CONTINUOUS QUALITY IMPROVEMENT TOOLKIT

**PREPARED FOR THE
THRIVE DATA PARTNERSHIP**

CHAPIN HALL
AT THE UNIVERSITY OF CHICAGO

thrive**chicago**

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CONTRIBUTORS

THRIVE CHICAGO

Thrive Chicago creates collaborative networks of people and data that accelerate innovation for Chicago's youth.

Thrive Chicago, the city's cradle to career collective impact organization, brings together over 300 nonprofits, city agencies, funders and researchers to collaborate and innovate to more rapidly improve outcomes for Chicago's youth at scale.

To generate outcomes, Thrive deploys a set of four capabilities—(1) convening and connecting cross-sector stakeholders, (2) activating data and research, (3) co-designing solutions, and (4) connecting to seed and sustainable funding.Thrive leverages these capabilities in two portfolios of work: Collaborative Solutions and Data Access & Use. The Collaborative Solutions portfolio targets specific youth outcomes with strategies that address the underlying systemic barriers, while the Data Access & Use Portfolio builds up capacity in partners to leverage data for impact. Thrive's data work leverages its research based, practitioner informed, Outcomes Framework and builds on its data infrastructure through the Thrive Data Partnership.

For more information on Thrive Chicago, visit www.thrivechi.org

CHAPIN HALL

Chapin Hall at the University of Chicago has, since its inception in 1985 as a research and policy center, focused on a mission of improving the well-being of children and youth, families, and their communities.

Chapin Hall is an independent policy research center at the University of Chicago that provides public and private decision makers with rigorous research and achievable solutions to support them in improving the lives of children, families, and communities.

Chapin Hall partners will policyicians, practicioners, and philanthropists at the forefront of research and policy development by applying a unique blend of scientific research, real-world experience, and policy expertise to construct actionable information, practical tools, and, ultimately, positive change for children, youth, and familieas.

For more information on Chapin Hall, visit www.chapinhall.org

PARTNER ACKNOWLEDGEMENTS

This Toolkit is a product of a Community of Practice in 2017 and 2018. As part of that community, we would like to thank all the partners who work tirelessly on their commitment to continuos quality improvement. Especially Jen Axelrod, Denali Dasgupta and Beth Horwitz at Chapin Hall for facilitation and coaching; Boeing and the Chan Zuckerburg Initiative for their financial support; Community of practice guest speakers including Sarah Dickson at CPS, Michael Brown at City Year, Andrea Chua at UCAN, Leah Rimkus and Vikki Rompala at MFS, Jessica Carrillo at BUILD, Shaun Lane, Commissioner Lisa Morrison Butler at DFSS, Kimberlee Guenther at United Way Chicago, Rebekah Levin at the Robert R. McCormick Foundation, Jeanne Century at Outlier Research and Evaluation, Linda Galib at Urban Initiatives; and all of the participants in the Spring 2018 Thrive Data Partnership Community of Practice, including representatives from the following organizations:

FORWARD

We know that data access alone is not sufficient to improve youth outcomes at scale. Thus, Thrive is working to build capacity of youth-serving organizations to have the access to actionable information, and help them identify the tools, processes, infrastructure, and culture to use data to support continuous improvement to ultimately improve youth outcomes.

Much of this capacity-building work is done through the Thrive Data Partnership, which connects program data to student data in real time thereby ensuring that a young persons' learning is recognized, coordinated and continuous between caring adults throughout the entire day, both in and outside the classroom and year round.

Community Partners participating in the Data Partnership get access to aggregated data for their program participants (including grades, misconducts and CPS attendance) in real-time. This aggregated data can be used to better understand youth needs, identify potential opportunities to enhance programming to better meet youth needs, and to monitor change in outcomes over the course of the year.

Thrive supports participating youth-serving organizations to access and use data in two key ways:

1. REAL-TIME DASHBOARD

The Data Partnership matches program records with individual student ID numbers at Chicago Public Schools (CPS) so participating community partners have real-time access to a dynamic dashboard of over 50 academic indicators, including attendance and grades. This also includes the ability to download data for reporting.

2. PROFESSIONAL DEVELOPMENT NETWORK

To support organizations to use data from the Data Partnership to improve programming, Thrive convenes a Communities of Practice (CoP) to enhance partners' ability to make data-driven decisions through continuous quality improvement processes.

The Data Partnership is a data-driven, collective impact strategy that relies on the actions of individuals to dramatically improve results for Chicago's youth, at scale, by working on the same goals. With the Data Partnership tools, CPS spends less time creating data extracts and reports, nonprofits spend less time trying to access CPS data and doing duplicative data entry, and Thrive has better visibility into service gaps and opportunities across the city. Access to this robust data , supported by a professional development network, provides visibility into critical service gaps and disparities across the city that can ultimately drive systemic changes to resource allocation and policy change. The Data Partnership aims to build the capacity of practitioners, leaders, and organizations to make better data-driven decisions on behalf of Chicago's children, youth, and young adults.

HOW TO USE THIS TOOLKIT

WHAT IS THE PURPOSE OF THIS TOOLKIT?

One of the ways in which Thrive helps the ecosystem of youth serving organizations better collaborate and innovate is by activating data to help inform youth serving agencies and enhance their ability to better serve Chicago's youth. **Recognizing that continuous quality improvement is an essential part of effective data integration, this Toolkit is intended to support youth serving organizations enhance their internal processes.**

WHY CONTINUOUS QUALITY IMPROVEMENT?

Continuous Quality Improvement (CQI) is a quality management practice that can benefit all levels of an organization. CQI is particularly important in the field of social services, as service beneficiaries often represent some of the most vulnerable populations. Thus organizations must have practices and procedures in place that enable them to be continually responsive to the efficacy of program delivery. CQI requires that organizations adapt so critical programmatic changes can be made as needed.

I'M NOT A PART OF THE THRIVE DATA PARTNERSHIP. IS THIS TOOLKIT FOR ME?

Of course! This toolkit is intended to provide organizations with a brief introduction to CQI along with guided practice. Even if your organization does not have a formal team focused on CQI , this toolkit can be used as an introductory guide to help you implement some of the fundamental practices and modes of thinking inherent in CQI.

HOW DO I USE THE TOOLKIT?

This toolkit is divided into 3 parts intended to walk you through the fundamentals of CQI—Everything from recommended documentation, who should be involved in CQI practices, and and step-by-step process of how to implement a CQI cycle (we walk through one framework, the Plan Do Study Act or PDSA cycle). Each section contains guiding questions, key terms, a summary, and list of external resources for more follow-up.

At the end of this guide you will find a selection of best practices and examples compiled from peer organizations across Chicago. These examples are intended to be illustrative of the many ways organizations can adapt CQI principles to support their unique organizational needs.

THIS SOUNDS GREAT, HOW CAN I JOIN THE THRIVE DATA PARTNERSHIP OR JOIN A FUTURE COMMUNITY OF PRACTICE?

Over time, Thrive will onboard additional youth-serving partners to increase data access and connect additional data sets for a more holistic picture of Chicago youth.

If you would like to know more about the Thrive Data Partnership and broader collective efforts, please visit datapartnership.weebly.com

PART I

INTRODUCTION TO CONTINUOUS QUALITY IMPROVEMENT (CQI)

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WHAT IS CONTINUOUS QUALITY IMPROVEMENT?

Continuos Quality Improvement (CQI) is a cyclical process of problem solving activities that requires the deliberate use of evidence. While the CQI process has its roots in manufacturing and the production of goods, over time it has been adopted within the social service sector as a method of professionalizing and enhancing performance of service delivery. Given that change is often a necessary precondition for improvement, the purpose of the CQI process is to create a structured means for tracking, monitoring, and assessing change to create long-term sustainable improvement.

CQI is inherently about asking probing questions about how a process works and creating small tests of change to see if it is possible to create (even minor) improvements. Ideally the questions we ask should be with an eye towards improving outcomes for the children, youth, young adults, and families we serve.

Example: Are there ways we can improve the enrollment process to encourage more target families to participate in [our organization's] programming?

In order to be strategic about the questions being asked, it is important to consider the organizational specific outcomes, which are typically articulated in agency-wide strategic plans, program specific plans, and/or contractual requirements. CQI teams should have a unified understanding of what they are trying to accomplish, how they will know when a change is an improvement, and what changes can result in an improvement.

In the context of CQI, improvement is understood as an action intended to (1) alter how work is done to produce a given service; (2) produce positive outcomes in comparison to historical norms (baseline); and (3) have a l asting impact. **There are five principles of improvement:**

1. Knowing **why you need to improve** (i.e. define the performance issue and understand underlying conditions)
2. **Having a way to measure** if improvement is happening
3. Developing a change that has the **potential to result in improvement**
4. **Testing a change** before making any lasting policy/practice changes
5. **Implementing a change**

INTRODUCTION TO CQI

There are four foundational elements of effective CQI, each of which will be discussed in greater detail below:[1]

1 CQI relies on an **organizational culture** that is proactive, supports continuous learning and is firmly grounded in the overall mission, vision, and values of the agency.

2 Quality CQI efforts depend upon the **active inclusion and participation** of staff at all levels of the agency, children, youth, families, and stakeholders throughout the process.

3 A high quality CQI approach incorporates the **rigorous use of evidence.**

4 The CQI approach identifies, describes, and analyzes strengths and challenges and then **tests and revises** solutions.

In addition to providing an overview of CQI, this toolkit will detail the **Plan-Do-Study-Act (PDSA) Cycle**, a framework for carrying out CQI. The PDSA Cycle entails making small, specific process changes in order to impact long-term outcomes

1. ORGANIZATIONAL CULTURE

Given that CQI requires buy-in from multiple parties within an agency, organizations should promote and foster a culture of innovation and openness. Paramount in this is a culture of learning, which is a necessary precondition for identifying problems and testing change. Benefits of a strong learning culture include the following:[2]

- Improves overall team performance when individual members enhance their skills
- Enables greater delegation so you can have more time to truly manage vs. "do for"
- Builds your reputation as a people developer
- Increases staff motivation and initiative
- Avoids surprise and defensiveness in performance appraisals
- Increases creativity & innovation of your department or team because staff feel safe to take risks
- Increases team cohesiveness due to clarified goals & roles
- Increases likelihood of tasks being completed in a quality way

2. ACTIVE INCLUSION AND PARTICIPATION

Closely linked to organizational culture is active and inclusive participation from all members of staff, service users, and community members. Individuals at every level must feel empowered to express challenges regarding any aspect of program implementation or data collection. To appropriately identify and assess the nature of challenges, issues must be considered from multiple viewpoints in order to understand the underlying conditions. Further, multiple viewpoints must be considered when identifying strategies for improvement.

1 COP Session 1, slide 16-- Slide 16 cites: "Using Continuous Quality Improvement to Improve Child Welfare Practice – A Framework for Implementation", Casey Family Programs and the National Child Welfare Resource Center for Organizational Improvement, May 2005 Children's Bureau Information Memorandum – ACYF-IM-12-07
"Continuous Quality Improvement in Title IV-B and IV-E Programs"
** Wulczyn, F., Alpert, L., Orlebeke, B., & Haight, J. (2014). 'Principles, language, and shared meaning: Toward a common understanding of CQI in child welfare." Chapin Hall at the University of Chicago.
2 COP session 1, slide 11

3. RIGOROUS USE OF EVIDENCE

Evidence must be integrated throughout every step in the CQI process.[1]

- **Define the challenge:** Need evidence that supports the agency's claim about current performance
- **Understand underlying conditions:** Need evidence that supports the agency's hypothesis about the underlying factors driving current performance
- **Identify strategies and plan for implementation:** Need evidence that supports the agency's decision to implement the selected intervention (i.e., "evidence based interventions"). Need evidence that justifies performance targets
- **Implement the strategy:** Need evidence of the extent to which the intervention is being implemented with fidelity to the implementation plan (i.e., with fidelity to process and quality standards)
- **Test the strategy and revise the approach:** Need evidence that supports the agency's claim about the effectiveness of the intervention and decisions about what to do next

4. TESTING AND REVISING SOLUTIONS

Continuous Quality Improvement is an iterative process, whereby organizations must continually revisit and test strategies intended to improve the way an organization does its core work. Each step in the process is informed by evidence (qualitative or quantitative) that is used to support an observation, claim, hypothesis, or decision. In order to effectively integrate evidence, it is recommended that organizations comply with the following:[2]

- Review outcome evaluation to determine progress toward the target outcome using methods that are objective, systematic, and matched to the performance question at hand
- Share the results of outcomes and process evaluations with relevant stakeholders, process owners, and decision-makers.
- Use the results of outcomes and process evaluations to support/refute the initial theory of change.
- Conduct a cost-benefit analysis to determine the return on investment in the intervention.
- Use the results of outcomes and process evaluations to determine whether adjustments to continue, modify, or discontinue the intervention.
- Summarize lessons learned and document plans for next steps

1 "A Guide to Build Capacity for Child Welfare Using the CQI Process" https://docs.google.com/document/d/1EbaVzbodRUaDN3N822QqL-T3yPMnX9av_4DD4udgvnvk/edit#

2 A Guide to Build Capacity for Child Welfare Using the CQI Process" https://docs.google.com/document/d/1EbaVzbodRUaDN3N-822QqLT3yPMnX9av_4DD4udgvnvk/edit#

DIFFERENTIATING BETWEEN CQI, QUALITY ASSURANCE, AND EVALUATION

CQI is _not_ the same thing as Quality Assurance or Evaluation. Despite terms being used interchangeably, there are significant differences between the three. The table below outlines some of the specific differences.[1]

	Continuous Quality Improvement (CQI)	Quality Assurance (QA)	Evaluation
Focus area	Focused on improvement and leadership is shared at all levels of staff and community	Focused on accountability and directed "top down"	Focused on assessment and often led independently or externally
Level of integration with agency activities	An activity integrated with regular practice	A separate activity	An external examination of regular practice
Compliance standards used	Uses fluid constantly changing standards that are established by stakeholders and consumers working alongside professionals	Uses standards that are established by professionals and compliance with professional requirements	Uses evidence-based standards determined by research questions
Staff involvement	Is agency-wide and crosses all functions	Involves selected staff and functions	Involves a cross-section of actors and functions related to a single set of processes or outcomes
Frequency of implementation	Is an ongoing process	Is event-based	Is retrospective
Purpose/ Use Case	Seeks to prevent errors by continuously clarifying and improving policies and protocols	Relies on reviews or checks to identify errors or non-compliance	Identifies factors or activities associated with outcomes or impact
Social conditions of use	Data shared in low stakes safe environment conducive to change	Publically available. Formal collection process to assure appearances of neutrality and objectivity	Meets scientific standards that are held in the field

PRECURSORS TO CQI: THEORY OF CHANGE AND LOGIC MODELS

Prior to engaging in a process of CQI, there are two tools your organization should have at its disposal: a Theory of Change and a Logic Model. Together these tools structure and guide the quality improvement process, ensuring that your hypotheses and testing are aligned with program goals and intended outputs. These tools will be referenced throughout this toolkit.

> If your organization already has a Theory of Change and Logic Models for each of your programs**, you can skip to the next section: Levering PDSA Cycles**
>
> If you do not already have a written Theory of Change or Logic Model, this section will provide more information, resources, and guided practice to help you develop these critical tools for your organization.

THEORY OF CHANGE	LOGIC MODEL
• Link program components to HOW and WHY change occurs • Identify assumptions about desired change • Start with impact desired and identify approaches needed • Require identification of indicators—necessary to determine if precondition met • Need to know how well pre-condition is met to determine impact • Requires justifications – articulate strategy as cause and effect	• Graphic illustration of program components • Clearly id outcomes, inputs, and activities • Start with program and articulates components • Don't always identify indicators – how an outcome will be measured • Short or immediate outcomes instead of pre-conditions • Assumptions and strategy are not articulated • Graphic representation of ToC

THEORY OF CHANGE
What is a Theory of Change and why is it important?

> **"** *A theory of change articulates how we believe change will happen, and as a result, how we plan to invest time and resources to contribute to that change.[1]* **"**

Theories of Change (ToC) tell a story. The different components of the story should be logically strung together without any holes in the narrative.[2] One way to develop this cohesive narrative is by actually having the conversations "out-loud" with key stakeholders. This helps bring to light the different perspectives and opinions people bring to the process and can be very helpful for surfacing underlying assumptions – and tensions – and getting key players on the same page.

DEVELOPING A THEORY OF CHANGE
A range of stakeholders should be included in the development of a ToC, because all leadership, staff, and stakeholders involved in a program make explicit or implicit assumptions regarding the following:

- Nature and severity of the problem or need experienced by the program's target population.
- Efficacy of activities and services used to address the problem.
- Pathways of change or linkages between certain services/activities and desired outcomes.

The perspectives of all stakeholders should be considered when building a cohesive understanding of the goal of a program, how it should be implemented, and what ideal outcomes should be achieved. Theories of Change can help to strengthen organizational processes by building clarity around the following:

- Articulating the context and known causes for the underlying challenges the program seeks to address, how an initiative's activities should impact the issue/problem and influence the intended outcomes, and convey the scope and focus of the program intervention.
- Clarifying program boundaries and where a program sits in the broader organizational, political context.
- Illustrating a causal pathway from "here" to "there" showing how activities will lead to goals being achieved (show the cause-effect relationships between activities and outcomes).
- Addressing "inadequacy traps," i.e., errors or gaps in thinking regarding how the program works: "miracle" thinking or "black boxes."

If your organization does not have any previous experience developing Theories of Change for its program(s), it is recommended that you plan a group brainstorming session to (1) define the specific problems your programming seeks to address; (2) outline the actions (activities) you are currently engaging in; and (3) define the program outcomes. Throughout this conversation, ensure that you are accurately recording the program scope. Outcomes should be achievable via program activities-- i.e. the work your organization is actually doing.

There are **4 basic frameworks** for developing program scope: narrow and shallow, narrow and deep, broad and shallow, broad and deep. Generally, it is recommended that organizations work to develop breath and depth. This approach ensures program models are inclusive of all preconditions for change and has a clearly defined (and achievable) pathway to bring about all intended outcomes. It is helpful to bring a cross-sectional group of stakeholders to the table when mapping out the necessary preconditions for change, as these will likely vary by vantage point.

FRAMEWORKS FOR DEVELOPING PROGRAM SCOPE

NARROW AND SHALLOW (NOT RECOMMENDED)

Shows the least amount of information. Identifies relevant preconditions to the long-term goal, but not all necessary preconditions. Focuses "narrowly" only on those preconditions that the initiative may address.

For example if a long-term goal is employment, a narrow scope may only identify the skill-related preconditions to employment and not identify things like available child care, stable lives, or attitudes that may be necessary for people to get and retain jobs, but that are outside the purview of the initiative. Similarly, the framework is "shallow" in that only the pathways are not worked all the way back to the beginning (where the initiative would start) or multiple outcomes are summarized for simplicity.

NARROW AND DEEP

Not all of the preconditions for the long-term goal are not identified, but for those that are, detailed pathways are developed so that every intermediate outcome is identified. Provides enough detail for the initiative to make decisions within the narrow framework it identified. **This scope may be most practical for very small-scale initiatives who just want to map out what they need to do.** This approach allows small initiatives to benefit from rigorous theory of change thinking and provide a blueprint for decision-making and evaluation. However, since some preconditions to reaching the long-term goal have not been accounted for, the initiative needs to be realistic about what level of success it can expect, given that it will only change what it has identified.

BROAD AND SHALLOW

All of the preconditions for the long-term goal are identified. However, the pathways may not go back much further. This type of framework is sometimes used by funders, or intermediaries, to identify a set of outcomes at a high level, and then ask individual grantees to develop the pathways to reach one or more of those higher-level outcomes. Strength: Can demonstrate a basic theory about what is needed, while providing a lot of flexibility for development of how to get to the higher level outcomes and can provide a unifying principle for multi-site, or multi-topic initiatives. The primary drawback of this framework is that it does not provide much guidance on how to reach long-term goals.

BROAD AND DEEP (RECOMMENDED)

It identifies all of the preconditions to change, and has a pathway of outcomes needed to bring all the outcomes about. This scope provides a level of detail that allows for the most internal learning, provides a blueprint to make decisions, and a finely honed evaluation that can sort out what is really happening. Strength: a project that has worked out a broad and deep theory is more likely to produce the desired changes and be able to be flexible as they learn by doing.

If you are writing a Theory of Change for the first time, a worksheet has been provided in **Appendix XX** to help guide you in developing the logical framework for your program(s).

fx appendix XX

1 Why Your Theory of Change is Critical to Your Organization's Impact. (2018, July 10). Retrieved from https://www.genevaglobal.com/blog/why-your-theory-of-change-is-critical-to-your-organizations-impact
2 Quality Monitoring in the Social Services-- week 3 lecture notes (Yolanda Green)

DETERMINING THE STRENGTH OF A THEORY OF CHANGE

There are four tests to determine the strength of a ToC: Is it plausible? Is it doable? Is it testable?
Is it meaningful?

- **Plausible**: Stakeholders believe the logic of the model is correct: if we do these things, we will get the results we want and expect.
- **Doable:** Human, political and economic resources are seen as sufficient to implement the action strategies in the theory.
- **Testable:** Stakeholders believe there are credible ways to discover whether the results are as predicted.
- **Meaningful:** Stakeholders see the outcomes as important and the magnitude of change in these outcomes being pursued as worth the effort.

EXAMPLE THEORY OF CHANGE

To illustrate how to apply a ToC we will use an example from the child welfare space. Consider the following problem: children stay in foster care for too long, while families do not receive support in a timely manner and are thus not completing service plans. Family Group Decision Making is an intervention designed to reduce the time to permanency for youth in care. If we were to simply say, "by implementing Family Group Decision Making, we expect to reduce time to permanency for youth in care with a goal of reunification", we would not have any indication of how or why we expect this to happen. Instead, we can build out a ToC detailing our hypothesized links between the identified needs and the activities needed to create improved outcomes.

Example Theory of Change:

We will implement Family Group Decision Making *so that*
Families will have a voice in the identification of their strengths, challenges & supports *so that*
Caseworkers can better understand families' needs, stressors & resources *and*
Families will be more involved in the development of their case plans *so that*
Case plans will be of high quality & reflective of the strengths, needs, & goals of children & families *so that*
Appropriate services can be identified timely *and*
Families will be more likely to participate in services they helped identify *so that*
Families can receive needed treatment & supports *and*
Families can learn the skills to safely care for their children *so that*
Children can reunify with their families sooner with appropriate safety plans & after care supports.

THRIVE'S THEORY OF CHANGE:

WHAT WE DO — If we fuel Chicago's collaborative engine by bringing together people and data to accelerate innovation...

HOW CHANGE STARTS — and we drive changes in existing policies, practices, resource flows, relationships & connections, power dynamics, and mental models...

ULTIMATE GOAL — Then we improve outcomes for Chicago's youth, leading them to thrive in a career.

LOGIC MODEL: A VISUAL REPRESENTATION OF THE THEORY OF CHANGE

WHAT IS A LOGIC MODEL AND WHY IS IT IMPORTANT?

"A logic model is a systematic and visual way to present and share your understanding of the relationships among the resources you have to operate your program, the activities you plan, and the changes or results you hope to achieve."

Logic models can provide a visual depiction or summary of the ToC in a way that clearly outlines inputs, core activities, outputs, short-, mid-, and long-term outcomes and can later be used as a useful foundation for designing a quality improvement and/or evaluation plan. As with the ToC, it is recommended that logic models be developed with multiple stakeholders - particularly your agency's program evaluator and CQI staff (if applicable). Logic models can be particularly useful for communicating program/agency im-pact to external stakeholders, and are often times required by funders.

HOW ARE LOGIC MODELS USED?

Of particular importance to the CQI process, logic models can (and should) be used to inform a focused management plan that helps identify indicators of interest and thus which data should be collected and monitored. "Logic models help you to consider and prioritize the program aspects most critical for tracking and reporting and make adjustments as necessary."

Aside from the explicit benefits of clearly articulating program inputs, activities, and anticipated outcomes, the actual process of developing a logic model has many implicit benefits as well. By bringing staff together to discuss resources and activities, you are building a common understanding of the challenges, resources, and timeframe needed to achieve impact. This enhances organizational communication by facilitating greater dialog and collaboration between teams. The document can then be continuously used as a benchmark with which to measure organizational progress.

DEVELOPING A LOGIC MODEL

At its most basic, a logic model links program *inputs* to *activities* to *outputs* to *outcomes* to *impact* and can be thus represented by the illustration below. For explanation of each of the key terms, see the **Appendix** at the end of the Toolkit.

LINKING THEORY OF CHANGE TO A LOGIC MODEL

The logic model is simply a graphic representation of the ToC. When reading left-to-right, the ToC can be overlaid across the core domains of the logic model, as shown on the illustration below.
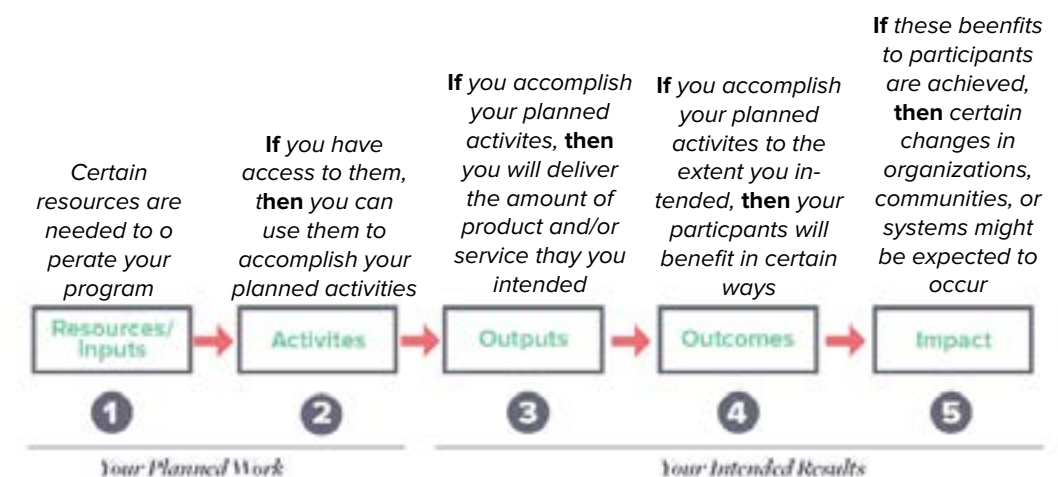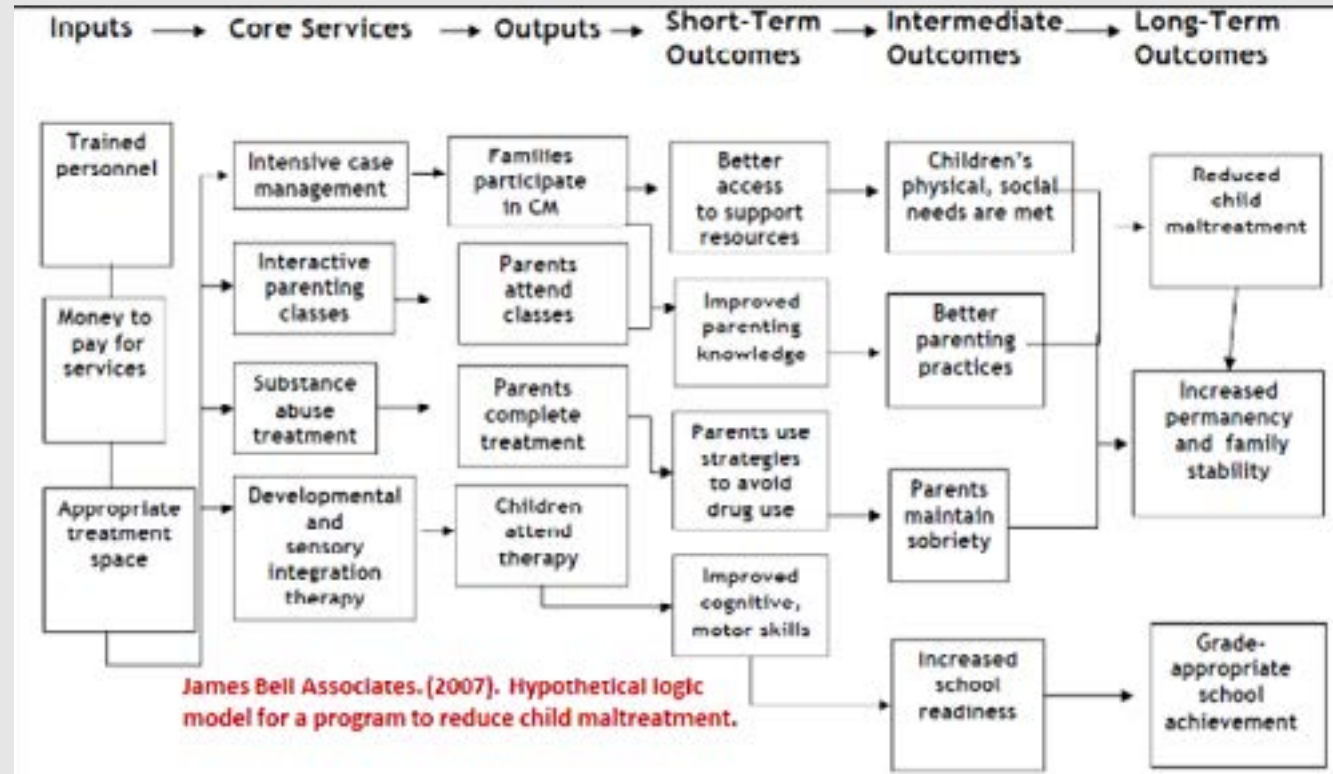
EXAMPLE LOGIC MODELS

In terms of visuals, logic models can range in complexity and detail. Typically, they are composed of boxes of text linked by arrows. The examples below are intended to provide samples of how programs can be represented.

EXAMPLE 1:

James Bell Associates. (2007). Hypothetical logic model for a program to reduce child maltreatment.

EXAMPLE 2:

ORGANIZATIONAL CONTEXT: ORGANIZATIONAL CULTURE AND SPHERE OF INFLUENCE

Where does CQI work happen within your work environment? Where does it specifically happen for you?
The key to successful CQI is a line of sight between what is happening on the front lines and the strategic direction of the organization. Employees at every level of an organization must understand how their role aligns with organizational objectives. Understanding your sphere of influence is necessary to realistic goals and expectations for your ability to impact change. Spheres of influence typically flow inward. Using the diagram to the right, you can see how the design of a program influences the team who implement the program, who then influence the individuals being served. If you are attempting a test of change, you need to consider at what level within the organization that change will occur, and if that change is within your sphere of influence. If you are working in direct service, trying to influence a systems level change may not be the best use of your time.

Who should be involved in a CQI team?
Most nonprofits do not have a budget large enough to support a dedicated CQI team, thus the duties of CQI are incorporated into different roles. The individuals comprising a CQI team will likely vary organization to organization. CQI is most effective when a range of stakeholders are represented. Therefore it is recommended that your team has representation from the following roles/responsibilities:
- **Decision Maker/ Leadership:** someone who can champion your work and elevate it to other leadership within the organization. This person's voice will be critical when you seek to scale your change.
- **Program Manager:** someone who knows the day-to-day program functioning. This person should have knowledge of the organizational context/ how the program links to organizational goals and objectives, available resources, as well as the on-the-ground realities of program implementation
- **Data Analyst/ Database Manager:** this person should have access to whatever organizational data you have available. CQI require the use of evidence to support your test. Therefore, whichever person/people have access to client data should be included in the CQI team.
- **Frontline staff:** as the ones tasked with actually implementing organizational policy, they are best positioned to provide suggestions and make decisions about what will/will not work for service users.

What organizational structure or conditions are necessary to support CQI?
Organizational culture drives the way decisions are made and how they are implemented within an organization. An organization's policies and procedures influence staff attitudes, belief systems, and behaviors. In this way culture can either support, or create barriers, for systems' efforts to innovate and learn. An adaptable and flexible organizational culture that empowers employees, and fosters teamwork and consensus-building is often a necessary precondition for effectively engaging in the CQI process. Cultures that emphasize affiliation, teamwork, and coordination implement and sustain more CQI initiatives. By contrast, cultures that emphasize formal structure, regulations and reporting relationships are less likely to innovate and sustain improvement.

ORGANIZATIONAL CHARACTERISTICS OF AN EFFECTIVE CQI SYSTEM: *A HIGH-QUALITY CQI SYSTEM SUSTAINS HIGH-QUALITY CQI PROCESS*[1]
- Organizational commitment to CQI establishes the importance of engagement with quality improvement across levels and functions
- Agencies need to collect, store, and analyze the qualitative and quantitative data needed to monitor performance and test the effects of interventions
- CQI policies and priorities develop the structures and functions that facilitate and evidence-driven CQI process

1 COP Session 1, Slide 27

PART I WRAP UP

KEY TERMS
Continuous Quality Improvement:
Theory of Change
Logic Model
Sphere of Influence

SUMMARY
After reading this section you should understand...

✓ **The purpose of CQI and be able to articulate the core components**

✓ **How to construct a Theory of Change**

✓ **How to use a Theory of Change to draft a Logic Model**

RESOURCES
Theory of Change(s)
- Video: Theory of Change DIY[1]
- Video: Measuring Your Social Impact: Theory of Change[2]

LOGIC MODELS
- Logic Model Development Guide.[3]\

1 https://vimeo.com/88053672
2 https://www.youtube.com/watch?v=dpb4AGT684U&feature=youtu.be
3 https://www.bttop.org/sites/default/files/public/W.K.%20Kellogg%20LogicModel.pdf

TRY IT OUT: Creating a Theory of Change (ToC)

Writing a Theory of Change
Remember that a Theory of Change should address the following questions:
1. Who are you seeking to influence or benefit (target population)?
2. What benefits are you seeking to achieve (results)?
   - a.) What indicators will tell us that are short, mid-and long-term outcomes are changing?
   - b.) How much change is good enough? (baselines and targets) (what is your baseline and target point). Your baseline can be national standards, yourself/ your avg, etc
3. When will you achieve them (time period)?
4. How will you and others make this happen (activities, strategies, resources, etc.)?
5. Where and under what circumstances will you do your work (context)?
6. Why do you believe your theory will bear out (assumptions)?

If you are writing a Theory of Change for the first time, start by responding to the questions below:

What is the problem your program or organization is trying to address?

Why do you think this problem is happening?

What is your organization going to do about this problem?
_____

Now that you've thought about a problem and how your program is working to address that issue, use the template below to create clear, comprehensive chains of "So-That" statements (can also be thought of as If-Then statements showing the hypothesized links between identified needs of the target population(s), the proposed activities and the anticipated short-term, intermediate, and long-term outcomes).

We are going to do _____

_____

_____ *so that*

_____ *so that*

_____ *so that*

_____*and*

_____ *and then*

_____ *so that*

_____

TRY IT OUT: Creating a Logic Model

Adapted from: Innovation Network: Logic Model Training Handouts[1]
_____

BACKGROUND

Designing a logic model can be a long and iterative process (and can be extra challenging if you are tasked with retrofitting a logic model to an existing program!) You will need to think about the various inputs, program activities, outputs, and outcomes. Remember, outputs lead to outcomes. See the chart to the right for an example of a simplified logic model.

Use the chart below to map out some of the key components of your logic model. You will then transfer the information into a logic model. Logic models are not typically required to follow a set structure. Initially you may find it easiest to follow a simple flowchart, and can then follow and iterative process to revise and enhance your model.
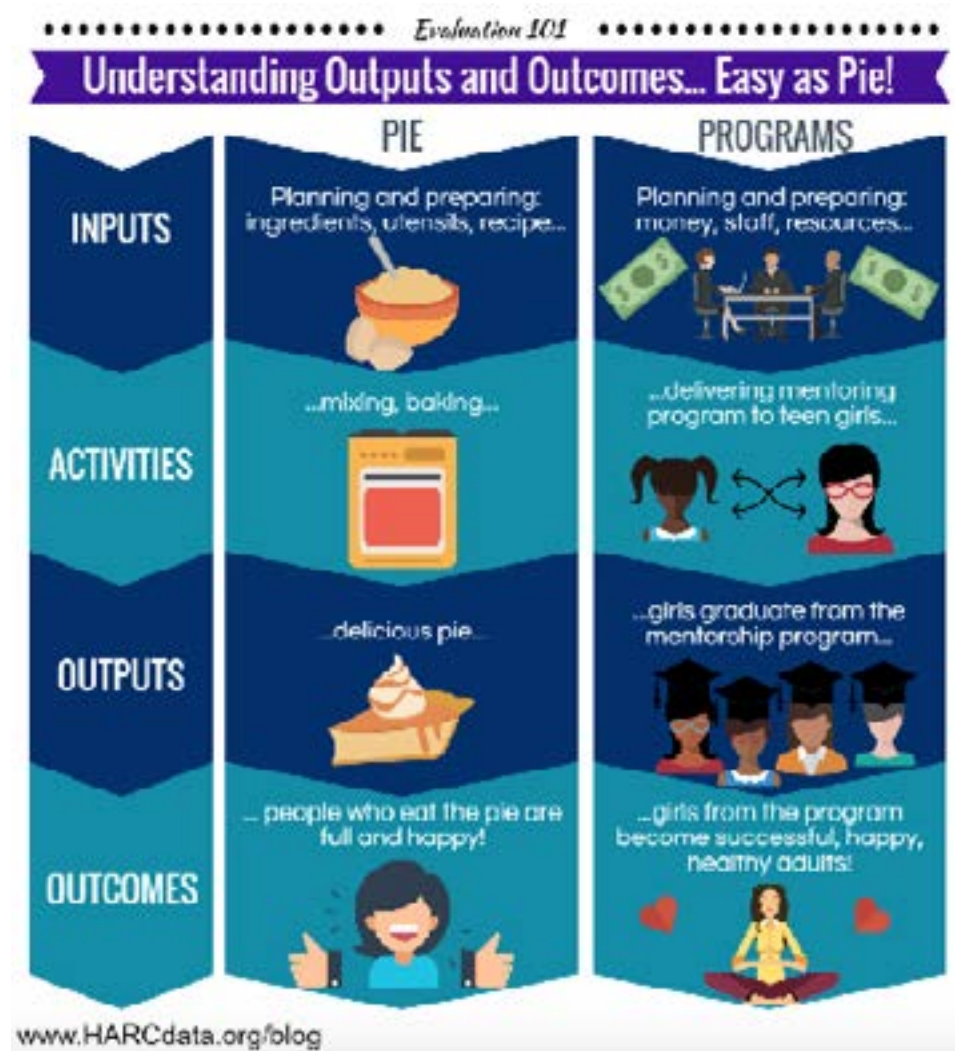
PROGRAM NAME:

PROBLEM STATEMENT:

Your problem statement should briefly explain what needs to change: why is there is a need for an intervention? Your problem statement answers the question, "What problem are we working to solve?" Include "who, what, why, where, when, and how" in your statement.

PROGRAM GOALS:

Note: Your goal should include the intended results—in general terms—of the program or initiative. Specify the target population you intend to serve.

RESOURCES:

This will be different if the program is existing, or proposed. If you are describing an existing program, list only the resources you currently have to run the program. If you are writing about a proposed program, this may be your opportunity to make a case to funders as to why certain materials/ inputs are needed.

ACTIVITES	OUTPUTS	SHORT-TERM OUTCOMES	INTERMEDIATE OUTCOMES	LONG-TERM OUTCOMES
What happens in our organization?	What are the tangible products of our activities?	What changes do we _expect_ to occur within the short term?	What changes do we _want_ to see occur after that?	What changes do we _hope_ to see over time?

RATIONALE(S): The explanation of a set of beliefs, based on a body of knowledge, about how change occurs in your field and with your specific clients (or audience).	ASSUMPTIONS: Facts or conditions you assume to be true.

PART II

CQI: LEVERAGING PDSA CYCLES

CHAPIN HALL
AT THE UNIVERSITY OF CHICAGO

thrivechicago

A DEEPER DIVE: PDSA CYCLES
UNPACKING CQI: LEVERAGING PDSA CYCLES

The Plan-Do-Study-Act (PDSA) Framework creates a structured process for your team to think about CQI. PDSA should be an ongoing and cyclical process to ensure you and your team are constantly reflecting on your practice and refining organizational operations. There are four key phases of the cycle:

1 PLAN
The work during this stage focuses on defining a challenge & outcome, developing a *theory of action*, and selecting a strategy for implementation

2 DO
Implemement the change

3 STUDY
Measuring outcomes, monitoring implementation, and providing feedback on the work that has already been done. Collaboration during this stage aids knowledge and speeds learning for improvement

4 ACT
Adjust strategy as needed (and as informed by the previous steps)

ACROSS THE FOUR PHASES, THE CRITICAL COMPONENTS OF PDSA INCLUDE:

Creating Small, Rapid Tests of Change: Prediction and outcomes are essential to driving improvement. Rather than focusing on making large changes, PDSA is rooted in the idea that making small changes in process can lead to major changes in outcome. To do this effectively, the process changes must be small, rapid, and sequential.[1]

Applying Organizational Context: As a reminder, to set yourself up for success, the PDSA cycle must be grounded in an organizational ToC and logic model(s), with careful consideration of an organization's learning culture and a individual (or teams) sphere of influence.

Leveraging Quality Data: Quality data is an inherent part of the entire CQI process. Before even beginning the CQI process, teams must have a baseline understanding of what is already happening in programs - baseline data includes everything from program inputs, to activities, outputs, and program outcomes. Without having a concrete understanding of what is already happening, supported by evidence, it will not be possible to assess how small changes may be impacting program implementation. The chart below ilustrates how data is integrated into thevarious phases of the PDSA cycle.

STAGES OF PDSA	CQI STEPS	QUESTIONS REQUIRING SUPPORTING EVIDENCE
Plan	**Define** the challenge	How do you know this is a challenge?
	Understand underlying conditions	What leads you to believe this is a challenge?
	Identify strategies and plan for implementation	What strategy can solve your problem? How do you know this is the right approach?
Do	**Implement** the strategy	How can you demonstrate you are doing things differently? What else is changing because of this new strategy?
Study/ Act	**Test** the strategy and **revise** the approach	Did it work? How do you know? How can you continue to improve?
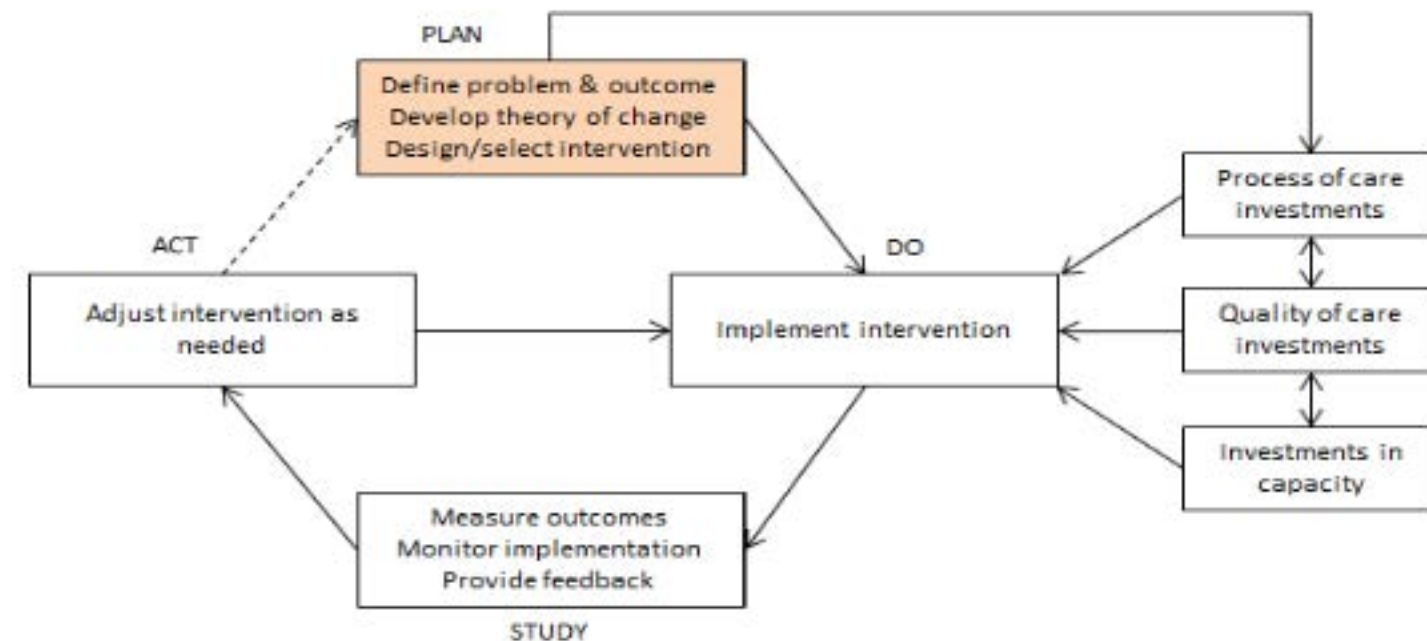
PLAN PHASE

GUIDING QUESTIONS[1]

- Is the problem clear & focused or vague & diffuse?
- Why is this a problem? How big is the problem?
- How do we know it's a problem? What evidence or proof exists?
- Which aspect of the problem will be addressed?
- What is the process for agreeing on new interventions?
- What is the process for setting performance targets?
- What is the process for collecting & analyzing the data?
- How do "stakeholders" use the evidence about the implementation of the strategy to monitor & improve?
- Who participates & with what frequency?
- How do "stakeholders" use the evidence about the implementation of the strategy to monitor & improve?
- Who participates & with what frequency?

1 COP Session 2, Slide 66, which cites: Adapted from A Guide to Build Capacity for Child Welfare Using the CQI Process. Available for download at http://www.aphsa.org/content/dam/NAPCWA/PDF%20DOC/Home%20Page/A%20Guide%20to%20Build%20Capacity%20 for%20Child%20Welfare%20Using%20the%20CQI%20Process%201.23.15.pdf. Adapted from The Karen Martin Group (2013). Available for download at https://www.slideshare.net/karenmartingroup

OVERVIEW

The Planning stage is the most time consuming phase of the process, often with 50-80% of the entire PDSA cycle being dedicated to planning. During the Plan phase your team should be working to fill in the following set of statements:

> We observe that [there is a specific challenge].
> We think it is because [of this reason].
> So we plan to [implement some strategy],
> which we think will result in [the desired outcome].

In order to complete this set of statements, teams must come together to:

1) Identify and define a problem or challenge
2) Determine its root cause(s)
3) Identify a solution and design an intervention plan, and
4) Set performance targets and develop a collection plan

TASK 1: DEFINE THE PROBLEM OR CHALLENGE

"We observe that..." [some outcome that we want to improve].

In defining the problem, first make observations from the data about the problem you are trying to solve— what does the data say about the outcomes you are concerned about? Specify what evidence indicates there is a problem. Then apply analytic methods to further understand the problem. In doing so, consider if there is any additional analysis that needs to be done to narrow the scope of the problem or articulate it more clearly.

> **EXAMPLE:**
> *Observation:* Administrative data from the Medical Director's office shows children are not meeting the required milestones for routine health exams.
>
> *Refinement:* Can this be narrowed by subpopulation?, i.e., Have you observed this issue to be more prevalent amongst boys, girls, teens, babies, specific regions, etc?

TASK 2: DETERMINE ROOT CAUSE(S)

"We think it's because of..." [this reason].

Be intentional about having meaningful conversations with a range of stakeholders to hypothesize about possible causes of variation, problems, under performance, etc. in the program of interest. Each of the individuals you engage should be able to contribute to your understanding of the problem. For example, a grants administrator may be able to provide context about financial limitations which impact service delivery, while program manager may be able to shed insight to specific day-to-day program realities.

Once you have identified the individuals that should be involved, there are a range of tools that can be utilized to help facilitate dialog and build a common understanding the root cause of specific issues, including:
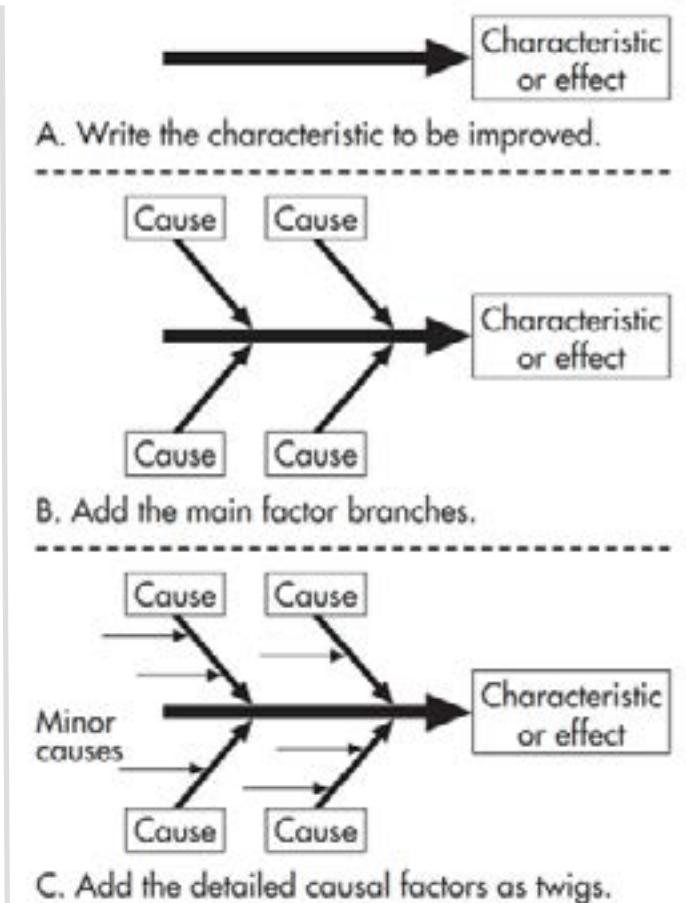
- A Fishbone Diagram (also known as a Cause and Effect Diagram, blank worksheet available in Appendix I)
- A 5 Why's Analysis (blank worksheet available in Appendix II)

ROOT CAUSE ANALYSIS: FISHBONE DIAGRAM[1]

Fishbone diagrams are effective tools for initial brainstorming sessions as they help participants to identify many possible causes for an effect or problem by sorting ideas into different categories and apply evidence to support their claims. Fishbone diagrams can be particularly useful in pushing complacent teams to think deeper about particular issues.

As the diagram to the right indicates, the first step in working through a Fishbone Analysis is to write out the characteristic to be improved. For example, "low attendance in the regional library's "Homework Help" program." Next, ask team members to suggest potential causes for low attendance.

These suggestions may naturally fall into discrete categories. For example, "Issues related to environment", "Issues related to people", and "Issues related to procedures". Then ask participants to dig deeper and list out the minor issues associated with each of these categories. Using "Issues related to procedures" as an example we may discover there is no follow-up activity if a child misses Homework Help. Without follow-up, parents may forget to send their children and thus attendance continues to decrease. Push your team to build-out each of the branches of the Fishbone Diagram.

A. Write the characteristic to be improved.
B. Add the main factor branches.
C. Add the detailed causal factors as twigs.

ROOT CAUSE ANALYSIS: 5 WHY'S ANALYSIS

The 5 Why analysis is another tool used to guide thinking towards the root cause of an issue and is best applied when facing simple to moderately challenging issues. Using this analysis, you begin by asking why a challenge is happening. The response to "why?" should be grounded in evidence. You then ask "Why?" this given occurrence is happening four more times. This helps teams drive into the contributing elements, rather than focusing on how the issue has manifested itself within a program.

EXAMPLE: Challenge/Problem: Low attendance in afterschool reading program.

Why?
Several parents are no longer sending their children to the program.

Why?
Children no longer have a ride home from the program.

Why?
The evening bus stopped service.

Why?
It was no longer cost effective for the school to fund an after-school bus when less than 10% of students were enrolled in programming.

Why?
District-wide funding cuts required schools to cut funding to certain programs, leaving after school providers to find supplemental funding.

1 Doggett, M. (2005), "Root cause analysis: a framework for tool selection", Quality Management Journal, Vol. 12 No. 4, pp. 34-45.

TASK 3: IDENTIFY SOLUTIONS
"So we plan to…" [implement this intervention/action plan/solution/small test of change].

Once you have defined the problem and determined the root cause, identify a potential solution. Given that there may be a range of solutions to choose from, think about what evidence you have that supports the hypothesis that this solution/strategy/small test of change will have the intended effect on the target population. Generating a hypothesis about what or why a potential solution will work is one of the most critical components of the PDSA process because it clarifies what you will do different to accomplish your outcome. [(cite)] Thus, to develop a sound hypothesis, make sure you are clear on the **OUTOMES** you are trying to achieve and ensure your solution encompasses any needed adjustments in:

- **PROCESS** (how the work is done)
- **QUALITY** (how well the work gets done – timely, accurate and comprehensive service plans, assessments, case notes, etc.), and/or
- **CAPACITY** (tangible and human capital resources – implementing an agency-wide administrative database, hiring more case aides to help with transportation needs, etc.)

Ultimately, the solution/strategy should be research-informed and practitioner-validated.

TASK 4: SET PERFORMANCE TARGETS
"Which we think will result in…" [improved outcome].

Now that you have defined the problem, determined the root cause, and identified a solution, you must set *performances target(s)* in order to monitor progress towards leading indicators. Sometimes these targets are set for you—either by outside stakeholders or internal administrative/program teams. If you have to set your own performance targets, you will need to consider identify your leading *key performance indicators (KPIs) and baseline indicators.*

INDICATOR TYPE	DESCRIPTION	EXAMPLE
Key Performance Indicators (KPIs)	Actionable markers that help you understand if you are achieving your intended result. KPIs are helpful in making decisions about how your program is running.	The #/% of participants who completed their first assignment by the program deadline.
Baseline Indicators	A baseline is the standard against which all subsequent changes are measured. You identify a starting point (baseline) using observations and/or historical performance.	On average, 86% of participants receive a completion certificate within six months of enrolling in the program
Performance Targets	Performance targets reflect what you are trying to achieve through your program. They can be used to set program priorities and make a case for resource needs.	95% participants will earn a completion certificate within six months of enrolling in the program.

KPIs MUST BE ACTIONABLE.
A basic test to determine if a metric is actionable is considering, if the metric were to start trending in a specific direction, the users would know what corrective actions should be taken. For example: Absences drastically increase over the course of one week. This is an actionable metric because a youth worker can begin making phone calls to families to investigate the sudden spike in absences— is it possible an entire class became ill with the same virus?[1]

TIMELY	TRIGGER PROCESS IMPROVMENT	TRIGGER PROCESS IMPROVMENT
ACCURATE	SPECIFIC AND OBSERVABLE	SPECIFIC AND OBSERVABLE
EASY TO UNDERSTAND	RELEVANT	RELEVANT

1 Eckerson, W. W. (2006). How to Create Effective Metrics. In Performance Dashboards: Measuring, Monitoring, and Managing Your Business (pp. 197-205). Hoboken, NJ: Wiley.

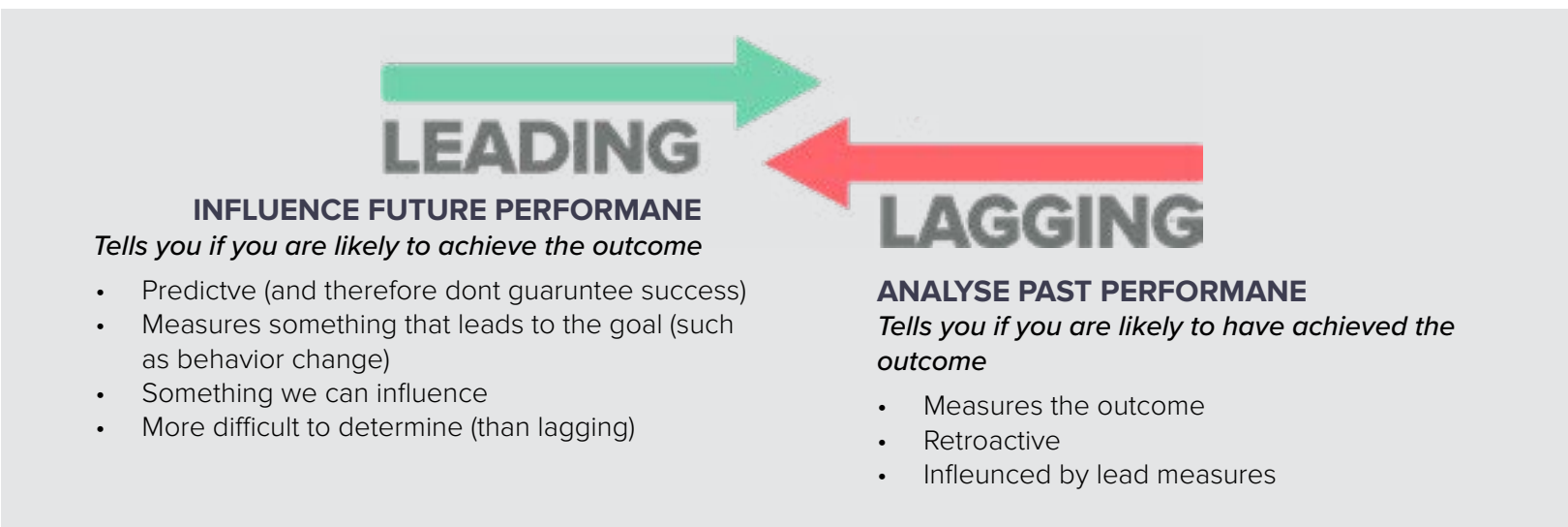### TAKING A CLOSER LOOK: ORGANIZATIONAL MEASUREMENT

Performance targets should be linked to your expected outcomes articulated in your theory of change. It is important to remember that while organizations may have one overall theory of change linked to a mission and vision, within an organization there are smaller processes and practices each of which has its own theory of change that hypothesis how change happens within the organization. We can simplify and say there are three sub-paths of internal processes and practices:[1]

- **PROCESS:** Organizational Health. How the work is done
- **QUALITY:** How well the work is done
- **CAPACITY:** How are resources allocated to do the work (and do it well)

1 COP Session 2, Slide 31

Within these paths— process, quality, capacity— indicators can be further classified as *leading* or *lagging*. A lead indicator tells you if you are likely to achieve the outcome and a lag indicator tells if you have achieved the outcome.[1]

Both types of indicators are needed in order to get a complete picture of what/how something is changing. A lag indicator without a lead indicator will not provide an indication as to how a result will be achieved and will not be able to provide early warning signs about tracking towards a strategic goal. Similarly, a lead indicator without a lag indicator may make you feel good about keeping busy with a lot of activities but will not provide confirmation that a result has been achieved.

LEADING

INFLUENCE FUTURE PERFORMANE
Tells you if you are likely to achieve the outcome

- Predictve (and therefore dont guaruntee success)
- Measures something that leads to the goal (such as behavior change)
- Something we can influence
- More difficult to determine (than lagging)

LAGGING

ANALYSE PAST PERFORMANE
Tells you if you are likely to have achieved the outcome

- Measures the outcome
- Retroactive
- Infleunced by lead measures

ESTABLISHING A BASELINE
A baseline is the starting point from which future program activity is measured against. Baselines are necessary to show if there has been any change within a program. Baseline data requires evidence to support why you have chosen a particular starting point. Ideally you will be able to utilize past performance or observation to determine the baseline. Sometimes, particularly in the case of new programming, you may need to utilize outside research to support your expectations.

1 COP Session 2, Slide 36 cites: The 4 Disciplines of Execution, Chris McChesney, Sean Covey, Jim Huling.

CHOOSING PERFORMANCE TARGETS AGAINST BASELINE

When establishing targets consider: mandates, available resources, and your organization's capacity to track performance. Performance targets are not helpful unless they can be accurately measured against a baseline.

> **GUIDING QUESTIONS TO ASSIST WITH SETTING PERFORMANCE INDICATORS:**
> - Are the outcomes related to the "core business" of your program?
> - Do your indicators make sense in relation to the outcomes they are intended to measure?
> - Are your indicators directly related to the outcomes? Do they define the outcome?
> - Are your indicators specific?
> - Are your indicators measurable or observable? Can they be seen (i.e., observed behavior), heard (i.e., participant interview), read (i.e., client records)?
> - Is it reasonable that you can collect data on the indicators?
> - Is it likely within your resources to collect data?

When answering these questions, keep in mind the following:

YOUTH/CLIENT NEEDS	*MANDATED VS. DESIRED TARGETS*	*CHANGE IN PERFORMANCE OVER TIME*
PAST PERFORMANCE	*RESOURCES/CASPACITY*	*BENCHMARKS FROM OTHER AGENCIES*
FOCUS	*POLICY*	*PRESSURES WORKING AGAINST TARGET*

For more information about selecting indicators, see **Appendeix III**

PLAN PHASE WRAP UP

KEY TERMS
PDSA
Root Cause
Performance Targets
Leading Indicators
Lagging Indicators
Baseline

SUMMARY
After reading this section you should understand...

✓ **How to identify challenges and support your observations with evidence**

✓ **How to map out**

✓ **How to distinguish between leading and lagging indicators**

✓ **What information you need to collect in order to identify baselines and set performance targets**

RESOURCES (IN APPENDIX)
Root Cause Analysis
- Fishbone
- 5 Why's

Creating Indicators
- Tips for Creating Appropriate Indicators

TRY IT OUT: Planning a small test of change

PDSA WORKSHEET 1: PLAN PHASE

You can use this worksheet as a tool to help structure and implement a PSDA cycle within your organization. Answer each of the questions below to help identify the action steps needed to implement your small test of change.

- **What is the outcome identified by your home team?**
- **What are key indicators related to the outcome your Home Team identified?**

1) WHAT ORGANIZATIONAL CHALLENGE ARE YOU TRYING TO IMPROVE? (DESCRIBE THE COMPONENTS OF THE CHALLENGE)

HYPOTHESIS DEVELOPMENT/TESTING

Define the challenge: We observe that…[what we want to improve].
What does the data say about the issue you are concerned about? Be precise in your analysis and description of the problem (e.g., explore by age, race, ethnicity, a particular site, team, program, service delivery model)?

EVIDENCE USE

What evidence supports this definition and description of the organizational challenge? (Describe what data and information you and your home team used).

CQI ACTIVITY

What activities did you complete to finalize the definition and description of what you and your home team want to improve. Summarize the activities and the processes your home team engaged in.

2) HYPOTHESIZE ABOUT THE CAUSE OF THE ORGANIZATIONAL CHALLENGE THAT YOU ARE TRYING TO IMPROVE

HYPOTHESIS DEVELOPMENT/TESTING

Hypothesize as to the cause(s) of the challenge – We think it's because…[Provide your assertions as to the cause of the problem – these should be research-informed and practitioner-validated].

EVIDENCE USE

What evidence supports the hypothesized root causes of the challenge? (What type of data did you collect and apply to inform and refine your hypotheses?)

CQI ACTIVITY

What activities did you complete to develop your hypotheses? Summarize the activities and the processes.

TRY IT OUT: PDSA Planning

AIM STATEMENT (Measurable goal, with a target date)

_____   Today's Date: _____

_____   PDSA Cycle #: _____

_____

PLAN

What will you try? _____

_____

_____

When? _____

Who will be involved?

Team: _____

Patients: _____

What do you predict will happen? _____

_____

How will you evaluate how it went? _____

_____

_____

Who will collect the evaluation data? _____
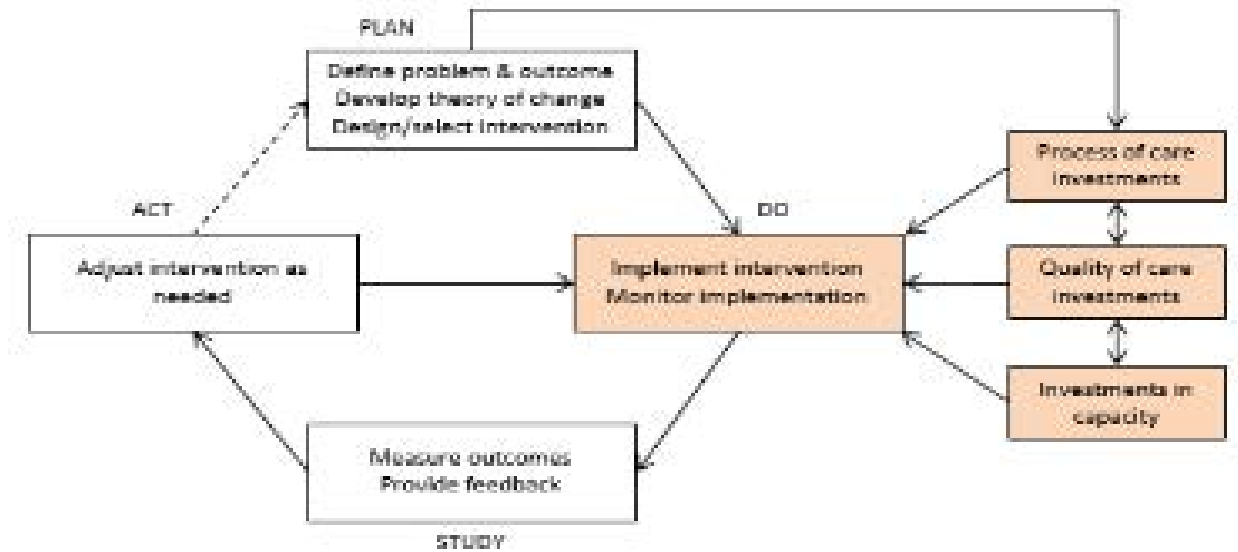
What do you need to do to get ready? _____

_____

_____

_____

DO PHASE

GUIDING QUESTIONS[1]

- Is the problem clear & focused or vague & diffuse?
- Why is this a problem? How big is the problem?
- How do we know it's a problem? What evidence or proof exists?
- Which aspect of the problem will be addressed?
- What is the process for agreeing on new interventions?
- What is the process for setting performance targets?
- What is the process for collecting & analyzing the data?
- How do "stakeholders" use the evidence about the implementation of the strategy to monitor & improve?
- Who participates & with what frequency?

OVERVIEW

The Do phase is focused on implementing the intervention identified during the plan stage. Teams work together to collect the data needed for analysis of the intervention's effectiveness and implementation fidelity. One of the goals of this phase is
identifying evidence indicating that the intervention was effective (or not effective).

There are two primary tasks[1] of the Do phase:
1. **Conduct a small test of change**
2. **Collect data you identified as needed during the PLAN stage, documenting observations, including any problems and unexpected findings**

CONDUCT A SMALL TEST OF CHANGE

It may be helpful to to remind team members that the Do Phase is an iterative process, and that the team should expect that not every intervention will be successful. Instead, it is likely that the team will go through multiple tests of change. Ongoing and clear communication amongst team members is necessary throughout this process. TIP: Appoint a CQI Lead to manage the small test of change.

RESPONSIBILITIES OF THE CQI LEAD[2]

- **Facilitate** the process and team meetings (create a data collection plan)
- **Assist** in data collection and analysis
- **Provide** reports or information back to the team
- **Encourage** the testing of the strategy/intervention
- **Support** the "practice" champion
  - Help keep the focus on the planned test of change
  - To not abandon the test – help people work through changes in practice (it may be uncomfortable)
  - Ensure that people start small
  - Maintain fidelity to the strategy/intervention

The CQI Lead should guide the team through the process of creating a data collection plan. A data collection plan is an outline that details the process of who, when, and how the data should be collected. It also identifies the leading and lagging indicators as well as outcomes of interest. This document can be referred to by team members throughout the data collection and monitoring process.[3]

Regardless of the tracking tool you use, you need to also consider how you will record data about problems and unexpected occurrences during the test.[1] For example, you can attach observation notes to your check sheet. Be sure to record the date/time of the observations and any environmental context as needed. You will want to indicate on your tool each time you change the strategy or implement another strategy. Typically there are three reasons why a test may not have worked:[2]
1. The change was not executed as planned
2. There was not enough support to implement the change
3. The predicted results did not occur (even if the change was implemented with fidelity)

If your test does not work, by the end of the Do phase, you should be able to identify which of the three aforementioned causes may apply.

Third, record the data. Once you have collected data, you will want to record and monitor the data using a visualization tool. There are a range of tools you can use to track the data over time. Some of the most popular tools include:

- Run chart (alternatively, stratification or flow chart)
- Control chart
- Histogram
- Pareto chart
- Scatter diagram

For more information data vizualtion tools, see **Appendix V**

1 COP Session 2, Slide 57
2 COP Session 2, Slide 56
3 COP Session 3, Slide 17

1 Langley, G. J. (2009). The improvement guide: A practical approach to enhancing organizational performance. San Francisco: Jossey-Bass.
2 Langley, G. J. (2009). The improvement guide: A practical approach to enhancing organizational performance. San Francisco: Jossey-Bass

Common Tools to Track Data

RUN CHARTS

Run charts are line graphs showing data plotted over time. They can be used to help visualize a problem, find trends or patterns in a process, or show how a process is operating. Run charts can also be useful in visualizing variation in the data. A run is defined as one or more consecutive data points on the same side of the mean line.

When working with a CQI team, looking at a run chart of your small test of change is one way to guide discussion around how the change may be impacting the program.

A run chart will help you:
• Monitor data over time to detect trends, shifts, or cycles
• Compare a measure before and after the implementation of solution to measure impact
• Focus attention on vital changes, not normal variation
• Track useful information for predicting trends

The run chart is a running record of a process over time:
• The vertical axis represents the process being measured
• The horizontal axis represents the units of time by which the measurements are made
• The centerline of the chart is the mean or average

CONTROL CHARTS

Similar to a run chart, control charts also plot data over time. However, control charts also utilize historical data to add a central line for an average, an upper line for the upper control limit and a lower line for the lower control limit.

Control charts can be useful when you are trying to determine if your small test of change should aim to prevent specific problems or make fundamental changes to your process.[1]

HISTOGRAM

Histograms, not to be confused with bar charts, are used to show distributions of data and are thus useful in identifying the "normalcy" of your spread and if you have any outlying data points. Each column represents a group defined by a continuous, quantitative variable (unlike bar charts, which are used to compare variables). Columns are placed together within a range or interval; column widths will not be the same and cannot be "re-arranged".

PARETO CHART

Pareto charts contain both bars and lines (individual values are represented by bars, and the cumulative total is represented by the line.) Pareto charts are most useful when:
• Analyzing data about the frequency of problems or causes in a process;
• You want to focus on the most significant issues when there are many problems/causes;
• Analyzing broad causes by looking at their specific components; or
• When communicating with others about your data

BAR CHART

Bar charts allow you to compare variables visually and are helpful when you want to show exact values. Bars can be displayed horizontally or vertically. Each column represents a group defined by categorical variable. Columns may be rearranged depending on the information conveyed ie. by size or alpha. Unlike histograms, columns are generally the same width. If you plan to use a bar chart to display your data it is recommended you use tally sheets to collect data.

SCATTER DIAGRAM (OR SCATTERPLOT)

Scatter plots are a helpful way to visually show if two variables are related. In this way scatter plots can be useful as a follow-up to root cause analysis (if you have the necessary data) to test if a cause and effect are related. Scatterplots are also useful tools in cases when your dependent variable has multiple variables for each of the independent variables.

DO PHASE WRAP UP

KEY TERMS
Small Test of Change
Run Chart
Control Chart
Histogram
Pareto Chart
Scatter Diagram

SUMMARY
After reading this section you should understand...

✓ **How to identify and collect evidence indicating that your intervention was effective (or not effective)**

✓ **The roles of the CQI lead**

✓ **How long to implement your small test of change**

✓ **How to visualize and interpret the data collected**

RESOURCES
Data collection charts
• Check Sheets
• Charts
• Scatterplots

Interpreting Charts
• Run Charts
• Run Charts Explained (video)
• Constructing and Interpreting Scatterplots (video)

VIDEO
• Small tests of change in action! October Sky movie clip

Try it Out! Constructing Sam

PDSA WORKSHEET 2: DO PHASE
CONSTRUCTING SAM

TIME
45 Minutes

MATERIALS
One (1) Mr. Potato Head (Sam) per group • • • • • •
Blank Run Chart

PURPOSE
Participants will work together in small groups to practice working through a PDSA testing cycle. This activity emphasizes the importance of prediction and measurement, while showing how to implement rapid cycle testing and measurement for the purpose of learning.

KEY CONCEPTS
• Rapid cycle PDSA
• Collaboration
• Generating hypothesis
• Measurement

DIRECTIONS
Break participants into groups of 4 people. Each group should be provided with a Mr. Potato head (all pieces should be put away inside Mr. Potato Head) and blank timing and accuracy run chart. Provide participants with a picture of a completed Sam (as pictured to the right).

Each group should designate a tester, a recorder, a scorer, and a data tracker. Once groups have assigned roles to members, explain that the task is to assemble Sam as quickly as possible-- and that they will be scored on timing and accuracy. (Accuracy as compared to the picture).

SCORING
  3 – All pieces on & positioned exactly as shown in the picture
  2 – All pieces on, but one or more is out of place
  1 – One or more pieces not on same

Allow the tester one practice round of assembling Sam. Once the testers have had an opportunity to practice assembly and place all of the pieces inside Sam, ask the time keepers to prepare for the the first test. Instruct the timekeeper to start the clock when the tester picks up Sam and to stop the clock when he or she indicates he or she is finished and removes his or her hands from the toy. Allow the teams to conduct their test. Advise them they should stop after their test and not do another. After the completion of the test, the documenter shall document the time and accuracy on the run charts.

Instruct the teams to discuss their results and what they learned through doing the exercise. Ask them to identify the next theory to test and write down their new predictions. When all teams are ready, instruct them to do repeat the test.
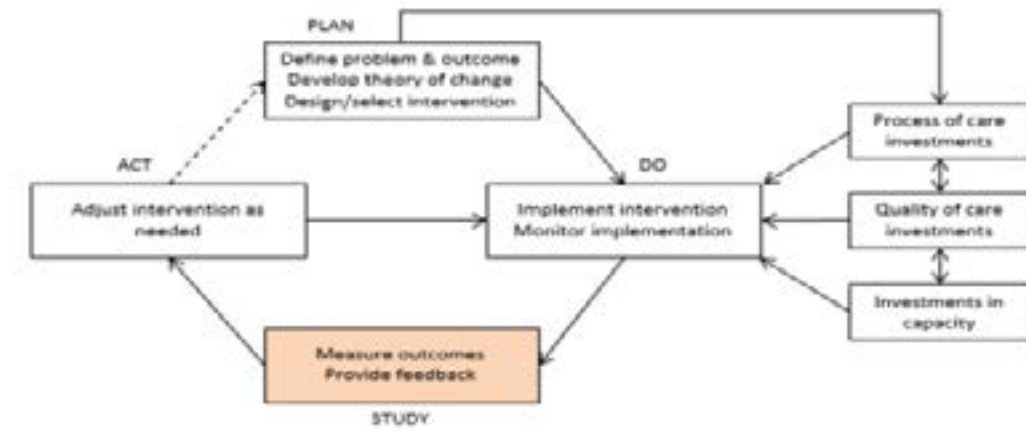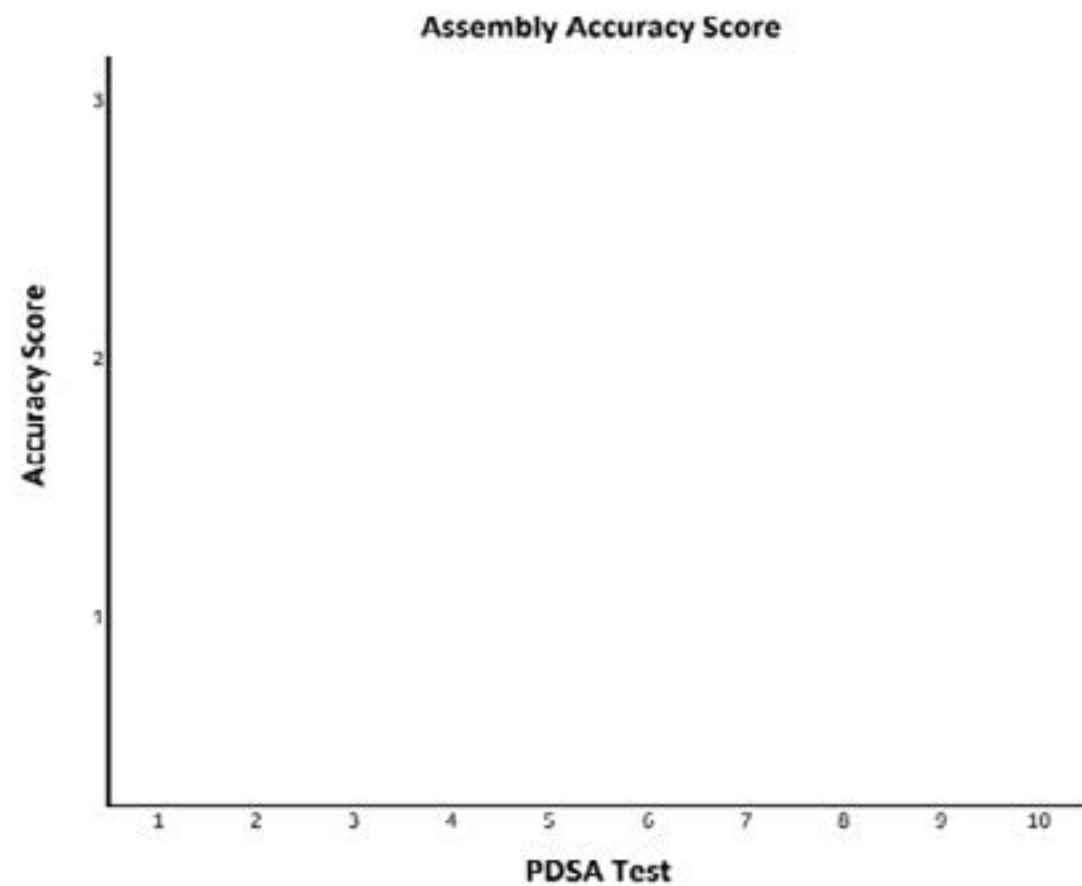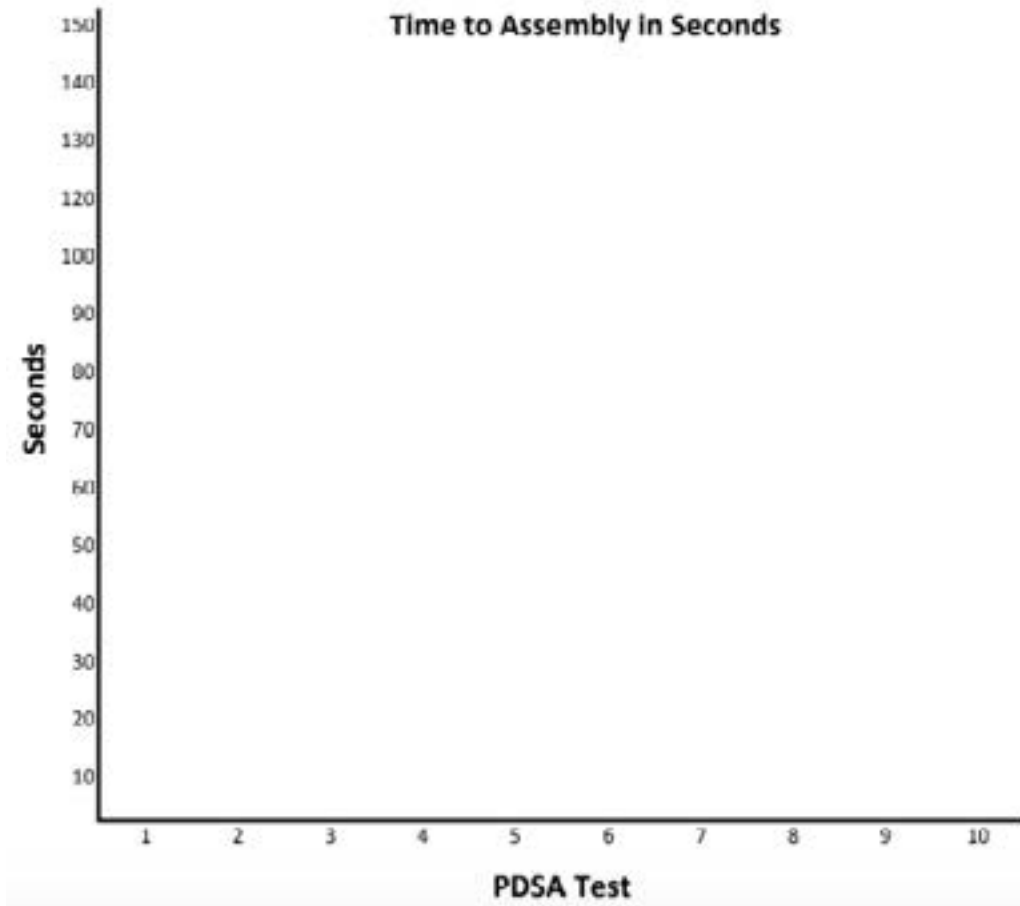
FACILITATOR NOTES:
o **PDSA 1** – (always first) – limited debrief

o **PDSAs 2–5** – order may vary and more than one observation may be shared per round.
• Ask teams to reflect on what was learned from the second round– should you adapt, adopt, or abandon the change?
• Find the best time and score in the room. Ask the table what their theory was and ask the other teams to test. This is an example of best practice. Also note that sometimes best practice teams show signs of competition and are resistant to sharing.
• Note teams continue to return the parts to the same state as they were distributed (i.e., inside the body). There may be an assumption that is a rule and they are anchoring that as a false requirement. For example, the parts could be laid out on the table.
• Note the energy level and engagement as team members are all involved in planning, testing, and results review.
• Note that each test may provide various ideas for testing and each one can be tested to learn. Including when two team members have competing ideas.
• Note how a change may improve one measure but not another. Importance of having a family of measures including process and balancing.
• Note the ease of measurement and display in real-time.

o **PDSA 5** – Inquire why participants are not visiting other teams to learn from them and bring the learning back to their team. Highlight this is the key value of a collaborative and a common missed opportunity in a collaborative. Have them try it.

Time to Assembly in Seconds

Y-axis: Seconds (10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 120, 130, 140, 150)
X-axis: PDSA Test (1, 2, 3, 4, 5, 6, 7, 8, 9, 10)

Assembly Accuracy Score

Y-axis: Accuracy Score (1, 2, 3)
X-axis: PDSA Test (1, 2, 3, 4, 5, 6, 7, 8, 9, 10)

PLAN
Define problem & outcome
Develop theory of change
Design/select intervention

ACT
Adjust intervention as needed

DO
Implement intervention
Monitor implementation

Process of care investments

Quality of care investments

Investments in capacity

Measure outcomes
Provide feedback

STUDY

GUIDING QUESTIONS
- How does the information gathered relate to the overall goal?
- What were the impacts of the intervention or strategy?
- What are lessons learned that should be incorporated into the intervention and data collection plan?
- How is the information being shared with key stakeholders?

STUDY PHASE WRAP UP

OVERVIEW

Once you have planned and implemented a small test of change, it is time to review the outcome of your test and compare your initial hypothesis to actual performance. The CQI Lead should reconvene the full CQI team to review collected data and allow for interpretation of findings. The three tasks of the Study phase are:

1. **Discuss the test**
2. **Draw conclusions**
3. **Communicate/ disseminate learnings**

DISCUSS

The CQI team should measure actual performance against the benchmarks and targets set in the Plan Phase. As a team, discuss the following:

- Was the "test" intervention/solution implemented with fidelity?
- How do you know/What evidence supports this?
    - What was the outcome of the test/intervention?
- Was the intervention successful?
    - What evidence is there that the intervention was effective (or not effective)?
    - Does the evidence make sense given what you know?
    - If the intervention was not successful, what opportunities does this create to better understand why it did not work?

DRAW CONCLUSIONS

Synthesize the responses to the questions above, as a group, outline your conclusions about success of your intervention. Even if the intervention did not work, it is equally important to describe, using evidence why the intervention did not work. For example, if the group concludes on reason the test failed was because there was not enough support to implement the change, by citing evidence the CQI team can present findings to management in an effort to garner necessary buy-in. If the test/intervention worked, the team should also discuss ways to the scale effective strategies.

COMMUNICATE/DISSEMINATE LEARNINGS

Share your findings with the implementation team, internal stakeholders, and decision makers. When sharing your findings, be open to feedback, observations, and questions. There are a range of ways to communicate your findings—think about which method(s) best fit within the culture of your agency. Data walks may work well in highly collaborative work environments while, whereas dashboards and other data visualizations might be better suited for more formal/conservative work environments.

Methods of disseminating learning:
- Data Walks
- Forums
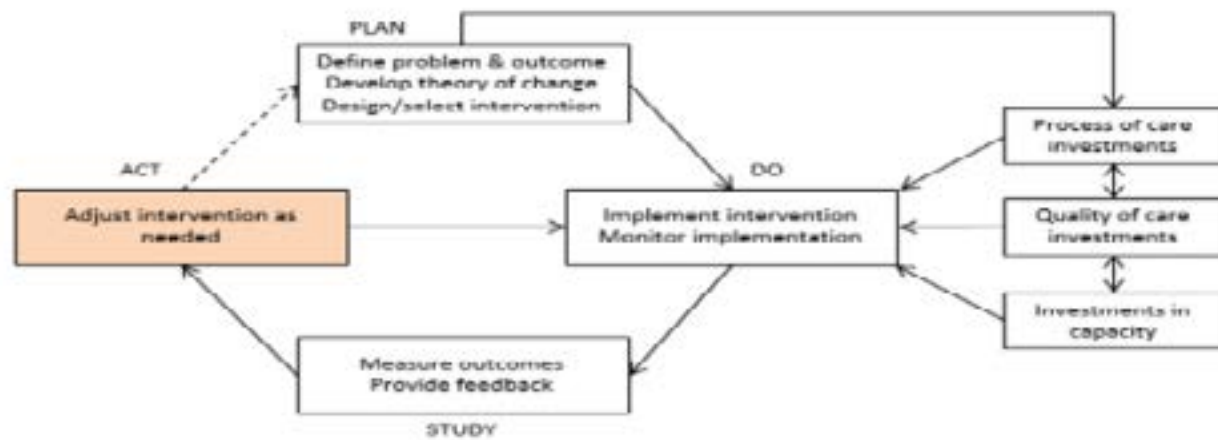- Surveys
- Dashboards
- Websites
- Data Visualizations

ACT PHASE

GUIDING QUESTION[1]

> What is the appropriate next step given the evidence considered in the STUDY phase?

The key task of the Act Phase is determining how to proceed based on what you learned from the test/ intervention. Generally, there are 3 courses of action:

- **ADAPT/MODIFY –** make needed changes & run another "test" cycle
- **ADOPT/CONTINUE** – Test on a larger scale
- **ABANDON/DISCONTINUE** – Do not do another test

In deciding the best course of action, the CQI should consider the following:
- Is there team consensus about the result of the test or is further testing needed align team beliefs?
- Do alternative changes need to be tested?
- Is the change ready to scale?
     - Are there any cost implications that should be considered before scaling?
- Is the team ready to implement the change on a full-scale basis?
- Should the team modify the proposed change or develop an alternative change?
- Should the proposed change be dropped from consideration? (A change should be abandoned only if the current theory no longer predicts that the change will result in an improvement.)[2]

COMMUNICATING THE CHANGE

The communication surrounding any change in process is usually critical to its success. Even if the change you are implementing is purely technical in nature, it likely requires human control and therefore, careful management of the communication is critical to success. People typically want to understand how and why a change is necessary. When preparing to scale your efforts, be sure to carefully articulate the initial problem you sought to address, how the test of change was successful, how you plan to scale the effort, and how you anticipate this

Communicating the Change: Best Practices	
Create organizational will	Dissatisfaction: People are more willing to accept change if they are already unhappy with processes. If they aren't already unhappy with the way something is being done, find a way to show them why they should be.
	Direction: Clear and consistent communication about what the change is and why it is necessary.
	Overconfidence: Leadership (or someone with influence) must demonstrate overwhelming confidence that the change will be a success
	Embrace the mess: Expect that something will go wrong, and be open setbacks and miscommunication.
Provide information as to why the change is being made	Empathize with anxiety surrounding the change
	Create opportunities and clearly articulate paths for staff to ask questions about the change
	Show how the change supports the organization and mission
Provide information how the change will affect people	Refer back to your visualizations! Combine real life stories with data to make your point.
	Highlight how the change will make people's jobs easier
	Anticipate and be prepared to discuss objections to the change
	Elevate the voices of individuals involved in the original test to help advocate for its success
Get consensus on solutions, resources, and supports to implement the change	Develop a clear plan of action
	Publically articulate confidence in those responsible for implementing the change—Are trainings offered that will help front line staff and others who may have to collect the data learn about the benefits of doing such work?
Publicize the change	Show appreciate for those who were involved in the PDSA cycle
	"Ride the wave": take advantage significant organizational events and tie the implementation of the change to these events
	Summarize and reflect key agreements as they are made

ACT PHASE WRAP UP

KEY TERMS
Adapt
Adopt
Abandon

SUMMARY
After reading this seciton you should understand...

✓ **How to interpret the results of your test and either adapt, adopt, or abandon the changes**

✓ **How to communicate changes to staff within your organization**

✓ **The questions for consideration when deciding to adopt changes**

RESOURCES
• How to decide: adapt, adopt, abandon?
• Tips for implementing changes

TRY IT OUT: Assessing Your Test

Note: Refer back to the PDSA Planning document you completed during the Plan stage. Compare your hypothesized results to what actually happened when you completed the test.

Today's Date: _____

DO
What actually happened? _____
_____

STUDY
What did you learn? _____
_____
_____

How did the results compare to your predictions? _____
_____
_____

ACT
How will you adapt, accept, or abandon? _____
_____
_____

PART III

SUSTAINABILITY

Beginning in spring of 2017, Thrive and Chapin Hall held a series of learning sessions (called a Community of Practice) with CBOs to help them set goals, refine organizational practices associated with data usage, think more comprehensively about data usage, establish Continuous Quality Improvement (CQI) practices, improve the quality and efficacy of their programs—and ultimately improve outcomes for youth. An intended result participation in the community of practice is more effective program and service delivery, which will benefit young people in Chicago, moving the needle on youth outcomes cradle to career.

This toolkit follows the outline of information and activities provided to the community of practice participants. At the completion of the CoP, participating organizations were asked to reflect on key successes achieved and challenges encountered during the process. Several common themes emerged from the responses and have been provided below to help inform and enhance your efforts as you embark on your own CQI work.

COMMON SUCCESSES: VOICES FROM THE FIELD

"Staff were very interesed in the test of change since some staff had suggested the idea in previous discussion unrelated to this PDSA ."

"Good documentation of this years efforts."

"This process allows the division to streamline process to work more efficiently across divisions."

"As a team we acknowledged that feedback was missing from our participants which led us to discuss and develop a plan of action to identify the participant needs. Working through a root cause analysis and Fishbone Diagram as a team brought program and eval teams together to come to consensus that we want to prioritize participant/family feedback going forward!"

Improved communication was a common theme amongst CoP participants. Organizations reported that the CQI process helped to break down existing silos in work flows and better incorporate a range of stakeholder perspectives— including making more space for youth and parent voices. Closely related to this, organizations reported that the PDSA process helped to enhance documentation and efficiency.

COMMON CHALLENGES: VOICES FROM THE FIELD

"Our second PDSA cycle: rolling out to all clubs...may prove to be too ambitious. Learning: hope to initiate more of a "culture of piloting." – better to test something new at 1 or a few clubs rather than rolling out at 20 clubs."

"Our timeline was challenging...."

"Facilitating team buy-in for implementing small tests of change and seeing value in those / seeing them as a component of programming instead of something separate"

"Timing + capacity to fully implement (end of school year, end of fiscal year)"

"We had numerous programs on our home team, so we had to find a small test of change that was important across all programs. Due to having so many programs in our home team, the logistics of meeting (both geographic and time) was a huge challenge."

"Successful implementation of this plan will require change management for which we have needed additional time to prepare."

Timing of the PDSA cycle was one of the most commonly cited challenges amongst participant organizations. One of the key lessons learned is more thoughtful timing of the PDSA cycle. If your test is related to an aspect of program delivery, it is important that the CQI team meet during active programming. Further, when thinking about the timing of "DO", consider the amount of time you will have to formalize a change if your intervention was successful. For example, the end of the school year may not be the best time to implement a change developed through the PDSA cycle as you may lose the momentum of the effort.

Buy-in from both direct service staff and administrators was a common challenge for participating organizations. Staff buy-in is needed to both test a change, as well as adapt and adopt changes. Given that organizations tend to be resistant to change, clear and direct communication with stakeholders throughout the CQI process is needed to keep staff engaged and invested in the CQI process. One participant noted the importance of promoting a "Culture of Piloting". If buy-in is a significant barrier within your organization, focusing a small test of change on a single program or single program site, is one low-stakes way to demonstrate "wins", which can then become scalable as you enhance buy-in.

USING PDSA TO IDENTIFY AND SOLVE COMMON CHALLENGES
SCHOOL ENGAGEMENT COP OVERVIEW

Six organizations are actively participating in the School Engagement CoP. These organizations were selected based on their expressed interest in the topic (as indicated on a survey provided to participants at the conclusion of the Spring CoP convening). Thus far the School Engagement CoP has met 4 times since November: 1 kickoff meeting and 3 "Design Phase" meetings. The objective of this phase of work is to collaboratively design and scope a universal tool for partners to share with schools/CPS. The tool is intended to help partners demonstrate student/program progress, service distribution and value of partnership to schools and the community.

In February we'll transition to the Validation Phase. The objective of the Validation Phase is to review, validate, and determine implementation steps for using the tool, ensuring the tool has a unified feel, but provides the flexibility to add organizational context. Finally, in April we will move to testing. In the Testing phase organizations build on first 2 phases to implement, leveraging the PDSA cycle.

SCHOOL ENGAGEMENT COP STATUS

Thus far we've collectively defined school engagement as a malleable process which is subject to changes in context-- most often the particular people and relationships involved. We've determined the the level of school engagement reflects the health of the relationships between schools and providers. We then collectively identified 3 challenges related to school engagement: relationships, resources, and data, and began a process of mapping where and how these challenges interact so we can start to better pinpoint where to target our intervention-- in this case, the intervention being the development of a new tool to help talk about data during meetings with school administrators.

Through a pre-assessment which asked which provider roles are responsible for meeting with schools, who they are meeting with, and how often, we learned there are many different ongoing touch-points between CBOs and schools. Given the breadth of the people involved and scope of these meetings, in order to think more strategically about where to focus our efforts as a group, we needed to start to identify some key trends or commonalities. We learned that quarterly meetings between management level staff and school administrators are to be happening almost universally, so in terms of identifying a place to most strategically integrate TDP data can into existing processes, this was a pretty significant finding.

Ultimately partners landed on the idea that they'd prefer to narrow in on a shared set of [TDP] indicators they can include on their existing reports, which management level staff will present to school administrators during these quarterly meetings. The value of these indicators is that they allow partners to speak in a shared language to school administrators.

PDSA FRAMING FOR SCHOOL ENGAGEMENT COP
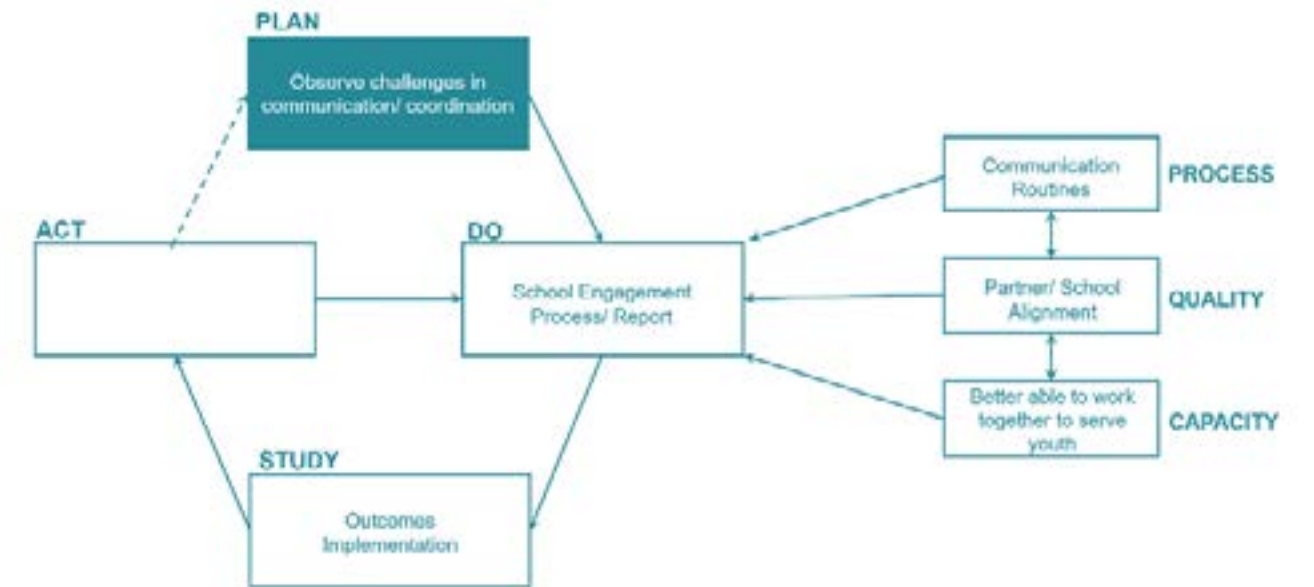
- **We observe** there is a challenge communicating program progress and impact to school partners.
- **We think it's because** of the variation in experience, skills, and abilities of school and OST partners.
- **So we plan to** standardize the method of communicating with schools (thereby
- strengthening the quality of relationships with our in-school partners by being more intentional about the data provided)
- **Which we think will result in**
     (1) Improved access to resoures (improve organizational capacity)
     (2) better recruitment coordination
     (3) established culture to insulate relationship from change.

DRAFT USE CASE/ IMPACT STATEMENT
Challenge
Communicating accurate and reliable data with school staff due to variation in experience, skills, and abilities between school and OST partners

Goal
Standardize the method of communicating with schools utilizing data from the Thrive Data Partnership

Use Cases
Partners will construct a standardized reporting format (real-time academic, attendance, and behavioral data provided in tcINTEL) to provide school administrators with data about youth progress, improvement, and program impact.

APPENDIX

APPENDIX I: FISHBONE DIAGRAM

Also Called: Cause–and–Effect Diagram, Ishikawa Diagram
The fishbone diagram identifies many possible causes for a specified problem. Fishbone diagrams can be used to structure brainstorming sessions as they helpful to sort ideas into actionable categories.

WHEN TO USE A FISHBONE DIAGRAM
* When identifying possible causes for a problem.
* Especially when a team's thinking tends to fall into ruts.

MATERIALS
Flipchart or whiteboard
Pens/ markers

PROCEDURE
1. Agree on a problem statement (effect). Write it at the center right of the flipchart or whiteboard. Draw a box around it and draw a horizontal arrow running to it. Ex: Youth dropping out of program mid-term. This has been a consistent trend over the last 2 years.
2. Draw a picture of the Fishbone Diagram on the flipchart, and label each bone. Ask the group to brainstorm the major categories of causes of the problem. If this is the first time the group is participating in this type of activity, it may be helpful to guide thinking by providing the following categories.

   * People
   * Policies
   * Processes
   * Procedures
   * Environment.
3. Explain that these areas help us diagnose the causes of organizational problems or obstacles that are preventing you from achieving your desired result.
4. Moving category by category, brainstorm all the possible causes of the problem. Ask: "Why does this happen?" As each idea is given, the facilitator writes it as a branch from the appropriate category. Causes can be written in several places if they relate to several categories.
5. Again ask "why does this happen?" about each cause. Write sub–causes branching off the causes. Continue to ask "Why?" and generate deeper levels of causes. Layers of branches indicate causal relationships.
6. When the group runs out of ideas, focus attention to places on the chart where ideas are few.

FISHBONE DIAGRAM EXAMPLE
This fishbone diagram uses the six generic headings to prompt ideas. Layers of branches show thorough thinking about the causes of the problem.
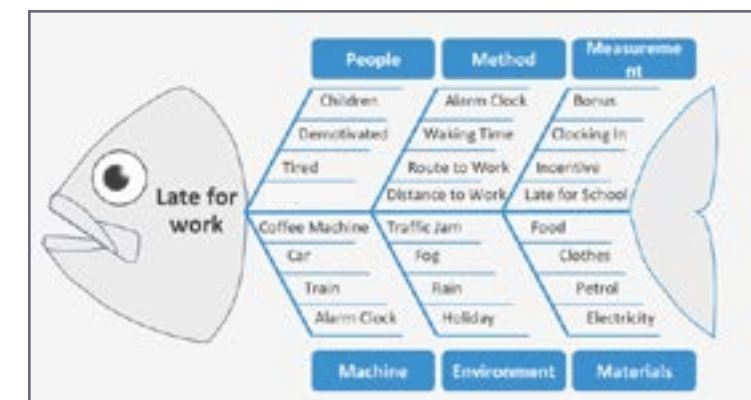
APPENDIX II: WHY'S ROOT CAUSE ANALYSIS

Root Cause Analysis: 5 WHY and 5 HOW

Have you ever had a problem that kept re-occurring? Having to address a problem or failure more than once is time consuming and a waste of valuable resources. The issue is that the root cause is not being identified or addressed. If you are not getting to the root cause then you are merely treating a symptom of the problem. In addition, if a permanent solution is not determined and implemented, the problem will eventually repeat. There is a simple to use tool that can help eliminate repeat problems. This tool is the 5 Why and 5 How. 5 Why and 5 How was developed in the 1930s by Mr. Sakichi Toyoda. Mr. Toyoda is the founder of Toyota Industries and is said to be one of the fathers of Japan's industrial revolution. This technique gained popularity during the 1970s and it is still used by Toyota and may other companies and organizations today.

What is 5 Why & 5 How

The 5 Why method is simply asking the question "Why" enough times until you get past all the symptoms of a problem and down to the root cause. The 5 Why method is often used during the Analyze phase of the DMAIC process and the Plan phase of PDSA activities. It is often used in coordination with other analysis tools such as the Cause and Effect Diagram but can also be used as a standalone tool. 5 Why is most effective when the answers come from people who have hands-on experience of the process being examined. By repeating the question "Why" you can drive down to the root cause of the problem.

The 5 Hows are then used to determine a root or permanent solution to the "root cause (s)" of the problem. The 5 Whys and 5 Hows have also been described as being like a ladder. You move down the ladder using the 5 Whys, to drive down to the root cause and then climb up the ladder using the 5 Hows to get to a resolution to the problem. The team will review "Why" did the problem occur and "How" can it be resolved so it does not occur again.

HOW TO PERFORM 5 WHY & 5 HOW

Form the Team

The 5 Why & 5 How exercise should be performed by a Cross Functional Team (CFT). It should not be done alone at your desk. The team should include representatives familiar with the process in question along with members from Quality, Process Engineering and operators from different shifts or from the next step in the process. Each team member will bring their own unique viewpoint of the problem and ask important questions that may not otherwise have been asked.

Define the Problem

The first thing any team should do during a root cause investigation is to clearly define the problem. Develop a clear and concise problem statement. The team should keep their focus on the process and not on the personnel. The team should also determine the scope of the problem to be addressed. If the scope is too narrow the problem solving exercise could result in small improvements when larger, broader improvements are needed. Adversely, defining the problem with too broad of a scope could extend the time required to resolve a problem and generate solutions that might not fit the corporate culture or align with corporate strategy and never be carried out. When you take the time to clearly define the problem up front, it often saves time and makes solving the problem easier.

Ask Why

Next the team leader or facilitator should ask "Why" the problem or failure occurred. The responses must be backed by facts or data and not based on an emotional response. The responses should also focus on process or systems errors. The facilitator should then ask the team if the identified causes were corrected, could the failure or problem still occur. If the answer is yes, then move on to the second "Why" and then the third, fourth, fifth and so on until the answer is no.

Note: It is not always necessary to ask "Why" five times. The root cause could be identified during the third or fourth "Why". It may also take more than five times to get through the symptoms of the problem and down to the root cause. In addition, by the 3rd, 4th, or 5th "Why", you may likely discover a systemic or management practice as the cause.

Determine and Implement Corrective Actions

Upon determination of the root cause(s), a list of appropriate corrective actions should be developed to address each root cause. 5 How is a useful method of brainstorming resolutions to the root causes and developing action items to resolve the problem. The facilitator should ask the 5 Hows related to the issue at hand. How can this cause be prevented or detected? Keep asking "How" until you get to the root solution that resolves the root cause. The actions should have an owner and a due date. Regular meetings should be held to update the team on the status of the actions until all are completed. Upon completion of the recommended actions, the effectiveness of the actions should be determined. The process could be monitored and measured using Statistical Process Control (SPC), Part inspection or other methods to validate effectiveness of any improvements.

The Three Legged 5 Why

It is not uncommon that the problem may have more than one contributing root cause. The 5 Why progression will sometimes branch out to form more than one path. In many cases, the root cause occurs due to an ineffective systemic issue within the organization. The Three Legged 5 Why includes additional paths to determine what control or process was not in place or not effective enough to detect the failure prior to the incident. Systemic or management processes either not in place or that could have contributed to the incident are also reviewed.

The 5 Why / 5 How method is one of several **Root Cause Analysis (RCA)** tools available for use in problem solving and continuous improvement activities.

APPENDIX III: TIPS FOR CREATING APPROPRIATE INDICATORS[1]

1. **Define the characteristics of an outcome as a way of identifying possible indicators.**
   For example, the characteristics of "increased fund development capabilities " could include the amount of money obtained in additional support and the diversity of those funding sources. The specific measures related to these two characteristics for "increased fundraising ability" might be 1) the number and percent of FBCOs who raise additional funds this year as compared to last year and 2) the number and percent of FBCOs who show an increase in the number of sources of funding for their programs.

2. **Use "if...then statements" to identify indicators.**
   Look for indicators that are indicative of an outcome rather than a predictor or a result of an outcome .
   If the relationship between an outcome and its proposed indicator sounds like an "if...then statement," then it is probably not the right indicator for that outcome.

   For example, "if' an organization attends grant writing training, "then" it is more likely to bring in additional grant funding . In this example , attending grant writing training is not an indicator for increased fund development capabilities , but may rather be a predictor of increased success. A more indicative indicator of increased grant funding would be "the number and percent of organizations whose budgets show an increase in the number of grants and/or an increase in the amount of support from grants."

3. **Apply the "means that" rule in assessing your indicators.**
   In theory , the accomplishment of an indicator "means that" you have achieved an outcome.
   For example, if an organization has completed, submitted , and obtained approval for 501(c)(3) status (indicator), it "means that" it has a stronger organizational structure (outcome) . In contrast, an organization having an expanded service area for more clients (indicator) does not mean the organization has improved its coordination and/or collaboration in service with others (outcome) .

4. **Develop one to three indicators per outcome.**
   One to three indicators is usually a realistic number for each outcome you have identified. Some straightforward outcomes can be quantified easily through the use of only one indicator. Other more complex outcomes will necessitate two or three indicators.

5. **Distill to the fewest outcomes possible.**
   As you look at what indicators you need to adequately describe your progress in achieving your intended outcomes, it's important to use the fewest number of outcomes possible. It takes time and money to gather and analyze the data for each one. What's important is not quantity but quality. What's the best way to see, hear, or read about the change?

6. **Take into account the feasibility of collecting data for the measurement.**
   Select the indicator that is most feasible for staff to measure within the time and financial resources available to you.

7. **Identify the most useful indicators.**
   Select the indicator that is most useful to you and gives you the most useful information about the outcome.

1 Strengthening Nonprofits: A Capacity Builder's Resource Library. Measuring Outcomes, pages 19-20; National Resource Center for HHS, 2010.

APPENDIX IV: FURTHER READING

1. A Guide to Building Capacity for Child Welfare Using the CQI Process, APHSA/NAPCWA National CQI Workgroup, American Public Human Services Association, 2014. (PDF)
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4. Annie E. Casey Foundation. (2016, October 3). "Data Walk Is a Key Tool in Results-Based Leadership", available at http://www.aecf.org/blog/data-walk-is-a-key-tool-in-results-based-leadership
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8. Center for Medicaid and Medicare Services, Quality Performance and Quality Assurance, "PDSA Cycle Template", available at https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/QAPI/downloads/PDSACycledebedits.pdf
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10. Clark, Helene and Andrea A. Anderson, "Theories of Change and Logic Models: Telling Them Apart" Presentation at the American Evaluation Association, November 2004. Access at https://www.theoryofchange.org/wp-content/uploads/toco_library/pdf/TOCs_and_Logic_Models_forAEA.pdf
11. The Continuous Quality Improvement in Child Welfare Services series developed in partnership: the Northern California Training Academy, the Center for Social Services Research at the School of Social Welfare, UC Berkeley, and Chapin Hall at the University of Chicago, available at https://extensiononline.ucdavis.edu/courses/705/pages/continuous-quality-improvement-in-child-welfare-services-modules
12. The COA Performance and Quality Improvement (PQI) Tool Kit (PDF)
13. CQI Cycle of Learning and Improvement Tip Guide, CQI Training Academy. August 2014 (PDF)
14. Endo, Jo Ann "5 Practical Strategies for Managing Successful Improvement Projects" posted Friday, July 8, 2016; download here http://www.ihi.org/communities/blogs/_layouts/15/ihi/community/blog/itemview.aspx?List=7d1126ec-8f63-4a3b-9926-c44ea3036813&ID=279
15. Emery, Ann K. "Great Graphs: Your Software-Agnostic Guide to Visualization" October 2017. (PDF)
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17. Evidence-Based Program Directory at the National Resource Center for Community-Based Child Abuse Prevention access at https://friendsnrc.org/evidence-based-practice-in-cbcap
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20. Healthy Connections, South Carolina's Medicaid QTIP "PDSA Cycle" August 2017. Available at https://msp.scdhhs.gov/qtip/site-page/pdsa-cycle
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APPENDIX V: DATA VISUALIZATION RESOURCES

If you're unsure of how to present your data, gather inspiration from a chart choosing tool or chart taxonomy. Taxonomies are diagrams, posters, websites, and other tools that classify chart types and aid designers in the chart selection process. Two helpful resources are provided below.

A PERIODIC TABLE OF VISUALIZATION METHODS
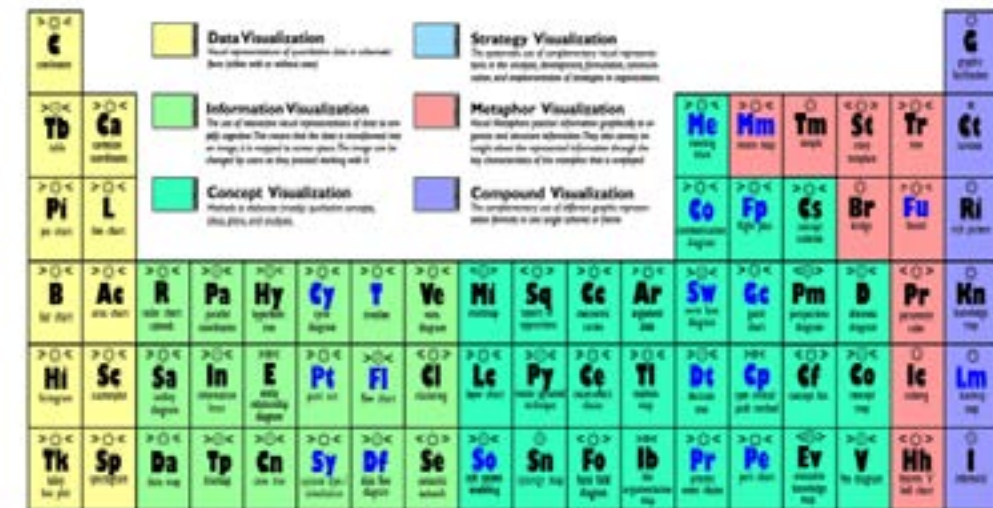
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http://www.datavizcatalogue.com/