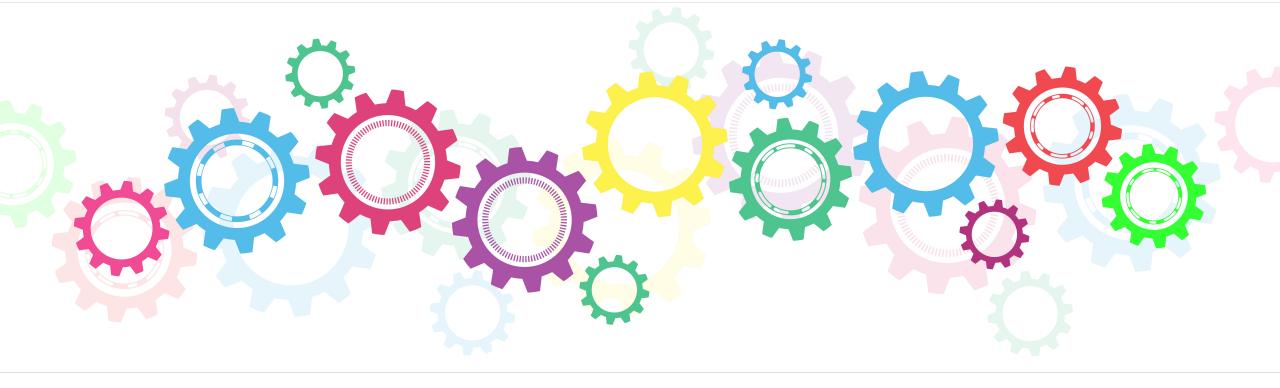


Getting to the Why

Using Root Cause Analysis to Move Towards Equitable Healing, Growth & Rebirth



MCH Evidence Center | MCH Navigator | National MCH Workforce Development Center

John Richards, Georgetown University

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Learning Objectives

- Increase knowledge of root cause analysis and how it applies to evidence identification and selection
- Increase experience-based understanding of which tools can be used to conduct root cause analysis
- Develop skills to implement a roadmap of how root cause analysis fits into a science-based process for program planning
- Increase skills to identify maternal and child health evidence-based strategies using resources developed and housed at the Evidence Center
- Expand sense of efficacy on using root causes to advance equity

Agenda

- The Four "Hows" of Integrating Root Cause Analysis Tools into your work
 - Overview of Results-based Accountability (RBA®)
 - Overview of Root Cause Analysis (RCA)
 - How RBA and RCA can lead to more equitable program planning
- Small Group Work & Report Out
 - Review, assess, and discuss RCA Tools
- Aligning RCA with other MCH Evidence Center tools and resources
 - Review the MCH Navigator & Evidence Center Websites
- Q&A

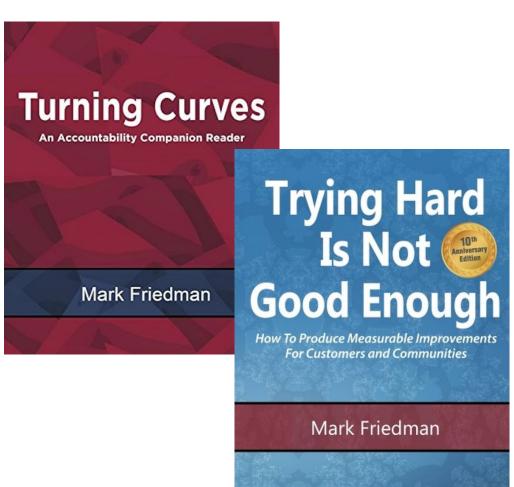
Results-Based Accountability (RBA®) in 5 Minutes

A systematic approach from counting "widgets" to prioritizing

real outcomes

Addresses 2 fundamental questions:

- How much did we do? → actions, resources, and initiatives we invest in.
- How well did we do it? → evaluates the effectiveness of implementation, measured by actual the actual outcomes attained
- 3 Essential Steps
 - Population Accountability
 - Performance Accountability
 - Accountability for Action



Results-Based Accountability

RBA works because it is

- Data-driven decision making
- Transparent and accountable
- Fosters adaptive learning

Population Accountability: We SHARE responsibility

Result	Children to live to their first birthday
	NOM 9.5: Sudden Unexpected Infant Death (SUID) rate per 100,000 live births NPM 5: Percent of infants placed to sleep on their backs

Performance Accountability: We OWN responsibility

1 – How much did we do?	2 – How well did we do it?
# of hospitals that report having a safe sleep policy	% of hospital systems partnered with Title V safe sleep initiatives
3 – Is anyone better off? (Quantity)	4 – Is anyone better off? (Quality)
understanding of safe sleep practices following a structured counseling session	% of staff in state Medical examiner's office who report an increased understanding in SIDS/SUIDS coding % of infants placed to sleep on their back in Baby Friendly hospitals

Decision Making

Ends to Means

Accountability

Partnerships

Population & Performance

Impact

Common Language

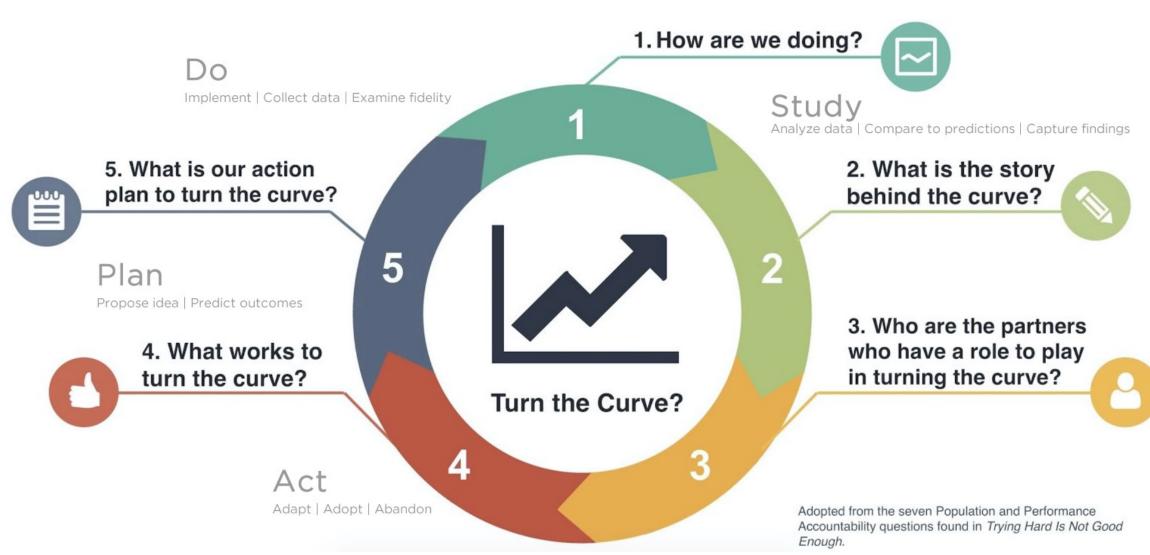
Source: Equity & Results, Anti-Racist RBA Training, Spring 2023

Steps of Antiracist RBA

	7 Questions of Population Accountability	7 Questions of Performance Accountability
1	What condition of well-being do we want for our community (population results)?	Who/what does the strategy aim to impact directly (client/customer) - may be multiple?
2	What would these conditions look like, feel like, taste like if we achieved them? (NOMs)	How can we measure the impact/"better off" of the strategy? (Is anyone better off?)
3	What measures can we use as a proxy to quantify these conditions (population indicators;	How can we measure the quality and quantity for the strategy? (How well did we do?)
[(NPMs)? What are the data sources? How are we doing on the indicators (broken	Implementation Begins: Steps, Tactics, Timeline, Budget
4	down by race) and what are the root causes ? What are the "hot" roots? (baselines + causes)	How are you doing on your better off measures? What are the roots of your performance?
5	What could we do to address the "hot" roots selected (brainstorm, internal and external)? (low-cost and no-cost)	What could address the root cause(s) of the problem or strengthen the performance?
6	Who are the partners with a role to play? (typical and new)	Who are the partners you need and what is their role?
7	What strategies do we propose to implement?	What do you propose to do differently? And What will be needed?
		Source: Equity & Results, Anti-Racist RBA Training, Spi

5. What is our action plan to turn the curve? 5 Plan Propose idea | Predict outcomes 4. What works to turn the curve?

Indicators, Performance Measures, and Turn the Curve Thinking



real relationships that can tolerate conflict for impact

relationships built for antiracist impact rooted in trust, rather than naming, blaming, and shaming when things go wrong

understanding and designing for root causes

design strategies to address root causes to powerfully interrupt and build new foundations

data informs practice to prevent harm

data is used consistently to inform practice - **not knowing is harm**

7 Principles:
Aligning
Anti-Racism
with RBA

sharing data/data ownership

data is owned by and shared with impacted BIPOC for trust, transparency and effective design

participatory practice

ensuring that power is accounted for and all parts of the process are designed and implemented with BIPOC decision-making at the center - "not about us without us"

paying attention to data culture

transforming the usual **punitive data culture** to a learning and use culture

organization selfreflection

a reflective process that doesn't

"prove" or blame BIPOC

communities/staff for our **institutional**failures and structural designs



Source: Equity & Results, Anti-Racist RBA Training, Spring 2023

Result(s): Condition(s) of well-being for people Population -evel **Indicators Root Causes** RBA is made **Programs Policies** up of iterative Performance **Functions** cycles Level **Better-Off Measures**



Root Cause Analysis (RCA) in 5 Minutes

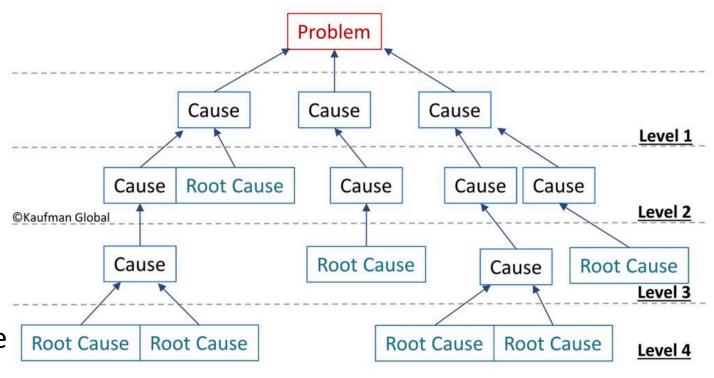
Symptoms

- A systematic, problem-solving approach that helps to enhance our understanding of issues and helps us make more informed decisions
- Helps to understand the underlying causes of problems/events/actions/ policies
- Asks the question: What are the underlying social, structural, cultural or habitual factors that influence why they symptoms of this issue are being seen?

RCA Importance

 Prevent the same 'thing' from happening over and over again

 Better understanding of what is contributing (or driving) the issue



- Fosters a continuous improvement mindset in organizations
- Reduces the risks by identifying them early and examining ways to address them

RCA Steps



1 Define the Problem

2 Gather Data

3 Identify Possible Causes

A Narrow Down Causes

4 Identify Root Causes

5 Develop and Implement Solutions

Continuous Quality Improvement & Monitoring

RCA and RBA: Two Aligned Approaches

- 1. Identify Disparities.
- 2. Seek to Understand Systems.
- 3. Develop Targeted Interventions.
- 4. Rely on Accountability and Monitoring.
- 5. Focus on Policy Change.
- 6. Integrate Community Engagement.
- 7. Shift to Continuous Improvement.
- 8. Facilitate Data-Informed Decision-Making.



8 RCA Tools in 15 Minutes

- Top Contenders
 - Equity Iceberg.
 - Fishbone (Ishikawa Diagrams).
 - 5 Whys.
- Other Tools
 - Fault Tree Analysis.
 - Pareto Principle and 80/20.
 - RCA2.
 - Failure Model.
 - Scatter Plot.



Process

Equity Iceberg & Questions to Ask

Outcome

How do we demonstrate equity in our implementation steps/tasks?

Events

What is happening?

Actions

How do we demonstrate equity in our interactions with others?

Behaviors/Patterns/Trends

What has happened over time?

Relationships

How do we demonstrate equity in our institutions (e.g., policies, organizations)?

Structures

What is influencing the repeated behavior?

Systems and structures

How do we understand and approach the world in an equitable and just way?

Mental Models

What beliefs stimulate the behavior?

Mental models

values, beliefs, worldviews

Have we fostered more equitable conditions?

Are we making strides towards establishing fairness and justice?

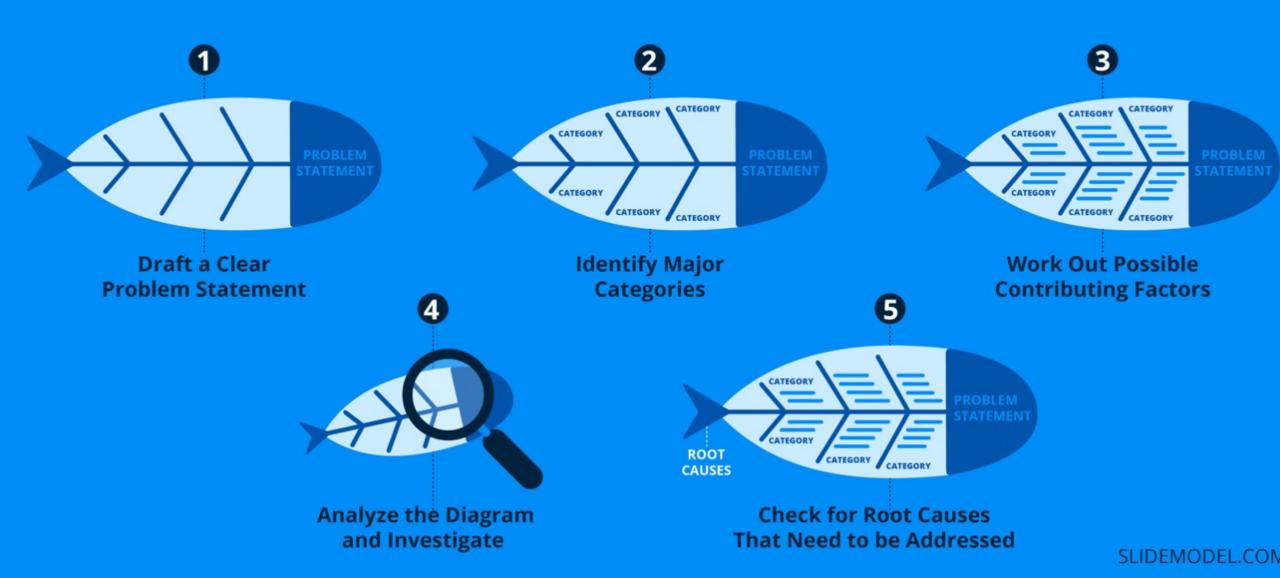
EVENTS are just the tip of the iceberg...

- The visible part of a system; to identify an event, you might ask yourself, "What is happening right now?"
- If we only think about the event level when considering solutions, we might treat the symptoms of our problem without addressing the root cause.
- Think about events in the context of outcomes

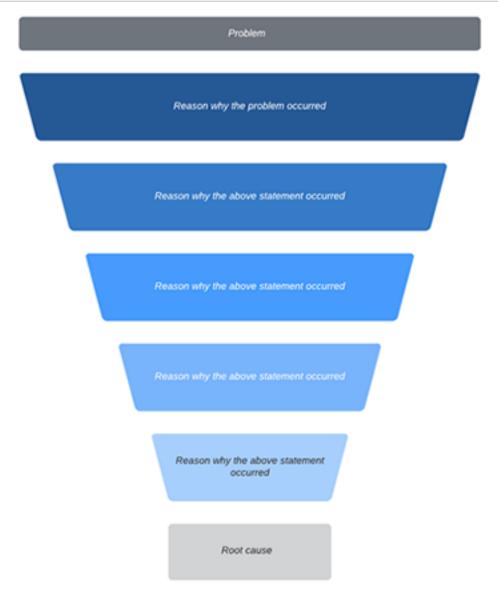


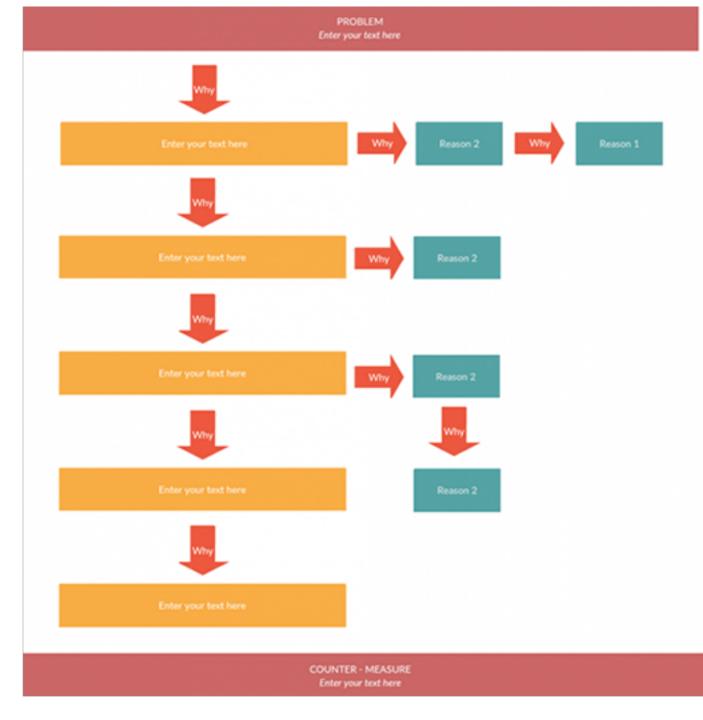
Figure developed by The Center for Implementation

HOW TO CONSTRUCT A FISHBONE DIAGRAM FOR CAUSE AND EFFECT ANALYSIS?



Five Whys Tool





ISOLOCITY

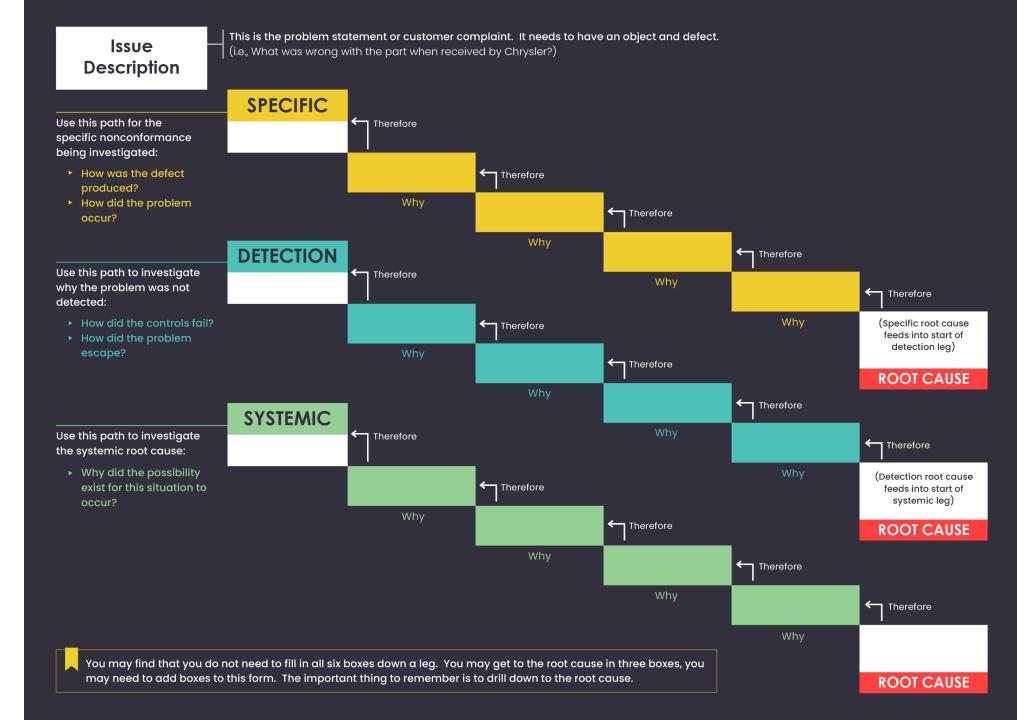
Start by describing the issue and then answer the why's for this leg of the analysis. In this order:

- 1. Specific
- 2. Detection
- 3. Systemic



Remember that each box must answer the "why?" to the statement in the previous box.

ROOT CAUSE

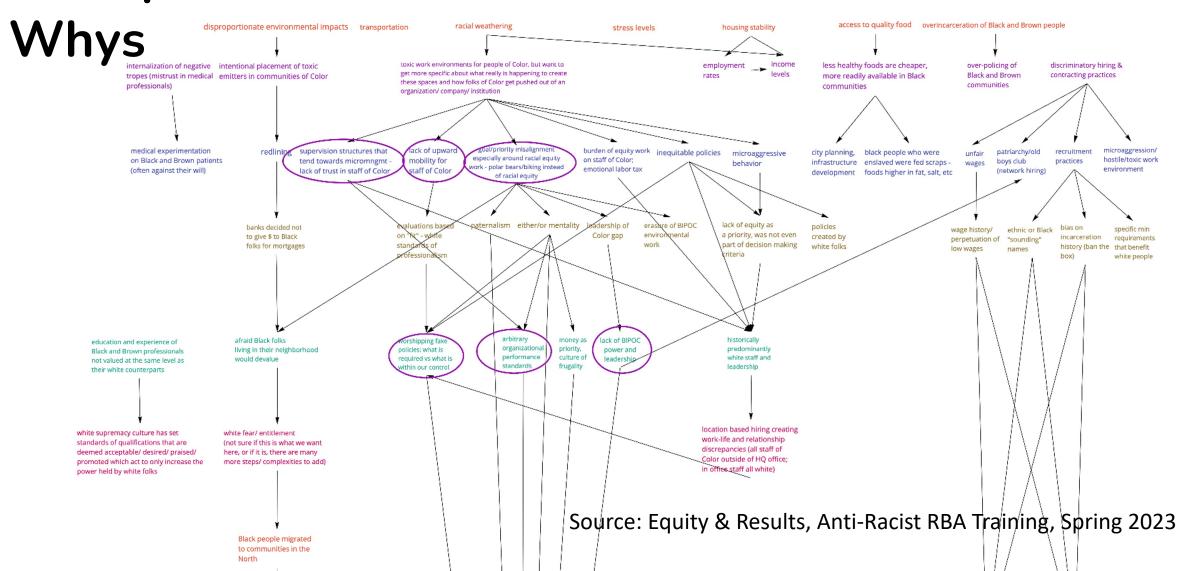


Using Anti-Racist Principles with the 5

Indicator: Life Expectancy (broken down by race)

Avg. Life Expectancy - (source RWJF via wikipedia)

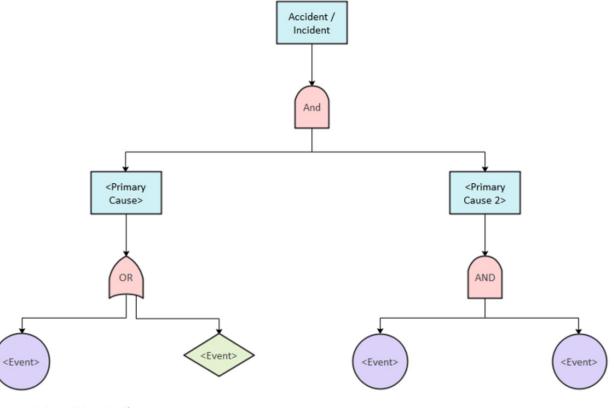
white: 79 years Black: 75 years

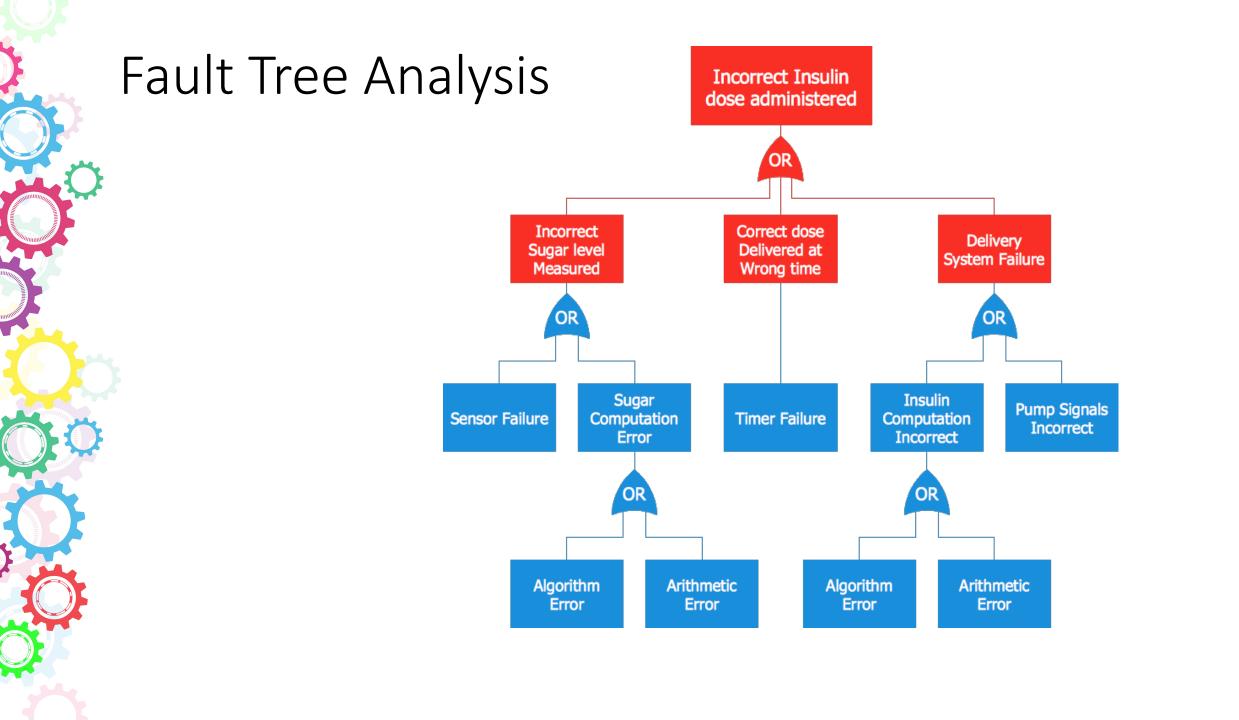


Fault Tree Analysis

S.No	Event Symbol	Description		
1		Primary or basic failure event. It is a random event and sufficient data is available		
2		State of system, subsystem or component event		
3	\Diamond	Secondary failure or under developed event, can be explored further		
4		Conditional event and is associated with the occurrence of some other event		
5		House event representing either occurrence or non- occurrence of an event		
6	∐ In — Out	Transfer in and transfer out symbols used to replicate a branch or sub-tree of the FTA		

S.No	Gate Symbol	Description
1	AND Gate	The output event occurs when all the input events
		occur
2	OR Gate	The output event occurs when at least one of the
		input events occur
3	Priority AND Gate	The output event occurs when all the input events
		occur in the order from left to right
4	Exclusive OR gate	The output event occurs if either of the two input
		events occur but not both
5		The output event occurs when the input event
	Inhibit gate	occurs and the attached condition is satisfied

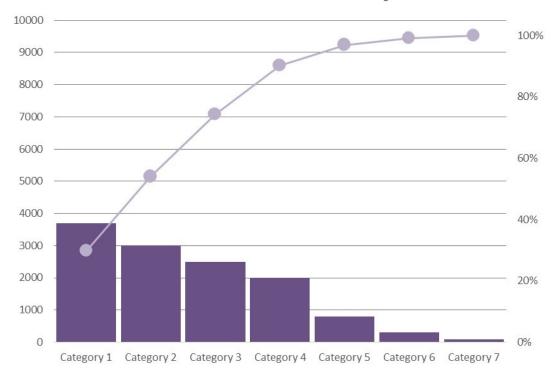




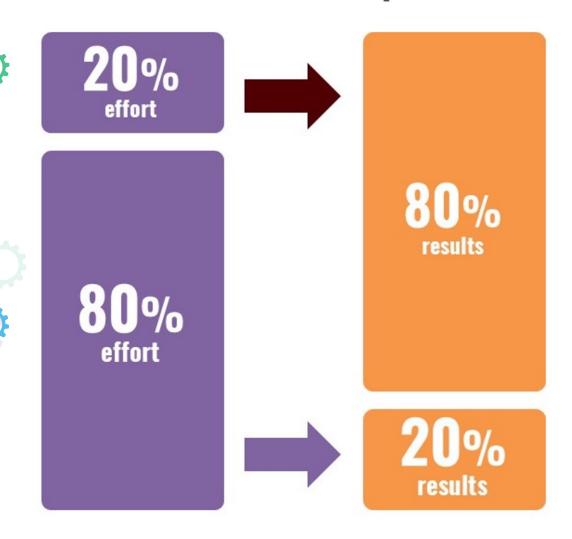


- Developed by Vilfredo Pareto, an Italian Sociologist, engineer, economist & philosopher
- Discovered that 80% of Italy's wealth was in the hands of only 20% of the population
- Joseph M. Juran, a management consultant, converted these findings into the 80/20 Rule.
- Currently this 80/20 Principle is used for planning decisions, six sigma, & performance management

Pareto Chart Example



Pareto Principle



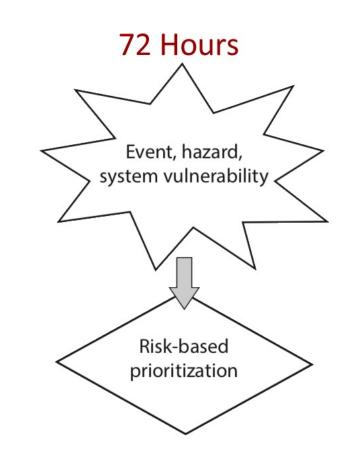


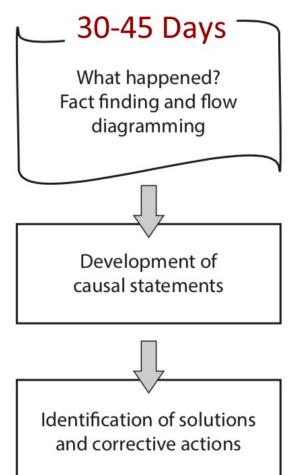


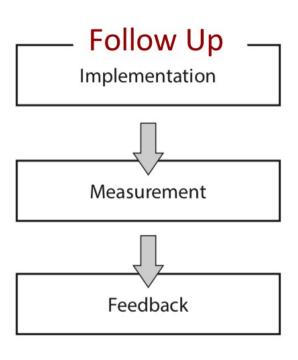
- "The purpose is to systematically review vulnerabilities so that they can be eliminated or mitigated."
- Focuses on systematic issues and system level challenges. It does not focus on the individual.
- Developed for patient safety and improving medical errors, close calls,
 near misses, and other potential issues in healthcare.

https://www.performancehealthus.com/blog/rca2-tools-to-prevent-harm; https://www.med.unc.edu/ihqi/wp-content/uploads/sites/463/2018/07/RCA2-National-Patient-Safety-Foundation.pdf

Root Cause Analysis²







https://www.performancehealthus.com/blog/rca2-tools-to-prevent-harm; https://www.med.unc.edu/ihqi/wp-content/uploads/sites/463/2018/07/RCA2-National-Patient-Safety-Foundation.pdf

Root Cause Analysis²

Template: Action Hierarchy Tool

	Action Category	Example	Action
Stronger Actions	Architectural/physical plant changes	Replace revolving doors at the main patient entrance into the building with powered sliding or swinging doors to reduce patient falls.	
(these tasks require less reli-	New devices with usability testing	Perform heuristic tests of outpatient blood glucose meters and test strips and select the most appropriate for the patient population being served.	
ance on humans to remember to perform the task correctly)	Engineering control (forcing function)	Eliminate the use of universal adaptors and peripheral devices for medical equipment and use tubing/fittings that can only be connected the correct way (e.g., IV tubing and connectors that cannot physically be connected to sequential compression devices or SCDs).	
	Simplify process	Remove unnecessary steps in a process.	
	Standardize on equipment or process	Standardize on the make and model of medication pumps used throughout the institution. Use bar coding for medication administration.	
	Tangible involvement by leadership	Participate in unit patient safety evaluations and interact with staff; support the RCA ² process; purchase needed equipment; ensure staffing and workload are balanced.	
Intermediate	Redundancy	Use two RNs to independently calculate high-risk medication dosages.	
Actions	Increase in staffing/ decrease in workload	Make float staff available to assist when workloads peak during the day.	
	Software enhancements, modifications	Use computer alerts for drug-drug interactions.	
	Eliminate/reduce distractions	Provide quiet rooms for programming PCA pumps; remove distractions for nurses when programming medication pumps.	
	Education using simulation-based training, with periodic refresher sessions and observations	Conduct patient handoffs in a simulation lab/environment, with after action critiques and debriefing.	
	Checklist/cognitive aids	Use pre-induction and pre-incision checklists in operating rooms. Use a checklist when reprocessing flexible fiber optic endoscopes.	
	Eliminate look- and sound-alikes	Do not store look-alikes next to one another in the unit medication room.	
	Standardized communication tools	Use read-back for all critical lab values. Use read-back or repeat-back for all verbal medication orders. Use a standardized patient handoff format.	
	Enhanced documentation, communication	Highlight medication name and dose on IV bags.	
Weaker	Double checks	One person calculates dosage, another person reviews their calculation.	
Actions	Warnings	One person calculates dosage, another person reviews their calculation. Add audible alarms or caution labels.	
(these tasks require more reli- ance on humans	New procedure/ memorandum/policy	Remember to check IV sites every 2 hours.	
to remember to perform the task correctly)	Training	Demonstrate correct usage of hard-to-use medical equipment.	

https://www.performancehealthus.com/blog/rca2-tools-to-prevent-harm; https://www.med.unc.edu/ihqi/wp-content/uploads/sites/463/2018/07/RCA2-National-Patient-Safety-Foundation.pdf



- A bottom-up analysis
- Identifies potential ways (modes) in which each part of the system can fail
- Assesses the priority of that failure in the terms of likelihood and impact
- Used proactively or retroactively
- Comes from engineering and science
 —
 modified for health care

How likely is failure to happen?

What is the severity of the failure (or this failure)?

What are the short-term and long-term impacts if it fails?

How difficult will it be to fail?

UNC SPH MPH Online; SPGH 718; Dr. William Oscar Fleming;

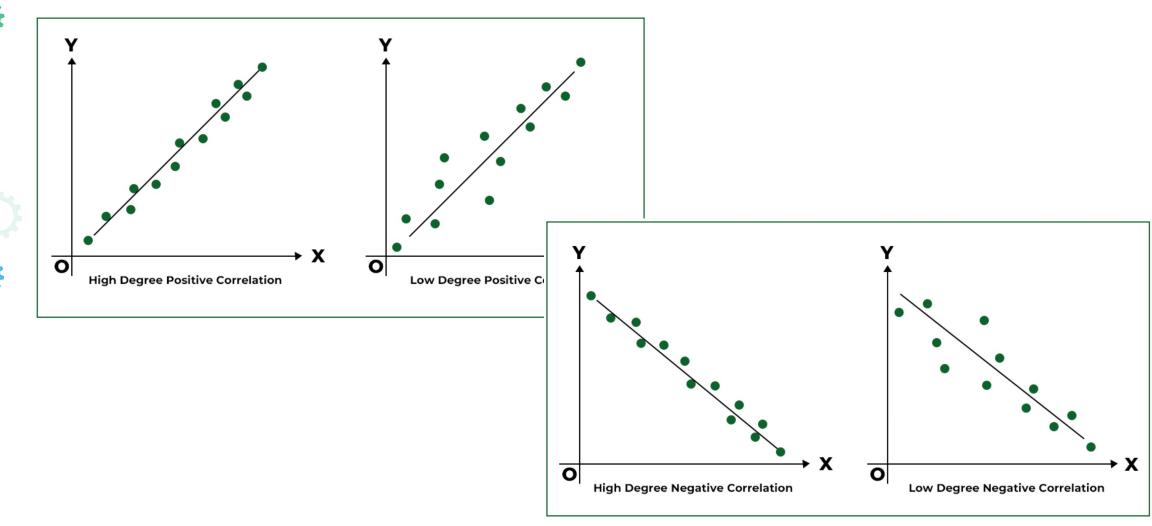
https://www.sixsigmadaily.com/understanding-fmea-benefits-pitfalls/

FMEA for Hypertension Informational Packet

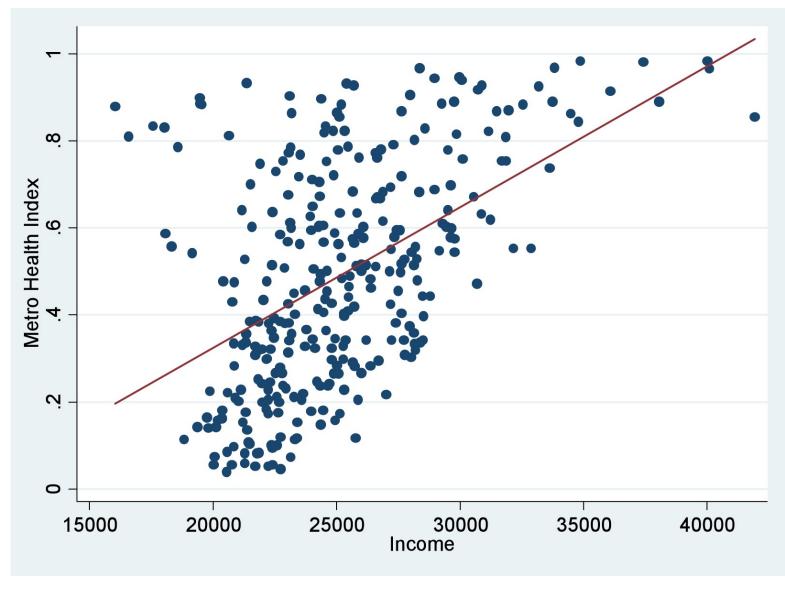
Process and Sub Processes	Failure Modes	Causes	Effects	Severity	Probability	Hazard Score	Actions to Reduce Failure Mode
Educational Materials	Difficult terms used in the educational materials	Not enough feedback received from PDSA cycles		2	3	6	Utilize more infographics and pictures; ensure right people are providing feedback in safe environments
Physician Access	Physicians are still far away		People will not seek treatment	3	3	9	Research and include transportation resources
Medication Cost	Medication is still unaffordable	listed in cost- reduction	People will not seek treatment or purchase medication	3	2	6	Research ahead of time to understand scope; work with providers to learn about substitutes of any medications and provide resources

UNC SPH MPH Online; SPGH 718; Dr. William Oscar Fleming

Scatter Diagrams (Plots)



Scatter Examples



RCA Tools: A Summary

Top Contenders

- Equity Iceberg: Simple way to look under the surface.
- Fishbone (Ishikawa Diagrams): Visualize potential causes and their relationships to identify root causes.
- 5 Whys: Repeatedly ask "Why?" to drill down and identify the underlying cause of a problem.

Other Tools

- Fault Tree Analysis (challenge is that shapes each mean something)
- Pareto Principle and 80/20 (more complicated, because you need to be intimately familiar with what the data says).
- RCA2 (really good for health care and clinical work).
- Failure Model (process-based, but complicated).
- Scatter Plot (advanced epi tool; need to really analyze data).

Accelerate with Evidence

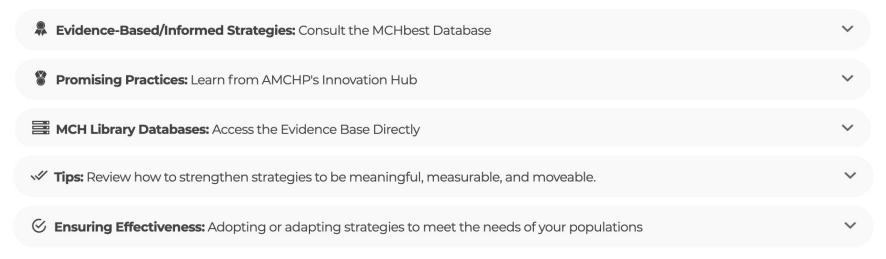
Explore the Evidence







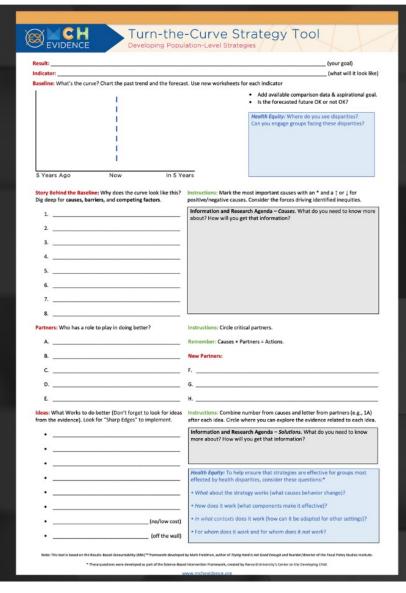
Find evidence-based/informed strategies through the MCHbest database, promising practices through AMCHP's Innovation Hub, and field-generated resources from the MCH Digital Library.



Think Upstream to Plan

Incorporating Equity into Result-Based Ability:

Two Evidence Center Tools

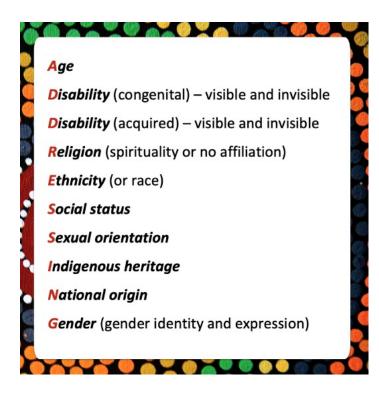


EVI		ant Measurement Tool e-Level Evidence-based/informed Strategy Measure			
structi	ons				
	How Much?	How Well?			
Effort	Step 1: How much did we do? – Quadrant 1	Step 2: How well did we do it? – Quadrant 2			
	Start with "Number of customers served." Better, more specific ways to count customers? Subcategories of customers? What activities are performed? (e.g., training providers). Convert each activity into a measure (# of providers trained).	Start with common measures: Ownfoad ratio (e.g. et clien/provider) Outstomer satisfaction (e.g. policy we treat you well? Were you satisfied with services) Tale each Quadrant 1 activity and ask how well was the activity performed. What is you creatly (e.g., % of providens trained, % of eligible mothers with how received content insertials). Out the providence of			
Effect	Step 3: Is anyone better off? How are they better off? – Ouadrants 3 and 4	Step 4: Headline your measures – Determine communication, proxy, and data power			
	Ask: "If your program works really well, in what ways are your customers better off?" how would you observe/measure this? These often occur in pairs [sh I nouadrant 3, sh I n	 Circle each measure that you have good, timely, and reliable data that is wallable now or with titles effort (only circle Gualence 2 and 4 measures). Asi "If you had to talk about this in a public cetting, which circle emeasure would you choose?" (Public Square Test). Bank with xt, 2x, 81. These are leading Measures. Remaining circled measures are Secondary Measures that can be tried medium-term. Step 5: Data Development Agenda 			
ther Cus	ustomer:tomers/Subgroups:	Common Measures (e.g., ratios, satisfaction):			
think abo	ut vulnerable groups in order to address health disparities)				
	mers Served:	% of Customers Served (Reach):			
f of Activi	ties Performed?	% of Activities Performed: (measured by time or accuracy/standards) Other ideas:			
Q	uadrant 3: Measuring Quantity of Effect Is Anyone Better Off (#)?	Quadrant 4: Measuring Quality of Effect How Are They Better Off (%)? Changes in: Skills/Knowledge: %			
		Attitude/Opinion: %			
	quity Considerations:	Behavior: %			
2. H	re the groups affected by this measure at the table? ow will this measure affect vulnerable groups differently? ow will this measure be perceived by vulnerable groups?	Access to/receipt of care: %			
4. W	ow will this measure be perceived by vulnerable groups? "Ill this measure ignore or worsen existing disparities? an we focus on a vulnerable subgroup with this measure to ddress disparities?	Other ideas:			

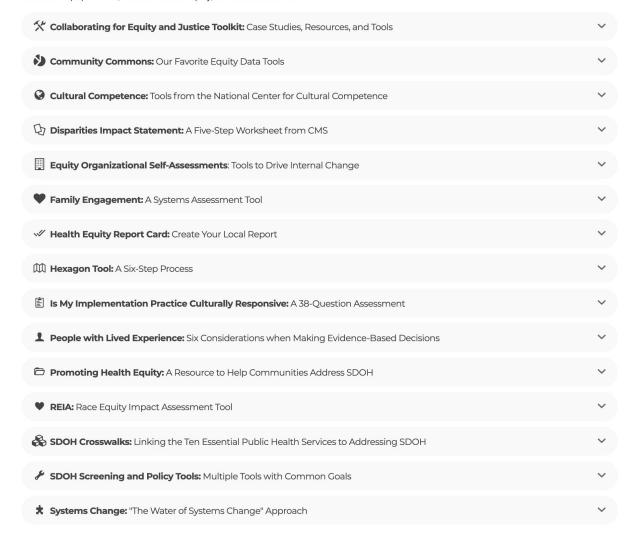


Work Together with an Equity Lens

The Hayes ADDRESSING Model



Hays PA. 2008. Addressing Cultural Complexities in Practice (2nd ed.): Assessment, Diagnosis, and Therapy. Washington, DC: American Psychological Association. **Tools.** The Center has identified and uses the following tools in work with Title V agencies to ensure that new and ongoing strategies reflect the needs of all populations, advance health equity, and address SDOH.



Request Technical Assistance



SMARTIE TA: An Equity-Centric Approach to Our Work

Specifically, we provide **SMARTIE TA** that leads to:

- > Sharp, Specific, and Systems-based ESMs. We help sharpen ESM goals to more fully advance NPM topics and utilize systems to sustain these strategies.
- > Measurable and Meaningful ESMs. We ensure that your ESMs are measurable and in line with related projects in other states and jurisdictions.
- > Actionable, Achievable, and Aligned ESMs. We ensure that your ESMs inform your actions, are aligned with your needs assessment, and flow from your State Action Plan.
- > Relevant and Research-based ESMs. We connect your ESMs with the published evidence, emerging promising practices, and what other states are currently doing.
- > Translatable, Targeted, and Time-phased ESMs. We engage your team in developing sustained approaches to address specific needs of your populations, including Children and Youth with Special Health Care Needs (CYSHCN).
- > Inclusive and Integrated ESMs. We encourage you to work with all population groups as decision makers in every step of the process to ensure a meaningful partnership draws on the strengths of your communities.
- > **Equitable ESMs.** We continually ask the tough questions to address disparities, gaps, and issues of equity.

Read about our TA in our brochure I Read about how our TA promotes implementation science

Questions, Contacts, and Comments (2:50)

Learn More with the MCH Navigator through Competency-

Based Trainings:

Using Quality Improvement Tools to Uncover the Root Causes of Health System Issues

Connect with Us

Leslie deRosset, University of North Carolina, Chapel Hill

derosset@email.unc.edu

John Richards, National Center for Education in Maternal and Child Health, Georgetown University jrichards@ncemch.org

