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Mid-Revenue Cycle Management:

How to Measure, Manage and Minimize Leakage

Strategies to leverage the latest technologies, make a measurable impact, and capture earned revenue.

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Executive summary:

Razor-thin profit margins are not a new problem for hospitals. In 2019, one study found that hospital profit margins had shrunk by 21% on average year-over-year.[1]

Enter COVID-19. According to an August 2020 KaufmanHall report, hospital margins were down another 28% through Q3, even with funds from the CARES Act and Coronavirus Aid and Relief Funds. If it weren't for the stimulus relief, hospital margins would have been down 96% on average in 2020.[2]

Yes, COVID-19 exacerbated the problem. But it certainly didn't cause it.

For many healthcare leaders, the heart of the problem is systemic—leakage from their mid-revenue cycle. In fact, 84% cite **inaccurate clinical documentation and coding** as the root cause of lost or decreased revenue.[3] This is not just a problem with struggling hospitals. Even "average performance" in the mid-revenue cycle was below optimal for those surveyed. In 2019 (pre-COVID), **Medicare and Medicaid underpayments reached $75.8 billion.**[4]

Today, COVID-19 has transformed the landscape of hospitals and health systems. While leakage was a problem before, it was predictable and manageable—thanks to consistent revenue and expenses. But for many hospitals, revenue projections have been completely upended.

Before COVID-19, mid-revenue cycle leakage impacted every hospital's bottom line. Now, it can mean **negative operating margins.** If operating margins remain negative, it can mean anything from downsizing staff and services to diminishing quality clinical care.

Thankfully, mid-revenue cycle leakage is not an insurmountable challenge. Financial leaders are turning to increasingly sophisticated and automated solutions to overcome leakage, building transformational solutions to ensure organizations are financially resilient for years to come.

This whitepaper discusses:

- Leakage throughout the mid-revenue cycle
- Strategies to better capture earned revenue
- The impact of machine learning on mid-revenue cycle leakage

1. https://www.hfma.org/topics/news/2019/12/hospital-operating-margins-decline-21--in-2019--tracking-firm-fi.html
2. https://kha-paywall.readz.com/executive-summary-august-2020?preview=139977
3. HIMSS and Besler Revenue Cycle Management Research Report - Insights into Revenue Cycle Management October 2016
4. 2019 AHA Fact Sheet: Underpayment by Medicare and Medicaid January 2021

Leakage throughout the mid-revenue cycle

In order to better understand where and why leakage occurs, healthcare leaders must first take a look at the various stages within the mid-revenue cycle.

EXAMINING THE MID-REVENUE CYCLE

Admissions

At the admissions stage, a patient is admitted to the hospital with a clinical complaint for which the admitting provider identifies the associated medical condition through documentation. Any associated comorbid conditions that also impact the patient's care should also be documented. The clinical picture and treatment may change multiple times throughout the inpatient encounter, requiring documentation of additional medical diagnoses. After careful work-up of the patient, greater specificity of conditions should also be documented to ensure accurate representation of the conditions being monitored and treated. Capturing this detail of documentation is key to financial stability but difficult to bring about without investment in additional staffing or technology.

CDI Review and Query

During CDI review and query, every case would ideally be reviewed daily by clinical documentation integrity specialists to identify potential documentation integrity concerns. Due to the high volume of cases and staffing shortages, however, CDI specialists attempt to prioritize a select number of cases to review and potentially query each day. Based on their clinical knowledge and expertise, they initiate queries where the clinical evidence and diagnostic documentation do not align. Query creation can be time consuming and requires confident clinical and coding expertise as well as attention to detail.

Provider Response

Once a CDI specialist initiates a query, the provider who created the documentation must be alerted to review the information and compliantly enter appropriate documentation into the medical record. This requires physicians to be knowledgeable regarding the documentation integrity process and understand their responsibilities throughout the query process. Documentation understandably takes a backseat to the actual care of patients for providers, and this is exacerbated during times of high census resulting in missed opportunity to capture the true acuity of patient care in medical record documents.

Final Coding

The last stage of the mid-revenue cycle comprises final coding and billing. Based upon review of the documentation by the provider, the coder identifies the most appropriate codes that reflect the conditions the providers documented as medical diagnoses. Often, the clinical language utilized by the provider is not well understood by the coder, or the provider has utilized language that does not directly translate to a code. This often results in misrepresentation of the acuity of the patient's condition and care. Without adding additional resources and time to the back-end process, it's near impossible to review every case and assess the accuracy of the final codes prior to final billing resulting in leakage of accurate final codes.

WHY MID-CYCLE LEAKAGE IS A HARD PROBLEM TO FIX

Given the unique challenges of the mid-revenue cycle, it is no wonder that leakage occurs so frequently. Despite the fact that mid-cycle revenue leakage is a known problem, it remains difficult for healthcare leaders to manage due to competing priorities, a lack of clinical knowledge, and a scarcity of appropriate software solutions.

Competing priorities for clinical staff

There are three primary challenges to managing leakage in any stage of the mid-cycle process:

1. **Physician challenges:** Physician engagement in the documentation process is a real problem. The AMA reports that 42% of physicians experienced burnout in 2019,[5] coupled with technology fatigue and indifference to the value of proper coding, documentation, and CDI query review.
2. **CDI challenges:** CDI specialists experience burnout and technology fatigue in addition to regular uncertainty regarding provider response that may undermine their confidence and willingness to query. They might fear backlash from providers. Time management remains a significant issue as well. CDI specialists often spend time on low-priority tasks that are easier to resolve and don't have the bandwidth to dig deeper into critical cases.
3. **Coding challenges:** Coders might not have adequate clinical knowledge or the experience required to fully understand complex cases but are still expected to perform at a highly efficient level. This can lead to improper coding that may go unreviewed or discussed. This is further compounded by a poorly enforced provider feedback loop.

Addressing these challenges is not easy as resources and time are increasingly less available. In the U.S., there are only about 4,800 CDI specialists today.[6] In order to eliminate mid-cycle revenue leakage, health systems would need at least **23,000 CDI specialists**[7]—379% more than are currently available. Healthcare organizations simply cannot obtain resources with enough bandwidth to analyze each and every case.

5. AMA 2020 "Physician Burnout: Which medical specialties feel the most stress"
6. American Hospital Association 2017
7. ACDIS Recommendation

Lack of clinical knowledge

Identifying the right cases to review matters tremendously, but CDI specialists also need to be empowered to take appropriate next steps and escalate issues accordingly. Unfortunately, CDI specialists often choose not to query, even with clear inconsistencies between clinical evidence and provider documentation.

Even when pointed to and reviewing the right case, there is substantial subjectivity in the decision to query. The reasons for this are multifold -- sometimes it's a lack of competency or confidence, worry about physician response, or a concern about potential for impact. Further loss of integrity occurs at the coding step due to poor interaction and communication with CDI specialists, or failure to cross-connect the implications of evidence, documentation, and code.

Outdated legacy software solutions

Existing legacy CDI platforms are often inadequate to address today's documentation process issues. Even solutions with features like automation and natural language processing (NLP) can't account for the myriad of issues that arise as part of the provider documentation process.

Unfortunately, many legacy CDI platforms lack the necessary checks and balances to satisfy rigorous compliance requirements. Most legacy solutions are simply unable to accomplish their primary goal: complete document integrity. For example:

1. **Workflow solutions:** Only focus on automating straightforward tasks -- but if information is missing or inaccurate, it will continue to be missed.
2. **NLP:** Currently, NLP can only analyze narrative (written) documentation. It does not take into account the entirety of the patient's clinical picture, including lab results and relevant history and is therefore unable to identify missing documentation.
3. **Rules and marker-based systems:** Rules-based approaches cannot reliably identify medical conditions and bring with them a new slate of challenges that frustrate the CDI specialists and slow down workflow.

Ultimately, current solutions on the market today focus on automating repeatable and predictable tasks, while CDI is the opposite of repeatable and predictable. Because of these shortcomings in legacy technology, healthcare leaders continue to rely on CDI specialists to assess and reassess documentation and final codes resulting in manual, inefficient and costly workflows that often still allow for continued leakage.

The solution isn't to strain existing human capital or better manage outdated legacy solutions. Rather, it's to rethink document integrity and the review process from the ground-up.

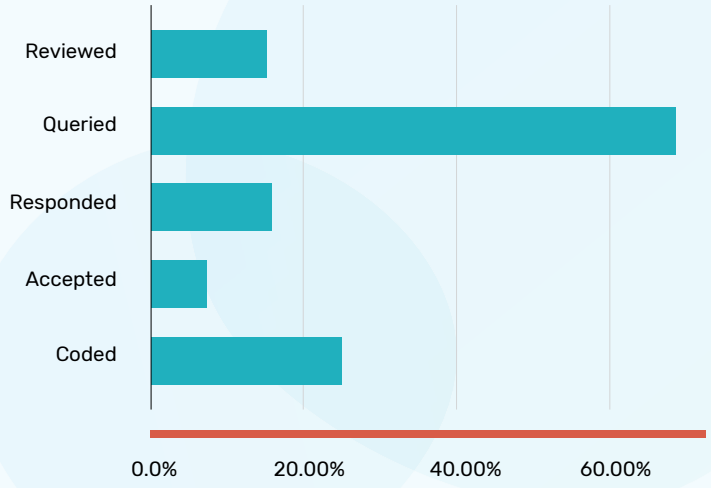
THE EARNED REVENUE OPPORTUNITY

To understand the full scope of leakage, Iodine conducted a comprehensive audit of hospital CDI queries from July 2019 to December 2019.[8] Across nearly 500 U.S. hospitals, Iodine found that each hospital was still missing an average of **84% of documentation improvement opportunities** -- meaning that the hospitals missed numerous opportunities to bill for additional reimbursement.

CDI QUERIES FROM JULY 2019 TO DECEMBER 2019

This chart shows the percentage of conditions that are missed or coded incorrectly at each stage of the process. As you can see, the most significant leakage occurs at the query stage.

While some of these cases might not have yielded an increase in revenue, the results of the audit certainly go a long way towards explaining how a 250-bed hospital **can lose $5–$11 million in annual revenue.** [9]



8. Iodine internal analysis, 2020
9. 2016 ACDIS Advisory Board Study

What health systems can do to better capture earned revenue

Health systems have options to better capture earned revenue.

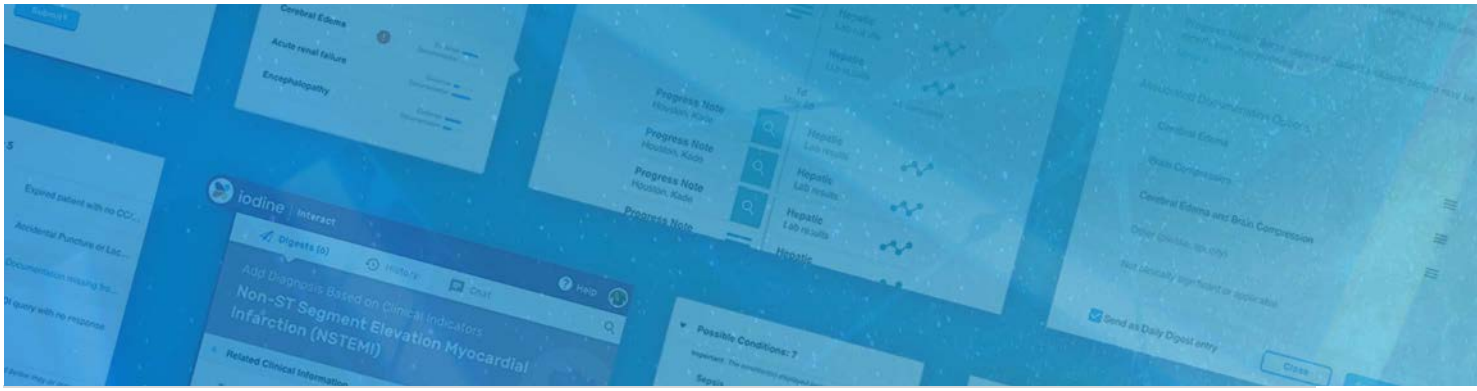
STRATEGY #1: FOCUS ON DOCUMENTATION INTEGRITY OVER DOCUMENTATION IMPROVEMENT

Many CDI programs and associated software solutions focus on "improving" documentation, which, by itself, doesn't stem revenue leakage. Often, documentation "improvement" is equated with adding documentation that allows a record to capture a complication or comorbidity (CC) or major complication or comorbidity (MCC) or, perhaps, add a point to the SOI or ROM score. Such an approach, though, fails to holistically support documentation integrity--that the documentation, overall, accurately and completely reflects the real-life clinical reality of the patient. Narrowly focusing on "improvement" may allow a particular record to code an additional CC, MCC, etc., but it neither effectively mitigates the risk of denials or audits nor supports coding accuracy. Paying attention to overall documentation integrity helps ensure that the final codes accurately codify the clinical condition of the patient and therefore leads to appropriate reimbursement and accurate quality metrics.

It is often difficult during a concurrent review to correctly predict the impact of accurate and compliant documentation on the final codes and their sequencing. Thus, focusing attention on the financial impact over the overall quality of documentation could result in missed opportunity. Paying attention to overall documentation integrity better supports validity of the final codes and therefore results in accurate reimbursement and quality metrics.

The following four core tenets support improved CDI processes and are essential for reducing leakage:

- Documentation unsupported by clinical evidence cannot be overlooked.
- The entire CDI process must be compliant, aligned with the AHIMA/ACDIS Query Brief and the ACDIS Code of Ethics supporting documentation integrity.
- Cases should be queried based upon merit—if any case requires document correction, it should be corrected, regardless of the financial implications.
- Financial gain should not be the core motivator of a strong CDI program. Rather, it should be a welcome outcome of improved document integrity.



These four pillars serve as a guideline to combating the largest challenges facing healthcare mid-revenue cycle management today.

STRATEGY #2: IMPLEMENT A ROBUST RETROSPECTIVE AND CODE REVIEW PROCESS

While metrics are important and can identify where leakage may be occuring, another solution for addressing mid-cycle leakage is to implement a robust retrospective documentation and code review process.

Retrospective reviews are the last opportunity to resolve documentation and coding issues prior to billing and quality reporting. Traditional reconciliation is inefficient and often ineffective for a number of reasons, including: it is a manual process, it doesn't address the root problem of provider documentation inconsistency, and it suffers from inadequate staffing--CDI teams are typically understaffed even without reconciliation duties.

The broad scope of factors impacting CDI efficiency and accuracy require creative solutions beyond hiring more CDI specialists. Technology designed to prioritize cases for retrospective review, based on the quantitative likelihood of benefit from review and correction, creates efficiency in this process and assists in minimizing leakage in this last step of the documentation integrity process.

STRATEGY #3: INVEST IN CDI AUDITING

Is it time to review the integrity of the CDI process? While some features of an existing solution may be sufficient, other aspects could be suboptimal or obsolete.

In order to conduct a proper CDI audit, one should consider potential blind spots and points of vulnerability—places where leakage could be happening, but which aren't obvious.

When considering an audit, healthcare leaders should ask the following questions:

- **Goal:** What is the end goal of the audit? If it is to improve document integrity, how is that defined, and what does that look like?
- **Current vs Retrospective**: Which pool of cases should be reviewed? How will you address the issues you identify?
- **Random vs Targeted:** Are there certain issues that should be investigated over others?
- **Volume:** How many cases should be reviewed? Does it make sense to review for all types of opportunities or those with a specific expected impact?
- **Auditor:** Who will conduct the audit?

A thorough and proper audit will help uncover weaknesses in existing systems and processes. Numerous tools, such as Epic reports, Iodine AI, and Vizient data mining, can grant new insights into potential sources of documentation issues and mid-cycle revenue leakage.

While the three strategies above can help health systems better capture earned revenue, they are insufficient for truly addressing leakage across the mid-cycle. **Something different and new is needed: machine learning.**

The impact of machine learning + clinical judgement to minimize mid-cycle leakage

Legacy software solutions are not capable of finding many types of financial and quality accuracy improvement opportunities because: 1) they cannot determine when patient information that is supported by medical data has not been written in a patient's chart, and 2) they do not support clinical validation, which verifies that documentation is adequately supported by clinical evidence. The former can directly lead to mid-cycle leakage, and the latter increases audit risk.

To minimize mid-cycle leakage properly would require a huge team with hundreds of CDI specialists, looking at the data all the time just like a clinician would. This is impossible at scale.

The objective of CDI is to determine whether the written documentation aligns with a patient's clinical reality, and this requires more than NLP. **This is where machine learning comes in**. Machine learning is capable of evaluating patient data using humanlike contextual understanding that continually improves over time.

A machine learning-powered CDI platform not only analyzes information in a patient's medical record, but it also learns and develops increasingly accurate connections between multiple sets of data, including lab results, patient history, medication, and more.

Applied correctly, machine learning can greatly enhance productivity and efficiency across the entire mid-cycle. Healthcare organizations have demonstrated benefits of nearly doubling their query volumes on average. This doubling of query volumes results in more accurate and compliant documentation that leads to improved coding accuracy. And all of this is achieved without the added stress and expense of hiring more CDI specialists or creating provider query fatigue. In fact, providers often respond to queries faster, more frequently, and more appropriately.

MINIMIZE LEAKAGE WITH IODINE'S AWARECDI SUITE

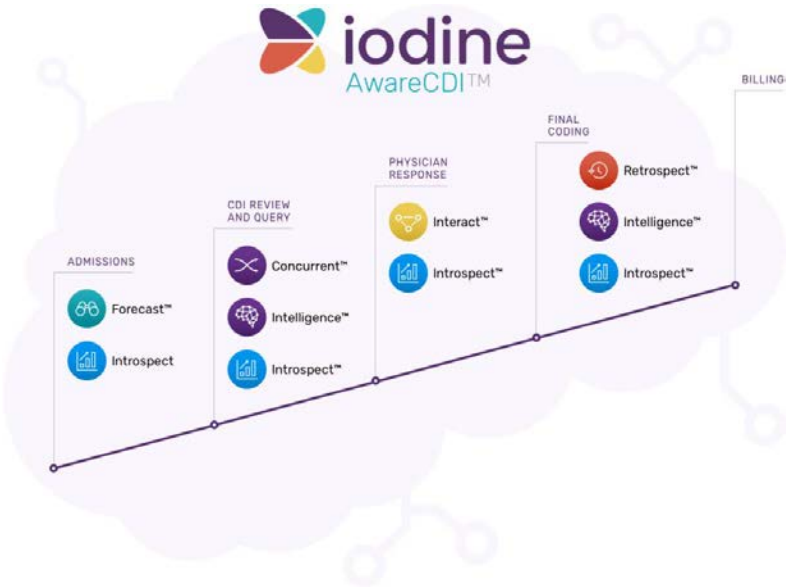
Iodine's **Cognitive Emulation**™ approach combines NLP and machine learning by applying clinical judgment to the clinical evidence in a patient's chart and leveraging previous learnings to more accurately determine the likelihood that a condition exists.

The AwareCDI™ suite does this by analyzing billions of data points sourced from more than 24 million clinical records for true-to-life context, insights, and trends. Conditions often present in a variety of ways, and by relying on clinical evidence rather than ambiguous thresholds, Iodine is able to learn from these unique instances to improve identification accuracy. For each of the leakage points discussed earlier, Iodine has built and deployed software modules - the **AwareCDI™ Suite** - to solve the revenue leakage problem.

The impact to a hospital's bottom line is substantial: [10]

- **$1.5** billion in additional appropriate reimbursement recognized by Iodine AwareCDI hospitals annually
- **$5.9** million average annual incremental reimbursement per hospital
- **75%** median lift in productivity (per/CDI specialist query volume)
- **21%** mean lift in performance (mean MCC volume increase)

With this new normal as our backdrop, finance leaders are looking at how to best leverage technology to do things differently -- now -- and ensure their organizations are financially resilient for the next decade and beyond. If your health system could benefit from implementing Iodine, please contact us to start the conversation.



10. Figures are based on a $6000 modeled base rate and actual measured MCC capture performance from the 2019 Iodine Performance Cohort Analysis of 339 facilities that compared measured MCC capture and CMI impact for the Iodine usage period 9/1/2018-8/31/2019 against pre-Iodine baseline performance.