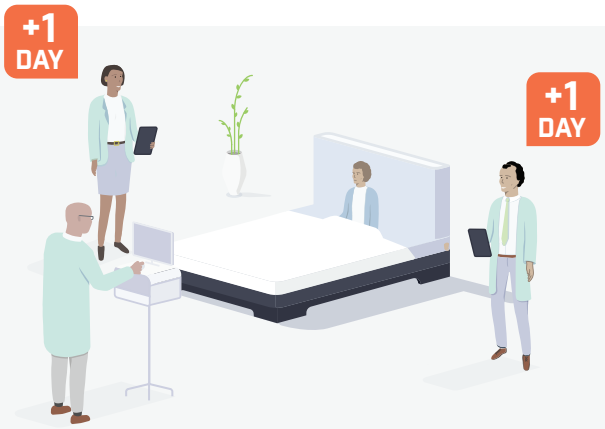
IllumiCare eReport



ANOTHER DOC. ANOTHER DAY

"Too many cooks in the kitchen" is a well-known idiom. It implies that more input is not always better when it comes to cooking a meal.

We can think similarly about the number of providers who are actively involved in a single hospitalization. As medicine is not formulaic, each provider brings his/her own experiences, training, practice habits, etc., to the case. Each may order procedures, tests or medicines that are of interest from their own perspective. As medicine becomes more hyper-specialized, the fragmentation even in the inpatient setting may foster inefficiencies and thus contribute to waste. Moreover, with today's electronic notes being a copy/paste/data pulldown exercise of "note bloat," a multitude of providers on a case means an imperfect information exchange among the care team.

Given these effects, one would hypothesize that it would be better with respect to efficiency to have fewer providers on a case, even when risk adjusting by severity of illness. This eReport examines that hypothesis and finds a close correlation between length of stay (LOS) and the number of providers who have written a med/lab/rad order. More or less, for every additional doc, patients will stay an extra day in the hospital. We also find that not all generalists are alike in the frequency of consulting other providers, giving us an opportunity to reduce this excess length of stay.

Background

As a result of the work we do to present costs, risks, and other key data in the clinical workflow, IllumiCare is uniquely able to collect and analyze the real-time cost (actual wholesale cost; not charge) of every order for a medication, lab, and radiology test. In addition, we track who ordered it (by provider/type) and the patient's acuity (MS-DRG) as documented by many acute care hospitals across the country.

We limited this analysis to inpatient admissions and to only those facilities where the ordering provider and specialty were known on 75% or more of orders for a med/lab/rad. A provider was considered "actively involved" in the encounter if he/she ordered a medication, lab or radiology test for the patient. We excluded any individual orders where the provider ID or specialty was not known.

Insight #1

More Docs = More Days

As a first pass, we looked at the correlation between the number of actively involved providers and length of stay. As Figure 1 shows, there is a near linear relationship between the number of unique providers on the case and the patient's length of stay ($R2 = 0.98$). Past three providers and three days, each additional provider adds 0.58 days to length of stay. Many hospitals think of a day of LOS as costing between $1,000-$2,000, thus this effect has a nontrivial impact on the cost of care.

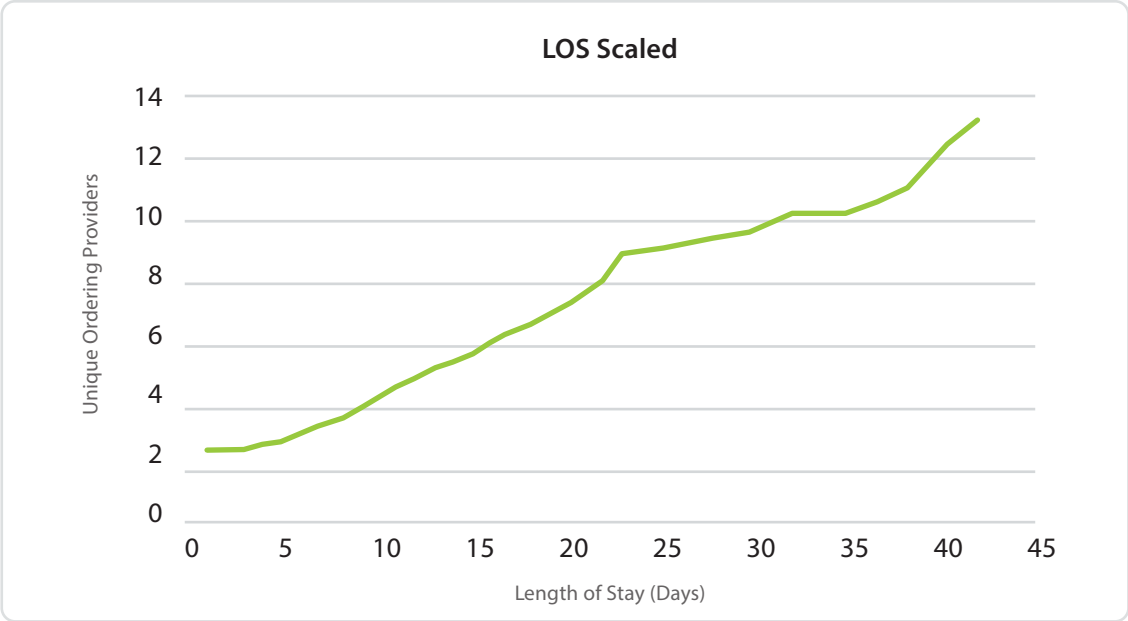


Figure 1

Insight #2

Risk-Adjusting Tells the Same Story

The natural reaction to the above insight is a chicken-and-egg argument: Patients who are sicker (and stay longer) have more providers. To see whether the correlation remained after risk adjusting, we considered each Diagnostic Related Group (DRG) separately. DRGs classify an encounter into one of about 900 disease/severity classes. We included only DRGs for which we had at least 100 encounters in the subject time period/data set.

For a given DRG, we calculated the average length of stay. To compare the effect across many DRGs (each with its own average length of stay), we used a scaled length of stay, where a value near 1 implies near the average length of stay. For every DRG, we then computed the average LOS scaled value for 1 provider, 2 providers, 3 providers, etc., to see if this average LOS scaled value had a pattern as the number of providers increased. Figure 2 shows the results across all DRGs:

Fig. 2 Explanation

A scaled LOS of 1 indicates a mean LOS. Thus, DRG-adjusted, less than 6 unique providers yield a below average LOS (across all DRGs).

Above 6 providers, LOS begins to grow linearly. At 10 providers, LOS will be 1.5x the mean for that DRG; at 16 providers it will be 2x the mean for that DRG, etc.

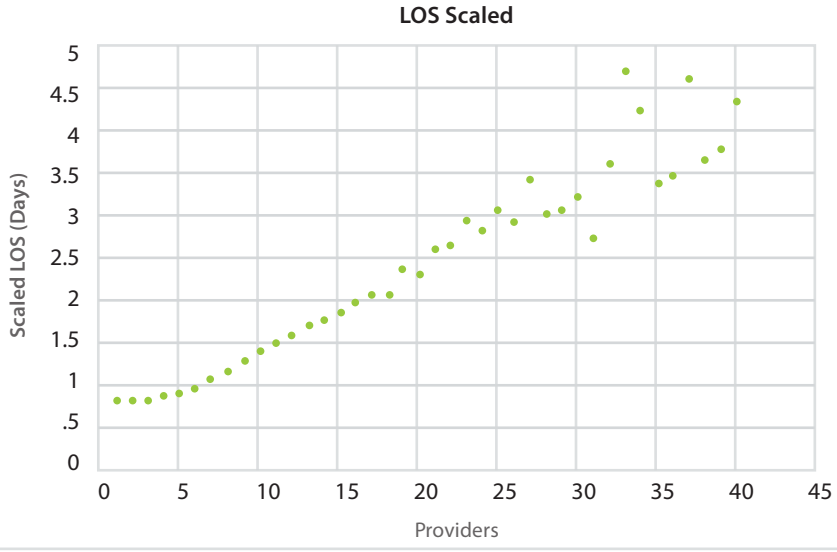


Figure 2

An additional way to think about risk adjustment is to consider the number of different specialties (e.g., internal medicine, nephrology, gastroenterology, etc.) represented by the ordering providers. If it is just sicker patients needing more sub-specialists that drives length of stay and more ordering providers on the case, then one would expect that the correlation between the number of providers and length of stay would largely disappear when including patients who saw only one or a small number of different provider specialties. But that is not the case. The correlation persists and looks very similar whether the collection of actively engaged providers are from one specialty all the way up to seven different specialties.

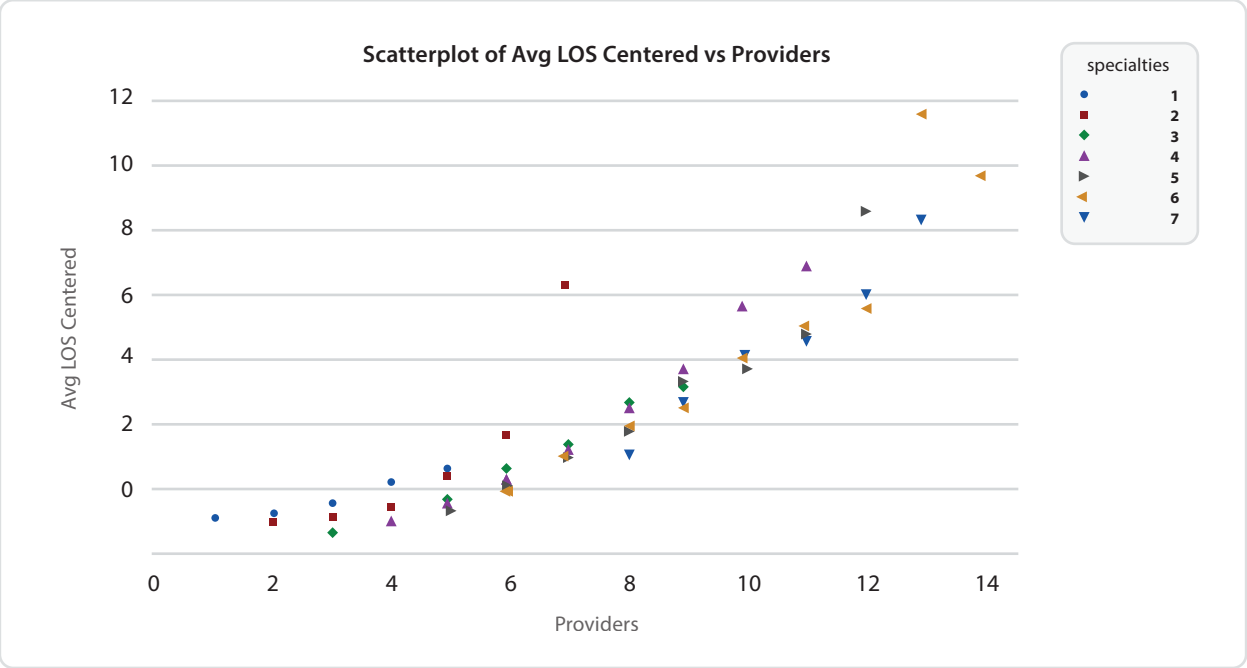


Figure 3

Insight #3

The "Consultologist"

Some providers consult other providers with greater frequency (we know of one hospitalist who consults specialists with such frequency that he is referred to by his peers as the "consultologist"). Given the correlation between the number of providers and length of stay, we can think of "over-consulting" as a behavior to discourage.

To see how much variation exists in the rate at which some providers are joined by others on the same case, we looked specifically at hospitalists across multiple facilities. In this specific analysis, we looked at over 45,000 admissions where a hospitalist wrote a med/lab/rad order. We excluded from the analysis any hospitalist who had fewer than 20 encounters in the data set. The average number of encounters per provider in the study population was 260 encounters per provider.

For this analysis, we asked the question, "How many other non-hospitalist, actively-involved providers were there in the encounter?" Thus, if there were six different providers who wrote an order during the encounter — hospitalists (3), gastroenterology (2), cardiology (1) — we counted this as "three other non-hospitalist providers on the case." The results:

Average	**4.29**	**Minimum**	**1.31**	**Maximum**	**11.84**

Our natural inclination was to think that the provider with the 11.84 average number of other providers was someone who barely made the 20-encounter cut. Surely one or two train wrecks ruined their average. But, no, that provider had 265 encounters in the data set — slightly higher than the average.

Conclusion

Excess length of stay drives up both the cost of care and iatrogenic risks to patients. Care coordination and timely discharge of a patient is more challenging as more providers must adjudicate the process. This leaves the admitting physician, the "gate-keeper," with additional challenges that extend the length of stay. Unnecessary test ordering leads to delays in discharge and can potentially extend days in the hospital, as one must wait for these tests to be completed and result. The more providers ordering tests, the more likely delays may occur.

"More cooks in the kitchen" may be bad in medicine too. Providers need to judiciously consult their peers and do so only for the right reasons.

About IllumiCare

Founded in 2014 in Birmingham, Ala. by a visionary physician and team of hospital IT experts, IllumiCare is dedicated to helping clinicians become better stewards of system and patient resources. Its Smart Ribbon® platform brings clinicians critical, patient-specific data in a focused view for expedited clinical decision making at the point of care, without disrupting clinical workflow. Hospitals around the country are seeing the benefits of decreasing harmful overutilization: Immediately after go-live, providers drop their spend per admission by $170. To learn more, visit www.illumicare.com/ereports.