

# Resource Optimization and Capacity Management in Community Oncology:

## *Reshape the Daily Curve with AI*

AI-driven scheduling, nurse assignment, and chair-capacity management platforms offer a powerful alternative to traditional scheduling templates and nurse assignment processes. By flattening daily workload curves and unlocking an additional 15–20 percent visit capacity, AI-powered tools can improve operational efficiency, enhance staff well-being, and reduce patient wait times. This white paper explores the root causes of scheduling imbalance, the real costs of inefficiency, and how operational leaders can leverage data-driven solutions to balance daily workloads, reduce overtime, and strengthen both patient and staff satisfaction.



## The Scheduling and Nurse Assignment Puzzle

Managing patient appointments in oncology has always been challenging. However, today, with nursing shortages and increasing patient volumes, the issue has evolved into a core operational barrier for community cancer centers. It should no longer be viewed as just a “scheduling” or “nurse assignment” problem. It is a resource optimization and capacity management challenge. Every patient appointment involves multiple touchpoints—labs, pharmacy, imaging, physician visits, and infusion therapy—each of which requires coordination between patients, nurses, physicians, and treatment chairs.



A common pattern exists in most community cancer centers: patient volumes peak sharply between 10:30 a.m. and 2 p.m. During these hours, waiting rooms are overflowing, nurses are stretched thin, and infusion chairs are at maximum capacity. Prior to, and after this time band, however, patient capacity is typically underutilized and may even sit idle.<sup>1</sup>

The consequences are real and significant:

- Constrained patient capacity.
- Extended wait times and patient dissatisfaction.
- Nursing staff burnout and turnover.
- Overtime expenses that erode margins.
- Lost revenue from underutilized infusion chairs.

For front office, nursing, and other oncology business leaders, addressing this imbalance is crucial to enhancing cancer center operations, improving the quality of cancer care, and attracting and retaining nursing staff.



# Root Causes of the Scheduling Imbalance

The peaks and valleys in daily activity aren't accidental—they are typically a result of systemic operational and behavioral issues, such as:

**1. Patient Preferences** - Patients often prefer mid-morning or early afternoon slots that align with personal convenience or transportation.

**2. Lack of Real-Time Scheduling Insights** - Because most community cancer centers lack centralized scheduling tools that provide a real-time view across all services, facilities, and staff, physician delays, nurse callouts, and patient add-ons can't be dynamically accounted for.

**3. Poor Service Coordination** - Patients with multi-step care plans may be scheduled without consideration of overall workflow balance. For example, chemotherapy infusions may only be scheduled by certain nurses or schedulers, creating bottlenecks.

**4. EHR Limitations and Siloed Technology** - Many EHR scheduling modules present the “first available slot,”

without factoring in nurse availability, chair capacity, or drug preparation time. If separate scheduling tools are used, they are often fragmented across infusion, labs, imaging, and physician services, which prevents coordinated patient flow. These all lead to multi-resource conflicts.

**5. Staffing Constraints** - Nurses and providers often have variable schedules that change daily, weekly, or monthly.

**6. Paper-Based Appointment Templates** - Static appointment templates cannot adapt to daily realities, leaving leaders with time-consuming, manual workflows that struggle to accommodate unexpected demand shifts optimally.

**7. Patient No-Shows** - When patients miss appointments, centers must quickly and efficiently reallocate resources and time—a process that is often manual and time-consuming.



## Impacts on Operations, Staff, and Patients

The scheduling imbalances described in the previous section don't just create inconvenience - they ripple across the entire cancer center, undermining efficiency, morale, and financial performance. Centers are left struggling with a cycle of overuse and underuse that affects every stakeholder and impacts the following:



### 1. Operational Inefficiency

Mismatched demand and resource supply result in infusion chairs and treatment bays sitting idle in the early morning and late afternoon, only to become overwhelmed during midday peaks. Crunch periods drive extended clinic hours and make overtime the norm, with physicians, APPs, and nurses often staying late. The result is a system that costs more to run while wasting capacity that could otherwise serve additional patients.

### 2. Staff Burnout and Retention

Uneven staff-to-patient ratios throughout the day translate directly into pressure on nursing staff. During peak midday hours, nurses can face intense stress and heavy patient acuity demands, while at other times their skills may be underutilized.

This imbalance fuels dissatisfaction, accelerates burnout, and raises the risk of mistakes and medicolegal exposure.

### 3. Lost Revenue

Operational inefficiencies result in financial losses. Studies show that 15–20% of infusion chair capacity remains unused, resulting in approximately \$15,000 in lost revenue per chair annually.<sup>1</sup> In a 20-chair suite, just one extra hour of daily overtime adds nearly \$95,000 per year in costs and erodes margins by 2–3 percentage points. Left unaddressed, these inefficiencies threaten both patient access and the financial sustainability of community cancer centers.

### 4. Patient Experience

For patients, the visible symptoms of these scheduling challenges are crowded waiting rooms, long delays, and unpredictable care timelines. Patients experience these disruptions as disorganization and lack of personalization—erosion of the trust and confidence that are essential in oncology care.

# Strategies to Eliminate Scheduling Peaks with AI

The operational, staffing, and patient experience challenges caused by scheduling imbalances cannot be solved by incremental fixes alone. What is needed is an EHR integrated, AI-enabled scheduling and resource management platform that dynamically balances demand and capacity throughout the day. At a minimum, it should include the following capabilities:

## 1. AI-Driven Scheduling Optimization

AI tools move beyond the limitations of static templates and “first available slot” scheduling. By learning from historical patterns and continuously recalibrating in real time, AI systems can:

- Flatten midday peaks by predicting demand and allocating slots.
- Instantly adapt when add-ons or cancellations occur and re-score pending visits nightly.
- Prevent bottlenecks by matching appointment times with available resources (chairs, nurses, pharmacy prep).

The result is a smoother daily scheduling curve, with fewer extreme peaks and better use of early morning and late afternoon patient capacity.

## 2. Acuity-Based Nurse Assignment

Instead of relying on manual judgment or static rotation,

AI-powered assignment engines distribute patients based on their acuity, the required nursing skills, and real-time staffing availability. This ensures equitable nurse workloads, reduces stress during peaks, and safeguards patient safety by adhering to oncology staffing guidelines.<sup>2, 3</sup>

## 3. Centralized Scheduling with EHR Integration

When scheduling is centralized and operates from a unified, AI-enabled platform integrated with the EHR, they gain visibility across infusion, imaging, labs, and provider visits, providing a holistic, real-time view of patient services for the day. This enables schedulers to offer patients the optimal time slot that best serves their clinical needs while optimizing staff allocation. There is no need to inconvenience the patient by asking them to come on different days for labs, physician visits and Infusion treatments. The system should make it convenient for patients and not the other way around.

## 4. Real-Time Dashboards and Alerts

Dashboards provide an integrated view of patient flow, chair utilization, and staff workloads to improve

business leaders' understanding of their business operations. These systems should also incorporate predictive analytics that understand historical volume patterns, enabling leaders to proactively identify bottlenecks and redistribute demand across available capacity.

## 5. Dynamic, Data-Driven Scheduling Templates

Rather than relying on rigid, pre-set appointment templates, AI continuously adjusts scheduling rules based on demand patterns, staffing levels, and patient mix. Templates evolve automatically, aligning capacity with real-world conditions.

## A Path Toward Smoother Flow

Community cancer centers cannot afford to let outmoded scheduling processes hamstring operations. Addressing root causes of resource imbalances and embracing AI-driven platforms enables community cancer centers to:

- Flatten daily workload peaks to even out staff-to-patient ratios.
- Unlock 15–20% more patient capacity.
- Enhance nurse satisfaction and retention by enabling a focus on patient care.
- Improve operational efficiency and reduce overtime costs.
- Smooth and personalize the patient experience.

For scheduling, nursing, and operational leaders, the opportunity is clear: take control of patient flow today to ensure sustainable, patient-centered cancer care tomorrow.

[1] National Comprehensive Cancer Network Infusion Efficiency Workgroup Study: Optimizing Patient Flow in Infusion Centers. Journal of Oncology Practice, <https://ascopubs.org/doi/full/10.1200/JOP.18.00563>

[2] Oncology Nursing Society. Ambulatory Infusion Staffing Guidelines (position brief, 2020). <https://onf.ons.org/publications-research/onf/47/1/ons-staffing-position-statement-ambulatory-treatment-centers#:~:text=On%20this%20page:-,Appropriate%20nurse%20staffing%20levels%20contribute%20to%20the%20delivery%20of%20safe,cited%20as%20a%20top%20concern>

[3] Government of BC. "Better Patient Care, More Nurses Coming to B.C." News release (Sept 2024) [https://news.gov.bc.ca/releases/2024HLTH0044-001553?utm\\_source=chatgpt.com](https://news.gov.bc.ca/releases/2024HLTH0044-001553?utm_source=chatgpt.com)

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