**Problem**

Step 1: Define the Problem

What: Surgeons more likely to make surgical errors

When: Surgeons drinking night prior

Where: Ireland

Impact to the Patient: Greater potential for injury/death

Employee Impact: Potential malpractice suit

**Analysis**

Basic Level Cause Map

- Patient Safety Impact: Surgeons more likely to make errors
- Surgeries out drinking night before

Basic Cause-and-Effect

Surgeons can make errors for a number of reasons. This study looked specifically at the effects of drinking the night prior to surgery.

While the basic Cause Map is fairly intuitive, it leads to further questions. Why does drinking cause surgeons to make errors the next day? Are they still intoxicated? Are they tired? Are they unable to focus?

More Detailed Cause-and-Effect

Modern surgical techniques, including laparoscopic surgery, require great manual dexterity and control as well as sustained mental focus. It is common knowledge that both of these skills are impaired while intoxicated. What is unknown is how these skills are impaired after one is no longer intoxicated, but obviously still affected. In all but one test subject, their blood alcohol content (BAC) had returned to 0.00%. Initial testing done in the morning showed no significant difference between test and control subjects, however later in the day there was a perceptible decline. While the study was only a preliminary one, it indicates that more research is needed in this area.

A Cause Map can be especially helpful in a research environment because it helps define causal relationships. In this case, the researchers focused on the effects of drinking the night prior. But perhaps there are other reasons at play, such as fatigue, which contribute to the effect. When searching for causes it is important not to focus in on one aspect, ignoring others, since all causes are required to produce an effect.

It is expected that surgeons wouldn’t actually drink while at work. However, there are surprisingly no guidelines about when they should stop drinking beforehand. Pilots are federally mandated not to drink at least 8 hours prior to flying or fly with a blood alcohol content (BAC) of .04% or greater. Perhaps this study will generate an overdue discussion on the need for abstention prior to surgery.

Potential solutions, such as training or regulations, can be displayed directly on the Cause Map above the appropriate cause.

**Solutions**

<table>
<thead>
<tr>
<th>No.</th>
<th>Action Item</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Training an effects of drinking</td>
<td>Surgeons out drinking heavily right before operation</td>
</tr>
<tr>
<td>2</td>
<td>Impose abstinence guidelines</td>
<td>No restrictions in place on drinking “off-duty”</td>
</tr>
</tbody>
</table>

Timeline of Study Events

- **Before 9:00 AM**
  - Breathalyzer tests administered to determine BAC

- **3:00 AM**
  - Surgeons run timed trial on laparoscopic surgery simulator

- **1:00 PM**
  - Surgeons run timed trial on laparoscopic surgery simulator

- **4:00 PM**
  - Surgeons run timed trial on laparoscopic surgery simulator

For a free copy of our Root Cause Analysis Template in Microsoft Excel, used to create this page, visit our web site.

ThinkReliability

Investigate Problems. Prevent Problems.

Houston, Texas     281-412-7766      ThinkReliability.com