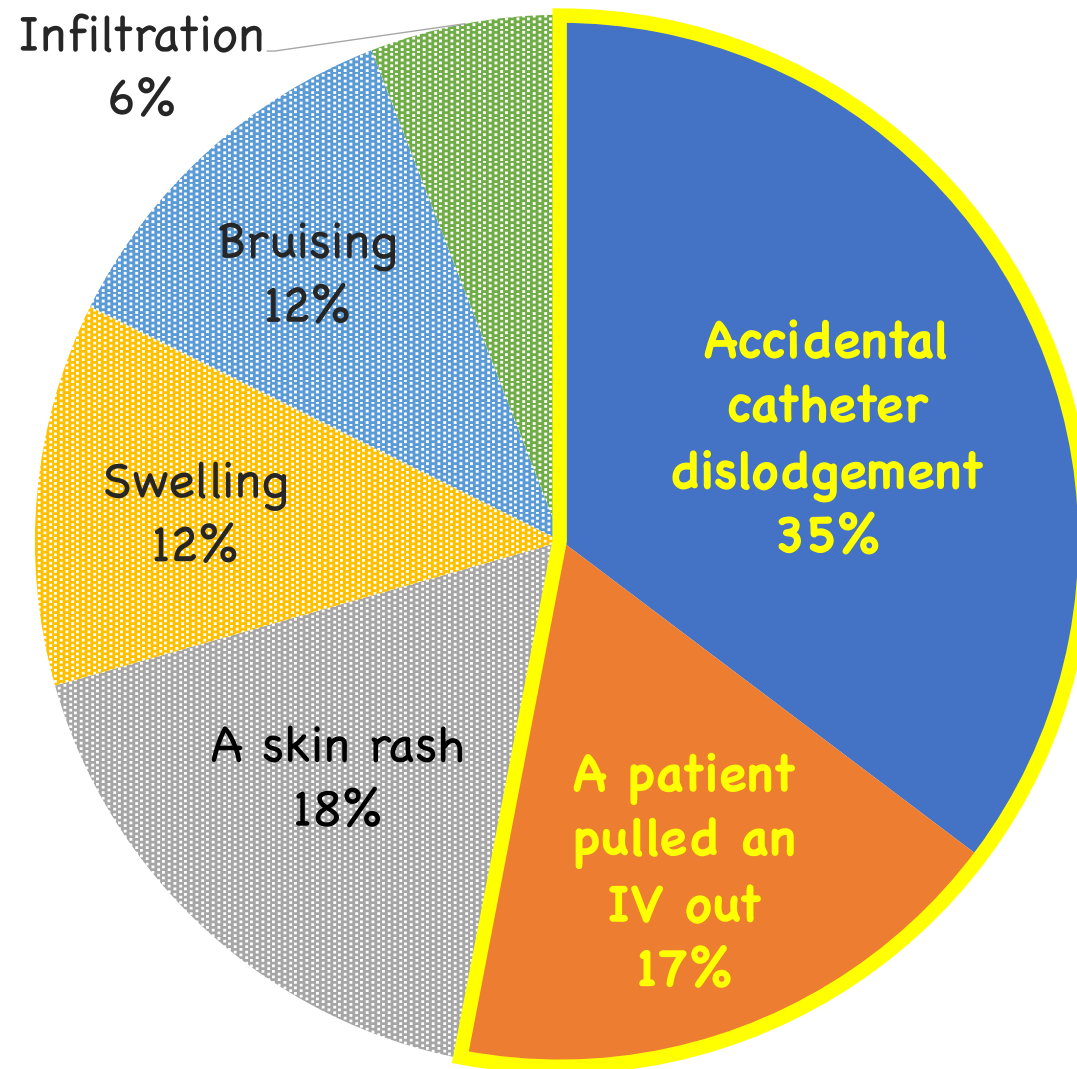
We tried to categorize the total of 17 cases according to the events that occurred, and found out that 49%, almost half of the cases, were related to catheter securement. In all these cases the IV lines were pulled out (accidentally or on purpose), and we suspected that these cases were caused by the catheter not being fixed properly.



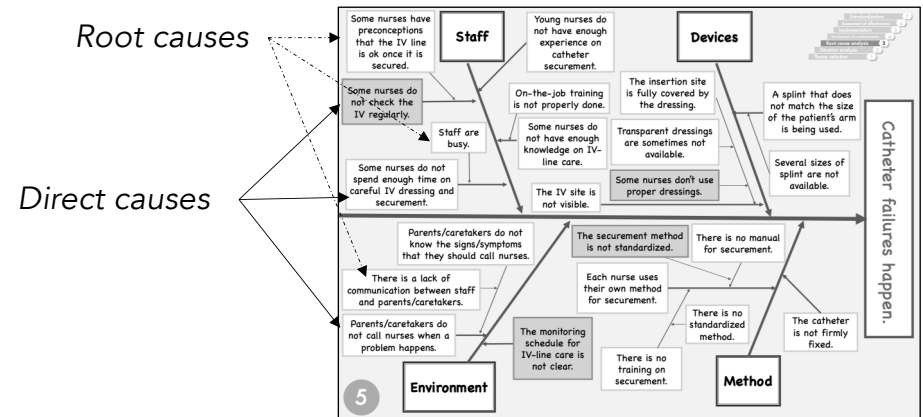
[Tips]

They used a pie chart to visualize and emphasize the key event, “catheter securement”. For more information on the use of graphs and charts, please see the appendix.

Classification of catheter failures (N=17)



Step 3: Root cause analysis



[Lines]

In order to clarify the root causes, we used fish-bone analysis. We asked ourselves why catheter failure happens and repeated why-because questions, drawing on our experiences and the information collected from the interviews and reports.

🔊 Then please read out all the cards in the form of “why” and “because”. (*1)

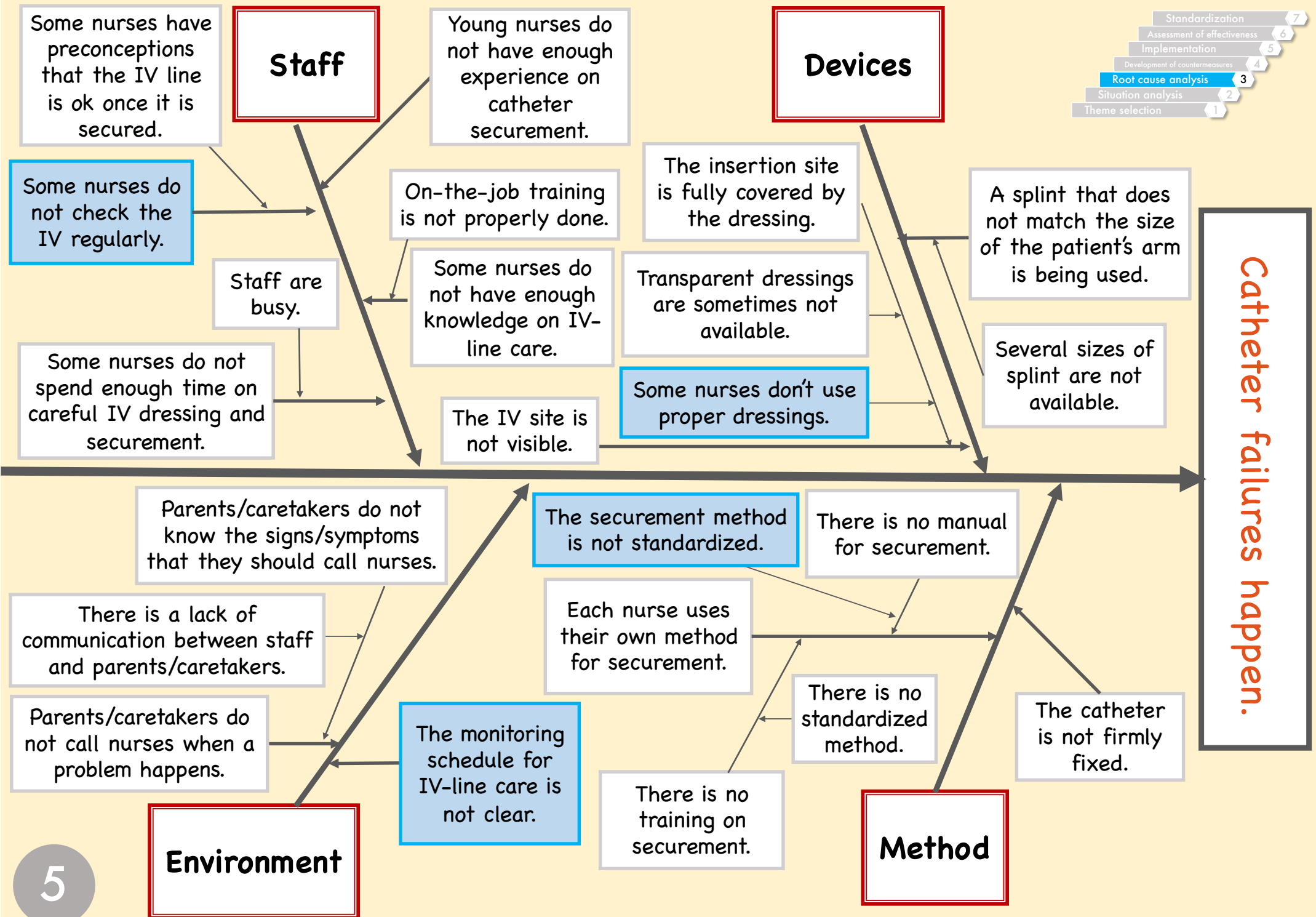
After the analysis, we highlighted some important and influential causes in blue. (*2)



[Tips]

*1: For example, under Staff, you can say “Catheter failure happens because some nurses do not check the IV regularly. Why? Because some nurses assume that the IV line is OK once it is secured.” As this analysis is a little complicated, please take the time to explain it carefully.

*2: Please choose or highlight only those causes that you truly think lead to the core problem in this process.



Step 4: Development of countermeasures

In order to reduce catheter failures...

Root causes	Countermeasures	Secondary countermeasures	Effectiveness	Resource availability	Difficulties	Overall feasibility
The securement method is not standardized.	A standardized securement method is developed.	Trainings for the standardized method are conducted.	3	2	3	8
		The SOP is developed.	3	3	2	8
Some nurses do not use proper dressings.	Appropriate dressing regimens are always used.	A sufficient amount of transparent dressings are purchased.	3	1	1	5
		The appropriate and available dressing regimens are identified.	3	3	3	9
Some nurses do not check the patient's IV-line regularly.	IV-line care is monitored regularly according to the schedule.	The monitoring schedule is developed.	2	3	3	8
The monitoring schedule is not clear.		The monitoring activities are supervised by superiors.	3	2	3	8

3: High priority/easy to take action, 2: Moderate, 1: Low priority/difficult to take action

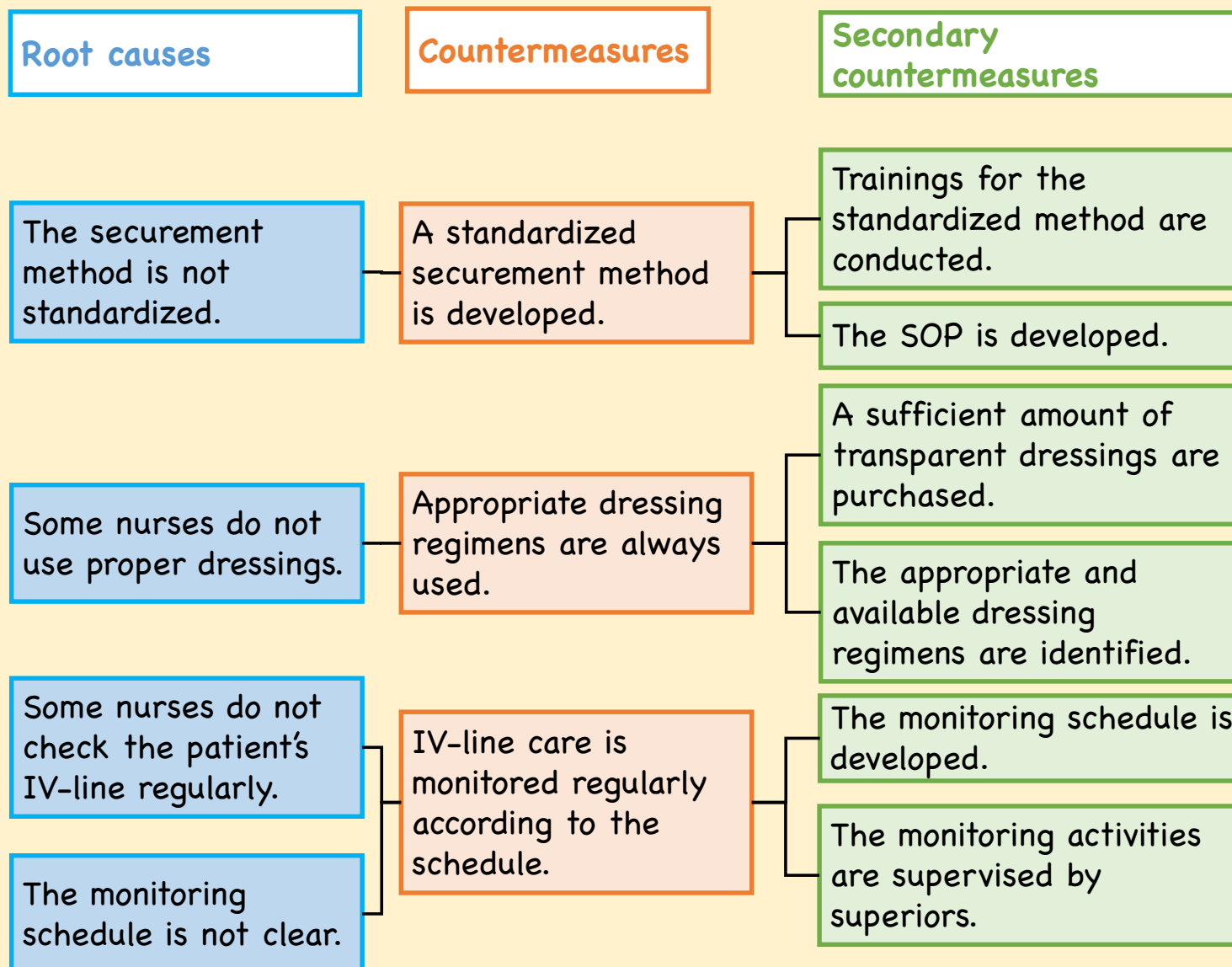
[Lines] 

For each cause we chose, we came up with countermeasures and described specific activities for each second countermeasure.

- 🔊 Please read the root causes, countermeasures and second countermeasures one by one, so that learners can see the connection between the problems and the necessary activities.

Then we scored the feasibility of the second countermeasures from 3 perspectives: effectiveness, resource availability and difficulty. Then, we decided to implement 5 activities that scored high, as the matrix on the right side shows.

In order to reduce catheter failures...



Effectiveness	Resource availability	Difficulties	Overall feasibility
3	2	3	8
3	3	2	8
3	1	1	5
3	3	3	9
2	3	3	8
3	2	3	8

3: High priority/easy to take action, 2: Moderate, 1: Low priority/difficult to take action

Step 4: Development of countermeasures

Implementation					
Countermeasures	WHY	WHO	WHEN	WHERE	WHAT
1. Implementation of the trainings for the securement method	In order for all the nurses to apply the standardized method	Rose	By 30 th Sept.	Paediatric WD	<ul style="list-style-type: none"> • Prepare the training materials. • Conduct the training in small groups.
2. Development of the SOP for the securement method	To standardize the securement method	Sarah	By 8 th Sept.	Nurse station	<ul style="list-style-type: none"> • Write the procedures and prepare the photos. • Print and display them.
3. Identification of the appropriate and available dressing regimens	In order for all the nurses to always use the suitable dressings	Agnes	By 20 th Aug.	The dressing room	<ul style="list-style-type: none"> • Check the available dressings. • Discuss and identify the suitable dressing regimens.
4. Development of the monitoring schedule for the patients' IV-line	To monitor the patients' IV-line regularly	Alison	By 31 st Aug.	Nurse station	<ul style="list-style-type: none"> • Decide on the timing of the monitoring. • Allocate staff to the monitoring schedule.
5. Supervision of monitoring activities	To have monitoring activities done as planned	SNO	Daily	Paediatric WD	<ul style="list-style-type: none"> • Check the roster and supervise IV-line care.

[Lines] 

We had a discussion and made this action plan. For each activity, there is a person in charge and a deadline. I was put in charge of number 3, “Identification of the appropriate and available dressing regimens”. What I had to do was to check the available dressings in the dressing room and identify the suitable dressing regimens through discussion with my colleagues, so that all the nurses would always be able use the suitable dressings.

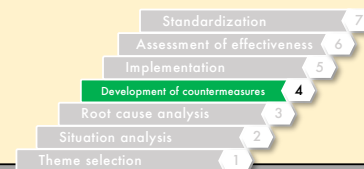


[Tips]

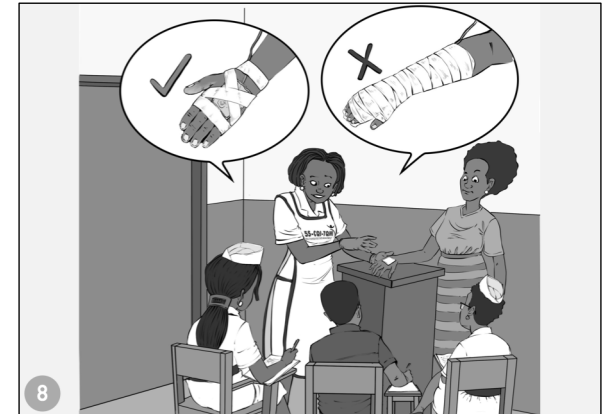
You can read all the countermeasures and the details (why, who, when, where and what) if necessary.

A Gantt chart can also be used when you develop an action plan.

Implementation



Countermeasures	WHY	WHO	WHEN	WHERE	WHAT
1. Implementation of the trainings for the securement method	In order for all the nurses to apply the standardized method	Rose	By 30 th Sept.	Paediatric WD	<ul style="list-style-type: none"> • Prepare the training materials. • Conduct the training in small groups.
2. Development of the SOP for the securement method	To standardize the securement method	Sarah	By 8 th Sept.	Nurse station	<ul style="list-style-type: none"> • Write the procedures and prepare the photos. • Print and display them.
3. Identification of the appropriate and available dressing regimens	In order for all the nurses to always use the suitable dressings	Agnes	By 20 th Aug.	The dressing room	<ul style="list-style-type: none"> • Check the available dressings. • Discuss and identify the suitable dressing regimens.
4. Development of the monitoring schedule for the patients' IV-line	To monitor the patients' IV-line regularly	Alison	By 31 st Aug.	Nurse station	<ul style="list-style-type: none"> • Decide on the timing of the monitoring. • Allocate staff to the monitoring schedule.
5. Supervision of monitoring activities	To have monitoring activities done as planned	SNO	Daily	Paediatric WD	<ul style="list-style-type: none"> • Check the roster and supervise IV-line care.



Step 5: Implementation

[Lines] 

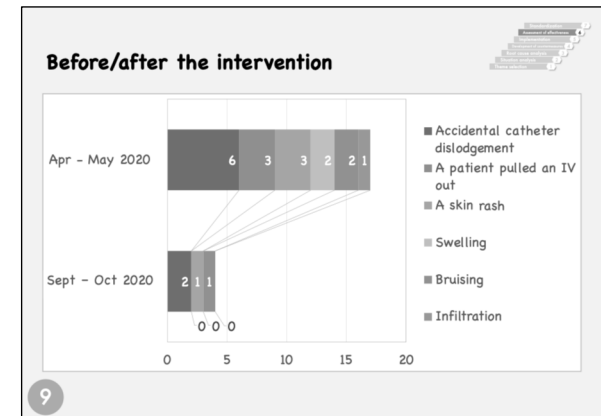
My colleague, Rose, was in charge of the trainings for the securement method. After Sarah and the team had completed the SOP for the securement method, Rose prepared the training materials and organized several training sessions in small groups, in accordance with the SOP. She demonstrated the standardized securement method and explained why all staff need to utilise the method.



[Tips]

When you develop an action plan, the sequence of activities must be carefully considered. In this case, countermeasure no. 2 “Development of the SOP for the securement method” needed to be done before the trainings (no.1) were conducted. Therefore, the “by when” date was set in that order.





Step 6: Assessment of effectiveness

[Lines]

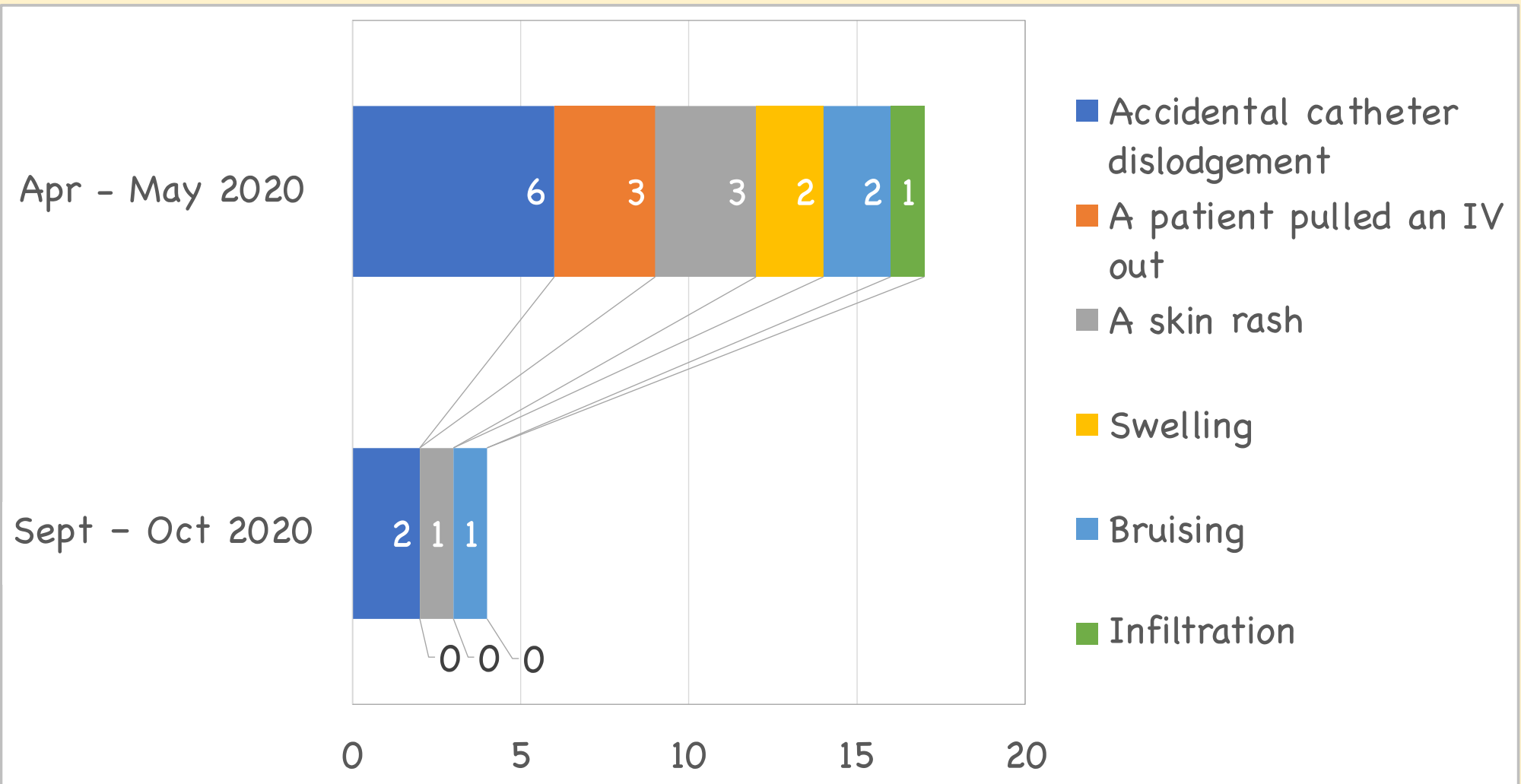
After all the countermeasures were taken, we assessed their effectiveness. In order to compare the data, we counted the number of IV-related incidents that happened in a subsequent 2-month period. As the bar chart shows, the number of incidents due to accidental catheter dislodgement decreased from 6 to 2, and not a single incident of a patient pulling out an IV occurred during this period. As a result, the overall number of incidents related to IVs also decreased. So we concluded that the measures we took were effective and commended ourselves for our efforts!



[Tips]

It is important to visualize the results so that everyone can see the changes. In this case, the numerical targets were not set at the beginning, and they simply compared the number of incidents before and after the intervention. If you do not get the results you were aiming for, you will have to go back to step 3 or 4 and start over.

Before/after the intervention



Step 7: Standardization

Standardization					
	WHY	WHO	WHEN	WHERE	WHAT
SOP	To standardize the securement method for infants and children at the entire hospital	The team	By the end of the year	OPD, Theatre, Casualty	Print and distribute the SOPs to the 3 departments.
Trainings for the securement method	To teach the standardized method to new staff	The team	New nurses are allocated.	Paediatric WD	Teach the method through on-the-job trainings.
Monitoring (1) Supervision	To have the patients' IV-line monitored regularly	SNO	Daily	Paediatric WD	Supervise the IV-line monitoring done by nurses.
Monitoring (2) Hospital safety reports	To be proactive toward catheter failure	The team and QIT	Every 3 months	QIT office	Review the hospital safety reports and analyse them if incidents related to catheter failure are reported.

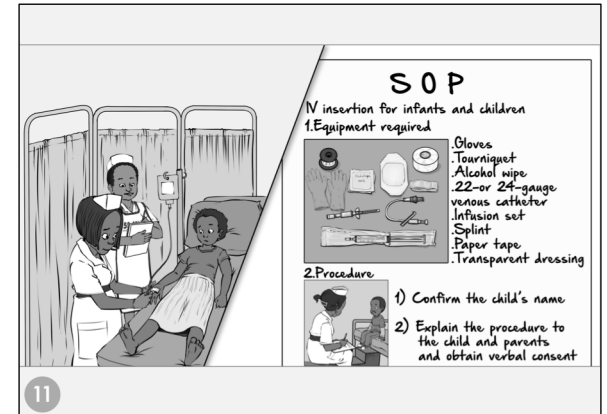
[Lines] 

Continual efforts will be needed to keep IV-related incidents low. We also found that the cooperation of other departments that accept and treat children and infants was essential. In order to sustain the improved situation and prevent recurrence, we developed this standardization plan.

Standardization

	WHY	WHO	WHEN	WHERE	WHAT
SOP	To standardize the securement method for infants and children at the entire hospital	The team	By the end of the year	OPD, Theatre, Casualty	Print and distribute the SOPs to the 3 departments.
Trainings for the securement method	To teach the standardized method to new staff	The team	New nurses are allocated.	Paediatric WD	Teach the method through on-the-job trainings.
Monitoring (1) Supervision	To have the patients' IV-line monitored regularly	SNO	Daily	Paediatric WD	Supervise the IV-line monitoring done by nurses.
Monitoring (2) Hospital safety reports	To be proactive toward catheter failure	The team and QIT	Every 3 months	QIT office	Review the hospital safety reports and analyse them if incidents related to catheter failure are reported.

Step 7: Standardization



[Lines] 

We talked to the WIT leaders in the OPD, theatre and casualty, and shared the SOP for the securement method so that they could apply the standardized method (*pointing to the illustration on the right*).

Also, the training for new nurses was ongoing at the time of allocation, as well as monitoring through supervision (*pointing to the illustration on the left*) and reviewing the hospital safety reports.

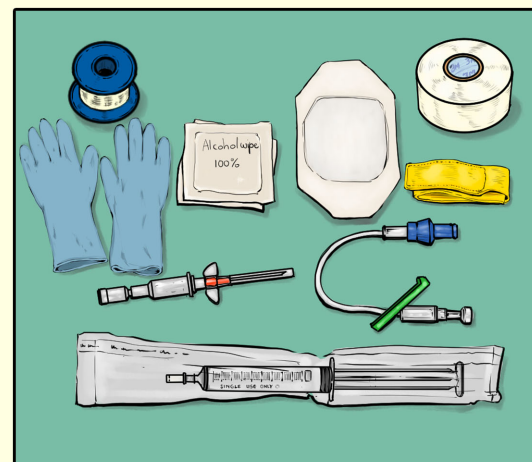
This is the full scope of our KAIZEN project. I hope you find it helpful!



S O P

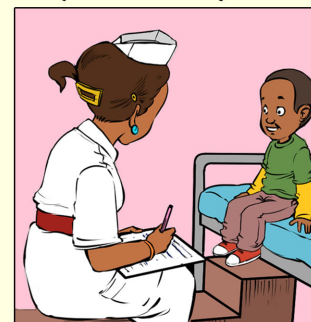
IV insertion for infants and children

1. Equipment required



- .Gloves
- .Tourniquet
- .Alcohol wipe
- .22-or 24-gauge venous catheter
- .Infusion set
- .Splint
- .Paper tape
- .Transparent dressing

2. Procedure



- 1) Confirm the child's name
- 2) Explain the procedure to the child and parents and obtain verbal consent