Learning From Defects Tool - Example

ICU & Non-ICU

**Problem statement:** Healthcare organizations can increase the extent to which they learn from defects. We define this learning as reducing the probability that future patients will be harmed.

**What is a defect?** A defect is any clinical or operational event that you would not want to happen again. This could include incidents that you believe caused patient harm or put patients at risk for significant harm. When it comes to methicillin-resistant *Staphylococcus aureus* (MRSA), the defects we focus on are events that could potentially lead to MRSA infection.

**Purpose of tool**: The purpose of this tool is to provide a structured approach to help identify steps that led to the defect. This tool will help your teams identify system factors that contribute to defects, plan improvements, and sustain those improvements. Because this tool helps you look at MRSA infections and other patient safety events at a systems level, the solutions you create are more likely to be lasting ones.

**Who should use this tool?** It is strongly encouraged that this tool be completed by a multidisciplinary healthcare team. At a minimum, include members of the Comprehensive Unit-based Safety Program (CUSP) Team, physicians, nurses, administrators, and other selected professionals, as appropriate (e.g., for a defect that involves environmental services, make sure the Environmental Services (EVS) CUSP Team member is present; for an equipment defect, include clinical engineering staff).

**How to use this tool:** Complete the form below for at least one defect per month. Investigate all of the following defects, MRSA related or not: information gleaned from Staff Safety Assessment Forms, liability claims, sentinel events, events for which risk management is notified, cases presented at morbidity and mortality rounds, and healthcare-acquired infections (HAIs).

I. Provide a clear, thorough, and objective explanation of what happened.

II. Review the list of factors that contributed to the incident and check off those that negatively and positively contributed to the outcome of the incident. Negative contributing factors are those that harmed or increased the risk of harm for a patient. Positive contributing factors limited the amount of harm. Rate the most important contributing factors that relate to the incident.

III. Describe how you will reduce the likelihood of this defect from happening again by completing the tables. Develop interventions for each important negative contributing factor and rate each intervention for its ability to mitigate the defect and the feasibility to carry it out. Identify two to five interventions that you will use. List what you will do, who will lead the intervention, and when you will follow up to note the intervention’s progress.

IV. Describe how you know you have reduced the risk. Survey frontline staff involved in the incident to determine whether the intervention has been used effectively and whether risk has been reduced.

**Investigation process**

1. **What happened?** In the space below, identify the MRSA infection or other event. Please describe the event to include the timeline, witnesses, and decisions that were made. Put yourself in the place of those involved and in the middle of the event as it was unfolding to understand what they were thinking and the reasoning behind their actions or decisions. Try to view the world as they did when the event occurred.

| Event Components | Descriptions |
| --- | --- |
| Event | Patient A developed a hospital-acquired central line-associated bloodstream infection (MRSA). |
| Timeline | Patient history: Patient was a 70-year-old male with a history of prostate cancer and frequent urinary tract infections (UTIs), chronic obstructive pulmonary disease, gastroesophageal reflux disease, hypertension, irritable bowel syndrome, previous hip replacement, and colon cancer requiring surgery and chemotherapy. He had also developed atrial fibrillation at the age of 50 which was primarily treated with medication.  Current: He was found unconscious at home after a suspected syncopal episode with injury to his chest, with bruising and two broken ribs on his right side. He was delirious as well. He also had urine incontinence when found by his spouse.  He was taken by ambulance to the local emergency department. Upon admission, he was delirious, complaining of a sore chest and torso, and of painful urination. His wife stated he had not been feeling well for 2 days but refused to call his physician and said it would pass.  First vitals included a blood pressure of 75/40, temperature of 38.5°C, heart rate of 110 beats per minute, and oxygen saturation of 88%. An electrocardiogram was obtained and he was pan-cultured. A peripheral intravenous line was placed and a 1,000 cubic-centimeter bolus of normal saline was given. His blood pressure continued to remain low, and it was decided to place a central line and begin a vasopressor. Emergently the ambulance team placed a femoral line and began norepinephrine. A Foley catheter was placed and he was admitted to the intensive care unit (ICU).  Upon admission: His oxygen saturation continued to remain low, and he was intubated. He was started on antibiotics for a presumed UTI that was confirmed the next day. The patient continued to improve until day 5 when he again spiked a fever to 38.3°C. Again, he was pan-cultured and Infectious Disease was consulted. It was determined that the femoral line had become infected, and he again was septic. |
| Witnesses | Patient A, patient A’s spouse, Emergency Medical Services (EMS) personnel, the multidisciplinary healthcare team at the local hospital (physicians, nurses, administrators, other selected professionals). |
| Decisions And Reasoning | Upon investigation of the event, it was determined that the central line had been contaminated during a period of stool incontinence where the dressing was clean but not replaced. On day 3, the central line dressing was found loose and was taped to secure it until the nurse could change the dressing after she took another patient to Computed Tomography (CT). On Day 4, it was noted that the IV bag and tubing should have been replaced the prior day. The nurse also found after they drew blood cultures that they had accessed the central line, leaving the stop cock without a cap. |

1. **Why did it happen?** In the space below, identify negative and positive contributing factors associated with the MRSA infection or other event.

**Negative contributing factors** are factors that harmed or increased the risk of harm for patients. You want to change these.

**Positive contributing factors are factors** that limited the impact of harm for patients. You want to keep and reinforce these.

*It may be reasonable to enter “Not Applicable” for some categories.*

|  |  |  |
| --- | --- | --- |
| Factors | Negative Contributing Factors | Positive Contributing Factors |
| Patient Factors (related to clinical condition of patient) | Not applicable. | Not applicable. |
| Technical Factors (related to MRSA prevention resources, including information technology resources) | The femoral line should have been replaced with an intrajugular (IJ) or subclavian line within 24 hours per hospital policy. | Not applicable. |
| When soiled with stool, the dressing was cleaned but not replaced, as the dressing seemed intact except where the line exited the dressing and no stool could be seen there. | Not applicable. |
| The nurse did not allow the chlorhexidine gluconate (CHG) to dry before the central line dressing was applied. | Not applicable. |
| The intravenous bag and tubing were found to have not been changed on day 2. | Not applicable. |
| Healthcare Worker Factors (related to members of the healthcare team) | Not applicable. | Not applicable. |
| Team Factors (related to teamwork and communication) | The nurse did not seek help in changing the dressing when she had to escort the patient to CT, only taping the dressing closed. | The Infectious Disease doctor had peripheral blood cultures drawn that came back positive for MRSA and *Escherichia coli* so appropriate antibiotics were given. |
| The nurse saw the resident drawing a blood culture from the central line, leaving the stop cock without a cap, but did not speak up to remind him he needed to draw two cultures peripherally within 24 hours because she was new and afraid to speak up. | Not applicable. |
| Institutional Factors (related to institution’s culture and resources) | The nurse was hesitant to speak up as she did not feel supported when the cultures were drawn incorrectly. | Not applicable. |

1. **How will you reduce the likelihood of this defect from happening again?** In the space below, identify two to five negative contributing factors from the previous step. Discuss and develop interventions to defend against the factors, assign the person(s) who will lead the efforts, and determine followup dates.

| Contributing Factors | Interventions | Person(s) Assigned To Lead Efforts | Followup Dates |
| --- | --- | --- | --- |
| Technical Factor: Replacement of femoral line or any central line when it was not assured it was placed under sterile technique. | Daily Goals Form: In addition to removing the line when no longer necessary, add the following lines:  1. Replace central lines within 24 hours if they were not placed following the central line checklist ensuring sterility.  2. Replace femoral lines with subclavian or IJ lines within 24 hours of placement, if clinically possible.  Distribute central line policy to all house staff for review at the beginning of every new rotation in the ICU. | Physician Director and Nurse Manager | *Enter followup dates* |
| Technical Factor: Dressing change. | Central line dressing kit: A step-by-step instruction was added, including letting the CHG dry entirely before placing the clear dressing.  Require staff to review the dressing change policy.  Set up a learning station so that nurses and residents can see the difference between intact and questionably intact dressings. | Nurse Educator | *Enter followup dates* |
| Team Factor: Not asking for help. | Set up a buddy system to make sure each nurse has coverage when they need help with a task or are going to be escorting a patient off the floor.  The charge nurse will also offer support when he/she has time available, so as to ensure tasks are completed in a timely fashion. | Charge Nurse or Resource Nurse | *Enter followup dates* |
| Team Factor: Not speaking up when cultures were drawn from the central line. | Communication workshops will be set up to address appropriate assertion and to use the chain of command if a staff member is not following policy. | CUSP Team | *Enter followup dates* |
| *Enter contributing factor* | *Enter intervention* | *Enter leader* | *Enter followup dates* |

1. **How will you know the risk is reduced?** In the space below, describe plans to measure the impact of the interventions and how to share and receive feedback. Ask frontline staff involved in the defect whether the interventions were effectively carried out and reduced the likelihood of recurrence of the defect. As some interventions may take several months to reach a conclusion due to multiple steps in the process (e.g., research and understand the problem, develop a plan, implement your improvements, and evaluate the impact of the planned change), it is fine to work on more than one intervention at a time.

| Interventions | Plans To Measure Impact of Intervention | Interventions Were Effectively Carried Out, 1 (Low) to 5 (High) | Interventions Reduced the Likelihood of Recurrence, 1 (Low) to 5 (High) |
| --- | --- | --- | --- |
| Staff will monitor the use of central lines and remind staff on rounds if a line needs to be replaced or could be removed. | Staff will track the number of times a line should have been replaced but was not removed monthly.  Information will be shared at the CUSP meeting and placed on a bulletin board for staff feedback. | *Enter effectiveness ranking* | *Enter recurrence ranking* |
| Nurse educator and one member of the CUSP team will complete random assessments of central line dressing adherence. | Findings will be shared at the CUSP meeting. If there is a problem with dressing adherence, staff re-education will take place. | *Enter effectiveness ranking* | *Enter recurrence ranking* |
| The Infection Preventionist will hold an education session about the blood culture policy within the organization when each new resident rotation occurs and with any new nursing staff. | *Enter measurement plan* | *Enter effectiveness ranking* | *Enter recurrence ranking* |
| *Enter intervention* | *Enter measurement plan* | *Enter effectiveness ranking* | *Enter recurrence ranking* |
| *Enter intervention* | *Enter measurement plan* | *Enter effectiveness ranking* | *Enter recurrence ranking* |

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