DATA ON THE EDGE

INSIGHTS FROM CLINICAL DATA BASE TRENDS AND IOC FORECASTS

As hospitals make progress on performance improvement and advancing patient outcomes, persistent challenges remain. Our team recently took a look at how clinical trends from the most recent year of data in the Vizient Clinical Data Base (CDB) compare to what the data represented three years earlier. The findings underscore a strong commitment by hospitals, but the challenges must be addressed as demand is projected to increase, according to the 2024 Sg2 Impact of Change® (IoC) forecast.

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At a high level, the comparison of the recent four quarters of CDB data (Q4 2023–Q3 2024) to the same period three years prior (Q4 2020–Q3 2021) indicates that hospitals manage not only a larger patient population but also patients with higher acuity and more complex medical needs. While the case mix index (CMI) has shown a slight decline, the value remains above one, reflecting the continued demand for tertiary care. Meanwhile, average length of stay had no change as lower-complexity cases are increasingly directed to ambulatory settings. Notably, hospital mortality rates are better than expected and continue to trend downward, demonstrating the effectiveness of ongoing quality improvement initiatives and patient management strategies, including end-of-life care.

However, our analysis also indicates an increase in readmission rates and a rise in emergency department patients requiring inpatient admission. With the IoC forecast projecting ED volumes and inpatient days to increase at a faster rate than discharges between 2024 and 2034, hospitals must actively address rising inpatient acuity and ensure appropriate patient admissions. Given ongoing challenges related to access, capacity and workforce constraints, holistic strategies that span the entire System of CARE (Clinical Alignment and Resource Effectiveness) will be critical to sustaining operational efficiency and optimizing patient care as demand accelerates.

Patient Quality Measures

Key trends surfaced when we compared CDB data and merged that analysis with IoC forecasts.

Key Trends, Q4 2020–Q3 2021 to Q4 2023–Q3 2024

High patient acuity continues. CMI declined ⬇1%.

Preventive cancer screenings increased over ⬆25% for breast, colon and cervical cancers combined.

Mortality rates decreased by an average of ⬇29% compared to expected rates.

Overall **ED volumes** increased by ⬆15%.

The average **readmission rate** increased by ⬆1%.

Note: Analysis excludes 0–17 age group. Expected mortality rates are based on Vizient risk-adjusted models. **Source:** Data from Vizient Clinical Data Base used with permission of Vizient, Inc. All rights reserved. Accessed February 2025.

DE-0225-006-CDB

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Key Findings, Q4 2020–Q3 2021 to Q4 2023–Q3 2024

High patient acuity continues. The case mix index saw a 1% decline over the three-year period. Yet CMI varies across clinical areas; CMI within the cancer service line increased 2% while decreasing 1% within the cardiovascular service line. Although ALOS has remained stable, the IoC forecast projects it will grow by 6% between 2024 and 2034, surpassing the anticipated 3% increase in discharges over the same period.

Preventive cancer screenings saw an increase of more than 25% for breast, colon and cervical cancers combined over the three years studied. During this period, inpatient cancer volume increased 11%, ALOS rose by 3% and the mortality rate declined by 18%. This trend is expected to continue, with ALOS projected to increase by 2% between 2024 and 2034, while discharges are anticipated to decrease by 1%, according to the IoC forecast.

The **mortality rate** decreased over the three-year comparison period. The observed mortality rates decreased by an average of 29% compared to rates expected by Vizient's risk-adjusted models. This trend is consistent across key service lines, including cancer, cardiovascular and neurosciences, all of which experienced a decline in mortality rates.

Overall **ED volumes** increased by 15%, with ED patients admitted for inpatient care rising 11% during the three years analyzed. Looking ahead, the IoC forecast anticipates ED volumes will grow by 4%, while emergent cases are expected to increase by 8% between 2024 and 2034.

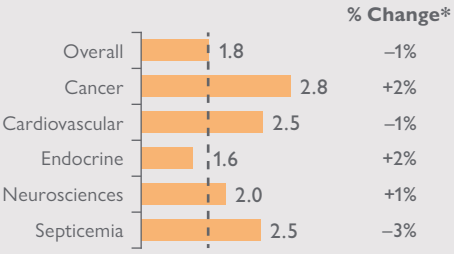
The average **readmission rate** rose to 21%, slightly higher than the 20% rate for the same period three years earlier. Endocrine and septicemia cases have higher readmission rates at 28% and 24%, respectively. These trends contributed to a 12% increase in overall IP volumes and patient days over the three-year period.

Clinical Area Quality Trends

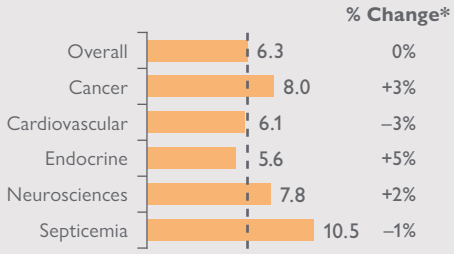
The Vizient CDB clinical benchmarks and Sg2's detailed IoC forecasts provide crucial information to help identify opportunities to improve outcomes and optimize capacity efficiently. The following data and forecasts highlight key clinical areas that hospitals are focusing on to enhance patient quality and operational performance.

Quality Measures for Select Clinical Areas

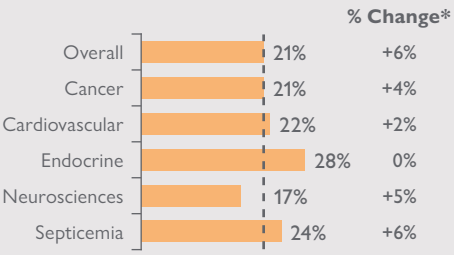
CMI, Q4 2023–Q3 2024



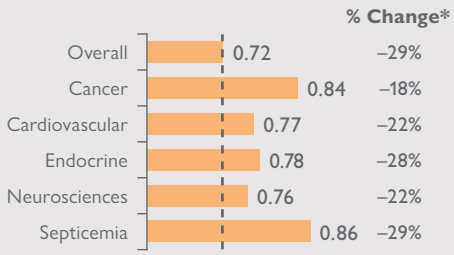
ALOS (Days), Q4 2023–Q3 2024



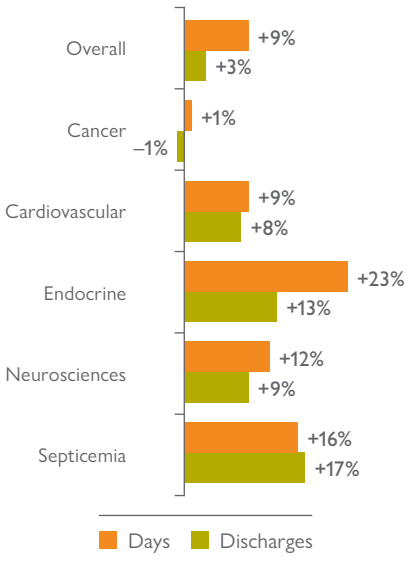
Readmission Rate, Q4 2023–Q3 2024



Mortality Index, Q4 2023–Q3 2024



10-Year Forecast, 2024–2034



*Percentage change from Q4 2020–Q3 2021 to Q4 2023–Q3 2024. **Note:** Analysis excludes 0–17 age group. **Sources:** Data from Vizient Clinical Data Base used with permission of Vizient, Inc. All rights reserved. Accessed February 2025; Impact of Change®, 2024; HCUP National Inpatient Sample (NIS). Healthcare Cost and Utilization Project (HCUP) 2019. Agency for Healthcare Research and Quality, Rockville, MD; Proprietary Sg2 All-Payer Claims Data Set, 2022; The following 2022 CMS Limited Data Sets (LDS): Carrier, Denominator, Home Health Agency, Hospice, Outpatient, Skilled Nursing Facility; Claritas Pop-Facts®, 2024; Sg2 Analysis, 2025.

CANCER

- Cancer screenings experienced a rebound following the COVID-19 pandemic, driving higher demand for both inpatient and outpatient cancer services. Rising cancer incidence, increasing patient complexity and a need for medical management contributed to a higher than average CMI during the three years studied. In addition, the average length of stay increased.
- Inpatient utilization will be driven primarily by higher-acuity, complex surgical procedures, and patients presenting with adverse events and multiple comorbidities, which add complexity and risk to treatment and management. Despite a soft decline in overall IP demand over the decade, utilization for select services will vary based on factors such as disease type, tumor staging and grade, patient health status, and clinical guidelines.
- Outpatient volumes, which make up the majority of cancer cases, will continue to rise steadily. This strong growth is driven by the increasing demand for minimally invasive procedures, clinically guided infusions, radiation and palliative care services, as well as improved access to imaging and screening. Updated screening guidelines are expected to expand eligible populations, further contributing to volume growth over the next three to five years. Effective channel management, robust care coordination and integrated care delivery will be essential for managing patients and ensuring seamless care transitions.

CARDIOVASCULAR

- The rising acuity of patients continues to persist in this specialty service line. The readmission rate increased over the three years analyzed and is now higher than average. However, inpatient volume had a slight decline, and the average length of stay also has been trending downward.
- Looking ahead, inpatient discharges and total bed days are set to increase by 8% and 9%, respectively, over the decade as complexity rises, the population ages and timely access is constrained, further exacerbating access challenges.
- Significant opportunities in outpatient care persist as multidisciplinary, disease-based care models enhance care coordination and access while mitigating some of the growing demand for hospitalizations. Implementing risk stratification can support capacity planning and assess market feasibility for disease-specific programs, such as congestive heart failure and atrial fibrillation clinics. These programs can optimize care for complex patient populations, improve patient outcomes, enhance preventive outreach efforts, and ultimately reduce hospitalizations and costs.

ENDOCRINE

- The increase in diabetes disease prevalence is evidenced in the 22% increase in inpatient endocrine volumes from Q4 2020–Q3 2021 to Q4 2023–Q3 2024. ALOS has trended upward, and it is important to note the high readmission rate of 28% during this period.
- Inpatient admissions will continue to rise over the next decade for both type 1 and type 2 diabetes. Conditions that become exacerbated due to deferred care will require inpatient stays and lengthen ALOS. Access issues remain barriers to disease management, especially for those affected by detrimental social determinants of health. The rise of high-deductible health plans and pharmacy copays, concurrent with high drug prices, hinder medical adherence. Collectively, these trends will propel higher-acuity, later-stage diagnoses, even during initial inpatient admissions.
- Toward the latter part of the decade, hospital at home approaches will lower inpatient demand and lower lengths of stay. GLP-1 drugs will begin to curb the obesity epidemic and help patients with symptom management through weight loss. This will slowly lower inpatient stays at the tail end of the decade, but it will take years to see a noticeable change nationwide.

NEUROSCIENCES

- Patients in the neurosciences service line remain highly acute, with a slight rise in CMI over the three comparison years. Readmission rates increased by 5% but stay below average. The mortality index improved while ALOS increased, reflecting better efficiency. However, programs will be challenged to sustain these gains as patient volumes grow.
- Increased patient complexity, driven by an aging population, advanced diagnostics and behavioral health comorbidities, fuels demand. While inpatient discharges for lower-acuity conditions decline, neurosurgical and neurointerventional procedures continue to grow.
- Advances in treatment (eg, for ischemic stroke) will enable programs to discharge patients home more frequently and sooner. This shift increases the need for strong postdischarge navigation and care coordination to better support evolving patient needs and enhance connections with post-acute and community-based resources.

SEPTICEMIA

- This deadly condition is one of the largest individual patient conditions from both a volume and length of stay perspective. Despite a slight decrease in CMI and ALOS from Q4 2020–Q3 2021 to Q4 2023–Q3 2024, the acuity of sepsis continues to be high with an increased readmission rate. In addition, volumes will rise precipitously in the coming years, primarily because of increased awareness leading to more early diagnoses.
- An aging population with increased chronic disease, multiple comorbidities and internal hardware/devices, along with a larger population of patients being treated with chemotherapy and immunosuppressants, will increase the risk pool for septicemia. Rising antibiotic-resistant infections will further drive demand.
- Increased adoption of infection control and central line protocols, improved outpatient disease management, implementation of AI models, and adoption of rapid molecular testing for infectious disease will temper LOS but not reverse growth in discharges. Increased awareness and clinical protocols for identification and treatment will facilitate management for select patients in outpatient settings, such as home-based programs.

EMERGENCY VISITS

- Overall ED volumes are up 15% compared to Q4 2020–Q3 2021. Over 25% of the total ED patients were admitted for inpatient care (19%) or to observation units (7%). The volume increase could be due to revisits within 30 days from a hospitalization.
- ED average length of stay increased by 6% to 4.5 hours during the three-year period analyzed. As illustrated in the Sg2 Data on the Edge report *Emergency Department Patient Acuity Will Not Abate in the Future*, ED patient acuity will continue to rise with an overall 4% increase from 2024 to 2034, and ED acuity is projected to trend upward for all service lines.

Emergency Department Volumes

	% CHANGE Q4 2020–Q3 2021 TO Q4 2023–Q3 2024	DISTRIBUTION Q4 2023–Q3 2024
Overall	15%	100%
Discharged Home From ED	17%	74%
Inpatient Admit	11%	19%
Observation Admit (no IP)	5%	7%
ALOS (in hours)	6%	

Note: Analysis excludes 0–17 age group. **Sources:** Data from Vizient Clinical Data Base used with permission of Vizient, Inc. All rights reserved. Accessed February 2025; Sg2 Analysis, 2025.

- As ED patient mix changes and acuity continues to increase, the clinical care and operational models required to support these changes should be based on a thorough evaluation of utilization and performance metrics as well as future growth.

Why It Matters

While progress has been made across various patient quality metrics, the rising acuity of inpatients underscores the urgency for hospitals to develop both near-term and long-term performance improvement strategies. These strategies are essential to ensure that patients' needs are met with high-quality care and operational efficiency.

- Make strategic decisions, including service optimization plans, based on a cross section of volume, quality, operations and market trends data. Assessing the role of each acute facility within the system footprint can inform the optimal location for each clinical program and procedure. The volume and quality relationship for procedures that are appropriate to shift outside of the hospital must be reviewed, as illustrated in the Sg2 Data on the Edge report *Quality Outcomes as a Driver for Service Optimization*.
- Address clinical and operational challenges within each service line while identifying growth opportunities to enhance overall performance. By targeting immediate improvement areas and implementing a long-term growth strategy across all sites of care—including home health services—organizations can drive improvements in financial, operational and clinical outcomes. A comprehensive, strategic approach ensures sustainable growth while optimizing patient care and resource utilization.
- Enhance patient quality and alleviate capacity constraints by identifying immediate performance improvement opportunities through longitudinal data analysis. This includes examining historical benchmarks and future trends at the disease level, both within the organization and across the market. Such insights can inform targeted strategies to optimize care delivery, improve outcomes and enhance operational efficiency.
- Continue to develop and implement ambulatory and System of CARE strategies to enhance patient management and operational efficiency. Rising patient acuity coupled with improvements in LOS and mortality indices may indicate the successful transition of appropriate procedures to lower-acuity settings, proactive management through disease-based clinics and the establishment of effective post-acute care services. These strategies are critical for optimizing patient care while maintaining system-wide efficiency.

Effective growth strategies must be rooted in the intersection of market performance and quality analytics. Gaining specific insights at the clinical area level is essential to identify organizational strengths and areas for improvement. This data-driven approach enhances confidence in strategic development, enabling informed decision-making and sustainable growth.

Note: Analysis excludes 0–17 age group. Expected mortality rates are based on Vizient risk-adjusted models. **Sources:** Data from Vizient Clinical Data Base used with permission of Vizient, Inc. All rights reserved. Accessed February 2025; Sg2 Data on the Edge: Emergency Department Patient Acuity Will Not Abate in the Future. June 2024; Sg2 Data on the Edge: Quality Outcomes as a Driver for Service Optimization. May 2024; Impact of Change®, 2024; HCUP National Inpatient Sample (NIS). Healthcare Cost and Utilization Project (HCUP) 2019. Agency for Healthcare Research and Quality, Rockville, MD; Proprietary Sg2 All-Payer Claims Data Set, 2022; The following 2022 CMS Limited Data Sets (LDS): Carrier, Denominator, Home Health Agency, Hospice, Outpatient, Skilled Nursing Facility; Claritas Pop-Facts®, 2024; Sg2 Analysis, 2025.

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To speak with one of our experts about performance improvements, service optimization, service line strategy or System of CARE strategy, email membercenter@sg2.com.

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VIZIENT DATA AND DIGITAL PLATFORM

This report's analysis leverages the following proprietary data and analytics assets.

Sg2 Intelligence is a diverse team of subject matter experts and thought leaders who represent specialties ranging from clinical service lines to enterprise strategy. The team develops strategy-specific content in the form of editorial reports, including the Data on the Edge series, and perspective-based analytics, such as the Impact of Change® forecast.

The **Vizient Clinical Data Base** is the definitive health care analytics platform for performance improvement. The CDB provides high-quality, accurate and transparent data on patient outcomes—such as mortality, length of stay, complication and readmission rates, and hospital-acquired conditions—that enable hospitals to benchmark against peers; identify, accelerate and sustain improvements; reduce variation; and expedite data collection to fulfill agency reporting requirements. Clinical benchmarking tools such as dashboards, simulation calculators, and templated and customizable reports enable you to quickly identify improvement opportunities and their potential impact.

The **Sg2 CARE Grouper** is Sg2's proprietary methodology that organizes data across all sites into standardized, clinically relevant categories. It amalgamates ICD-10 diagnosis codes into clinically pertinent disease categories, which are then organized into broader service lines and service line groups. It also groups ICD-10 codes and CPT/HCPCS procedure codes into inpatient and outpatient procedure categories, respectively. These categories facilitate a standardized approach to tracking patient volumes and service utilization seamlessly across inpatient and outpatient settings. The Sg2 CARE Grouper is foundational for our analytics offerings and also serves as a stand-alone product that health systems rely on to manage their organizational data efficiently.

The **Sg2 Impact of Change®** model forecasts demand for health care services over the next decade, examining the cumulative effects and interdependencies of key impact factors driving change in utilization. Using both disease-based and DRG-based analyses, the forecast provides a comprehensive picture of how patients will access inpatient and outpatient services along the continuum of care.

The Vizient Data on the Edge series team includes Brianna Motley, Catherine Maji, Eric Lam, and Sg2 Creative Services.

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