Cause and Effect Diagram

A cause and effect diagram, also known as an Ishikawa or “fishbone” diagram, is a graphic tool used to explore and display the possible causes of a certain effect. Use the classic fishbone diagram when causes group naturally under the categories of Materials, Methods, Equipment, Environment, and People. Use a process-type cause and effect diagram to show causes of problems at each step in the process.

A cause and effect diagram has a variety of benefits:

- It helps teams understand that there are many causes that contribute to an effect.
- It graphically displays the relationship of the causes to the effect and to each other.
- It helps to identify areas for improvement.

This tool contains:
- Directions for making a Cause and Effect Diagram
- Cause and Effect Diagram: “Fishbone”
- Cause and Effect Diagram: Process-Type
Cause and Effect Diagram

Directions

1. Write the effect in a box on the right-hand side of the page.

2. Draw a horizontal line to the left of the effect.

3. Decide on the categories of causes for the effect. Useful categories of causes in a classic fishbone diagram include Materials, Methods, Equipment, Environment, and People. Another way to think of categories is in terms of causes at each major step in the process.

4. Draw diagonal lines above and below the horizontal line (these are the “fishbones”), and label with the categories you have chosen.

5. Generate a list of causes for each category.

6. List the causes on each fishbone, drawing branch bones to show relationships among the causes.

7. Develop the causes by asking “Why?” until you have reached a useful level of detail—that is, when the cause is specific enough to be able to test a change and measure its effects.
Cause and Effect Diagram: “Fishbone”

- **People**
  - Secretary
  - Lab tech
  - Dispatcher
  - Phlebotomist

- **Environment**
  - Clocks
  - Transcription error
  - Lab equipment

- **Materials**
  - Specimen vials
  - Lab supplies

- **Methods**
  - Too many people involved
  - Handling in lab
  - Lab not following FIFO

- **Equipment**
  - Lab not available when lab called
  - Escort
  - Lab secretary

- **Long test results time**
  - Inaccurate
  - Don’t agree
  - Rounding

**Cause and Effect**
- Physician order illegible
- Not available to get results
- Heavy workload
- No tracking process
- Unavailable
- Spilled
- Escorted stopped other places before lab
Cause and Effect Diagram: Process-Type

Physician orders test → Secretary calls dispatcher → Dispatcher sends to phlebotomist → Long test results time

- Wrong test
- No forms
- Order in wrong place
- Incomplete specimen
- Dispatcher too busy
- Dispatcher communicated wrong test request
- Phlebotomist unavailable
- Phlebotomist sent to wrong patient
- Pager malfunction
- Gave wrong info
- Handwriting unreadable
- Phone line busy