Root Cause Analysis

Ghassan Saleh

MaineHealth Director of Operational Excellence

Objectives

1. Utilize root cause analysis in the planning phase of Plan-Do-Study-Act (PDSA) cycles
2. Describe two RCA tools: the 5 Whys and Fishbone

When a patient visits his/her physician complaining about "headache," the provider doesn't simply deal with the symptoms. They try to figure out the underlying cause of the headache. They take a patient history, perform a physical examination, and do other investigations like blood work or imaging. They are interested in the root cause of the headache so that they can treat the headache and also prevent its recurrence.
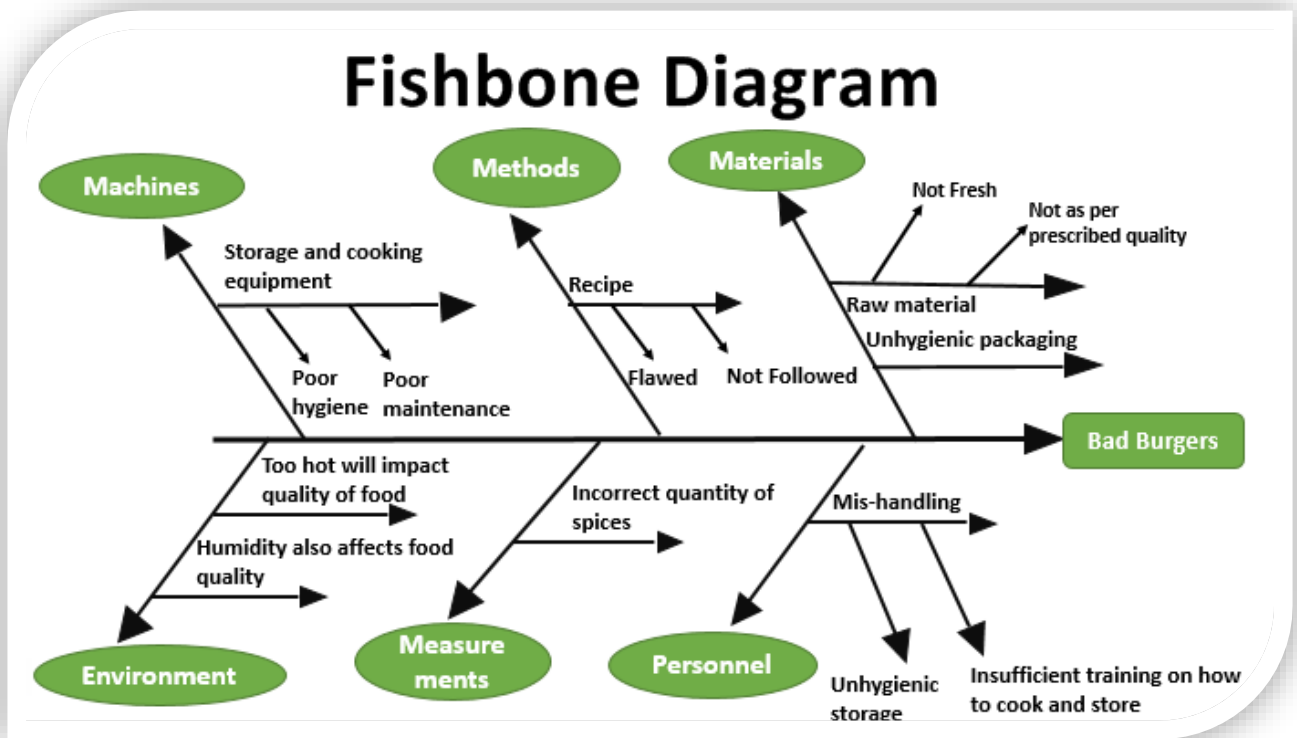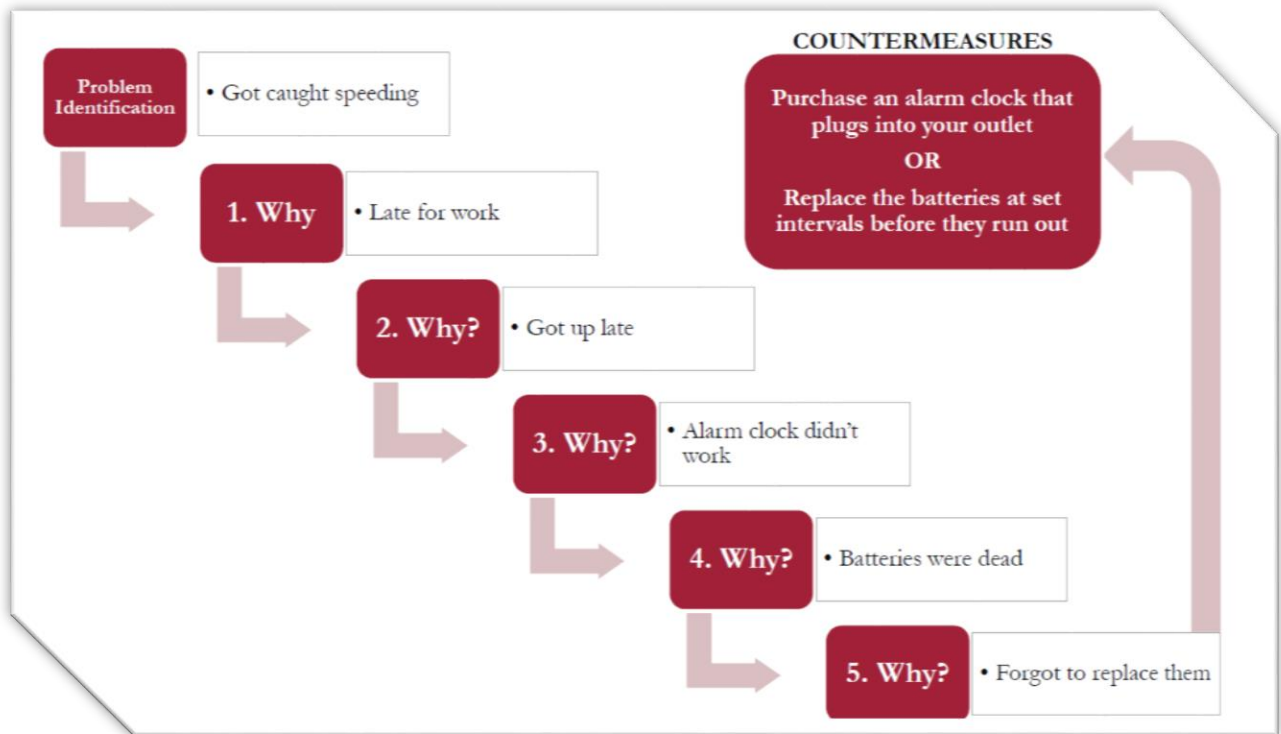
Performing Root Cause Analysis (RCA) for a quality problem is essential during the "planning phase" of any Plan-Do-Study-Act (PDSA) cycle. RCA calls upon us to figure out and then solve the real cause(s) of the problem and helps to address more than its symptoms. This technique proposes that once we solve for the root cause, the same problem should not happen again or, at least, we significantly reduce the likelihood.

In quality circles we use RCA tools to drill deeper into the problem. There are number of RCA tools, but the most common two are 5 Whys and Fishbone. Both require us to take on the mindset of a five-year-old child. First we ask "why" did this happen? As soon as we answer the first question, we have to ask: "why" did this ever happen in the first place? Then, we continue to ask more "whys." The difference between a five-year-old child and healthcare professionals is the cumulative wisdom that tells us to stop asking "why" once we feel that we have reached an actionable root cause to counteract.

5 Whys is used to break a linear problem into its root causes by asking why it happened multiple times, usually 5 times, or generally between 4 to 6 times. The Fishbone, on the other hand, is a tool that helps parse through a multi-factorial problem to its root causes. First, we identify categories of causes, and then we ask "why" multiple times for each one of those categories, while writing them down using the fishbone structure.

Figure 1 demonstrates the use of 5 Whys to discern the cause of a speeding ticket, and Figure 2 uses a fishbone to exemplify the root causes of cooking a "bad burger."

In the healthcare setting, we often schedule formal gatherings to perform RCA to either discern gaps in the process of quality improvement or to analyze a clinical harm or near harm event in safety. The collective wisdom of subject matter experts provides the foundation for deconstructing the categories and asking the Whys for each branch of the Fishbone. A key to RCA process is to avoid transitioning too quickly into "solutions" – this poses the risk of premature closure and failure to identify a true root cause. Through patience and deliberate query, RCA helps us to identify the correct causes of our failures and expedite our journey to improvement and success.

Problem Identification

Problem Identification — • Got caught speeding

1. Why — • Late for work

2. Why? — • Got up late

3. Why? — • Alarm clock didn't work

4. Why? — • Batteries were dead

5. Why? — • Forgot to replace them

COUNTERMEASURES

Purchase an alarm clock that plugs into your outlet

OR

Replace the batteries at set intervals before they run out

Fishbone Diagram

Machines
- Storage and cooking equipment
- Poor hygiene
- Poor maintenance

Methods
- Recipe
- Flawed
- Not Followed

Materials
- Not Fresh
- Not as per prescribed quality
- Raw material
- Unhygienic packaging

Environment
- Too hot will impact quality of food
- Humidity also affects food quality

Measurements
- Incorrect quantity of spices

Personnel
- Mis-handling
- Unhygienic storage
- Insufficient training on how to cook and store

Bad Burgers

Reference:

1- 5 Why graphic: adapted from https://www.greycampus.com/blog/quality-management/how-do-you-determine-the-root-cause
2- Fishbone graphic: reproduced from https://www.wallstreetmojo.com/fishbone-diagram/