Calculation of Supply in a Complex Specialty Care Practice or Program

This article outlines issues that may apply in many programs and even in some specialty care practices. It arose in a program that employs a number of clinicians who provide home care visits to their patients who have an initial evaluation and then a number of follow-ups. There is no prescribed treatment plan, visit length, number of return visits or length of treatment. Within this program, the current practice is to leave the schedule for all the clinicians wide open and let the clinicians decide what they are going to do. There is a need to constantly balance non-patient care work (meetings, program functions, committees) and patient care, which includes direct patient care work (red-zone face-to-face time) and indirect patient care work (paperwork, documentation, review of clinical issues, telephone calls). In this program, there is an extensive amount of travel both to and fro to support the patient visit. While this could be viewed as an independent workload category, it is most commonly viewed as part of the indirect work. In this scenario, it is relatively easy to determine activity, that is, how many home visits were accomplished. It is also somewhat easy to determine demand (how many appointments were made) although the concept of "appointment made" presents some difficulties due to the fact that appointments are made directly with the clinicians, and there are measurement and interpretation challenges. Still, measurement of demand as appointments made could be determined, particularly if there was a commitment on the part of the clinicians to measure it, and a commitment and a behavior change toward entering this data into a master scheduling book. Currently, each clinician keeps his or her own scheduling book. The greatest challenge, however, lies in calculating supply. How much capacity do the program and the individuals have to meet the demand? Are they meeting the demand? Is there a delay? Is the delay accumulating and extending? Is there variability in caseload, in visit return rate, in visit length, and/or in process?

The following question and answer is an initial attempt to look at how we begin to calculate the supply component of this compass of measures, because in order to accurately gauge system performance, we have to be able to see if this program and the individuals within the program are actually meeting the demand with their corresponding supply. What is the demand, what is the supply, what is the activity, what is the waiting time, and what is the caseload?

Question: The program clinicians currently plan face to face red zone appointments to last two hours. This is an arbitrary decision based on previous experience and is probably based on close to worst case scenario. At the same time, despite the fact that all of the appointments have an associated travel time and associated paperwork, neither is directly accounted for in planning. The clinicians schedule their own appointments, and there is a great deal of variability in the number of appointments each one schedules per day or per week. How do we calculate supply in this ambiguous environment?

Answer: In order to improve system performance, we clearly need to get accurate measures. These measures would include the entire compass: delay, demand, supply, activity and caseloads for all providers. Activity is relatively easy to measure - we look retrospectively at how many appointments/visits were completed. We can also use the pie chart approach to review activity. The pie chart can look at workload categorized into non-patient care work and patient care work which can be sub-divided into direct (red zone face-to-face) and indirect (supporting) patient care work. In practices with travel, we can categorize travel time as activity within the indirect patient care group but, at the same time, because we may at some point want to address the travel issue differently, I would collect data on travel time as a distinct entity within this category. We have to start measuring demand. The categories of demand can be determined with the pie chart. Demand for direct patient care time (face- to- face appointments) needs to be determined. This will require that all clinicians either "allow" some form of central appointment scheduling or at least record appointments made/workload generated each day. If the current common practice is to "count" all appointments as two hours, record each appointment made as a two-hour "demand." This gives an early estimate of total demand.

Currently there is no clear way to measure supply because there is no schedule. So supply needs to be codified. A critical question for the practice or the program is: What can we do? How much capacity do we actually have? Most groups can look prospectively at a schedule and say "This is the supply." But these groups can't. They can only speculate. So we have to look retrospectively at "What have we done? How many visits have I been able to do in the past?" We use the pie chart (which is an activity chart) in order to determine supply. So retrospective past activity is used as a surrogate for prospective supply. Later, applying the care team workload analysis to the categories identified within the pie chart, we expect that current supply, actually measured as activity, is less than the eventual true capacity.

In your practice, each "demand" for an appointment comes with an associated travel time and associated indirect patient care work. To start, I would bundle all the associated tasks (the direct and associated indirect work) into a single bundle. In this case, that means adding the red zone, plus the travel to and fro, plus all associated tasks (paperwork, etc.) together. Then ask: "How many such bundles can be accomplished in a day?" For travel, I would again look retrospectively and determine the average or mode (most common amount of time) for that travel and use that in the calculation of bundles.

Then use the pie chart—and remember that the pie chart captures the same data but in a different format. The pie chart looks at non-patient time plus direct patient time plus indirect patient time. The bundles are a combination of direct and indirect. The pie chart tells us, within current performance, how much of the day needs to be subtracted for non-patient work. Then the time left over can be filled with bundles of patient care work (direct plus indirect). How many bundles can we fit into this time? How much excess time is there?

The number of bundles is the supply in current performance. When we compare this to demand, the current demand may be balanced by current allocated supply. We know, at least from historical data, just how much supply has been allocated in the past to meet demand. We could assume initially that demand into those categories illustrated on the pie chart is balanced by correct and appropriate supply. There are, however, at least two problems with this assumption:

1. We don't know if this is correct and appropriate supply and

2. We don't know what the delay is.

The assumption that the demand is met by the correct and appropriate supply needs to be continuously challenged through measurement and decisions about workload analysis. This analysis will allow us to determine practice capacity. In addition, if measured demand appears greater than supply, we need to do the workload analysis. In either case, these are the tasks:

1. Review the pie chart. Subtract the non-patient work time. A number of bundles will fit into the remaining patient care time but the bundles will not fit here perfectly. Look at the "excess time," the time difference between the bundles of direct plus indirect time and the time left within the pie chart.

2. If possible, reduce the non-patient time in order to gain more patient time and room for more bundles.

3. Work on efficiencies with process flow and care team workload analysis within the indirect time. Then standardize.

4. Look at travel time. Ask if this is necessary in the current environment.

5. Standardize and look for efficiencies within the red zone time

6. See if there is more room for more bundles within the pie chart.

In this way, we use the retrospective activity analysis to get us some traction on prospective supply. Once we get better traction on supply, then we need to convert as much work from unscheduled to scheduled work. The ambiguity of unscheduled work makes baseline assessment and assessment for improvement virtually impossible. There is no way to manage, evaluate or improve performance in a completely unscheduled environment. Once the work is scheduled, we can evaluate the true test of system performance: the delay. Unless the work is scheduled there is no mechanism to measure this critical system performance metric. The next key measure is caseload. From that we can more accurately and appropriately evaluate individual provider performance.