Basics of Quality Improvement
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What is quality improvement (QI)?
QI is a systematic, formal approach to analyze and improve performance.

How is quality improvement different from research?
While QI projects and research are not mutually exclusive, the two have different emphases:

- QI projects address a stated problem by implementing multiple interventions in a real-world situation, continuously monitoring change, and adjusting interventions to optimize results.
- Research focuses on the effect of a specific intervention on a system, often utilizing randomized control trials. Within QI, controlled studies are rare, as context is an important factor in real-world situations.

How do I design a QI project?

1. Identify and explore the nuances of a problem to be addressed or a scenario to be optimized. This process may be time intensive and requires input from key players working within the system in question.
   - Objectively measure the magnitude of the problem
2. Create a SMART Aim Statement: Specific, Measurable, Achievable, Relevant, and Timely. For example: I will reduce my 5k time by one minute within 6 months.
3. After crafting an Aim Statement, identify how change will be measured
   - Outcome measure(s): direct measurement of the process you want to improve
   - Process measure(s): measurement of steps within the process to be improved or of outcomes of specific interventions
   - Balancing measure(s): monitoring for unintended consequences or outside influences
4. Run at least two (preferably more) PDSA cycles
   - Plan: Plan an intervention that is hypothesized to result in improvement.
   - Do: Implement the intervention within the system, starting small and scaling up if it results in improvement.
   - Study: Analyze the effects of the intervention
   - Act: Determine whether the intervention was valuable: should that intervention be adapted, adopted, or discarded?
How do I track change over time in the system?

A run chart is a line chart that tracks data over time. It allows visualization of trends and patterns. Once you have a run chart with no less than 12 data points, there are methods available to analyze variation.

Typically, a run chart contains:

- A measure (often an outcome measure) graphed over time
- A line indicating the median prior to implementation of any interventions
- If relevant, a line indicating the goal (as stated in the Aim Statement)
- Annotations of any noteworthy events, including intervention roll-out.