

# Cause and Effect (Fishbone) Diagram

## What is the Cause and Effect Diagram, and how can it help you?

This diagnostic tool identifies, sorts, and graphically displays all the possible causes of a problem or outcome. Also known as the *Fishbone Diagram*, this tool can help you, together with team members or stakeholders, understand the root causes and relationships between factors affecting a complex problem.

## A Cause and Effect Diagram:

- Explores the primary and secondary root causes of a complex problem
- Shows how different causes are inter-related
- Sparks conversation and builds shared understanding and agreement about the causes of a problem
- Supports quality and systems improvement and integration activities
- Helps develop critical thinking and problem-solving skills

## How to use this tool? (refer to worksheet on page 3)

- **Box 1:** State the **main problem** that you and your team wish to solve or improve. In Box 1, record the problem, or outcome, representing the “head” of the fish.
- **Box 2:** Discuss the **potential primary causes of the problem**. Some typical categories of primary causes are People, Processes, Policies/ Environment, Technology/Materials, and Systems. As a team, identify the categories, or primary causes of your problem. In Box 2, record each primary cause, representing the “spines” of the fish.
- **Line 3:** As a team, brainstorm and further discuss each of the primary causes related to the problem. Record these further elaborated causes of the problem, or **secondary causes**, on Line 3 under each primary cause; these are the “bones” of the fish.
- **Line 4:** Continue to explore these secondary causes by asking “Why?” until you have identified a cause that is specific enough to test a change and measure its effect. Record any **additional causes** of the problem on Line 4 under the corresponding secondary cause.
- The output of this tool is a visual representation of the potential root causes affecting your complex problem.

### KEY

**1:** Main problem

**2:** Primary root cause

**3** Secondary root cause

**4** Sub-cause of secondary root cause

## What are the next steps?

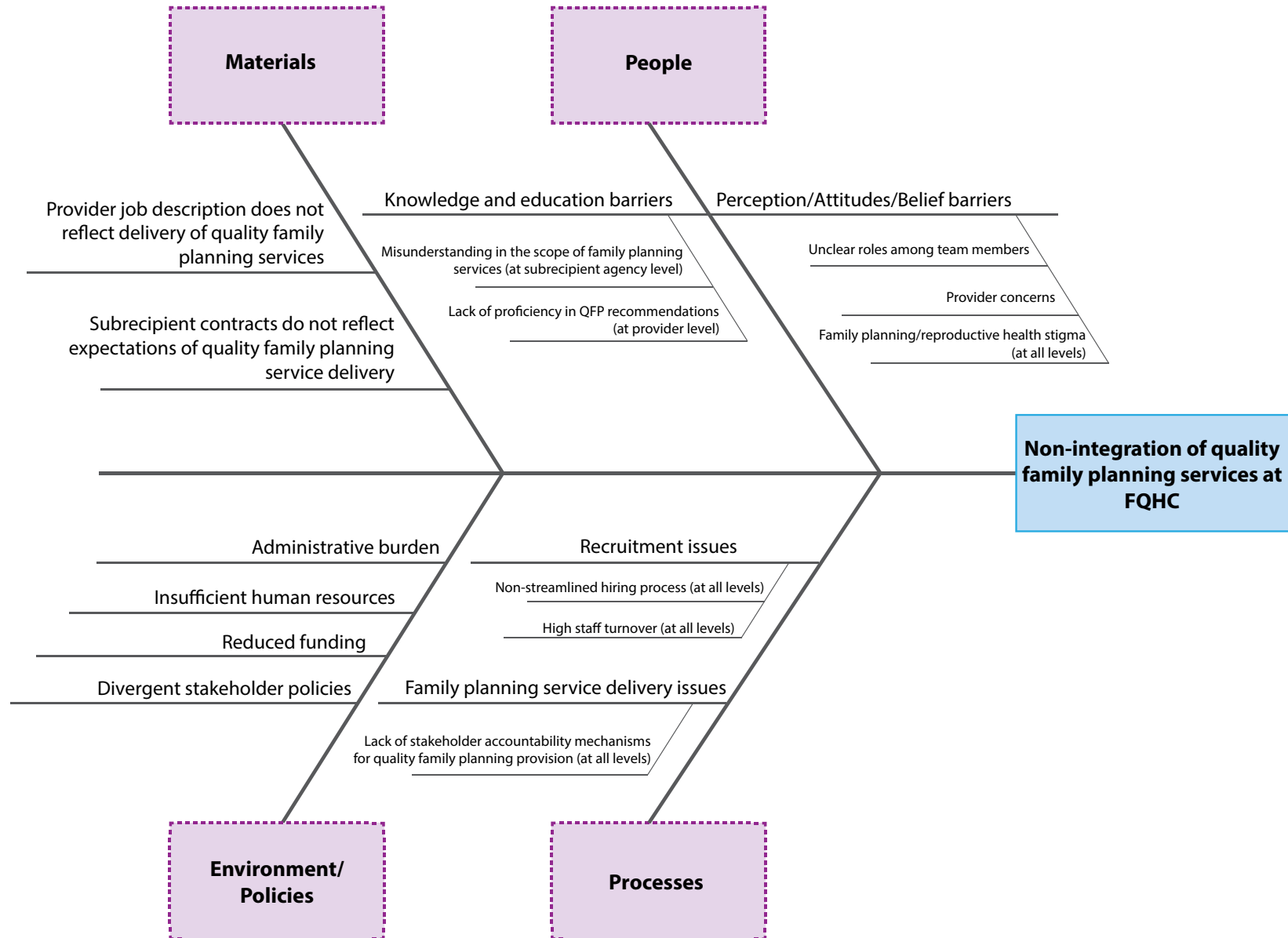
- After identifying all the potential root causes of the problem, reflect on the overall diagram.
- Share how your understanding of the main problem may have changed by completing the *Fishbone Diagram*.
- Identify solutions that address the root causes. Additional tools, such as the *Agreement and Certainty Matrix* or *Huddle Board*, can be used in conjunction with this diagram to better understand the problems identified or to prioritize and implement solutions for addressing the root causes.

### References:

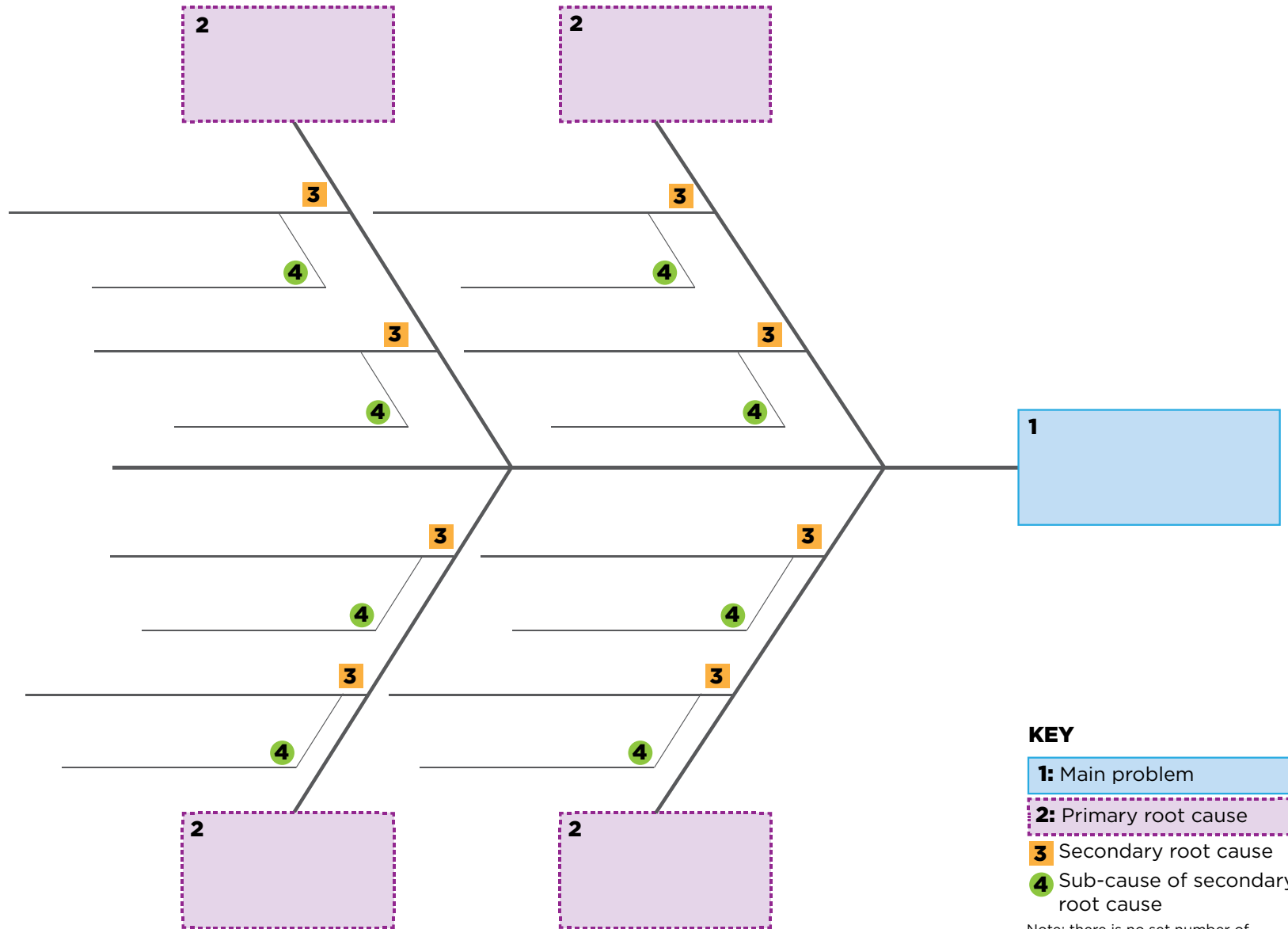
1. Ishikawa K, 石川馨. (1986) Asian Productivity Organization. Guide to Quality Control. Asian Productivity Organization.
2. The Fundamentals of Cause and effect (aka Fishbone) Diagrams. (n.d.). Retrieved April 24, 2018, from <https://www.isixsigma.com/resource-pages/the-fundamentals-of-cause-and-effect-aka-fishbone-diagrams/>



# Cause and Effect Diagram Example



# Cause and Effect Diagram Worksheet



## KEY

**1:** Main problem

**2:** Primary root cause

**3** Secondary root cause

**4** Sub-cause of secondary root cause

Note: there is no set number of primary and secondary root causes that should be identified. Please adjust to meet your needs.