

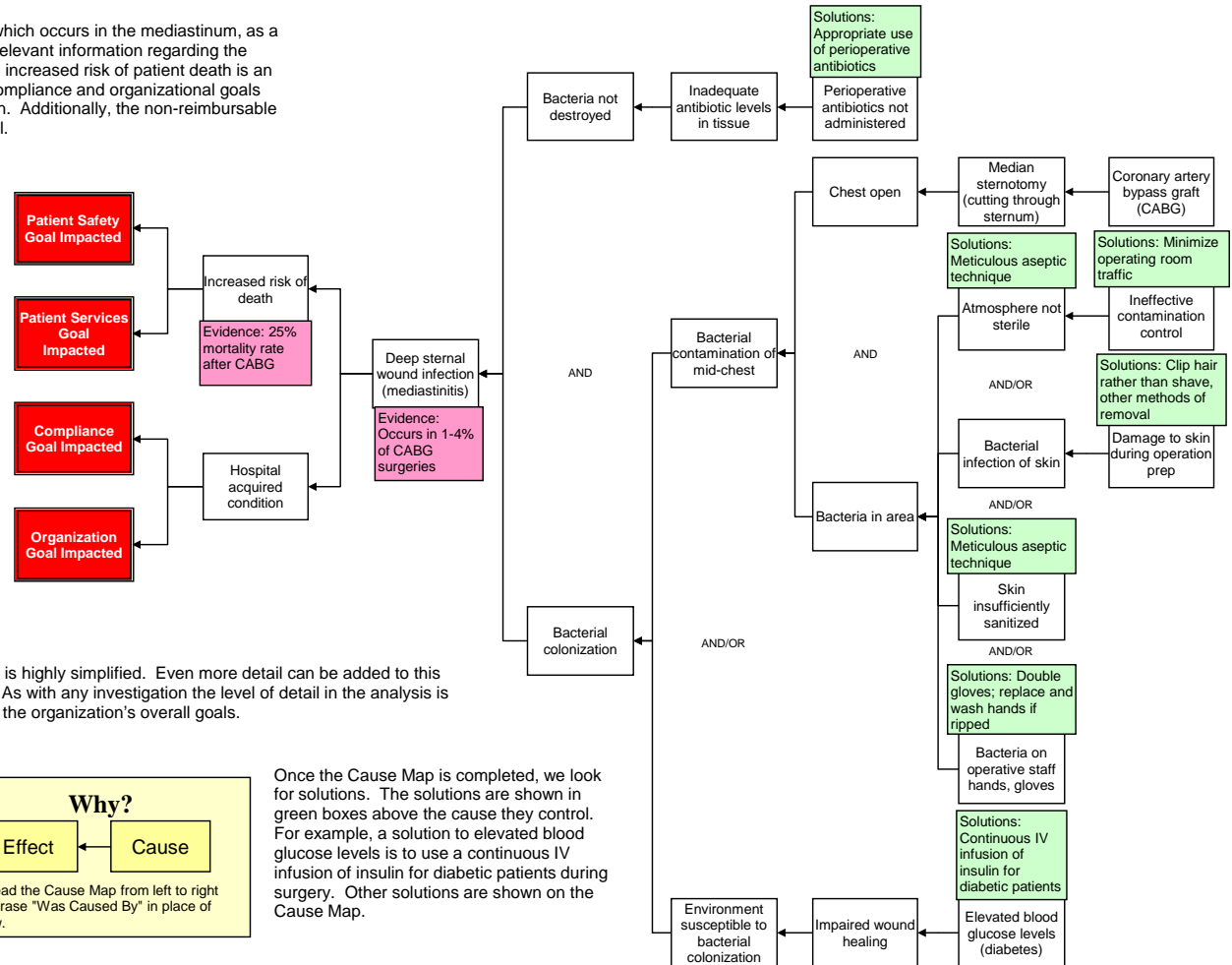
Reducing the Incidence of Mediastinitis

Mediastinitis (deep sternal wound infection) acquired as a surgical complication of coronary artery bypass graft (CABG) surgery is now considered by Medicare as a hospital-acquired condition for which reimbursement will not be given. It is a serious complication that results in an increased risk of death and, from Medicare data, adds almost \$300,000 to the cost of a hospital stay.

For these reasons, it is important to work on reducing the occurrence of mediastinitis in medical facilities. A tool we can use to help reduce the occurrence is a visual root cause analysis, presented as a Cause Map. A thorough root cause analysis built as a Cause Map can capture all of the causes in a simple, intuitive format that fits on one page. We develop a Cause Map in 3 steps.

First, define the problem. Here, the problem is mediastinitis, which occurs in the mediastinum, as a result of the process of CABG surgery. After we capture this relevant information regarding the problem, we look at the impact to the organization's goals. An increased risk of patient death is an impact to the patient safety and patient services goals. The compliance and organizational goals are impacted by the contraction of a hospital-acquired infection. Additionally, the non-reimbursable cost to the hospital is an impact to the materials and labor goal.

Now that the problem has been defined related to the organization's goals, we perform our root cause analysis, or make our Cause Map. First we put down the impacts to the map. Here, the impacts to the goals are caused by a patient contracting mediastinitis. The causes of a patient contracting mediastinitis are bacterial colonization of the mediastinum and the bacteria not being destroyed (possibly due to inadequate levels of antibiotics in tissue because of perioperative antibiotics not being administered). The bacterial colonization is caused by bacterial contamination, and/or an environment susceptible to colonization, possibly due to impaired wound healing, such as caused by elevated blood glucose levels. Bacterial contamination is caused by bacteria in the area of an open chest (which is open for the purposes of performing a CABG). The bacteria in the area can be caused by a number of things, including a non-sterile atmosphere, bacterial infection of the skin, insufficient sanitization of the skin, and bacteria on the operative staff hands or gloves.

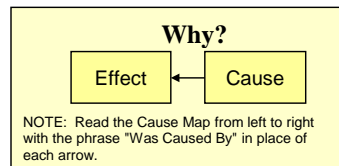


The root cause analysis we show here is highly simplified. Even more detail can be added to this Cause Map as the analysis continues. As with any investigation the level of detail in the analysis is based on the impact of the incident on the organization's overall goals.

Cause Map Detail Level



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Once the Cause Map is completed, we look for solutions. The solutions are shown in green boxes above the cause they control. For example, a solution to elevated blood glucose levels is to use a continuous IV infusion of insulin for diabetic patients during surgery. Other solutions are shown on the Cause Map.