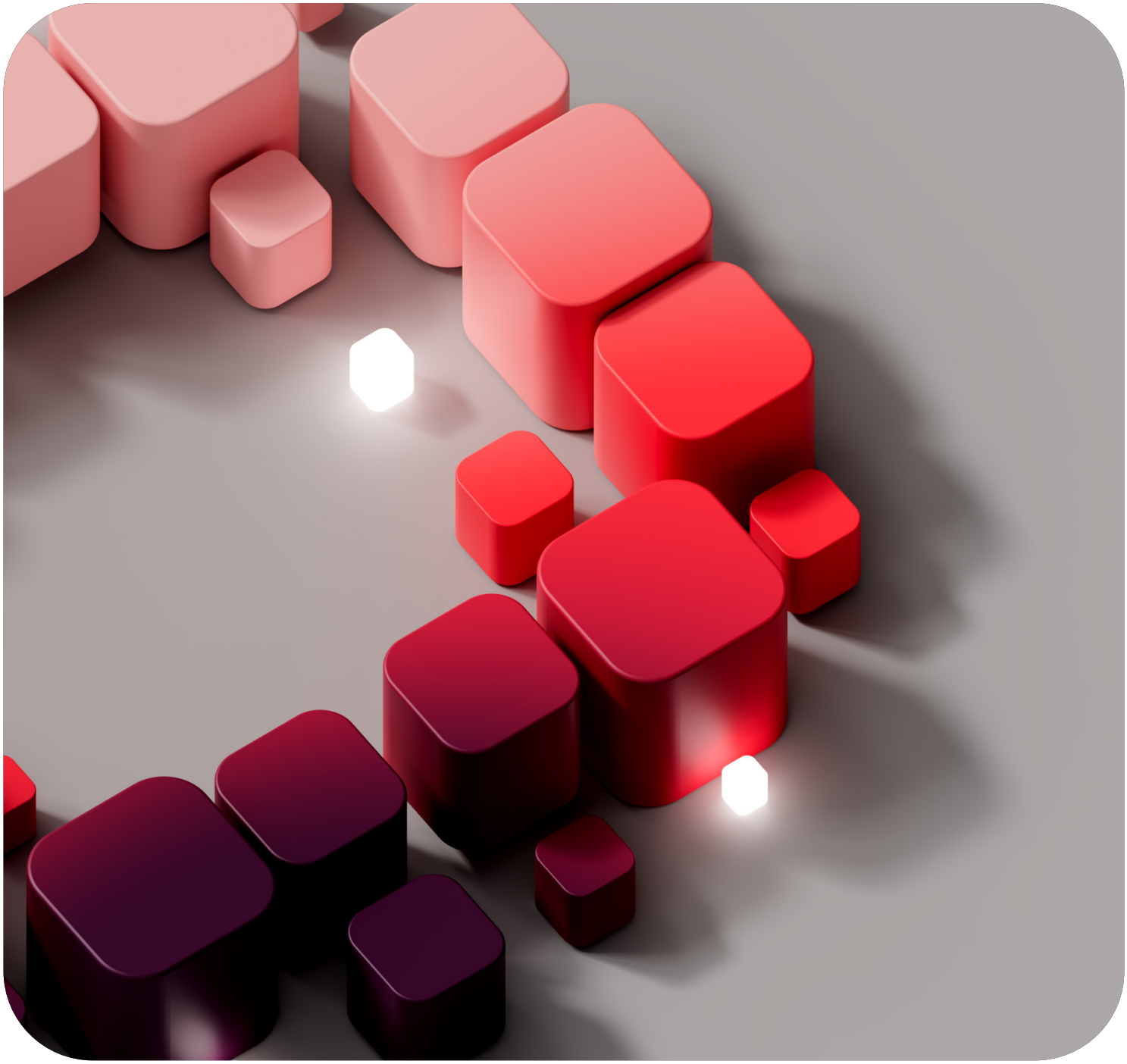
kontakt.io

The Operational Gap: A Report on Where Hospitals Are Losing Value

Kontakt.io | Care Operations Intelligence Brief | 2026



Executive Summary

Large hospitals are not underperforming because they lack technology or talent, but because their operations are fragmented across disconnected layers. Each layer generates data, but almost none of it is translated into insights or interventions. The cumulative cost of this fragmentation runs into the tens of millions annually for any large health system.

This report examines five operational layers where the gap between current performance and optimized performance is both measurable and closeable: asset and supply chain management, staff safety, staff productivity, patient flow and the patient journey, and infection prevention. Each section draws on published research and operational benchmarks to establish where hospitals currently stand, and what the data shows is achievable when the right intelligence is applied.

The argument is not that hospitals need to spend more, as the value is already present, embedded in equipment that goes unused, beds that sit soiled, nurses whose time is consumed by tasks that should not require their expertise, and care interactions that go undocumented. What most health systems lack is the operational visibility that would convert existing data into coordinated action across every layer of the organization.

This ebook is a layer-by-layer examination of where that value is being lost, grounded in data and research.

Asset and Supply Chain Management

In large hospitals, the most persistent paradox is simultaneous surplus and scarcity. Hospitals own more portable medical equipment than they need at the system level, yet nurses in individual units routinely face shortages that delay patient care, prompt additional rental requests or purchase orders, and drive the hoarding behavior that compounds the problem across floors and shifts. The root cause is not insufficient inventory, but the absence of reliable, real-time distribution intelligence.

Research and operational data consistently bear this out. A peer-reviewed study conducted at a 1,154-bed tertiary care center found that despite owning a fleet of 3,459 infusion pumps, the equipment was unevenly distributed across its units, with assets concentrated in some care areas while inventory at other units fell below safe levels. In the end, this required a hospital-wide redistribution system to rebalance supply without purchasing additional inventory *(Martinez et al., 2020).*

The downstream consequence of poor distribution visibility is rental spend that accumulates well above what an optimized fleet would require. When existing devices are pooled in the wrong units at the wrong time, they are functionally inaccessible to the clinical staff who need them. This forces nurses to spend between 21 and 60 minutes per shift searching for equipment already in the building. Multiple peer-reviewed, time-motion studies confirm that the time spent hunting for assets represents one of the largest single sources of non-clinical labor waste in acute care settings *(Yen et al., 2018; Michel et al., 2021).*

Temperature monitoring represents a related but distinct aspect of the same asset management challenge. Over 75% of health systems reported having to quarantine drug products due to cold chain issues, including temperature excursions *(ASHP Executive Forum on Cold Chain Management, Resource Guide #1, 2022)*. Manual temperature checks, which remain the standard practice in many facilities, introduce both compliance risk and staff burden, consuming time that pharmacy and nursing staff could apply to higher-value clinical work.

As a solution, hospitals have found significant success after implementing real-time location systems (RTLS) to track and visualize assets. One study of 42 peer-reviewed papers on RTLS applications in healthcare facilities concluded that RTLS can effectively streamline workflows, improve productivity, and simplify asset management *(Overmann et al., JAMIA, 2021)*.

Another study implemented a Bluetooth Low Energy (BLE) and WiFi-based RTLS asset tracking system in a tertiary care hospital and surveyed 117 nurses after three months of use. The authors found that the RTLS solution was well-rated by the majority of nurses, who were willing to continue using the system *(Yoo et al., BMC Medical Informatics and Decision Making, 2018)*.

Staff Safety

Workplace violence in hospital settings has become an operational and financial crisis, not merely a clinical or human resources concern. Research found that eight in ten nurses have experienced workplace violence *(National Nurses United, February 2024),* with more recent surveys suggesting the problem has intensified significantly in the years since.

The cost compounds through turnover: the 2026 NSI National Health Care Retention and RN Staffing Report found that the average cost to recruit, onboard, and replace a staff RN reached $60,090, with hospitals losing an average of $5.19 million per year to RN churn (NSI Nursing Solutions, Inc.). Across a large nursing workforce, even incremental improvements in retention create material financial impact.

$60k

Average cost of hiring a registered nurse.

$5.19 million per year

Hospitals lose on average due to nurse turnover.

The real gap in most hospital safety protocols is real-time location intelligence. When a duress event occurs, existing systems typically generate an alert without providing responders with accurate, continuously updated information about where the staff member is or whether their location has changed.

On a large hospital campus spanning multiple floors, wings, and buildings, the difference between a response guided by real-time location data and one coordinated without it is measured in minutes. In a serious incident, those minutes determine whether a response becomes an intervention or an escalation.

Real-world deployments of RTLS-based staff duress systems at scale demonstrate the technology delivers operational benefit in active clinical environments. A study presented at the 2023 IEEE International Conference on RFID Technology and Applications documented Mayo Clinic's rollout of RTLS-enabled staff duress across more than 7,000 nursing and inpatient staff members. It found that RTLS activations provided tangible benefits in allowing staff to signal and report duress events *(Jones et al., IEEE, 2023)*

Staff Productivity

Clinical staff in large hospitals spend a disproportionate share of every shift on tasks that should not require their expertise. Registered nurses spend roughly 25% of every shift on EHR documentation and review, most of it away from the bedside, and are interrupted by colleagues or patients every six minutes on average *(Yen et al., 2018; Michel et al., 2021)*. The cumulative effect is a workforce that is technically present but structurally prevented from exercising its full potential.

Three workflow gaps illustrate where automation recovers meaningful clinical capacity.

Nurse calls are a persistent burden. When patients trigger nurse call alerts, most systems require a nurse to physically cancel it at the bedside even after delivering care, generating redundant trips, alarm noise, and documentation overhead. One study found that 76% of nurses felt that nuisance alarms were a frequent occurrence; 79% of respondents subsequently reported low trust in alarms and even disabling alerts *(Cho et al., Healthcare Informatics Research, 2016)*.

In the OR, critical surgical timestamps (including wheels-in and wheels-out) are recorded manually in most hospitals, or not at all. A review of documentation (surgeon's notes, anaesthetists' records, and nurses' perioperative notes) found design, quality, and accuracy deficiencies. This led to consequences ranging from inefficient procedures to serious adverse patient events *(Braaf, Manias & Riley, International Journal of Nursing Studies, 2011).*

At the bedside, patients who cannot identify their care team disengage from their own care. By displaying care team names and roles in patient rooms, hospitals can improve patient awareness and satisfaction with provider communication, and increase HCAHPS communication scores *(Singh et al., American Journal of Medical Quality, 2011; Tan et al., Postgraduate Medical Journal, 2013).*

Automating away these issues can also recover more time for clinical work, resolving structural frictions without requiring additional staffing.

Patient Flow and the Patient Journey

Research consistently finds that a substantial proportion of U.S. inpatient days are not clinically necessary. One study at a U.S. tertiary care hospital found 13.5% of all hospital days were unnecessary and attributable to care delays (Carey, Sheth & Braithwaite, Journal of General Internal Medicine, 2005). This finding was reinforced by a systematic review across multiple settings, which found that inappropriate bed use exceeds 20% across a wide variety of clinical contexts *(Caminiti et al., BMC Health Services Research, 2013).*

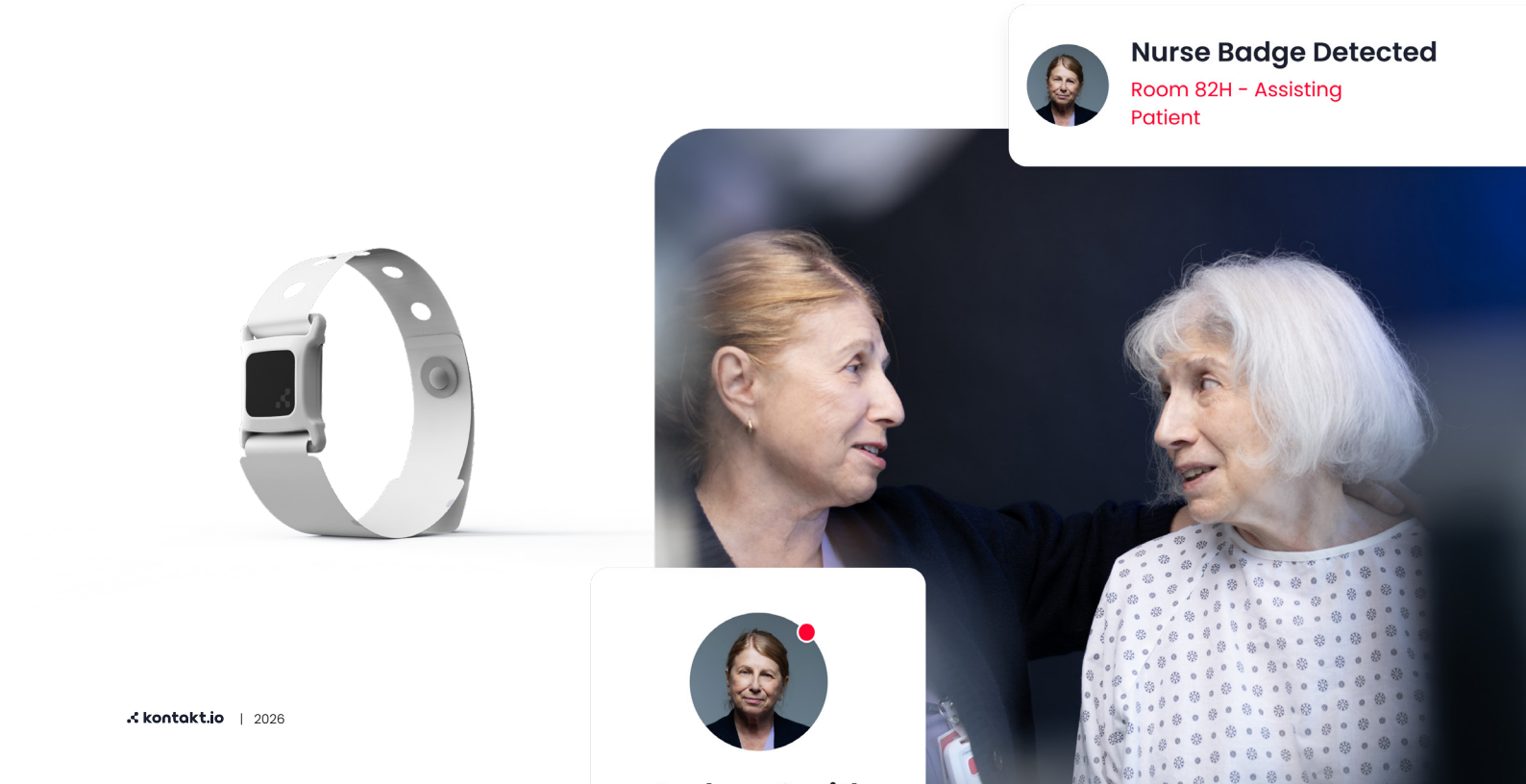
The most common bottlenecks to discharge, including radiology delays, consult timing gaps, post-acute placement, and DME procurement, are identifiable and addressable when RTLS and EHR data are combined. Without that combined view, patient flow leaders respond to problems that have already added time to a patient's stay, rather than intervening before the delay compounds.

Room turnover only exacerbates this dynamic. The lag between when a patient leaves and when that departure is documented costs hospitals a median of two hours per turnover, a delay that directly obstructs ED outflow by limiting bed availability for incoming patients *(Shaikh et al., BMC Health Services Research, 2018; El-Eid et al., PMC, 2015).*

The financial consequences of discharge delays at scale are substantial. A three-month data project across 50 New York hospitals found 992 patients experiencing discharge delays of more than two weeks, at an estimated total cost of $167 million (an average of $168,000 per case); the majority of these days went unreimbursed by payers *(HANYS, February 2023).*

Nationally, the American Hospital Association found that average patient length of stay increased by 19% in 2022 compared to 2019 levels, rising to nearly 24% for patients awaiting discharge to post-acute care settings, with hospitals bearing the cost of those additional days without appropriate reimbursement *(AHA, December 2022).* Reducing turnover idle time directly recovers bed capacity that would otherwise remain unavailable to incoming patients, with each hour reclaimed representing both a clinical and financial gain.

Outpatient settings face the same problem in a different form. Clinics routinely operate well below optimal room utilization, a gap that constrains visit volume and patient access. A prospective study of outpatient clinic operations found an overall exam room utilization ratio of just 32.5%, driven by scheduling templates that did not reflect actual patient flow and a no-show rate approaching 15% *(Okotie et al., Advances in Urology, 2008).*



Supporting evidence from specialist settings point to the same systemic problem. A separate study at a National Cancer Institute-designated cancer center found patients occupied rooms nearly 44 minutes longer than scheduled, at an estimated $55 per room per hour. This is a direct measure of the revenue lost when schedules are built on assumptions rather than real-time data *(Hamel et al., Journal of Oncology Practice, 2014)*

The cause is structural. Research on outpatient clinic workflow consistently finds that static scheduling templates built on historical assumptions cannot accommodate actual demand variation, leaving fillable slots empty and constraining patient access *(Creps & Lotfi, Journal of Medical Economics, 2017; Hribar et al., PMC, 2018).* When demand signals are visible in real time, clinics can adjust scheduling dynamically, recovering capacity that would otherwise represent lost visits.

44 minutes

Patients stay in the room for so much longer than planned

$55

This is the cost of the room per hour with such poor time management of the patient

Infection Prevention

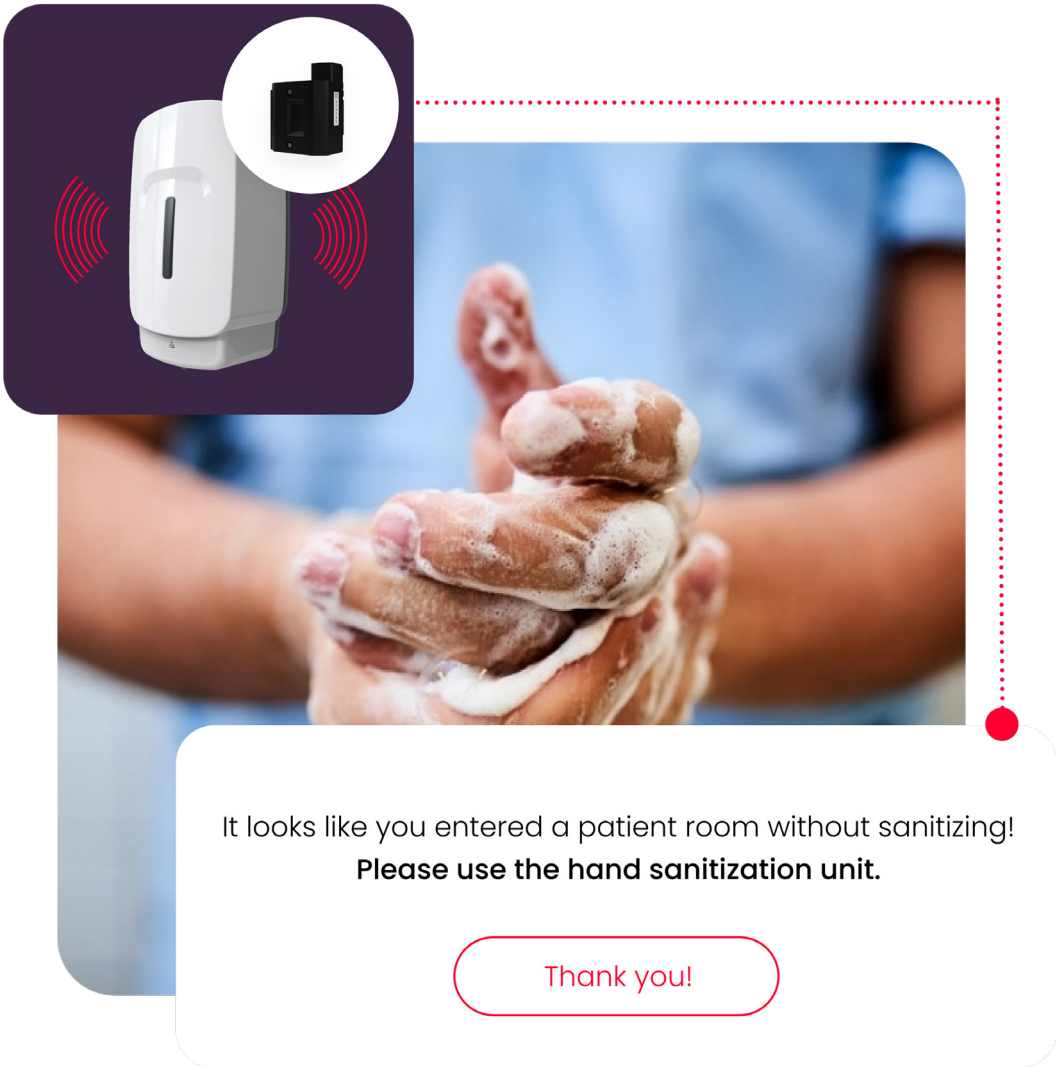
Hospital-acquired infections affect approximately one in 31 patients on any given day in U.S. hospitals, accounting for an estimated 72,000 deaths and 687,000 infections annually (CDC, 2015). Despite the scale of the problem, only 10% of hospitals use technology to manage hand hygiene compliance throughout their facilities; the vast majority still rely on manual audits that are limited in scale and susceptible to observation bias *(Leapfrog Group, 2024).*

The persistence of that figure is diagnostic. Manual observation audits capture only a fraction of actual hand hygiene opportunities, producing compliance rates that simultaneously over- and undercount real behavior and provide infection prevention teams with data that does not reflect what is actually happening at the point of care. The gap between reported compliance and actual compliance is not a measurement error; it is a structural blind spot built into the measurement approach itself.

Automated compliance monitoring addresses the hand hygiene blind spot in ways that manual observation cannot. The difference in scale alone is massive: one study found that an automated system captured 632,404 hand hygiene events during the study period, compared with just 480 recorded by human observers *(McCalla et al., American Journal of Infection Control, 2017)*

The clinical benefits of closing that gap are measurable. A follow-up study by the same team, conducted across 36,890 patients, found that automated hand hygiene monitoring was associated with a 55% reduction in catheter-associated urinary tract infections and a 45% reduction in central line-associated bloodstream infections. The authors note these reductions should be interpreted as associative rather than definitively causal, given concurrent infection control measures *(McCalla et al., American Journal of Infection Control, 2018).*

Real-time reminders amplify the effect further. Across nine inpatient units over 51 days, audible and haptic alerts sustained compliance at or above 90%. Without alerts, compliance dropped to 74% *(Webster et al., Infection Control & Hospital Epidemiology, 2023).*



The Platform Argument

Each of the five operational layers in this report carries a measurable inefficiency with a documented path to recovery. The more important observation is that these layers do not operate independently, and treating them as separate, standalone problems recreates the same fragmentation that made each one expensive in the first place.

A hospital that deploys supply chain automation without connecting it to patient demand signals will still face equipment shortages on high-census days. A hospital that improves discharge workflows without automating room turnover will still lose two hours per bed. The inefficiencies are interconnected because the operations that generate them are interdependent. A platform spanning all five layers does not simply add the value of each; it compounds that value by making each layer's data available to the others in real time.

Kontakt.io's RTLS-enabled platform consolidates staff safety, asset tracking, patient flow, compliance, and workflow automation on a single infrastructure, integrating with Epic, Cerner, and ServiceNow via FHIR and HL7 APIs, and requiring no new networking or cabling in facilities already operating on WiFi and BLE.

Health systems that address all five of these use cases from a single data foundation recover more than the sum of individual efficiency gains. Instead, they also recover the ability to act on what they already know, in real time, across every layer of the operation. That is what intelligent orchestration means in practice, and that is where the largest and most durable value in healthcare operations lives.

References

American Hospital Association. „Patients and Providers Faced with Increasing Delays in Timely Discharges." AHA Issue Brief, December 2022.

American Society of Health-System Pharmacists. „Pharmaceutical Cold Chain Management in Health Systems." ASHP Executive Forum on Cold Chain Management Resource Guide #1. ASHP Innovation Center, 2022.

Braaf, S., Manias, E., & Riley, R. „The role of documents and documentation in communication failure across the perioperative pathway: a literature review." International Journal of Nursing Studies, 48(8):1024–1038, August 2011. DOI: 10.1016/j.ijnurstu.2011.05.009.

Caminiti C., et al. „Reducing unnecessary hospital days to improve quality of care through physician accountability: a cluster randomised trial." BMC Health Services Research, 2013.

Carey, M.R., Sheth, H., & Braithwaite, R.S. „A Prospective Study of Reasons for Prolonged Hospitalizations on a General Medicine Teaching Service." Journal of General Internal Medicine, 20(2):108–115, February 2005. DOI: 10.1111/j.1525-1497.2005.40269.x.

Centers for Disease Control and Prevention. „HAIs: Reports and Data." CDC Healthcare-Associated Infections Data, 2015 prevalence survey.

Cho, O.M., Kim, H., Lee, Y.W., & Cho, I. „Clinical Alarms in Intensive Care Units: Perceived Obstacles of Alarm Management and Alarm Fatigue in Nurses." Healthcare Informatics Research, 22(1):46–53, January 2016. DOI: 10.4258/hir.2016.22.1.46.

Creps, J. & Lotfi, V. „A dynamic approach for outpatient scheduling." Journal of Medical Economics, 20(8):786–798, 2017. DOI: 10.1080/13696998.2017.1318755.

El-Eid, G.R., Kaddoum, R., Tamim, H., & Hitti, E.A. „Improving Hospital Discharge Time: A Successful Implementation of Six Sigma Methodology." PMC, 2015.

Hamel, L.M., Chapman, R., Eggly, S., Penner, L.A., Tkatch, R., Vichich, J., & Albrecht, T.L. „Measuring the Use of Examination Room Time in Oncology Clinics: A Novel Approach to Assessing Clinic Efficiency and Patient Flow." Journal of Oncology Practice, 10(6):e385–e389, 2014. DOI: 10.1200/JOP.2013.001359.

Healthcare Association of New York State (HANYS). „The Scope of Complex Case Discharge Delays in New York State." February 2023.

Hribar, M.R., et al. „Evaluating and Improving an Outpatient Clinic Scheduling Template Using Secondary Electronic Health Record Data." PMC, 2018.

Jones, D., Heaton, H.A., Wallerich, T.J., Riekmann, L.A., et al. „Wearable Real Time Location Services Technology for Staff Duress in Healthcare." 2023 IEEE 13th International Conference on RFID Technology and Applications (RFID-TA), September 2023. DOI: 10.1109/RFID-TA58140.2023.10290330.

Leapfrog Group. „U.S. Hospitals Show Dramatic Improvements in Hand Hygiene According to New Leapfrog Report." Leapfrog Group, 2024.

Martinez, D.A., Cai, J., Oke, J.B., et al. „Where is my infusion pump? Harnessing network dynamics for improved hospital equipment fleet management." Journal of the American Medical Informatics Association, 27(6):884–892, June 2020.

McCalla, S., Reilly, M., Thomas, R., Young, A. „An automated hand hygiene compliance system is associated with improved monitoring of hand hygiene." American Journal of Infection Control, 45(5):492–497, 2017. DOI: 10.1016/j.ajic.2016.12.015.

McCalla, S., Reilly, M., Thomas, R., McSpedon-Rai, D., McMahon, L.A., Palumbo, M. „An automated hand hygiene compliance system is associated with decreased rates of health care-associated infections." American Journal of Infection Control, 46(12):1381–1386, 2018. DOI: 10.1016/j.ajic.2018.05.017.

Michel, O., Garcia Manjon, A.J., Pasquier, J., Ortoleva Bucher, C. „How do nurses spend their time? A time and motion analysis of nursing activities in an internal medicine unit." Journal of Advanced Nursing, 2021.

National Nurses United. „High and Rising Rates of Workplace Violence and Employer Failure to Implement Effective Prevention Strategies is Contributing to the Staffing Crisis." National Nurses United, February 2024.

Overmann, K.M., Wu, D.T.Y., Xu, C.T., Bindhu, S.S., & Barrick, L. „Real-time locating systems to improve healthcare delivery: A systematic review." Journal of the American Medical Informatics Association, 28(6):1308–1317, 2021. DOI: 10.1093/jamia/ocab026.

NSI Nursing Solutions, Inc. „2026 NSI National Health Care Retention and RN Staffing Report."

Okotie, O.T., Patel, N., Gonzalez, C.M. „The Effect of Patient Arrival Time on Overall Wait Time and Utilization of Physician and Examination Room Resources in the Outpatient Urology Clinic." Advances in Urology, 2008.

Shaikh, S.A., Robinson, R.D., Cheeti, R., Rath, S., Cowden, C.D., Rosinia, F., Zenarosa, N.R., & Wang, H. „Risks predicting prolonged hospital discharge boarding in a regional acute care hospital." BMC Health Services Research, 2018.

Singh, S., Fletcher, K.E., Pandl, G.J., Schapira, M.M., Nattinger, A.B., Biblo, L.A., & Whittle, J. „It's the writing on the wall: whiteboards improve inpatient satisfaction with provider communication." American Journal of Medical Quality, 26(2):127–131, 2011. DOI: 10.1177/1062860610376088.

Tan, M., Hooper Evans, K., Braddock, C.H., & Shieh, L. „Patient whiteboards to improve patient-centred care in the hospital." Postgraduate Medical Journal, 89(1056):604–609, October 2013. DOI: 10.1136/postgradmedj-2012-131296.

Webster, K.L., Bishop, S.M., Scott, L.E., Oppy, L.M., Heishman, C.R., Stevenson, G.M., & Arnold, F.W. „Automated hand hygiene compliance system's audible alert reminder increases healthcare worker hand hygiene compliance." Infection Control & Hospital Epidemiology, 44(5):728–731, May 2023. DOI: 10.1017/ice.2022.173.

Yen, P.Y., Kellye, M., Lopetegui, M., et al. „Nurses' Time Allocation and Multitasking of Nursing Activities: A Time Motion Study." AMIA Annual Symposium Proceedings, 2018.

Yoo, S., Kim, S., Kim, E., Jung, E., Lee, K.H., & Hwang, H. „Real-time location system-based asset tracking in the healthcare field: lessons learned from a feasibility study." BMC Medical Informatics and Decision Making, 18(1):80, September 2018. DOI: 10.1186/s12911-018-0656-0.

Get in Touch

Kontakt.io

133 West 19th Street 7th Floor,

New York, NY 10011

+1 415-295-4558

hello@kontakt.io