

Examples of Graphic Presentation of Performance Results: Tables, Bar Graphs, and Run Charts (Line Graphs) over Time

Graphic presentations of performance should help viewers easily and quickly understand the key information: variables, sample sizes, and results. Often tables are used because they are easy to create and format to show all key information. Bar graphs and run charts better illustrate visually the amount of change, but sometimes make information about sample size and specific result values more difficult to create and to see.

Simple measurements can be easily displayed and understood in any graphic format. More complex measurements often require deciding what aspect is most important to highlight in visual display, with the format chosen accordingly.

Examples from UMMS QI projects documented for MOC are provided below for three common situations:

1. One performance measure at three points in time
2. One performance measure at many points in time
3. Multiple performance measures at three points in time

These examples are illustrations that can be modified to fit the needs of a specific QI project and audience.

1. One Performance Measure at Three Points in Time

One set of results is shown in four example formats to illustrate visual differences in presentation.

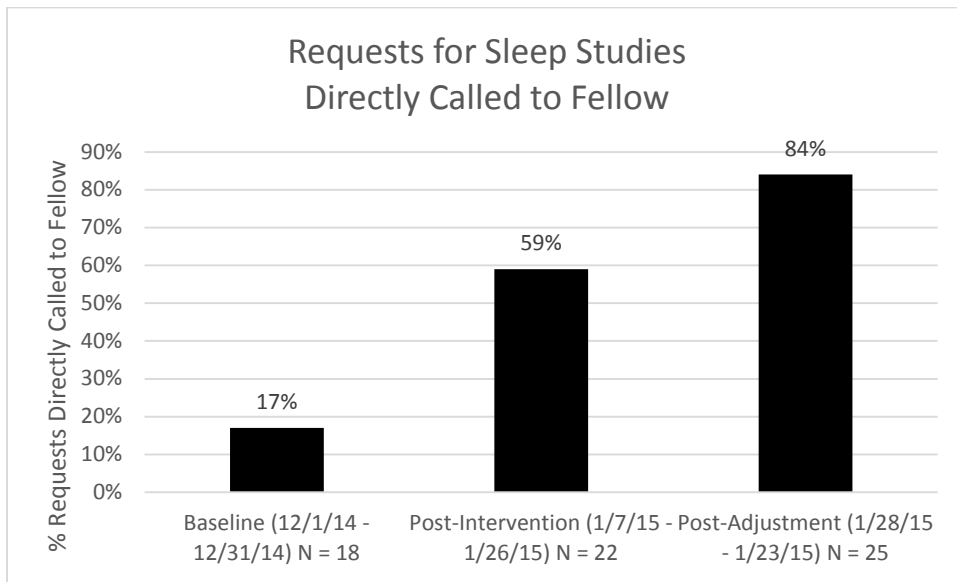
Example Table – Option 1

Time Period	Baseline (12/1/14 – 12/31/14)	Post-intervention (1/7/15 – 1/26/15)	Post-Adjustment (1/28/15 – 2/23/15)
N Requests for Sleep Studies	18	22	25
% Requests Directly Called to Fellow	17%	59%	84%

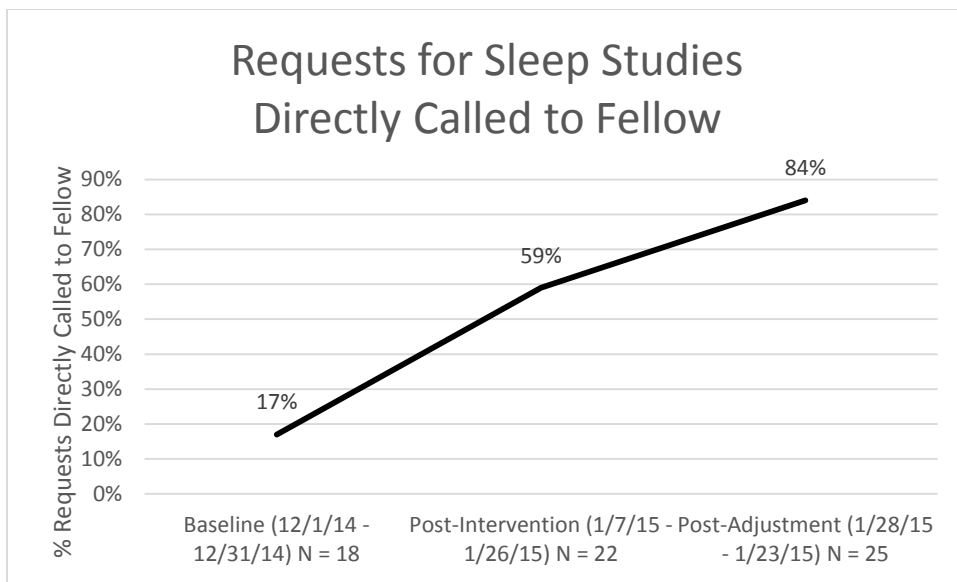
Example Table – Option 2 (axes switched)

Time Period	N Requests for Sleep Studies	% Requests Directly Called to Fellow
Baseline 12/1/14 – 12/31/14	18	17%
Post Intervention 1/7/15 – 1/26/15	22	59%
Post Adjustment 1/28/15 – 2/23/15	25	84%

Example Bar Graph



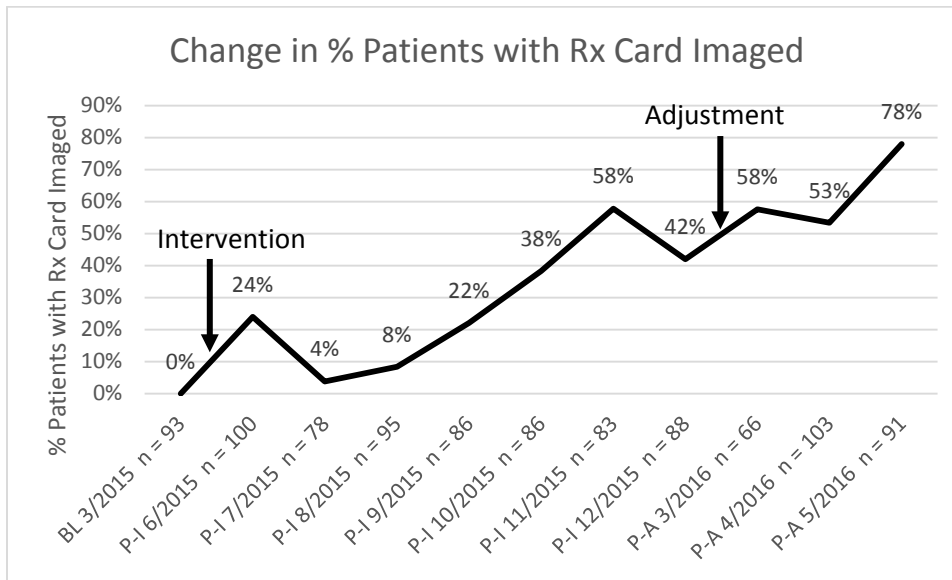
Example Run Chart



2. One Performance Measure at Many Points in Time

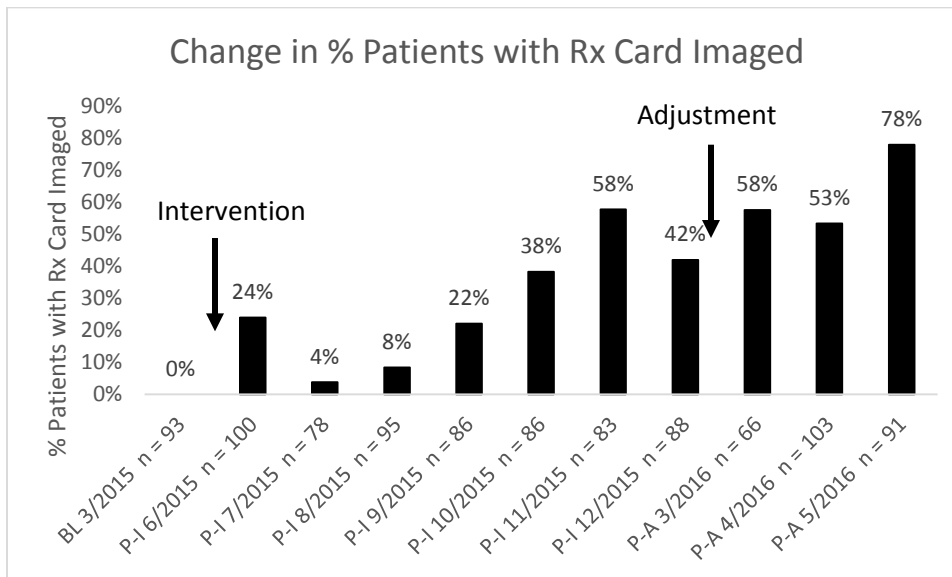
Sometimes performance is measured repeatedly to provide interim information during a larger observation period (e.g., weekly reports during a two-month observation period). The interim information indicates trends as interventions are more fully implemented or as external events occur. Interim changes in trends are visible when interim results are presented in run charts or bar graphs. With many data points, trends are likely to be seen more easily in run charts (line graphs) than bar graphs.

Example Run Chart – One Performance Measure at Many Points in Time



Note: Baseline (BL) = 0%, Post-intervention (P-I) mean = 28%, Post-Adjustment (P-A) mean = 61%.

Example Bar Graph – One Performance Measure at Many Points in Time



Note: Baseline (BL) = 0%, Post-intervention (P-I) mean = 28%, Post-Adjustment (P-A) mean = 61%.

3. Multiple Performance Measures at Three Points in Time

Having multiple performance measures occurs either when several aspects of performance are measured over time for one group or when one aspect of performance is measured over time for several groups (e.g., clinics within a department). Multiple performance measures are easily presented in a table. If many measures are involved, they can be visually complex and hard to follow when they overlap in bar graphs or run charts.

Example Table – Multiple Performance Measures at one Site

Performance Measure	Baseline (Sept-Oct 2015)	Post- Intervention (Nov 2015)	Post-Adjustment (Dec – Jan 2015)
Vaccination Status Documented			
N audited	67	30	43
% documented in EMR (goal: >90%)	67%	72%	93%
Clinic Vaccination Rate			
N eligible for vaccine in our clinic	56	14	20
% rec'd vaccine in Peds ID clinic (goal: >55%)	45%	43%	55%
Declination Documented			
N not vaccinated	32	8	9
% whose refusal/declination doc'd (goal: >90%)	47%	63%	67%
Counseling Documented			
N not vaccinated	32	8	9
% who had counseling doc'd (goal: >66%)	16%	38%	44%

Example Table – One Performance Measure at Multiple Sites

TABLE. Foot Exam Performed within Past 365 Days for Patients with Diabetes

Site/Group	Baseline 6/30/13		Post-Intervention 9/16/16 – 10/4/13		Post-Adjustment 10/24/13 – 11/15/13	
	N Patients	% with foot exam	N Patients	% with foot exam	N Patients	% with foot exam
Family Medicine Site A	817	65%	839	73%	840	72%
Family Medicine Site B	809	56%	828	59%	836	67%
Family Medicine Site C	299	60%	300	76%	304	74%
Family Medicine Site D	452	53%	476	82%	492	81%
Family Medicine Site E	629	52%	655	61%	671	60%
All Family Medicine	3,006	58%	3,098	68%	3,143	70%
All UM Group Practice	11,984	53%	12,079	58%	12,181	60%

Note: Number of patients is the number with diabetes in the UM Health System's registry of diabetic patients on the last day of the intervention period. The percent is the number of these patients who, on the last day of the intervention period, have had a diabetic foot exam performed in the previous 365 days.

Example Combination of Run Chart (Line Graph) and Table – Multiple Measures at One Site

When highlighting important differences between multiple measures on patterns of change, the combination of displaying results both in a run chart and a table may be useful. While a table is the simplest format for showing the sample sizes and results across multiple measures, similarities and differences between measures in patterns of change may be harder to see in a table than in a run chart. However, sample sizes and results are difficult to display simultaneously for multiple measures at one point in time on a run chart.

The following example presents a run chart showing a noteworthy difference in pattern of change between one measure and the rest. It is accompanied by a table that details the specific results and sample sizes by measure, showing that the measure with the different pattern of change also has a noteworthy difference in sample size. The small sample size was subsequently determined to be the reason for the difference in pattern of change. The one antibiotic was administered so infrequently (e.g., once per month) that remembering its timing was more difficult than remembering the timing for other antibiotics.

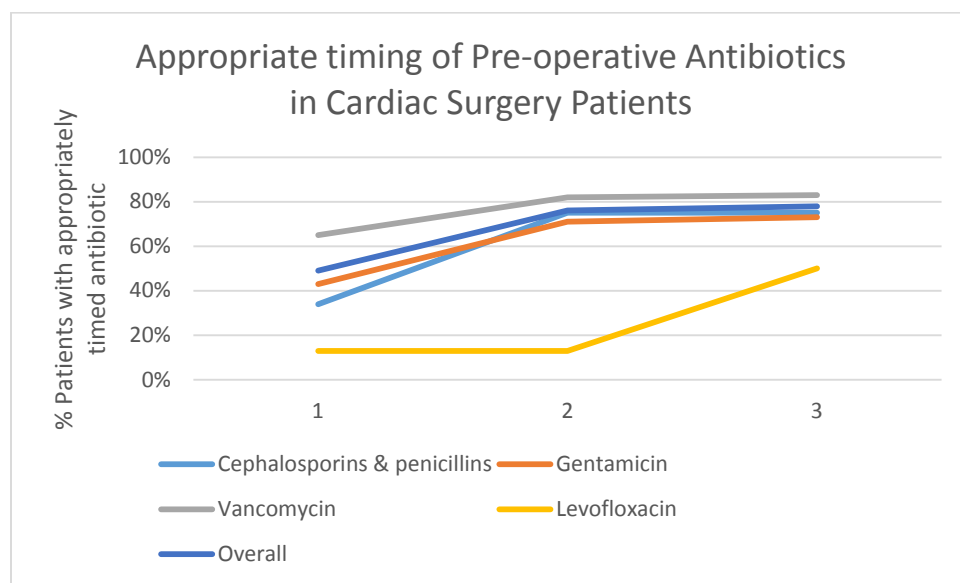


Table. Percent of Patients with Appropriately Timed Administration of Pre-operative Antibiotics in Cardiac Surgery Patients

Antibiotic	Baseline May 2015		Post-Intervention July 2015		Post-Adjustment October 2015	
	N	%	N	%	N	%
Cephalosporins & penicillins	26	34%	71	75%	63	75%
Gentamicin	6	43%	10	71%	8	73%
Vancomycin	60	65%	96	82%	83	83%
Levofloxacin	1	13%	1	13%	3	50%
Overall	93	49%	178	76%	157	78%