



# Improvement Cymru Academy Toolkit Guide



## Fishbone Diagram

## What is a Fishbone Diagram?

A Fishbone Diagram is a visual tool to help you work through the possible causes of a problem. It is also known as an Ishikawa or 'cause and effect'. It's an effective improvement tool that supports organisations and stakeholders track imperfections, variations defects or failures. It's in the shape of a fish, where the problem is at the head of the fish and the causes are feeding into the spine.

## Rationale

It helps the team to understand there are many causes that contribute to a problem and helps identify areas of improvement. It visually displays the relationships of cause and effect.

## Background

Ishikawa or fishbone diagram was named after its inventor, Professor Karoru Ishikawa of Tokyo University during the 1960s. It is also called a fishbone as it looks like a skeleton of a fish. The tool was first used to deal with challenges at the Kawasaki shipyards. It's known as one of the seven best quality tools amongst the improvement methodologies.

## When to use a Fishbone Diagram

It is a useful tool to use when you are trying to determine why a problem is occurring. It will help you and your team understand the issues and a wide range of underlying factors, and not just the obvious one. It creates a snapshot of the collective knowledge and a consensus of the problem for the team.

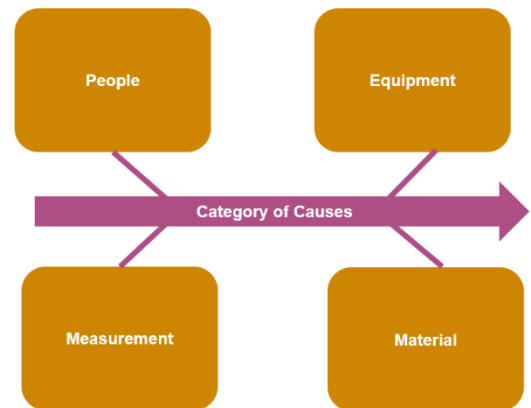
## How to use a Fishbone Diagram

1. Identify the problem in collaboration with all the team members. Be clear about the exact problem. Identify who is involved, what the problem is, when and where the problem occurs. Draw an arrow with a box displaying the problem.

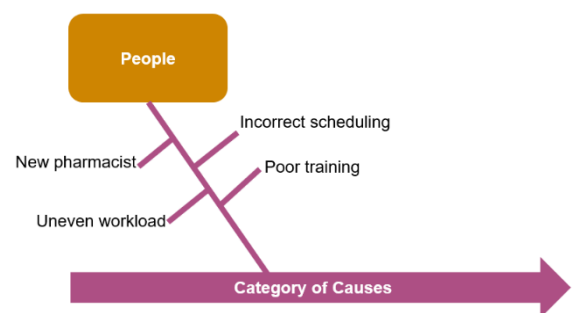


**Your problem  
statement  
goes here**

2. Identify the major factors (categories) or potential causes. This may be environment or people, and so forth. Make sure the categories are relevant to your problem. Write as branches off the main arrow.

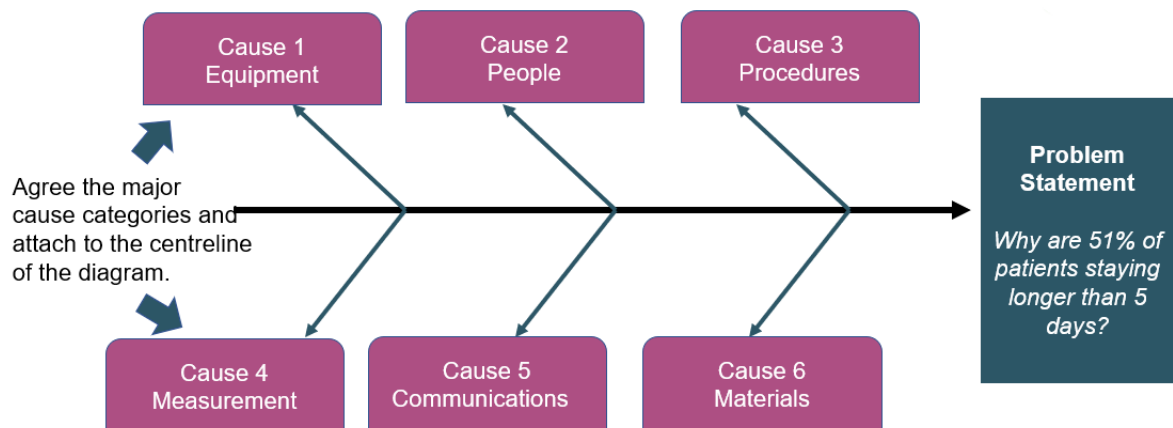


3. Take each category and brainstorm all the possible causes of the problem. Continue branching off until every possibility has been identified. If a cause is complex you may wish to break down into sub-causes. Show these lines as coming off each cause line.



4. Once all causes have been identified it is time to analyse your diagram. You now may wish to investigate the cause further, for example, setting up patient interviews or process mapping. This will help with ensuring the causes are identified correctly.

### Example Diagram 1: Fishbone Diagram



Reference: Microsoft PowerPoint - A2 - How to construct a fishbone diagram (england.nhs.uk) (Accessed 22.8.22)

### What next?

The Fishbone diagram identifies many possible causes. Depending on the complexity and importance of the problem, you need to agree with your team/stakeholders which cause(s) you are going to investigate further.

Other Improvement tools that may be useful at this stage are **Process Maps, 5 Whys or Pareto charts.**

### Helpful tips

Choosing the right categories to help determine the causes of your problem can be difficult. Here are some to consider:

- Methods, Machines (equipment), People (people power), Materials, Measurement and Environment.
- The 4Ws: What, Why, When and Where.
- The 5 Ps: People, Provisions, Procedures, Place and Patrons.

Make sure that your team agree on the problem statement and include the people involved in the problem.

Include as much information as possible in the 'what', 'where', 'when' and 'how much' of the problem.

Use data to help you to understand the problem.

Use a Fishbone diagram as a working document, update regularly and updated as and when you collect more data, or to trial various solutions.

## Additional Resources

If you are interested in learning more about how improvement practices can benefit your workplace, we offer a range of training courses. Visit our website for more information. <https://phw.nhs.wales/services-and-teams/improvement-cymru/improvement-cymru-academy/> or email us [improvementcymruacademy@wales.nhs.uk](mailto:improvementcymruacademy@wales.nhs.uk) to find about the improvement courses we offer.

## Further reading

Asq.org. (2018). *What is a Fishbone Diagram? Ishikawa Cause & Effect Diagram* | ASQ. [online] Available at: <https://asq.org/quality-resources/fishbone> [Accessed 1 September 2022]

England NHS (2022) NHS Improvement Hub [online] How to construct a Fishbone Diagram available at [Microsoft PowerPoint - A2 - How to construct a fishbone diagram \(england.nhs.uk\)](https://www.nhs.uk/improvement-hub/microsoft-powerpoint-a2-how-to-construct-a-fishbone-diagram-england-nhs-uk) [Accessed 1 September 2022].

Ihi.org. (2019). *IHI Home Page*. [online] Available at: <http://www.ihi.org/> [Accessed 1 September 2022].

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NHS East London NHS Foundation Trust (2021). *Cause and Effect Diagram (Fish Bone)*. [online] Available at: <https://qi.elft.nhs.uk/resource/cause-and-effect-diagram-fish-bone/> [Accessed 1 September 2022].

What is a Fishbone Diagram? [What is a Fishbone Diagram and How Do I Use One? \(sixsigmadaily.com\)](https://sixsigmadaily.com/what-is-a-fishbone-diagram-and-how-to-use-one/) [online] [Accessed 6 October 2022].