Expect the Unexpected: How to Conquer Variability in Your Outpatient Infusion Center

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Introduction

The last several years have challenged infusion centers in ways never imagined or anticipated. But a constant theme remains since LeanTaaS began working with these centers nearly a decade ago: how can infusion centers better plan for the unexpected to reduce stress and uncertainty?

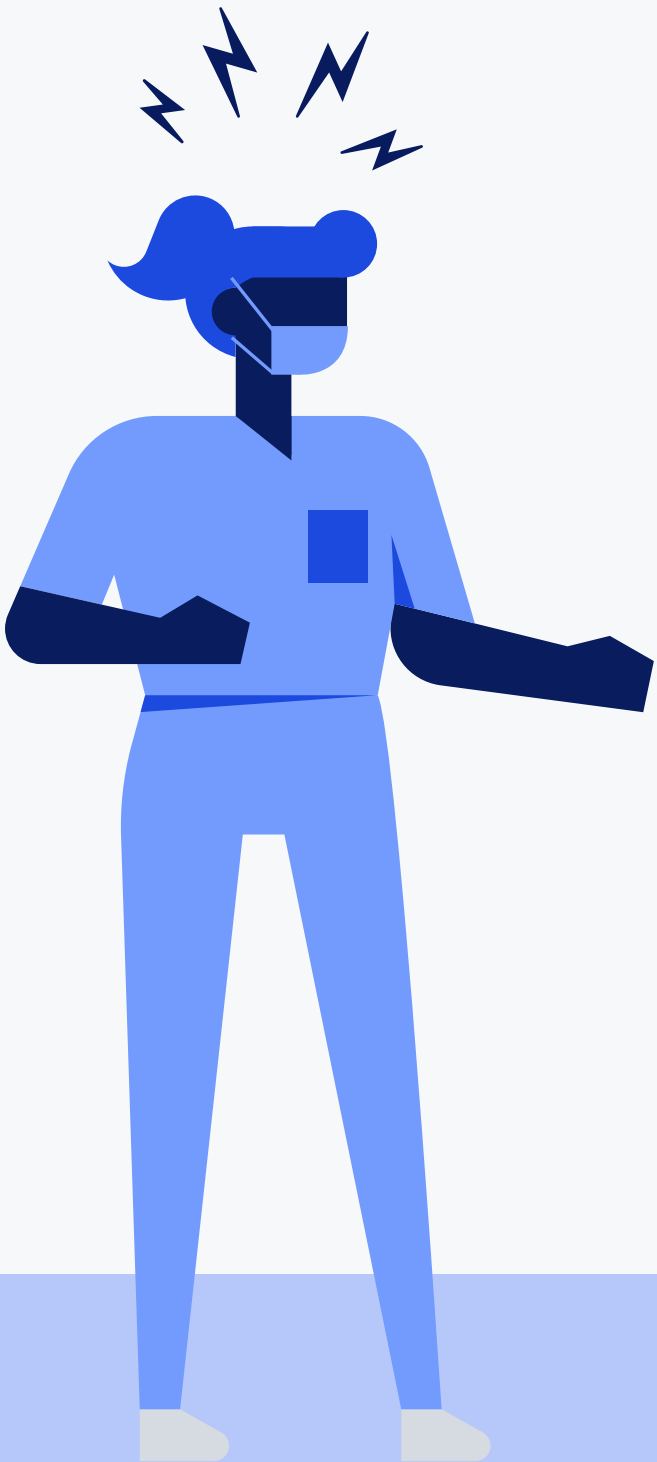
Outpatient infusion centers are challenged with day-to-day uncertainty given the nature of their patient population; ongoing staffing challenges add another layer of uncertainty. This has caused many in the field to feel increasingly fatigued.

Although it may not be possible to predict the next patient reaction or the next nurse who needs to take an extended leave, some causes of variability within infusion centers are not entirely random. Each time there is a disruption, a call for an add-on, several cancellations, treatments running long, or patients arriving late, the team must stop their usual work and put thought and energy into making more and more decisions. One tool to counteract what can feel like ongoing chaos is a foundational Lean concept called Variability Reduction.

> **Variability reduction is the process of identifying and minimizing the sources of variation in a system or process. In Lean processes, reducing variability is important because it leads to greater efficiency and consistency in operations. When there is less variability in a process, it becomes easier to control the outcome of the process, which can help reduce waste and delays.**

With the support of predictive analytics and ongoing monitoring, infusion centers can quantify predictable variability so they can better manage it – by accounting for it directly in the scheduling plan and then developing an action plan to reduce the underlying sources.

If infusion centers can decrease the amount of variability under their control between what is scheduled and how the day actually plays out, they will be better positioned to handle the unpredictable events that happen inevitably in the course of infusion care.



1. What drives variability at infusion centers?

Below are a few major sources of variability that create a gap between what is on the schedule going into the day and how the day actually plays out.

- **Same-day cancellations and no-shows:** Same-day cancellations and no-shows can range from as low as 5% to as high as 25% in extreme cases. Though the inclination may be to keep these as low as possible, a reasonable number to target is about an 8-10% rate of same-day cancellation and no-shows. When same-day cancellations rates get much higher than that, it's likely a result of missing workflows that result in scheduling "clog" which undermines patient access. An infusion center with 30 chairs and 10 nurses that sees 60 patients a day could lose out on as many as 1,500 visits a year due to avoidable same-day cancellations.

- **Late patient arrivals (or early arrivals):** Ensuring patients arrive within a reasonable timeframe of their scheduled appointment time is critical to maintaining a smooth and stable infusion center operation. A reasonable target for late patient arrival to infusion is under 10%, ideally lower than 5%. Data-driven flexible scheduling gaps (time between connected visits) can help improve on time arrivals.

- **Predicted appointment durations running long (or short):** Actual durations running systematically longer (or shorter) than scheduled duration impacts infusion center capacity and access. Although this depends on many factors and may be different for specialty infusion centers, a good rule of thumb is that 80% of appointments should run within +/-30 minutes of their expected duration.

The illustration below also depicts what the “gap” can look like for each of these scenarios from a chair utilization perspective. These gaps can result in lost access, missed nurse lunch breaks, nursing overtime, and more.

Figure 1: Examples of the Gap Between Scheduled and Actual Utilization

There are other self-inflicted sources of variability such as routine staffing plans that are not consistent enough by day of week or that don’t align with the high volume days when more providers are sending patients to infusion.

A crucial insight is that each of these sources of variability can be improved. If infusion centers are able to drive operational change and bring these metrics down to healthier levels, their center will have a more solid foundation for consistent operations while maximizing patient access.

2. Conquer variability at infusion centers by adjusting with it

While working to reduce these sources of variability to healthier levels, it is important to recognize that this progress does not happen overnight. Infusion centers should also develop ways to plan around their variability right now in a phased approach. This variability can be addressed through optimization of scheduling practices and workflows. Optimization strategies that directly model infusion appointments as “stochastic” rather than deterministic events can yield better operational outcomes for infusion centers.

For example, if an infusion center has a high rate of same-day add-ons that equate to a net of three additional chairs during peak hours, then the predicted chair utilization from a full schedule during peak hours should leave about three chairs of buffer for add-ons.

On the other hand, if an infusion center has a high rate of same-day cancellations and no-shows that result in five fewer chairs being utilized compared to what is scheduled, then the infusion center can deploy larger templates that have more slots in them to account for the anticipated loss in volumes. This is a similar approach to how airlines use mathematics and probability calculations to strategically overschedule some routes due to predictable cancellation patterns along those routes. Anticipating ‘missed passengers’ will help to maximize patient access and capacity utilization by keeping the seats full.

Another example involves variability in appointment lengths. Even after scheduling guidelines are aligned with the true expected time in chair for each regimen, some treatments have a natural propensity to run longer than scheduled. This is the natural anticipated variability. Infusion centers don’t need to predict exactly which treatments will run longer, only to predict that some percentage will and by approximately how much. When building out templates, simulation tools can help infusion centers realistically model these patterns and bake them into the overall plan. This can be very helpful to control overtime costs.

3. Tactics to reduce variability at infusion centers

While variability is inherent to healthcare settings, there are a variety of levers infusion centers can pull to reduce it to a best practice level. Common interventions include:

Variability	Interventions to Reduce Variability
High same-day cancellations and no-show rate	• Implement workflows to ensure appointments get removed from the schedule in a timely fashion, for example by having a clear identification and removal process for infusion appointments when a patient is hospitalized or transitioned to hospice care. • Reducing scheduling lead time. The more time between when the appointment is booked and the date of service, the higher the chance it won't actually happen. Generally, don't schedule an appointment more than four weeks out. • Further, do not schedule chronic transfusion appointments, which have higher variability than chemotherapy treatment, more than two weeks in advance. • If labs are done on a day prior to treatment, ensure there is a process for providers to review lab results in a timely manner so visits can be canceled to open up scheduling capacity. • Improve communication with MD offices. Share data illustrating lost capacity due to cancellations. • Set up reminder/confirmation calls, especially for appointments with a higher likelihood of canceling or no-showing (e.g. non-oncology treatments). Be consistent within the organization to avoid confusion of when to rely on reminders.

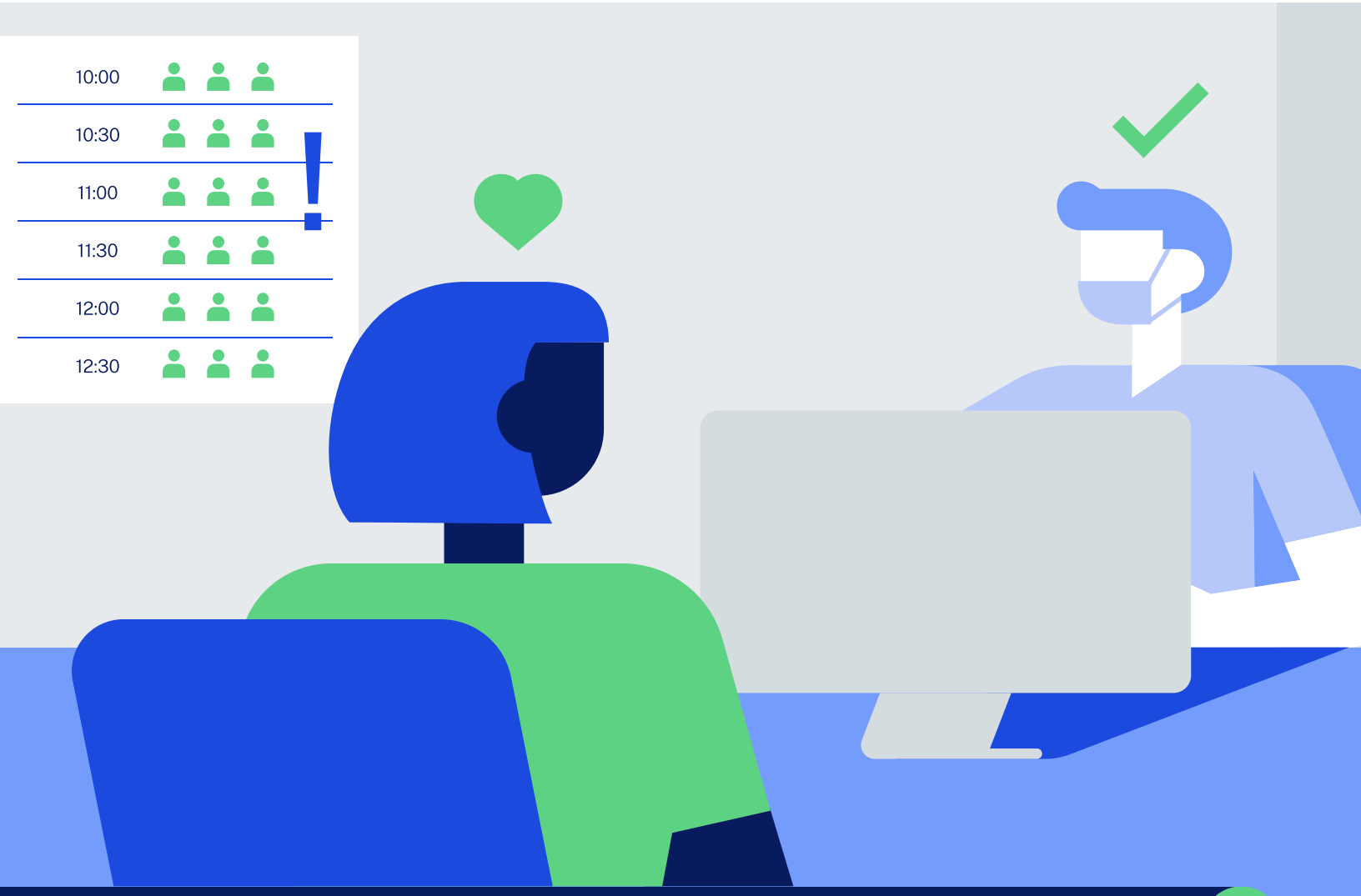
Variability	Interventions to Reduce Variability
Late patient arrivals (or early arrivals)	• Use data to understand root causes of late arrivals and then address these. • Use data analytics to predict the optimal scheduling gap between upstream clinic services and infusion appointments. This gap will likely not be a single amount of time between services. There may be certain clinics that need longer/shorter "layovers" to improve on time arrivals. • Availability of parking, wheelchairs, valet services, etc. are good areas to look for delays when appointments are not preceded by another service such as a lab/provider visits. • Offer patients the option of decoupling some same-day appointments like labs if it works better for them. Although it may seem convenient for patients to receive all care needed in one day, the process of having all patients come in the same day for all of their appointments can lead to unnecessary waiting time for the patient and prevents level loading resources. By offering patients choices, infusion centers can empower them and improve their experience.
Appointments running long (or short)	• Quarterly review of scheduling guidelines will help ensure appointment lengths are right sized, especially following clinical conferences where new regimens are published. The goal is not to 100% predict the exact chair time of each patient, but to eliminate systematically built-in errors. • Review appointments running long for any patterns so that process improvement opportunities can be identified (medications not ready in a timely fashion, certain treatment regimens are padded with too much time, etc.) in order to recapture that capacity. • Decrease lab turnaround time through optimized scheduling/workflows.
Staffing variability	• Simplify staffing models so that the daily staffing plan is more consistent and nurse shifts become more interchangeable should a nurse need to find coverage or request a shift swap. • If it is known in advance that the infusion center will be significantly understaffed on a given day, adjust the appointment scheduling capacity accordingly. This works best when staffing plans are known one month out before schedules begin to fill up.

Users of the AI-powered iQueue for Infusion Centers solution have successfully deployed a mix of these interventions to reduce the gap between scheduled utilization and what actually happens on the infusion floor, helping to increase patient access at their center and remove unnecessary variability that stresses the system. To learn more, view success stories from infusion centers.

Conclusion

While addressing variability may seem overwhelming, infusion staff can begin by choosing one project to tackle at a time, identifying the item that has the highest variability and most potential impact. Once they conquer controllable variability in their operations, infusion centers will be on the path to operational excellence and a less stressful environment.

Outpatient infusion centers across the country are already addressing these challenges by applying Lean best practices to their operations and leveraging advanced analytics and optimized scheduling templates. To see even more on how LeanTaaS can help, reach out for a product demo.



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