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Healthcare Key Performance Indicators; a DHA
Study in Perception and Importance by Clinical
and Non-Clinical Healthcare Professionals at a
Large Healthcare System

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Introduction

Healthcare systems in the United States are unique structures where compassion for the care of others meets the science of medicine. It is a business, but it is a business with passionate professionals who care about the health of its customers, or patients. While most businesses have one structured financial system, health care contains finance for both the business and the patient. The finance for the business includes building maintenance, staffing, benefits, and technology. Patient finance however is third party payments, insurance denials, and charity care. Insurance companies play an important role often mediating care based on coverage policies and government regulations. Unfortunately, patients do not understand the process and what they are responsible for or what portion of the payments they will owe. The business cycle functions as most industry businesses do acquiring capital assets, leasing equipment, and paying operational expenses such as electric bills for the facilities. The patient revenue cycle, however, is vastly different and the source of which the business cycle is financed.

The patient accounting system is paid for directly by both the patient and third-party payors such as insurance companies and government agencies (hfma.org, 2023). It is one of the few industries that allows its customers to pay for the service after it has been performed. This creates a complexity in healthcare resource funding, also highly politicizing the role of government and insurance in healthcare for quality and safety (hfma.org, 2023). The patient accounting system or the revenue cycle consists of the following areas: scheduling, precertification, registration, health information management, coding, charging, and billing (hfma.org, 2023). Although these are not revenue generating departments, they play a vital role in appropriately capturing the correct data for payment and clinical information on behalf of the patient.

Healthcare employees working on either side of the patient's experience find themselves being pulled in different directions from leadership and their patients. Healthcare administrators are constrained by budgets, high employee turnover rates, and patient safety requirements (Edwards et al., 2018). Health administrators often compete with one another for new staff, equipment, software upgrades, and new services. While every industry is facing employee deficits and turnover rates, healthcare jobs at every level must comply with complex regulations and meticulous planning.

Further division among departments includes the staffing system separation between the finance and revenue cycle teams from the clinical teams. Reimbursement topics can be difficult to relay to the clinical staff as relatability and correlations to departmental goals are perceived as out of touch (Li et al., 2018). KPIs or Key Performance Indicators, reported by finance are usually created for revenue driven initiatives with little contact and communication with the clinical teams. KPIs are a prominent driver utilized by health systems and reimbursement agencies to measure efficiency and cost (hfma.org, 2023). They indicate the state of important measurements within the hospital (hfma.org, 2023). They measure the health of the facility through a series of patient-related and financial related targets (hfma.org, 2023). KPIs are considered best practice and are recognized at a national level (hfma.org, 2023). These types of measurements show the viability of that area and its contribution to the healthcare system. KPIs provide best practices for critical timelines and measurements as outlined by the governing bodies that support the industry (hfma.org, 2023).

KPIs cannot be realized without smaller goals achieved through critical success factors (beckershospitalreview.com, 2013). Critical success factors or CSFs focus on projects and initiatives within a KPI to drive accomplishment and propel the measurements forward toward

the total KPI goal (beckershospitalreview.com, 2013). Following the KPI for charge reconciliation for example would include CSFs such as identifying the workflow around charges and creating a charge dashboard to follow charge data for possible improvements (beckershospitalreview.com, 2013). Creating the structure that provides small wins along the to achieving that KPI provides sustainability, leadership buy-in and eventual success (beckershospitalreview.com, 2013).

Since finance is primarily working on these internal KPIs and process improvements they do not interact regularly with the clinical teams. This intermittent exposure for clinical leadership can lead to further misunderstanding, mistrust, and miscommunication between the clinical and financial teams (Li et al., 2018). Although it is not mandatory for these teams to understand one another to get their jobs done, it is critical that both sides understand the necessity of the other and how they contribute to the organization (Li et al., 2018). One successful avenue for healthcare professionals to cross train their knowledge in other healthcare professions in the hospital setting is Interprofessional Education or IPE (Lajaunie and St. Romain, 2023). IPE is proving to be extremely successful for developing improved communication, teamwork, and decision making within multidisciplinary teams (Lajaunie and St. Romain, 2023). IPE also promotes collaboration for patient care, mislabeling colleagues based on education/economics, and departmental conflict (Lajaunie and St. Romain, 2023).

The role of a clinical professional is appropriately patient centered with thoughts slowly turning to the financial implications of care. Few clinicians can effectively verbalize to their patients any financial responsibility or understanding of cost of care (Hastert et al., 2023). It can be difficult to even begin those conversations as clinicians struggle with the questions that come from patients and what their responsibilities are with payments and coverage (Hastert et al., 2023).

However, the patient's viewpoint typically focuses on their quality of care and recovery first, then the financial implications. Patients have high expectations as they view themselves primarily as consumers of healthcare, while clinicians view them as patients who need to be diagnosed and treated (Young and Chen, 2020). Patients are not able to properly understand the complexity and quality of their care and can be biased when reviewing their experience not on the health outcome but rather how they personally felt they were treated as a customer (Young and Chen, 2020).

Healthcare financial teams face many challenges both external and internal to the organization. Rising costs, supply chain issues, political agendas, and increased government and insurance requirements plague all healthcare organizations. As constraints continue to increase including less staff, more responsibility, and additional financial stewardship, hospitals are looking for unified answers to resolve internal questions.

In conjunction with the hospital, regulatory groups such as the Centers for Medicare/Medicaid Services (CMS), the Joint Commission, and the state health agencies follow KPIs closely. These regulatory groups are reviewing KPIs in certain areas of the hospital including correct insurance, clinical interventions, charge reviews, correct medical coding and billing practices, and case mix index (The Health Care Collector, 2019). The pressures of clinical quality excellence and financial knowledge often challenge team efforts within any health system (Li et al., 2018).

Appropriate diagnosis and treatments are a team effort as patient handoffs, physician orders, and medical record completions are done by multiple professionals throughout the facility. Clinical KPIs that follow these workflows contribute to the department's viability and the hospital's reliability. A well-known clinical KPI that is often displayed on an outside billboard near or on hospital campus is the Emergency Department wait time (hfma.org, 2023). Other examples of

common KPIs include point of service (POS) cash collections, clean claim rates, case mix index, and total denials (hfma.org, 2023). The relationship between the clinical teams performing these KPIs and those who are reporting it in finance is far reaching and filled with mistrust and miscommunication (Li et al., 2018).

KPIs will continue to be a strong focus for reimbursement as it has been in the past (Gannon et al., 2014). Government agencies and insurance companies are competing for the same healthcare reimbursement market share with hospitals, making this a difficult challenge for everyone. At the same time, value-based reimbursement relies on KPIs making it the most visible external force challenging larger hospital strategies today (Eriksson and Nedlund, 2021). Value based reimbursement or pay for performance (P4P) is a Medicare initiative that reimburses organizations when they meet certain criteria for quality indicators (cms.gov, 2005). The shift from fee for service to P4P is gradually changing the reimbursement landscape and future budget planning. The future includes value for compensation and not volume, which is a shift historically in how reimbursement is viewed by healthcare professionals and what should be important for quality of care (cms.gov, 2005).

Another challenging factor for appropriate KPI communication is the education gap between relating KPIs with clinical goals (Akinleye et al., 2019). An example of this gap occurs when the finance team discusses charity care numbers at a leadership meeting (The Health Care Collector, 2019). Clinicians often assume that there is not enough charity care given based on their patient's stories or what they perceive to be the total charges, when non-profit hospitals provide millions of charity care dollars per year (The Health Care Collector, 2019). Misconceptions such as these divide the health system further and can lead to undercharging, under documentation, and other serious compliance or fraudulent consequences (The Health Care Collector, 2019).

There is often a misunderstanding of department roles between the clinical and financial teams that indicates a general mistrust of financial stewardship between the two areas (Sutherland et al., 2022). Lack of teamwork between hospital staff and interdepartmental competition for budget and financial importance all lead to misalignment and miscommunication during higher level meetings (Eddy & Stephenson, 2016). One way to resolve mistrust and misunderstanding is to find common ground on a known hospital issue. Subsequently since KPIs are multifaceted and affect major areas in the hospital, they are a good starting point. KPIs have the unique ability to provide unity, trust, and better reimbursement strategies for any health system (Sutherland et al., 2022). The goal of this study is to review the perceptions of the most important KPIs and why by both clinical and financial leadership in a health organization.

Organizations that do well financially have emphasized the importance of appropriate financial awareness and the direct correlation with patient safety (Akinleye et al., 2019). Understanding the depth of financial responsibility gives everyone a sense of value in their work and ultimately creates a positive dollar outcome. Finally, collaboration and teamwork among healthcare workers is key to any successfully driven initiatives, specifically within areas of the organization that do not deal primarily with revenue or reimbursement issues (Sangaleti et al., 2017).

The link between the finance and clinical areas is imperative to healthcare system's sustainability efforts. Government and insurance regulations, political agendas, and systematic education have placed a gap of mistrust and miscommunication between these two groups that can pull strategies and budgets in different directions. Consumers, executives, and insurance groups are seeking high level information about the hospital's clinical and financial health. KPIs can potentially build a foundation of common ground between these contrasting groups. Aligning internal forces

can greatly contribute to the health and longevity of an organization, especially one as complex as a health system.

There are few studies that have examined the perception of KPIs by both clinical and financial teams which makes this research novel and important. Providing additional information to create a culture change due to financial acumen with clinical staff is a new and exciting opportunity for health systems to take advantage for longevity and continuity. That is why for this study we will review the perceptions of the most important KPIs and why by both clinical and financial leadership in a health organization.

Literature Review

The literature review is specific to the subject of KPIs in the US healthcare system from 2015 to present. The original search for KPIs in healthcare resulted in 4,353 articles in Elsevier, DOAJ, EBSCO Host, and Ovid journals. Subjects include facilities maintenance, balanced scorecards, digital health interventions, centralized intake for arthritis patients, nursing leadership, HR management of military hospital managers, and quality imaging practices. Further delineation for KPIs for healthcare in the US resulted in 737 articles. The listing decreased to only a few articles when filtering from 2015 to present and those performed in a US hospital with US KPIs only. The article titles did not indicate the location of the studies being performed until reviewing the scope of the article and continued to limit the number of applicable reviews. Other excluded articles had key phrases that selected articles that discussed quality performance indicators or performance improvement instead of KPIs. A Google Scholar search yielded 55,600 articles but overlap the applicable articles from the initial database search and include a larger generic

international research listing. A PubMed search yielded only 230 results, with several duplicates and loosely associated key words of the search only.

The study objective is to review what is perceived as the most important KPIs and why by both clinical and financial leadership in a health organization. Narrowing the search to KPIs in healthcare in the US greatly reduced the number of applicable articles which indicates a need for more research in this area. The dates of significance were also an important factor as major healthcare revenue publications have not been updated prior to 2015. Given that the Covid pandemic and a rise in cybersecurity issues has happened in the last 8 years alone, there is a need to update this information to stay relevant. An interesting finding in the review revealed that most research on KPIs is consistently performed outside the US and any internal reviews were completed before Covid reached the US in 2020. Several articles have international healthcare guidelines and regulations which also exclude them from this study. During the review process articles were further excluded when international collaborations occurred for KPI studies between the US and other nations. The KPIs in the US focus on different requirements than other countries and would not bring the necessary information to this literature review. A general search in gray literature for healthcare KPIs in the US yielded about 21.2 million results, including results from Healthcare Finance Management Association (HFMA), Databox, ClearPoint Strategy, Insight Software, and KPI.org. Several results only included articles for key performance indicators, healthcare performance, or healthcare quality factors. There were multiple results from the same agencies or websites such as HFMA, Agency for Healthcare Research and Quality (AHRQ), LinkedIn, Qlik, and Moody's Analytics.

The first article that met the criteria described how KPIs can improve value and patient safety in a radiology office (Nelson et al., 2022). The researchers provided context for site specific KPIs from the medical physics perspective (Nelson et al., 2022). The article describes why KPIs are important for the viability of an organization and how they can assist in achieving goals and the organization's vision (Nelson et al., 2022). The article focuses on the clinical viewpoint of KPIs, and a few categories reviewed were equipment performance, staff performance procedural compliance, quality and safety training, and reporting (Nelson et al., 2022). After defining the chosen KPI process four main categories were created to capture the specific metrics under each category (Nelson et al., 2022). The process continued the logical pattern for analyzing and utilization of KPI measures (Nelson et al., 2022). Overall, this article is a positive reflection of successful KPI planning, mapping, and integrating metrics for a small radiology practice (Nelson et al., 2022). There is no method, design, or theory associated with the research to validate the framework created but the information provided is useful modeling (Nelson et al., 2022).

The next article review focuses on the Donabedian model method utilized for clinical patient workflows optimization using KPIs and workflow dashboards (Martinez et al., 2018). Johns Hopkins identified a need for patient workflow improvements starting in the ED to monitor discharges, re-admissions, and transfers using a communication dashboard (Martinez et al., 2018). The Donabedian model placed the KPIs into three categories for outcome, structure, and process and included clinically important KPIs such as length of stay, ED disposition duration, and inpatient bed designation (Martinez et al., 2018). KPIs were the main communication of the dashboard to inform various departments and leadership on its developments (Martinez et al., 2018). Semi-structured interviews were performed multiple

times to identify the restrictions for information gathering and how the changes could be successfully sustained (Martinez et al., 2018). KPIs were instrumental in providing information for monitoring clinical measurements for the improvements Johns Hopkins was intending to make (Martinez et al., 2018). There was a positive collaboration with the clinical and financial teams to create successes despite the limitations listed (Martinez et al., 2018). This article is an excellent example of identifying KPIs and their importance for improvement, understanding, and optimizing measurements for healthcare.

An interesting use of KPIs from the VA hospital perspective comes from research interviewing physicians and their overall satisfaction and attitudes as primary care physicians (Mohr et al., 2018). The researchers found validity in this set of KPIs for future education and potential improved care for patients if physicians find satisfaction in their roles (Mohr et al., 2018). The study was conducted using a cross-sectional survey throughout 36 various VA hospital systems throughout the country (Mohr et al., 2018). The survey concluded that adequate staffing of physicians, quality of care, and opportunities for research had positive responses for the KPIs they were capturing in their interview assessments (Mohr et al., 2018). The facility type and scope of practice are niche for this research but important when creating KPIs from a satisfaction perspective. The outcomes of the surveys performed indicate that measuring data outside of the normal KPI metrics can still contribute to more mainstream items (Mohr et al., 2018). This is another example of the clinical perspective of KPIs, furthering the need for more financial KPI reviews to see what truly is important for both areas and why (Mohr et al., 2018).

The Brusik and Bensley article (2016) narrows the focus of KPIs to mobile versus fixed devices utilized for mothers enrolled in the WIC program and their user engagement for

nutrition services. Unlike the other articles reviewed, this is a quantitative linear regression study performed over a period of year to delineate the type of education most people preferred and on what type of device (Brusk and Bensley, 2016). Those who participated in the study were divided into two groups who were followed by lesson completion and type of device utilized over a period of a year (Brusk and Bensley, 2016). KPIs were used for specific components such as language and pregnancy status with the same metrics such as early stage of change and unique users (Brusk and Bensley, 2016). The research concluded that specificity and additional studies are needed to engage more people in education especially if patients are more apt to use one device or another (Brusk and Bensley, 2016). The perspective from this study allows KPIs to be a part of quantitative analyses which has not been a common finding in the literature review (Brusk and Bensley, 2016).

The last article also utilized dashboards but not for patient outcomes but rather internal performance (Weiner et al., 2015). There is little information given about the specific KPIs they followed but it is suggested that they were data driven from every level and department in the facility (Weiner et al., 2015). The hospital had been influenced by insurance changes and lower reimbursements, along with community competition for patients and they decided to look for affective avenues of improvement for overall employee engagement (Weiner et al., 2015). The largest obstacle they faced during the creative stage of the dashboards was interoperability and accessibility with different technologies (Weiner et al., 2015). Once this was overcome the KPIs they followed were viewable by all staff which increased motivation for higher level performance no matter where the employees worked (Weiner et al., 2015). It would have been ideal to see dashboard examples and specific KPIs and their improvement

pathways, but the article is poignant in that KPIs are effective in performance for both clinical and financial professionals (Weiner et al., 2015).

There is little evidence of any crossover between clinical and financial KPIs during the literature search. Clinical teams continue to focus on clinical KPIs and financial professionals primarily review financial KPIs, but higher levels of leadership focus on both. This study would provide an opportunity for either side when prioritizing KPIs with a deeper understanding as to why they are important.

The literature review confirms that this is not currently a heavily researched topic, but it should be as evidence in 2015 shows hospital awareness of decreased insurance reimbursement tactics due to performance measures (Weiner et al., 2015). Previous studies performed on quality of care in the United States shows an egregious gap for quality and errors, often at the expense of the patient (National Academy Press, 2009). Utilizing quality standards within KPI measurements is essential and could potentially offer additional literature and criteria for future studies.

Methods

A small nominal group survey study was performed, and the survey was sent to clinical physician and nurse leaders and non-clinical financial leaders who reviewed and selected KPIs that are the most important. Participants were asked their rankings and reasoning for those rankings. This type of study has been shown to be an effective and confidential pathway for participants to answer questions honestly and without prejudice (Wiggins et al., 2020). Nominal studies have also historically provided important qualitative information that can be transformed for future quantitative research (Wiggins et al, 2020). A nominal study approach provides a

foundational framework to further understand and navigate the complex relationship between those who work directly with patients and those who finance the work (Wiggins et al., 2020). These studies are often utilized for applied research (Wiggins et al., 2020). This study was conducted at a 1600- bed multihospital system located in the upper Northeastern area of the US and is the largest provider of healthcare in the region. The level of care provided includes acute care, long term care, ambulatory surgery centers, and a children's hospital.

KPIs are critical measurements for every department to define their value and performance based on best practices (hfma.org, 2023). Leadership exposure to and participation with KPIs varies within each organization (clearpointstrategy.com, 2024). A total of 20 KPIs was presented to 15 physician/nursing clinical leaders and 8 financial/revenue cycle leaders. Selected leaders for this study are currently exposed to KPI measurements and report their area's numbers both monthly and quarterly depending on their leadership reporting structure. They are also participants in various Revenue Cycle team initiatives that primarily focus on financial issues. These issues include the KPIs listed in the table below. The KPIs are both clinical and non-clinical and were chosen from various websites that overlapped several important categories listed. The 20 KPIs were chosen based on experience and resources, and because they are consistently listed as the most important and reviewed measurements by healthcare professionals to achieve KPI best practices. These best practices come from nationally recognized experts including Healthcare Finance Management Association (HFMA), Clear Point Strategy, and Insight Software.

Participants were provided the list of 20 KPIs and were asked to select and rank order the top 5 most important KPIs. The chosen 20 KPIs are reported by acute non-profit hospitals on their internal scorecards and their external reimbursement reports to insurance and government entities (hfma.org, 2023). They are recognizable to both clinical and non-clinical leaders based

on their importance to the viability of hospital operations (insightsoftware.com, 2023). The rationale and the metrics for the 20 KPIs listed provide critical information from a broad perspective on their significance to the patient care spectrum, from registration of the service to the final bill received. Different positions and departments find certain KPIs more effective for measurement in their areas. Higher level positions are looking for longer-term measurements and improvements, where managers are typically reviewing daily operational KPIs. The survey provided participants with the introduction and opportunity to review KPIs outside their routine measures.

Participants were asked to choose their top 5 most important, then to rank the top 5 in level of importance with 5 being the most important. The information on the questionnaire included the KPI description, the rationale, and the metric. Please see the full table for further description.

Revenue Cycle (Non-Clinical) KPIs			
KPI	Description	Rational	Metric
Discharged Not Final Billed (DNFB)	Accounts where the patients have been discharged but the claim has been suspended for requiring missing information (hfma.org, 2023)	Indicates any cash flows issues and overall revenue cycle performance	Gross dollars in DNFB/ Average daily gross patient revenue = Unbilled A/R/ Income Statement
Point of Service (POS) Cash Collections	Occurs when the patient payment is made at the time of service directly towards their total balance (hfma.org, 2023)	Provides cash collections earlier in the revenue cycle process and potentially decreases cost to collect payments	Patient POS payments/ Total self-pay cash collections = Accounts Receivables
Late Charges as a Percentage of Total Charges	Occurs when pre-determined overdue charges post to the patient's accounts post discharge at the department charge level entry (hfma.org, 2023)	Illuminate areas of opportunity for charge capture optimization, decreased unnecessary cost	Gross charges with post date >3 days after service date/Total gross charges = Patient Financial System

		and quicker cash flow	
Patient Confidentiality	The number of times a patient's medical information is compromised (clearpointstrategy.com, 2024)	Internal indicator of HIPAA safety and PHI security	The number of breach incidences during a selected period
Case Mix Index	Combination of patient acuity, level of documentation of illness, and what was coded on the account for reimbursement (hfma.org, 2023)	Indicates documentation is present and supports appropriate reimbursement and clinical reporting	Sum of relative weights of inpatients/ Number of discharged patients in a month = Coding Encoder Decision Support
Charity Care	The amount of money the organization does not collect from underinsured or uninsured patients (hfma.org, 2023)	Demonstrated programs the organization is offering under the financial assistance policy	Charity care/Gross patient revenue = Income Statement
Average Patient Wait Time	The amount of time it takes for a patient to be checked in and seen by a clinical (insightsoftware.com, 2023)	Provides critical information for appropriate staffing for nursing, supplies, and pharmacy. Also, information is used for cost reporting and financial planning	Total wait time/ Number of patients
Average Treatment Charge	The total charge/price for a certain procedure including medication, supplies, and time to complete the procedure (clearpointstrategy.com, 2024)	Provides patients with options to review total prices. Measuring tool against competitive pricing	Average price of bill per treatment
Average Insurance Claim Processing Time and Cost	The amount of time it takes to get a claim processed and paid with the various insurance groups (clearpointstrategy.com, 2024)	Indicates clean claim rates and quality of claims reduces patient cost while increasing payment turnaround times	Average time claim is sent to the payer and reimbursement is received

Remittance Denial Rate	Claims that have been denied after payer review due to missing/invalid/incorrect information such as incorrect insurance and non-covered services (hfma.org, 2023)	Indicates facility compliance rate with payer guidelines, and payer's capacity to correctly pay	Total number of claims denied/ Total number of claims remitted = Accounts Receivable/ 835 File or Paper Remittance
Operational (Clinical) KPIs			
Number of Patients Who Leave without Being Seen	Patients that are registered at the ED unit but leave before they are called back to be evaluated by the physician (clearpointstrategy.com, 2024)	Indicates potential workflow issues in the ED or inadequate staffing with patient volumes	Total number of patients triaged but not documented by physician per month
Childhood Immunization Rates	The number of children who receive vaccines in a certain period (insightsoftware.com, 2023)	Contributes to the principal of herd immunity and the potential strain of increased visits to facility	(Number of children immunized/ Number of children) x 100 for percentage
Patient Follow Up Rate	Patients who get a call or questionnaire after their stay (insighsoftware.com, 2023)	Directly correlates with lower re-admission rates when this rate is high	(Number of follow ups/Number of patients) x 100 for percentage
Medication Errors	Incorrect, missed, or overdosing of prescription medication to a patient (clearpointstrategy.com, 2024)	Indicates quality of communication, documentation, and understanding between nursing, physicians, and pharmacy staff	Number of medication errors/Total number of medications administered
Hospital Length of Stay for Covid Positive Patients	The number of days a patient who tested positive for Covid stays at the hospital whether outpatient or inpatient status (clearpointstrategy.com, 2024)	Measures appropriate prioritization of supplies, equipment, and potential outlier length of stays	Average number of days for Covid related stay
Number of Mistake Events	Internal measures that fail or not properly adhered to including missed hand-offs, incorrect procedures, and missed communication between departments (clearpointstrategy.com, 2024)	Quality of employees and their workflow capabilities, and properly working equipment	Number of incidents in specific time period/type of incident

Time Between Symptom Onset and Hospitalization	The time it takes for a patient to understand that their symptoms need to be checked out and when they are admitted (insightsoftware.com, 2023)	Public health metric to follow community disease progression and the benefits of getting symptoms diagnosed early	Total time starts at patient onset symptoms and ends with admission
Communication Between Primary Care Physician (PCP), Proceduralist, and Patient	The level of communication between different clinicians for the service/procedure of one patient (clearpointstrategy.com, 2024)	Increased levels of communication show higher quality level of care	Number of documented activities or overall patient satisfaction percentage
Readmission Rates	The rate at which a patient is readmitted for the same illness, or something related to their last patient stay in a certain amount of time (insightsoftware.com, 2023)	Indicates overall quality of care provided by nurses and physicians with lower rates of readmission	(Number of readmissions/Number of Discharges) x100 for percentage
Average Length of Stay (LOS)	The average amount of time a patient stays in the hospital for treatment (insightsoftware.com, 2023)	Following the average can provide outlier information for unforeseen complications during a patient's stay	Total stay duration/ Total number of stays

Other nominal data to be considered will include occupation and years of healthcare experience.

The final questions included:

Question	Answer/Rationale
Please list any KPIs that your team considers critical to the organization	
What is your current occupation?	

How many years have you been in healthcare?	
---------------------------------------------	--

The results of the questionnaire were analyzed and classified according to the KPIs selected. Content analysis was used to analyze the reasoning behind the selections. All results are presented by nominal categories and related answers.

Results

The survey was sent to 23 participants identified by their leadership and KPI exposure qualifications. Out of the 23 total participants, 11 responded and completed the survey, resulting in a 48% response rate. The participants’ occupations included:

Count (n)	Role/Occupation
3	Revenue Cycle Directors
1	Revenue Cycle VP
2	Physicians
1	Chief Medical Officer
1	Clinical Director
3	Operation Managers

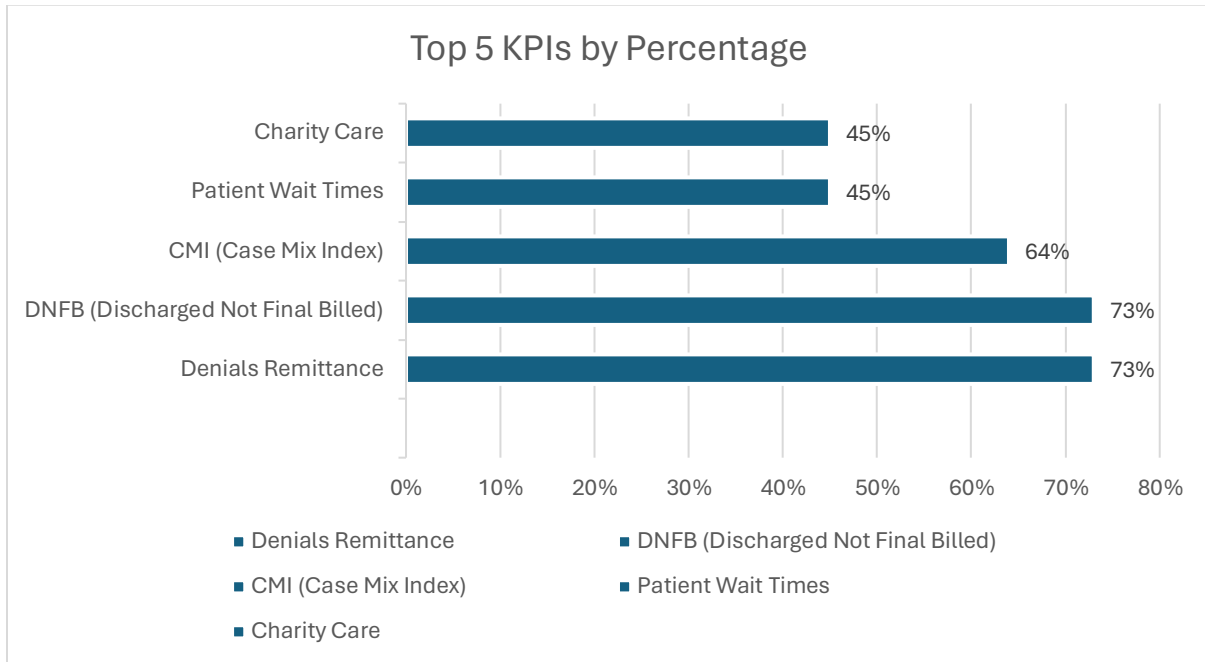
Leadership was represented by 2 physicians, 3 revenue cycle directors, 2 C-Suite professionals, 1 clinical director, and 3 operations managers. This group is a good representation of leaders throughout the organization and provides a more balanced insight into what is important for their purview.

Total years in healthcare ranged from 6-33 years, for an average of 19.2 years in healthcare.

The top 5 KPIs are listed by percentage in Figure 1 below.

1. Remittance Denial Rate (Revenue Cycle KPI) are claims that have been denied after payer review due to missing/invalid/incorrect information such as incorrect insurance and non-covered services (hfma.org, 2023) This KPI tied at 73% as the most chosen top 5 by all participants. It is the number one choice because it ranked higher in the rank of importance (having the most level 5 as the highest chosen level) than the DNFB metric with 4 participants choosing a level 5 importance.
2. Discharged Not Final Billed (DNFB) (Revenue Cycle KPI) are the accounts where the patients have been discharged but the claim has been suspended for requiring missing information (hfma.org, 2023). This tied at 73% of the top 5 most chosen but ranked 2nd because only 2 participants chose a level 5 importance for ranking within the top 5.
3. Case Mix Index (CMI) (Revenue Cycle KPI) is a combination of patient acuity, level of documentation of illness, and what was coded on the account for reimbursement (hfma.org, 2023). It ranked 3rd as a top 5 choice at 64% of all participants' choices.
4. Average Patient Wait Time (Revenue Cycle KPI) is the amount of time it takes for a patient to be checked in and seen by a clinician (insightsoftware.com, 2023). This KPI tied at 45% overall top 5 choice by participants but came in at 4th place over Charity Care because 2 participants chose a level 5 ranking of importance, and 2 participants chose a level 4 ranking of importance as well.
5. Charity Care (Revenue Cycle KPI) is the amount of money the organization does not collect from underinsured or uninsured patients (hfma.org, 2023). Charity Care tied at 45% for the overall top 4th choice but landed in 5th place because 2 participants chose a level 5 ranking of importance, and 1 participant chose a level 4 ranking for importance.

Figure 1. Top 5 KPIs by Percentage



Ranking Level of Importance

Once the participants chose their top 5 most important KPIs, there was an additional question of the level of importance within the top 5 chosen. This opportunity gave the participants the option to rank their top 5 choices in order of importance as well. The choices were numbered 1 through 5, with 5 being the most important.

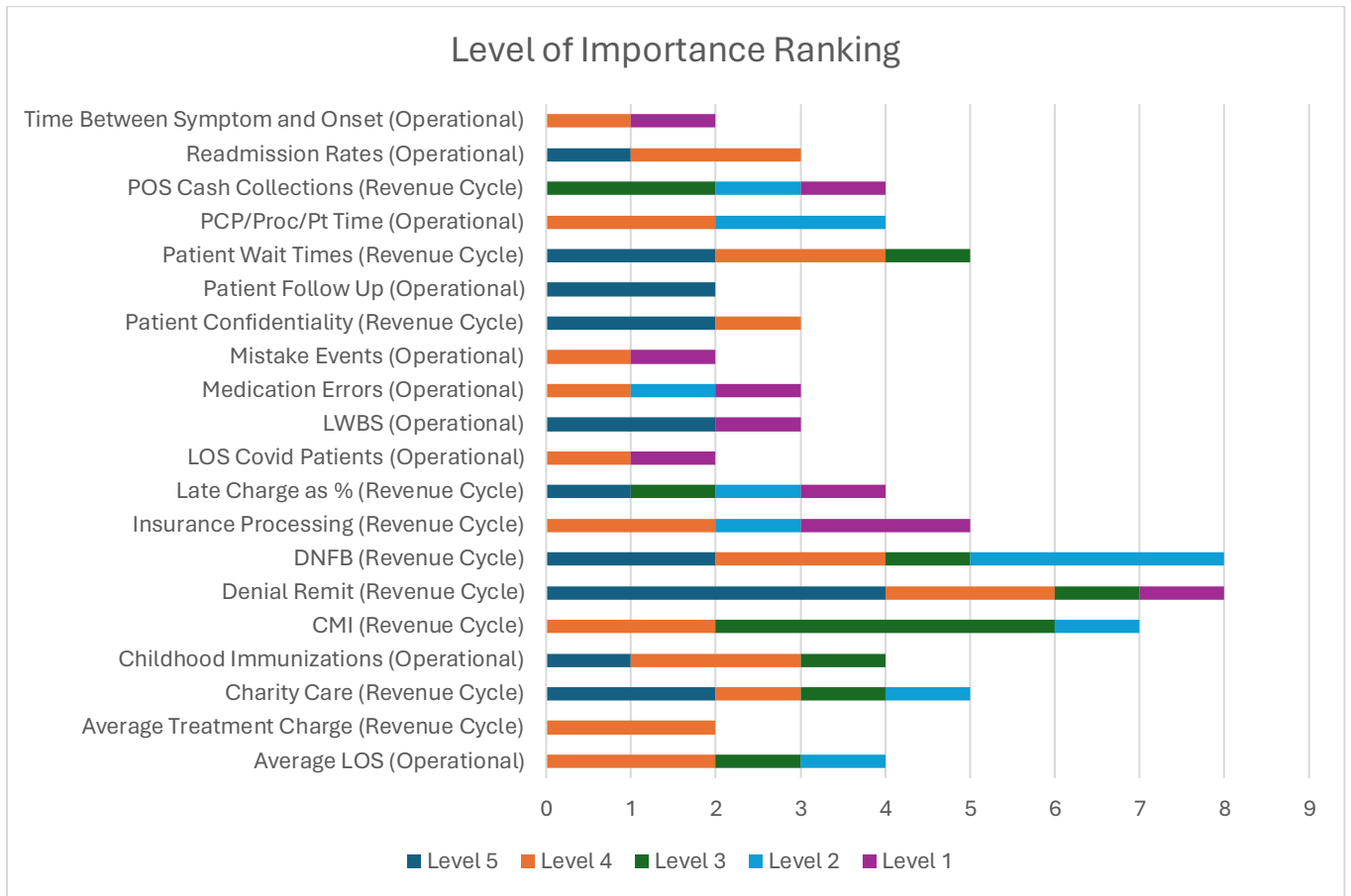
The highest ranking of importance at Level 5 was assigned by the participants for 6 Revenue Cycle KPIs and 1 Operational KPI as indicated in the above graph. The denial rate of remittance, DNFB, patient wait time, and charity care are also in the top 5 most important KPIs chosen by the participants. The operational KPI with the level 5 ranking of importance represents the KPI for left without being seen. The highest number of Level 4 ranking of importance was equally distributed amongst 10 KPIs at 10% each. There were 7 Revenue Cycle KPIs and 3 Operational KPIs chosen. Level 3 ranking of importance had the highest choice in Case Mix Index, and

Levels 2 and 1 are distributed with 2 or less chosen between Revenue Cycle and Operational KPIs respectively. Please see figures 2 and 3 below for KPI totals with levels of importance ranked.

Figure 2. Rank of Importance Totals by KPI

KPI Description	Level 5	Level 4	Level 3	Level 2	Level 1	Totals
Average LOS (Clinical)	0	2	1	1	0	13
Average Treatment Charge (Non-Clinical)	0	2	0	0	0	8
Charity Care (Non-Clinical)	2	1	1	1	0	19
Childhood Immunizations (Clinical)	1	2	1	0	0	16
CMI (Non-Clinical)	0	2	4	1	0	22
Denial Remit (Non-Clinical)	4	2	1	0	1	32
DNFB (Non-Clinical)	2	2	1	3	0	27
Insurance Processing (Non-Clinical)	0	2	0	1	2	12
Late Charge as % (Non-Clinical)	1	0	1	1	1	11
LOS Covid Patients (Clinical)	0	1	0	0	1	5
LWBS (Clinical)	2	0	0	0	1	11
Medication Errors (Clinical)	0	1	0	1	1	7
Mistake Events (Clinical)	0	1	0	0	1	5
Patient Confidentiality (Non-Clinical)	2	1	0	0	0	14
Patient Follow Up (Clinical)	2	0	0	0	0	10
Patient Wait Times (Non-Clinical)	2	2	1	0	0	21
PCP/Proc/Pt Time (Clinical)	0	2	0	2	0	12
POS Cash Collections (Non-Clinical)	0	0	2	1	1	9
Readmission Rates (Clinical)	1	2	0	0	0	13
Time Between Symptom and Onset (Clinical)	0	1	0	0	1	5

Figure 3 Level of Importance Stacked Bar Chart



KPIs considered critical to the organization are listed below in Table 1. This table is result of the final question on the survey to give the participants the opportunity to add supplemental KPIs that are critical but not listed in the survey. The question was an open-ended text response, and the answers provided are similar to the KPIs listed in the survey but provide additional specificity. For example, the KPI for final denials is listed below; however, but the denial remittance KPI is used in the survey. The KPIs are equally represented for revenue cycle and operational areas in the table below. These responses were from all participants regardless of background and provide additional insight into what are considered critical measurements to leadership in the organization.

Table 1. KPIs Important to the Organization

1. Accounts receivable % aged >90 days (Revenue Cycle)
2. Average daily revenue (Revenue Cycle)
3. Clean claim rate (Revenue Cycle)
4. Final denials (Revenue Cycle)
5. Cash/Cash as % of net patient revenue/Cash net days (Revenue Cycle)
6. Patient experience metrics (Operational)
7. Time to 3 rd next new appointment (Operational)
8. Number of phone calls that go to voicemail/average wait time on the phone (Operational)
9. No show rate for clinics (Operational)

1. Accounts receivable % aged over 90 days occurs when the total waiting payments on patient claims is listed as a percentage past 90 days from the date of service (hfma.org, 2022).

Reviewing this KPI is a common revenue cycle best practice typically at 10% or less (Graham, 2023).

2. Average daily revenue is also called patient services net revenue and it measures the total revenue after contractual allowances and charity care (hfma.org, 2023). This is typically reviewed over a 3-month rolling total for organizational revenue (hfma.org, 2023).

3. Clean claim rates occur when a claim has no errors or edits before it leaves the hospital's financial system to be sent to the insurance company's payment system (hfma.org,2023).

4. Final denials occur once the claim has been initially denied by the insurance and after a hospital appeal is sent, the insurance continues to deny (hfma.org, 2019). Final denial rates are at best practice from 5-10% (hfma.org, 2022).

5. Cash/Cash as % of net patient revenue/cash net days are similar to the average daily revenue or patient service revenue, with the exception of cash focusing on operating days of cash flow for the organization (multiviewcorp.com, 2022).

6. Patient experience, which influences patient satisfaction, is a survey or interview with patients to capture their experiences and constructive criticisms about the services performed (Sisense.com, 2024).

7. Time to third next appointment measures backlogs through counting practices until the 3rd next available appointment is found, usually due to distorted numbers of the first 2 appointments with no call/no shows and cancellations (Brar et al., 2019).

8. Number of phone calls that go to voicemail/average wait time on the phone are considered a part of the overall patient experience (Sisence.com, 2024). These indicate how efficiently staffed the area is, and how busy their office/clinic might be if calls are sent to voicemail or take too long to answer (Sisence.com, 2024).

9. No show rates for clinics include those visits where patients do not show for their appointment time due to various reasons, with the benchmark being under 10% (John, 2023).

Although these additional KPIs were not listed in the original survey they do indicate other critical areas of measurements that need defined, reviewed, and executed by healthcare organizations.

Discussion

The top 5 most important KPIs chosen by the participants are Remittance Denials, DNFB (Discharged Not Final Billed), CMI (Case Mix Index), Average Patient Wait Time, and Charity Care. All KPIs are revenue cycle driven and could have been chosen based on a few general preferences. Leadership has had exposure to these recognizable measurements in current meetings and initiatives led by the organization. These KPIs are discussed at length by reputable healthcare organizations and professionals on a regular basis as indicators for success (hfma.org, 2023). Leaders are also increasing their understanding of pay for

performance initiatives and how they can bring financial gains to the organization (cms.gov/newsroom, 2005).

Specifically, remittance denials are the only denial KPI listed, and the participants acknowledge that denials have far reaching consequences as insurance companies will deny payment for services rendered (hfma.org, 2023). If other denial KPIs were on the survey the final selections might have been balanced among different denial elements such as underpayments, avoidable write-offs, or total denial volumes (hfma.org, 2022).

Discharged Not Final Billed (DNFB) is also highly valued because of the areas that affect this KPI (hfma.org, 2023). DNFB accounts are held after the patient was seen but before the claim is sent to the payer that consequently puts the claim in suspense (hfma.org, 2023). This suspense can be caused by operational departments not completing their paperwork, charges missed or incomplete by the department, coding edits, and any physician incomplete reports (hfma.org, 2023). Suspense indicates that it will not be moving forward in the processing to the insurance to pay until these processes are complete.

Case Mix Index (CMI) is affected by several areas like DNFB but some of its elements are out of the control of the organization (hfma.org, 2023). CMI relies heavily on clinical documentation and the level of patient acuity to be documented and appropriately reported by coding (hfma.org, 2023). Patient acuity is not a regulated domain and can only be managed by the clinical teams once the patient is being treated for their illness. CMI is directly related to inpatient stays which are paid by case rates or DRGs and can bring high revenue claims for the organization (hfma.org, 2023).

Average patient wait times are a part of the overall patient experience and are one indicator of how efficient the organization is running (insightsoftware.com, 2023). Patient wait times can be measured in the ER, a hospital-based clinic, or any area where the patient is waiting to see a practicing clinician (insightsoftware.com, 2023). This KPI is followed closely by revenue cycle and operations because it influences other KPIs like Left Without Being Seen and Missed/Incorrect Registrations (hfma.org, 2023). Patient experience and satisfaction metrics such as wait times are extremely critical for continued business and to meet community needs. It is clearly understood why it was chosen as a top 5 KPI among participants.

Charity care does not measure the total write offs due to non-payment, but it does measure how much assistance the organization provided for those who qualified for charity programs (hfma.org, 2023). Revenue cycle and operational teams find this KPI important because of revenue and non-revenue initiatives. Non-profit organizations offer assistance to patients in need to provide care for the community as well as gain appropriate tax write-offs (hfma.org, 2023). Operational leaders find this KPI important because their priority is to care for the patient and not worry about their insurance or financial status (hfma.org, 2023).

Common KPIs not chosen by the participants as one of the top 5 most important included: medication errors, mistake events, patient confidentiality, average length of stay and readmission rates. These KPIs are worth mentioning due to their high profiles in established publications and best practices (clearpointstrategy.com, 2024). Medication errors and mistake events or never events, are often followed by an internal group and reported through various governmental agencies which could explain why they were not chosen (clearpointstrategy.com, 2024). Patient confidentiality is a topic associated with cybersecurity

and is followed closely by the hospital's Information Technology (IT) department (clearpointstrategy.com, 2024). This could support why patient confidentiality was not chosen either. The average length of stay is a bit generic and needs further clarification to be appropriately followed (insightsoftware.com, 2023). Readmission rates track the overall quality of care for patients admitted to the hospital, so this is the most contrary outcome since it was not chosen (insightsoftware.com, 2023). One reason for this outcome could be that the organization does not recognize this as a current issue. Another possibility would be that the participants do not get involved with inpatient care data in their current role and do not review readmission rates.

Despite the even amount of operational versus revenue cycle KPIs most leaders chose revenue cycle KPIs as most important. This is even more significant because 7 of the participants were operational leaders, while 4 were revenue cycle. The interest in revenue cycle KPIs could be because the participants have an average length career of 19.2 years in healthcare and are knowledgeable on the revenue perspective of the industry. It could also be that the participants want to understand revenue cycle KPIs as their experience is mostly from the operational side.

The ranking levels of importance reflected the top 5 KPIs chosen as well, with their rankings at levels 4 and 5 for most participants. The highest-ranking level used the most by participants was Level 4. This could indicate that most participants felt that their most important KPIs were at a higher level. Several of the lower levels chosen for importance were more operational meaning that participants put interest in them but acknowledge that they are not the most important for the organization. These include late charges as a percentage, patient follow up,

average treatment charge, and length of stay for Covid positive patients (insightsoftware.com, 2023).

KPIs considered critical to the organization not listed in the survey had similarities to the KPIs in the survey but have more descriptive qualities. For example, revenue cycle KPIs included specific cash days on hand, average daily revenue, and cash as a percentage of net patient revenue (NPR). The listing provided by the participants included 10 KPIs, half revenue cycle and half operational. This is significant because more participants were operational, and the operational KPIs listed included wait times, no show rates, and patient experience statistics.

Limitations

Six participants rated each KPI with a level of importance instead of ranking importance of only their top 5 choices. Several participants ranked importance levels 1-5 but did not mark it as a top 5 choice. If there was a ranking of importance but not a top 5 choice marked, the level of importance was noted and counted towards the total KPIs chosen by percentage. The number totals for each level ranking of importance are higher than 5 per participant, however they do present vital information on what the participants believed to be the most important KPIs.

Participants of the survey have a certain bias toward revenue related KPIs and this could have affected their top 5 choices. Since the participants already report measurements and their roles in higher leadership tend to focus on revenue, they could have selected their top 5 based more on experience and less on what they consider important overall.

Additional KPIs could have been added to the survey as publications reviewed indicated 25-30 most essential KPIs for success (clearpointstrategy.com, 2024). For future research this expansion along with more healthcare organizations involved could provide critical information on additional education on KPIs and their metrics.

Although there was a 48% response rate, the number of participants in the study was limited to one healthcare organization. This survey utilizes simple formatting with only a few open text choices, providing specific information from just a few questions. It would be a valuable instrument to perform on a larger scale to provide even greater benefits and insight into cross-sections of different organizations or regions in the country. This expansion could include more hospitals in the northeast region of the US, or same size organizations across the country.

Conclusion

The most important KPIs to both revenue cycle and operational leaders are similar and hold high values within the organization as they are directly related to revenue. Although treating patients is the most important aspect for all healthcare leaders, understanding the bottom line is a large contributor to an organization's success. The participant group understands the metrics needed to maintain quality of care, sustained employment, and critical ancillary needs for the hospital.

This study was a small nominal group survey with a high participant rate. The participants represented the various hospital types in the organization at different levels of leadership and experience. The study results indicate the understanding of KPIs is equal among revenue cycle and operational leaders. This is an encouraging conclusion as healthcare organizations

continue to look for ways to unify teams, provide value to employees, and create a strong environment for patient safety and quality of care (Akinleye et al, 2019). KPIs will continue to expand their importance in healthcare reimbursement and organizational success especially with the increase in pay for performance initiatives ([cms.gov/newsroom](https://www.cms.gov/newsroom), 2005). In reviewing the MAP keys from HFMA, KPI metrics provide critical measurements that all professionals need to understand and engage with at their own level (HFMA.org, 2023). Transparency and engagement is key to teamwork and further engagement toward reaching organization goals set with KPIs (HFMA.org, 2023).

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