

Run Charts

As we've touched upon already, data collection is vital to assess the impact of your intervention. We now know that the best way to do this within the QI framework is through collecting data over multiple time points, both before and after your intervention. Quite often, the best way to present your data is in a run chart. Using a run chart not only allows you to display your data in an easy-to-understand format, but as we'll see, it also enables you to see whether your intervention has had a statistically significant impact.

So, what is a run chart? It is a method of presenting how an outcome, on the y-axis, changes over time, which is your x-axis. In our example, our y-axis would be our outcome measure, which is the number of inappropriate antibiotic prescriptions that have been issued. We'd measure how many inappropriate antibiotic prescriptions there were in each week of our project, and plot them on the run chart, as so.

You'll see in this example, we've collected six data points before our intervention. This is really important in order to determine what your baseline level of inappropriate prescriptions is – the starting point from which you are hoping to make an improvement.

We've mentioned that you can use run charts to assess statistical significance – how do we do so?

Our first step is to calculate the median for our baseline data, and plot this on our run chart. The aim of this is to reflect the true number of inappropriate prescriptions per week, accounting for the normal variation that we would expect to see in these systems week on week.

Our next step is to plot our post-intervention data on the run chart. What we are looking for here is what is described as a "shift." This is where post-intervention, you have six consecutive points that sit either above or below the baseline median. Due to the mathematical properties of the median, a shift means you have achieved statistical significance, with a p value of below 0.05.

When you see this shift, you should then recalculate your median, and use this as your new baseline upon which to seek an improvement.

We've made our worked example here available for download at the link below. It is editable, so feel free to use this as a template for your own work.