

ONLINE SUPPLEMENTARY DATA

Supplementary Data 1. Glossary of Terms.

Aim statement: captures the specific goal that a quality improvement project aims to accomplish. This statement should specify an amount of improvement in a concrete measure and the timeframe in which this will occur. E.g., "To reduce the median wait time for new appointments by 50% over the next 12 months." Or, "To increase the proportion of patients with autoimmune rheumatic disease who receive the flu shot to at least 80% by this time next year."

Balancing Measures: capture undesirable or unintended consequences that might emerge as a result of an improvement intervention. For instance, introducing a checklist before a procedure ensures safety, but may cause delay in procedure. Thus, a project aiming to increase use of a checklist to achieve some safety goal, might include a balancing measure of procedure time.

Fishbone or Ishikawa Diagram: a structured visual depiction of the contributing factors to a quality problem of interest. This approach avoids overlooking possibly important causes by prompting users to consider broad categories such as 'system factors' (e.g., financial constraints, staffing issues), provider factors (e.g., knowledge and skills, memory, workload), patient factors (attitudes, expectations, health literacy), and so on.

Model for Improvement: Framework to guide quality improvement work that combines three fundamental questions with iterative cycles of improvement (see PDSA below). The questions ask: What are we trying to accomplish? How will we know that a change is an improvement? What changes can we make that will result in an improvement?

Outcome Measure: The result of a test or process that is used to objectively determine the result of an intervention.

Online supplement to: "Rheum to Improve": Quality Improvement in Outpatient Rheumatology. *The Journal of Rheumatology*. doi:10.3899/jrheum.161053

Pareto chart: Chart that contains both bars and a line graph where the individual values are represented in descending order by bars and the cumulative total is represented by the line. In this way it signifies what values are significant. In many situations, some 80% of the outputs will be generated by only 20% of the inputs.

PDSA (Plan-Do-Study-Act): Testing a change by developing a plan to test the change (Plan), carrying out the test (Do), observing and learning from the consequences (Study), and determining what modifications should be made to the test (Act).

Process measures: this term can have two related but distinct meanings in the context of quality improvement. One meaning comes from the Donabedian triad of structure, process and outcome. This is where process refers to the activities carried out by health care professionals to achieve a desired outcome. This meaning appears most commonly in connection with performance measurement. For instance, measuring the percentage of patients who received care concordant with current guidelines represents process-based performance measuring, as opposed to measuring outcomes such as functional status or disease endpoints. But, "process measures" in the context of the Model for Improvement and PDSA type improvement projects refer to anything that captures how the intervention is working. Did patients receive the reminders letters regarding their upcoming appointments? Did clinicians receive the feedback reports about their guideline adherence? Did they acknowledge the computerized reminder prompting certain laboratory tests before prescribing a new therapy?

Quality Improvement: a formal approach to the analysis of performance and systematic efforts to improve it.

Run Chart: a simple, visual way to depict data over time (ie, a time series) accompanied by easy to use rules of thumb to identify signals of statistically significant change or so-called 'special cause variation' (as opposed to 'common cause variation,' which refers to random fluctuations or 'noise'). A typical run chart shows a measure of interest (e.g., the percentage of patients who received some desired process of care or the average

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wait time for a first appointment) plotted over time. The graphic typically includes a horizontal 'center line' showing the median. Six or more consecutive points either all above or all below the center line constitutes an example rule for detecting a significant change. For an easy to follow overview of run charts see: Perla RJ, Provost LP, Murray SK. The run chart: a simple analytical tool for learning from variation in healthcare processes. *BMJ Qual Saf* 2011;20:46-51.

Spread: refers to the uptake of successful improvements at other clinical sites.

Sustainability: refers to locking in the progress that occurred initially and ensuring that practice does not revert to the baseline state. Sometimes the initial gains in an improvement intervention depend on extra efforts made on the basis of enthusiasm or good will, neither of which can last forever. Even in the absence of these obvious problems, changes that depend on training or orienting staff to a particular process require periodic retraining in settings with high staff turnover. In general, one should consider sustainability when exploring change ideas at the outset, rather than waiting to work on sustainability down the road.