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**Summary:** The following white paper provides national survey data on chart review productivity of CDI specialists, lists the variables that can reduce or enhance chart review productivity, and provides ACDIS' recommendations on chart review productivity standards.

Determining acceptable levels of productivity for CDI staff can be an overwhelming task. Although many organizations prefer a single national standard for calculating CDI productivity (e.g., a set number of new reviews and re-reviews per CDI specialist (CDS) per day), frequent regulatory changes and broad diversity within the industry prohibit a one-size-fits-all approach.

CDI productivity is influenced by a number of intrinsic and extrinsic variables, which will be discussed within this white paper. Examples of intrinsic variables include the review focus or mission of the CDI department, the defined role of the CDI staff within the organization and their experience with the tasks, and how much data each CDS must track and enter during chart reviews. Extrinsic factors include the complexity of the assigned patient population, availability of supplemental resources (i.e., technology), and the format of the health record (i.e., electronic or hybrid).

As industry demands evolve and responsibilities change, CDI managers will need to adjust their productivity expectations and will be challenged in setting both qualitative and quantitative productivity goals. To establish fair and productive goals without compromising the quality of work for quantity's sake, CDI managers must consider the many variables that go into productivity determinations.

This white paper will address the factors that make standardization of CDI productivity practices a challenge within the inpatient, short-term acute care setting. It will provide guidance on how to develop productivity levels based on an organization's unique attributes and the mission of its CDI department. It will also provide ACDIS Advisory Board–endorsed recommendations on setting productivity standards.

### CDI Productivity Survey results

In order to establish an industry baseline, ACDIS issued a *CDI Productivity Survey* in September 2016 to collect data on current CDI review practices and their impact on productivity. This paper incorporates relevant findings collected during the survey, which included more than 400 responses by CDI professionals nationwide.

**Ninety percent of respondents post queries (paper or electronic), 79% ask verbal queries, and 76% perform query follow-up.**

The overwhelming majority of the 414 respondents to the CDI Productivity Survey (99%) indicated that most CDI duties revolve around concurrent medical record review and the provider query process. Ninety percent of respondents post queries (paper or electronic), 79% ask verbal queries, and 76% perform query follow-up. About 65% also spend some amount of time conducting DRG reconciliation. These are the principal review tasks conducted by CDSs.

Surprisingly, only 28% of respondents participate in the HIM/coding query process (i.e., reviewing HIM queries), and only 34% round with physicians in multidisciplinary rounds. This seems to indicate that some CDSs work in “silos” without interacting with two key participants necessary for a successful CDI program: physicians and HIM. In addition, less than half (41%) of respondents participate in retrospective, pre-bill reviews (i.e., supplement their concurrent reviews with non-concurrent work such as mortality reviews, DRG validation, etc.).

New CDI programs often begin with a mission of ensuring accurate MS-DRG assignment. An MS-DRG can be one-, two-, or three-tiered, meaning patients can be stratified in as many as three categories. Traditionally, the CDS was a professional who clarified only those diagnoses that directly impacted payment through DRG assignment. Under this model, CDI tasks often included clarifying the principal diagnosis and ensuring the capture of secondary diagnoses that could result in CC or MCC assignment. Once a case had reached the highest possible DRG assignment, the CDS' review of the case was assumed to be complete.

But as CDI programs evolve, their focuses typically shift to a broader review, including quality and/or documentation accuracy. Today, CDI reviews are typically either revenue-based or quality-based. The *2016 CDI Productivity Survey* indicates that CDI departments are moving away from financially focused reviews. Additional duties are being incorporated into the CDI review to meet the increasing demands associated with documentation and coding.

Some may argue that their CDI efforts address both revenue and quality, believing that revenue follows quality; however, tactics that emphasize revenue capture may negatively impact quality of care performance measures. For example, principal diagnosis sequencing can affect both reimbursement and inclusion or exclusion within a quality measure population. The traditional CDI approach of MS-DRG maximization would result in sequencing choices that likely increase the volume of cases impacted by quality measures. When focusing on secondary diagnoses, these goals can also contradict each other. For example, consider the diagnosis of acute respiratory failure. When acute respiratory failure is documented following

surgery, it can add an MCC to the MS-DRG; however, reporting acute respiratory failure in conjunction with an elective surgical procedure can result in a quality deficiency based on postoperative respiratory failure rates.

Regardless of the program's focus, CDI leadership needs to report performance measures that reflect and complement the mission of accurately demonstrating CDI's impact. The following are possible objectives during a CDI review:

**Regardless of the program's focus, CDI leadership needs to report performance measures that reflect and complement the mission of accurately demonstrating CDI's impact.**

- Principal diagnosis selection and CC/MCC capture with a focus on MS-DRG assignment/optimization
- Positively affecting the organization's mortality index
- Obtaining thorough documentation of Patient Safety Indicators (PSI)
- Helping physicians establish medical necessity for their services and code and bill appropriately
- Reviewing the entire record for accuracy and completeness of diagnoses and procedures, regardless of payment impact
- Implementing documentation improvement techniques that benefit both the hospital and the physician in their business of practicing medicine, including accurate E/M code assignment
- Capturing additional diagnoses that do not impact MS-DRG assignment, but do affect severity of illness (SOI)/risk of mortality (ROM) scores
- Reviewing criteria of inpatient admissions to ensure they meet coverage requirements, including medical necessity—i.e., patient status (inpatient or observation)
- Collaborating with utilization review and case management to support the medical necessity of the level of care/setting and/or justification of the procedure as required for compliance with national and local coverage determinations
- Accurately reflecting patient acuity and complexity through diagnoses that risk-adjust outcome performance monitored by a variety of CMS quality programs, including:
  - Hospital Value-Based Purchasing Program (HVBP)
  - Hospital Readmissions Reduction Program (HRRP)
  - Hospital-Acquired Condition Reduction Program (HACRP)
  - Hospital Inpatient Quality Reporting Program (IQR)
- Accurately reflecting patient acuity and complexity through diagnoses that risk-adjust to predict cost and future payment for various CMS alternative payment models, including:
  - Medicare Advantage Program (Part C)
  - Accountable care organizations (ACO)

Interpreting the medical record to support these goals requires expertise in related but distinct disciplines—for example, knowledge of diagnoses that result in CCs/MCCs; knowledge of the intrinsic SOI/ROM level of each diagnosis and how different clinical diagnoses impact the final APR-DRG value; and knowledge of CMS and Joint Commission quality measures, plus the documentation requirements for each.

**Although it may seem reasonable to ask a nurse or HIM professional to perform additional review functions typically handled by case management or quality improvement professionals, these reviews differ from simple diagnosis clarification and may require looking at different elements of the health record.**

The types of documents reviewed and the value of the documentation varies based on the focus of the program, the patient population, and the object of the review. For example, an initial review for CC/MCC capture would focus on the history and physical of the patient to identify chronic conditions that are still being treated and/or require greater specificity, as well as to identify the reason for the admission. An initial review for medical necessity of setting would focus on abnormal diagnostic findings and associated treatments, but an associated code would not be assigned unless a treating provider documented an associated diagnosis.

The volume and intensity of subsequent reviews also varies based on the departmental objectives. CDI departments that focus on MS-DRG assignment/optimization can often “close” a case in one review if the severity is great enough for the highest level of reimbursement to be reached, or if the case falls into a one-tier DRG (i.e., an MS-DRG that is not further categorized into “with CC,” “with MCC,” “with CC/MCC,” or “without CC/MCC”). Conversely, optimizing SOI/ROM impact under APR-DRG methodology will often require numerous follow-up reviews. Programs focused on the impact of CMS quality-of-care measures will also have many follow-up opportunities, because while the initial MS-DRG assignment (i.e., the working MS-DRG) can place a case within the patient population, subsequent documentation can lead to an exclusion or risk-adjust the impact of a negative outcome that may not be known until later in the episode of care, perhaps not until discharge.

Although it may seem reasonable to ask a nurse or HIM professional to perform additional review functions typically handled by case management or quality improvement professionals, these reviews differ from simple diagnosis clarification and may require looking at different elements of the health record. Organizations should provide additional training, staff, and resources to support an expanded CDI focus as well as consider the impact on departmental productivity metrics.

Some facilities require a CDS to concurrently code cases, and time spent coding diagnoses and procedures to establish an initial and working DRG would also have to be factored into productivity standards. Many CDI programs reconcile record reviews after coding and prior to billing, which requires additional time and in some cases communication with coding to resolve discrepancies.

Often, CDSs do not have access to the same tools or possess the same experience as the coding staff within their facility, which may necessitate additional coding research during the review process, thus increasing the time spent on a particular review. This is especially cumbersome when CDSs use stand-alone coding tools that do not save their encoder results and/or that require input of demographics, requiring daily entry of the same diagnoses. As a result, the responsibility for establishing a working (or concurrent) DRG can be time-consuming.

### Base CDI productivity averages from CDI Productivity Survey

The majority (53%) of respondents to the ACDIS 2016 *CDI Productivity Survey* indicated that they conduct 6–10 new reviews each day, with 32% reporting that they conduct 11–15 new reviews each day. Respondents noted seasonal and early week variations (Monday vs. Friday) as well as standards established based on CDS experience. In total, 85% of respondents report 6–15 new patient reviews as typical, with 7% indicating that they review five or fewer new records per day and 5.1% reviewing 16 or more new records per day.

Given these averages, it appears that 10 new records per day, plus or minus two new case reviews, represents the national average for daily new CDI reviews. Keep in mind, however, that data regarding the typical number of completed reviews was collected independently of the specific tasks being performed by CDI staff. As will be discussed in the next section, the focus or objective of the CDI review greatly impacts productivity.

Survey results indicated an interesting split of daily re-reviews, with approximately one-third of respondents conducting 6–10 re-reviews per day and one-third conducting 11–15 re-reviews per day. The remaining third of responses varied widely, from 0–5 reviews per day to 21–25 per day. Removing the extremes, the majority of this latter third completes 16–20 re-reviews per day.

Similar to the figures for new reviews, 63% of respondents noted that 6–15 daily re-reviews is typical; respondents also noted seasonal and early week variations. Given this correlation with historical averages, 10 re-reviews, plus or minus two re-reviews per day, appears to be the national standard.

In conclusion, 16–24 total reviews per day (new reviews and re-reviews) is an average range for a CDS, with 20 daily reviews being an acceptable goal to account for variability in review focus, as noted later in the survey.

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A study published in the August 2016 *Journal of AHIMA* indicated that coding time has been dramatically impacted by ICD-10. This AHIMA study reviewed 157,248 coded cases in order to examine average inpatient coding times. It found that coding time increased from 20 minutes in 2007 to 41.9 minutes in 2016 following the implementation of ICD-10. In addition, cases with the highest average coding times included MS-DRGs often reviewed by CDI staff, such as septicemia, renal failure, heart failure, COPD, pneumonia, and ICH/CVA. The study further indicated that coding time is impacted by the average site case-mix index, a proxy for complexity.

**In summary, ICD-10 has had less of an impact on productivity for CDSs than for coding professionals.**

As opposed to “front line” coding professionals, CDSs perform directed clinical and coding validation with respect to impacting diagnoses and procedures. Given the complexities and nuances of ICD-10-CM/PCS, one might think that, similar to coding, CDI productivity would suffer after the code set's 2015 implementation. However, according to the 2016 CDI Productivity Survey, ICD-10 does not appear to have had a dramatic impact on CDI productivity. Approximately 60% of respondents indicated that it resulted in no change in their productivity levels. About 22% indicated that they are less productive since ICD-10's implementation, and 6% indicated that they have become more productive. Some commenters noted that they initially felt a dip in productivity, but it quickly improved.

In summary, ICD-10 has had less of an impact on productivity for CDSs than for coding professionals. Of those 22% of respondents to the ACDIS CDI Productivity Survey who stated that ICD-10 has resulted in a loss of productivity, most indicated a less than 10% productivity loss, while 13% could not identify the precise effect of ICD-10 on their review productivity. In summary, if 20 charts per day is the goal of most CDSs, productivity loss at most for this group appears to equate to less than two charts per day.

## Variables affecting standardization of CDI productivity

Wide variability exists among facilities regarding the role of CDI and what hospitals consider routine CDI tasks. Following is a snapshot of these variables; CDI managers or directors seeking to implement a productivity standard in their facility must consider these in their calculations.

### The skill sets and core competencies of individual CDSs

Interestingly, the 2016 CDI Productivity Survey indicates that the variables with the most significant impact on CDI productivity are the experience of the reviewer (named by 54% of respondents as the largest variable impacting productivity) followed by the complexity of the

account/diagnoses (cited by about 21%). CDI is more of an art than a science, and it can take more than a year on the job for someone to attain proficiency. There is much trial and error when learning how to assign ICD-10-CM codes and working MS-DRGs. A new CDS is typically not as efficient or skilled as a seasoned CDS and cannot review as many records.

**In addition to the coding aspects of the CDS role, the CDS must be a “clinical content expert” within the medical specialty to which he or she is assigned.**

In addition to the coding aspects of the CDS role, the CDS must be a “clinical content expert” within the medical specialty to which he or she is assigned. A CDS who is expected to cover multiple specialties will require training on the nuances of disease processes in order to recognize vague, missing, and incomplete documentation. This skill set differs from simply asking for clarification or increased specificity of existing documentation. An experienced coder transitioning to a CDS role may have an advantage due to strong knowledge of coding rules; however, this knowledge must be combined with the essential elements of practical clinical knowledge and familiarity with a wide array of clinical disease entities. Conversely, an experienced nurse transitioning to a CDS role may possess strong clinical knowledge, but would need to develop coding and MS-DRG assignment expertise.

The healthcare industry is dynamic, and healthcare reform is driving revisions to reimbursement rules and regulations from fee-for-service to pay-for-performance. A CDS should balance his or her daily duties with staying current on these ever-changing rules and regulations. A strong CDI department requires leadership dedicated to regular continuing education, and CDI staff should be aligned with the HIM/coding staff regarding changes in coding practices. Training can reduce productivity, but a lack of training can result in DRG assignment discrepancies, which require frequent discussions between CDSs and coders. A lack of training also presents compliance risks.

### **Review focus, including designated goals and objectives**

Another variable impacting CDI productivity is the type of work performed by the CDS. Some CDI departments focus on Medicare reviews, while others review all records. Not all reviews are created equal; some reviews may present more opportunities for documentation clarification or face-to-face discussion with the attending provider—which, of course, require additional time.

Organizational composition can affect CDI productivity. As pointed out

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by survey respondents, the complexity of the review affects CDI productivity since not all medical specialties' diagnoses correlate to DRGs with multiple tiers. For example, if a hospital specializes in labor and delivery, its CDI staff may be able to review records in a shorter time frame than a hospital that specializes in cardiology. Additionally, cardiac patients often have a short length of stay, whereas oncology patients often have a longer length of stay and require more follow-up reviews.

If CDS assignments are decided solely by bed count per unit, the work may not be well distributed among team members due to these types of variations. Also, the more cross-coverage required across multiple medical specialties, the lower the productivity, as the CDS may not be as proficient with the disease processes and coding rules associated with all the specialties.

Another consideration is the volume of medical patients compared to surgical patients. Engaging surgeons in CDI is often more difficult than engaging medical practitioners because of differences in professional billing. Medical providers must supply daily documentation to support their professional billing; therefore, they are often more amenable in responding to queries as well as more likely to add the requested documentation. Surgeons, conversely, are often paid a global fee, so they are not required to provide daily documentation for professional billing, and they are often difficult to reach because their days are spent in the operating room.

Notwithstanding the objectives of the CDI review, the CDS must know what charts to select for review and when to review the case in order to optimize his or her CDI priorities and maximize productivity. The traditional CDI review population includes adult, non-obstetric, Medicare fee-for-service beneficiaries. As more payers adopt a prospective payment model based on DRGs, the CDI review population is quickly expanding to include other demographics, payers, and settings.

#### **Chart retrieval, layout of hospital, and EHR adoption**

CDSs need continually updated access to patient information through the admit/discharge/transfer (ADT) feed so they can easily identify new admissions, changes in inpatient status, changes in patient locations, and discharges. The patient discharge is an important event that may end the CDI review process for organizations that only perform concurrent reviews. Patient discharge can also initiate a secondary CDI review



process which occurs after discharge but before billing—including, for example, mortality reviews.

CDSs who can access charts electronically may be able to review more cases per day, as they do not need to physically retrieve the records. The majority of respondents to the 2016 CDI Productivity Survey (about 68%) indicated that they work in a completely electronic environment, with a distant second (27%) operating within a hybrid EHR and only 1.9% of respondents working in a purely paper-based setting. Most write-ins to this question were suggestive of hybrid environments. Survey results bear out that EHRs (or a lack thereof) have a bearing on productivity, as more than 12% of survey respondents indicated that reviewing charts on an electronic record vs. paper or hybrid is the third greatest variable impacting productivity.

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The physical layout of the hospital can impact productivity with service line-based CDI assignments if the services don't directly correlate to units, as the CDS may be required to access patient records in a variety of locations across floors and sections of the facility. This can become particularly cumbersome if the CDS follows the patient, not the service line, when service line changes occur during admission and the CDS must access different unit locations to review the record.

The quality of the electronic medical record (EMR) can positively or negatively impact CDI productivity. Some CDI professionals are not as computer-savvy as others and may require additional time to navigate an electronic record. Depending on the type of EMR, documents may only be available once finalized by the provider, which can delay access and lengthen review time. The available EMR sections and associated documents may not align properly if providers fail to use the correct template, leading to holdups in the review process.

### **The process of provider querying**

Developing and closing a query can both be time-consuming tasks. Some organizations use query templates with clinical indicators specific to a particular condition to save time, while others require each query to be manually crafted from scratch. Although templates can standardize the information contained in a query, it must still be individualized to the patient. Query construction can take up a good portion of a CDS' day—especially a novice CDS.

Getting the query noticed by the provider is equally challenging. Of survey participants who have an EMR that allows electronic queries and prompts to the physician, 42% indicated the EMR enhances their productivity. However, 39% indicated “don't know” or “not applicable,” which may mean that they lack the capability to perform electronic querying. Therefore, it would appear that when an EMR with electronic querying capability is present and set up properly, the majority believe it improves productivity.

**Unanswered queries can require frequent record checks for the additional documentation as well as negotiation between the CDS and provider.**

Unanswered queries can require frequent record checks for the additional documentation as well as negotiation between the CDS and provider. Organizational policies dictating query formats can be used, and productivity is also affected by how a provider can respond to a query. Organizations that limit the use of multiple-choice and yes/no queries in favor of open-ended questions are less likely to receive provider responses that result in the intended query outcome, since the provider is often unaware of how best to respond. Depending on the quality of the provider's response to an open-ended question, additional follow-up may be required to obtain phrasing that can result in precise code assignment.

Requiring providers to document their query response in the medical record rather than on a query form which is retained as part of the health record can also negatively impact CDI productivity. It is much easier for a CDS to check for a response on a query form than it is to search recent provider documentation in hopes of finding the query response within the provider's notes.

Some organizations require significant follow-up to bring closure to a query, the amount of which varies greatly depending on physician engagement with CDI and the type of medical record in use at the facility. Other facilities do not require every query to be closed out before final billing. The amount of time a CDS spends each week on queries can be highly variable.

### Technology including remote reviews, computer-assisted coding (CAC), and natural language processing (NLP)

The prevalence of EMRs allows for remote CDI reviews. About 50% of respondents indicated that their facility does not allow remote CDI compared to 39% that do, with 7.7% reporting “other” (some of which do allow remote CDI work). Some interesting write-ins include:

- Those that allow remote CDI workers typically do so one or two days per week
- Some allow only remote CDI work for extenuating circumstances such as weather or illness
- Some use remote CDI as an incentive program with “home passes” for those that meet incentives

When comparing the performance of remote and on-site staff, 47% indicated that remote staff are more productive. About 31% indicated that they perform at the same productivity levels as on-site staff, with only 3% indicating that they are less productive. In total, then, 78% of those that work remotely have productivity equal to or better than on-site CDSs. How remote CDI work translates into favorable outcomes and physician engagement, however, is unclear.

Those who indicated productivity is enhanced in a remote setting cited fewer distractions, flexibility in review time, reserved computer space providing better access to records, and less responsibility for on-site tasks (i.e., education duties and other administrative duties) as chief reasons for the boost.

Some respondents indicated that remote CDI is less impactful on future physician documentation habits, as it involves time away from physicians, rounds, and education.

Respondents to the 2016 CDI Productivity Survey reported CAC and NLP among the variables that are the least impactful on productivity (perhaps due to the technology's lack of maturity). CAC and NLP can benefit CDI by suggesting code sets as the medical record is scanned; those suggestions are then confirmed, vetted, and possibly clarified by the CDI professional. In addition, some software will alert the reviewer to the presence of conditions that may result in a PSI, an HAC, or a potentially preventable readmission, and offer an opportunity to avert a PSI or HAC when compliant or feasible. Having these products at hand can improve CDI productivity.

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Many vendors also offer advanced products that incorporate references to AHA Coding Clinic, ICD-10-CM Official Guidelines for Coding and Reporting, medical dictionaries, pharmacology references, anatomical references, and so forth. These products can also increase CDI productivity. In general, however, there are pros and cons to CAC/NLP products, though the specifics are beyond the scope of this white paper.

#### **Additional duties beyond chart review**

About 55% of respondents to the CDI Productivity Survey reported spending six to seven hours per day in chart review, which indicates that the majority have one to two hours per day of administrative, education, or meeting time. Comments were made that non-review time must be included in overall productivity numbers. The remaining respondents reported either spending their full eight-hour day or only four to five hours per day reviewing cases.

Some other routine activities noted by survey respondents include:

- Denial reviews.
- Physician education.
- Grand rounds.
- Q/A. This had only one mention, which is surprising since compliance is a critical component of a successful CDI program.

CDI efforts are increasingly used to bridge the revenue cycle and medical practice as the need for coded data to accurately reflect the clinical scenario becomes increasingly important for an organization's financial health and the reputation of the organization and its providers. As CMS continues to transform its reimbursement methodology, organizations are identifying a variety of "gaps" that not only result in lost revenue, but can also negatively affect the organization's reputation through publicly reported performance measures. Adding "one more thing" for CDSs to review because "they are already in the health record" adds more to the review process than the few minutes it takes to peruse the documentation.

As a supplemental business function not governed by *Conditions of Participation*, CDI departments are uniquely positioned to respond to the changing healthcare environment. But expanding to new areas has a drawback of potential "scope creep," and the benefits must be weighed accordingly. For example, CDSs or CDI leadership may be asked to

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serve on committees that address topics such as Recovery Auditors, PEPPER reports, ICD-10 gap analysis and training, length of stay, and denials. Meeting preparation, attendance, and follow-up responsibilities to meet these initiatives may hinder productivity by taking reviewers off the floor.

CDI staffing ratios must take into account that provider education and support is an essential component of successful CDI departments—perhaps the most essential. If education is to be meaningful to providers, it must include research and data analysis, which takes time and effort. Organizations may choose to enlist the support of outside experts to provide physician education, or even hire dedicated CDI educator staff, but it is the day-to-day CDI team that is charged with reinforcing those educational concepts through one-on-one discussions and subject-specific queries. Other hospitals may employ a physician advisor to meet and educate new physician hires as part of the onboarding process.

Each new documentation education concept that is introduced to the medical staff will generally result in an increase in provider queries until documentation patterns improve, thus impacting the productivity of the CDS. Face-to-face education provided by CDSs to individual physicians also requires time.

CDI departments must often prove their worth through time-consuming, manual tracking of a variety of metrics. Every facility wants data to ensure its CDI program is showing a positive return on investment; therefore, gathering and reporting data is an essential component of most CDI programs.

Reviewing CMI trends, CC/MCC capture rates, and discrepancies in the “working” or concurrent DRG assigned by the CDS (versus the final DRG assigned by the coding staff) is important but also takes time to perform. Facilities should carefully consider the benefits and the burdens of requiring the CDS to contribute to data acquisition and reporting. The manual abstraction and entry of information into a database or spreadsheet may result in less time to perform chart reviews and/or provider education.

Facilities are encouraged to investigate software programs designed to capture information at the point of review or to assign data entry tasks to administrative personnel, thus freeing the CDS to focus his or her time on documentation review and providing education.

At a minimum, most CDI departments should track the total number of charts reviewed by a CDS (i.e., review rate), the total number of queries issued by a CDS (i.e., query rate), and the provider response rate by CDS. Other metrics to consider include provider query agreement rate, query type, provider response time, case-mix index, and financial impact. Again, the choice of metrics is dependent on many factors, especially the focus of the CDI department. As a CDI department matures, however, these metrics typically need revision.

### ACDIS' recommendations on chart review productivity

The ACDIS Advisory Board does not advocate for a specific one-size-fits-all formula to determine adequate staffing and chart review productivity.

Hospitals have unique patient populations and demographics. Likewise, as noted above, CDI departments vary considerably based on each facility's goals, outcomes, metrics, and available resources. A universal productivity number cannot take into consideration all the variables that impact efficiency, complexity of clinical reviews, and additional responsibilities of the individual CDS. Instead, each CDI department must evaluate its own staff responsibilities and scope of clinical chart reviews, then determine what data elements are necessary for a complete and accurate review as related to the specific goals of the program.

The first step in creating productivity standards is to identify the goals of the CDI program and how these goals will be accomplished with current staff and resources. A strong indicator of the effectiveness of the CDI program regardless of the productivity numbers is outcome data. The facility will need to ask, "Do I want quality reviews, or quantity?"

There are many different ways to achieve objectives and positive outcomes, but consistency and the flexibility to evolve alongside healthcare regulatory changes are the most important considerations. Since there are so many factors and variables impacting each CDI program, **the ACDIS Advisory Board does not advocate for a specific one-size-fits-all formula to determine adequate staffing and chart review productivity.** Rather, the Advisory Board believes it is incumbent on the individual hospital to make that determination based on the goals and objectives of the CDI program, the program's scope of work, and the core competencies and skill sets of the program's CDSs.

**The ACDIS Advisory Board recommends each facility set its own productivity standards,** taking into account the above variables to formulate an accurate reflection of the CDI program's goals and mission. ACDIS has many resources to assist in defining goals and determining outcomes/metrics, including national survey results, *CDI Journal* articles, and peer-to-peer networking. See Appendix A for an example of how one hospital determines its productivity standards.

### Appendix A: Developing and implementing productivity standards

Approximately 63% of respondents to the 2016 CDI Productivity Survey indicated that their facility has a set quota for chart reviews, and 29% stated that their facility does not. Setting productivity standards requires strategic planning and time studies to identify all the responsibilities of the CDS.

Once CDI core responsibilities have been identified and defined, a time study can be conducted to evaluate the actual hours spent on record reviews per day, compared to other duties performed. There will always be differences among the CDSs in your facility as well as in comparison to other facilities because of differing skill sets and service lines; however, hospitals are encouraged to set a productivity range that incorporates these differing characteristics.

Following is an example of how a CDI department at a fictional hospital (Hospital A) determines its productivity expectations.

#### Productivity

- Identify and omit time spent on activities other than initial or follow-up reviews, including query follow-up. Hospital A requires its CDSs to spend two hours at the end of each day for DRG and coding reconciliation. It also allots a half-hour lunch break and two 15-minute breaks, leaving five hours of daily review time per CDS.
- Determine how many weeks per year CDSs work. Employees at Hospital A are given two weeks' vacation, 10 paid holidays, and five sick days, reducing the work year to 47 weeks.
- Multiply the hours of reviews each day by the number of days in a workweek by the number of workweeks per year. For Hospital A, this works out to 5 hours x 5 days x 47 weeks, meaning each CDS spends approximately 1,175 hours performing chart review each year.
- Once the baseline of annual hours spent completing reviews is determined, count how many patients are reviewed by each CDS and determine how long it takes to perform an average chart review. Track each floor or service separately by the number of reviews, number of new reviews, and number of queries. This allows for an equal distribution of assignments and a more realistic average, since certain types of patient charts will require more queries and more detailed reviews than others. At Hospital A, CDSs review an average of 20 patients in five hours, so each review takes approximately 15 minutes. (Note: Reviewers are assumed to only review charts for principal diagnosis and secondary diagnoses, and do not perform other duties such as case management/observation, quality elements, etc.)

Once you have determined your productivity baseline, be sure to solicit administrative and departmental buy-in. Administrative support is essential to the success of any CDI department, as many executives do not clearly understand how CDI efforts can support target areas for the organization—they only see CDI as a means to improve revenue. By providing productivity measures to the executives that account for factors like quality metrics and mortality reviews, a dialog is opened to explore areas of need and where CDI can help.

Likewise, CDI staff must also understand the productivity metrics and why it is necessary for management to track them. Open, transparent sharing of CDI productivity expectations with your review team can help ensure buy-in and successful implementation.

### CDI Productivity survey results

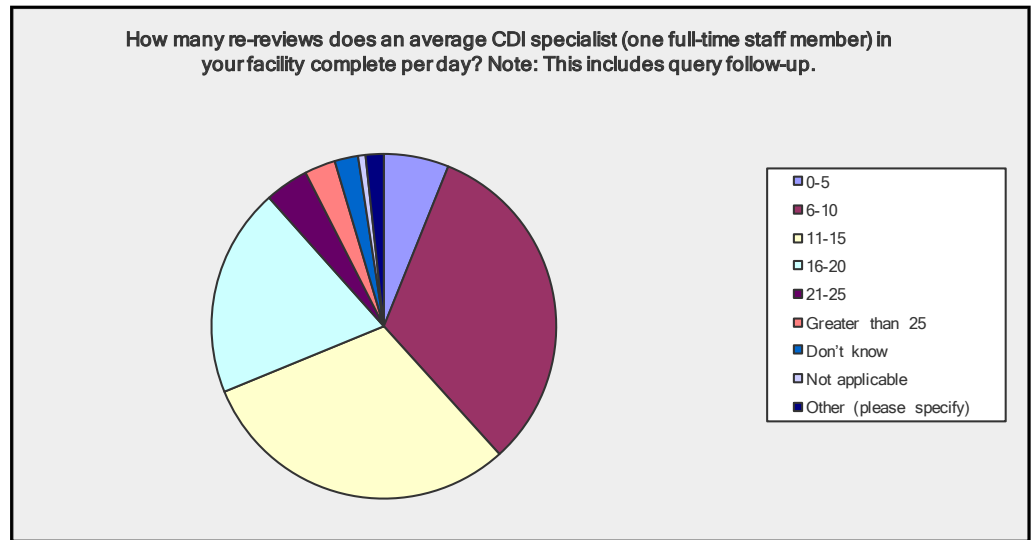
How many new patient reviews does an average CDI specialist (one full-time staff member) in your facility complete per day?		
Answer Options	Response Percent	Response Count
0-5	7.0%	29
6-10	52.7%	217
11-15	31.8%	131
16-20	3.4%	14
21-25	1.5%	6
Greater than 25	0.2%	1
Don't know	0.7%	3
Not applicable	0.7%	3
Other (please specify)	1.9%	8
<b>answered question</b>		<b>412</b>
<b>skipped question</b>		<b>2</b>

#### Open-ended responses

- It depends on the time of year. In the summer usually 5-10, during the winter season up to 20-25
- New associate (<1yr) target is 6 new cases, experienced associate (>1yr) target is 8 new cases
- It varies on the day, Mondays could be as high as 20; some days there are only five.
- Unpredictable since service based

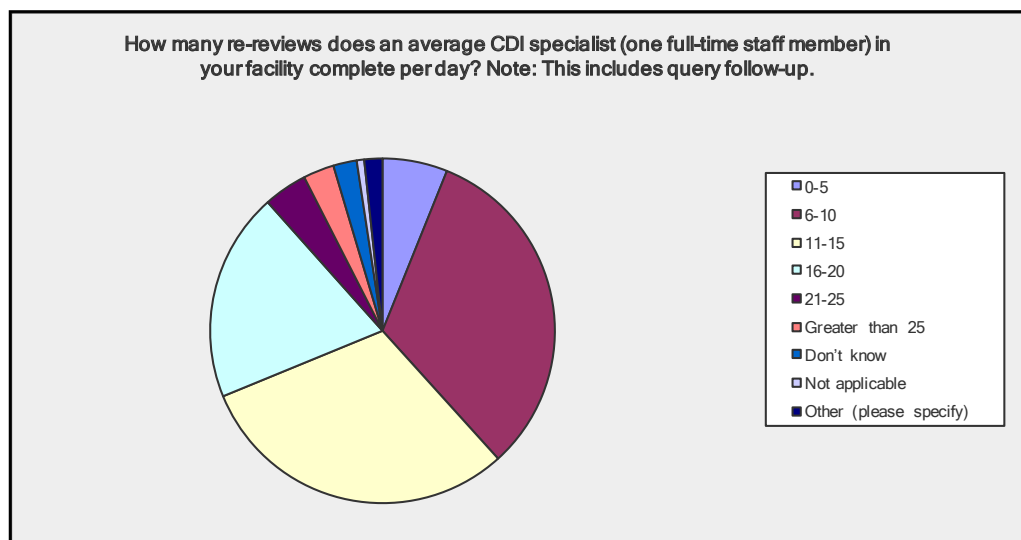


## Set CDI productivity expectations, but don't look for a national standard



How many re-reviews does an average CDI specialist (one full-time staff member) in your facility complete per day? Note: Includes query follow-up.

Answer Options	Response Percent	Response Count
0-5	6.1%	25
6-10	32.2%	133
11-15	30.5%	126
16-20	19.6%	81
21-25	4.1%	17
Greater than 25	2.9%	12
Don't know	2.2%	9
Not applicable	0.7%	3
Other (please specify)	1.7%	7
<b>answered question</b>		<b>413</b>
<b>skipped question</b>		<b>1</b>



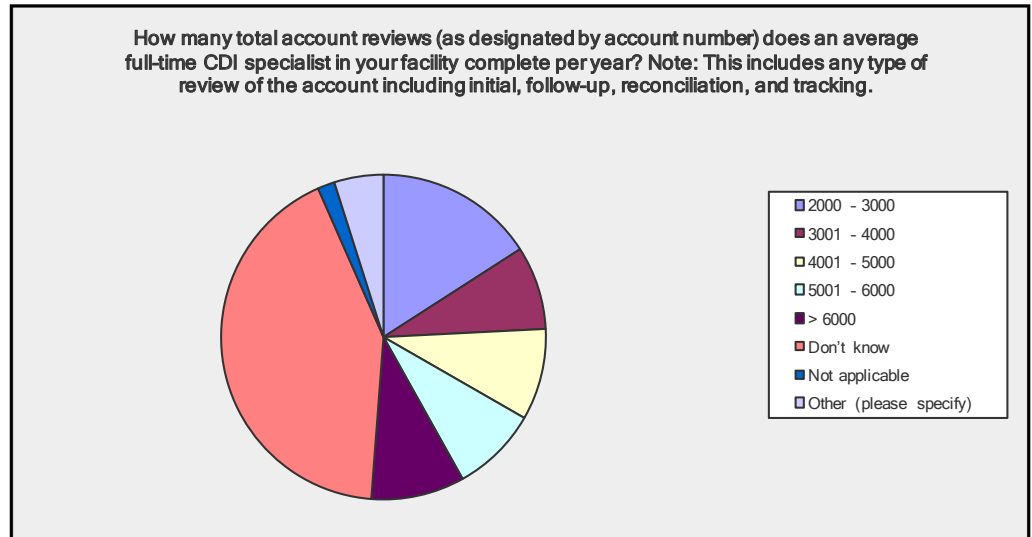
How many total account reviews (as designated by account number) does an average full-time CDI specialist in your facility complete per year? Note: This includes any type of review of the account including initial, follow-up, reconciliation, and tracking.

Answer Options	Response Percent	Response Count
2000 – 3000	15.9%	65
3001 – 4000	8.3%	34
4001 – 5000	9.1%	37
5001 – 6000	8.6%	35
> 6000	9.3%	38
Don't know	42.2%	172
Not applicable	1.7%	7
Other (please specify)	4.9%	20
<b>answered question</b>		<b>408</b>
<b>skipped question</b>		<b>6</b>

**Open-ended responses**

- >6000 but this is too many. We plan to increase FTEs.
- 1200-1300
- 1700-1800
- 1700-1900
- About 5000, but this does not include query follow-ups or reconciliation

## Set CDI productivity expectations, but don't look for a national standard



**Which of the following review duties do your CDI specialists perform? Check all that apply.**

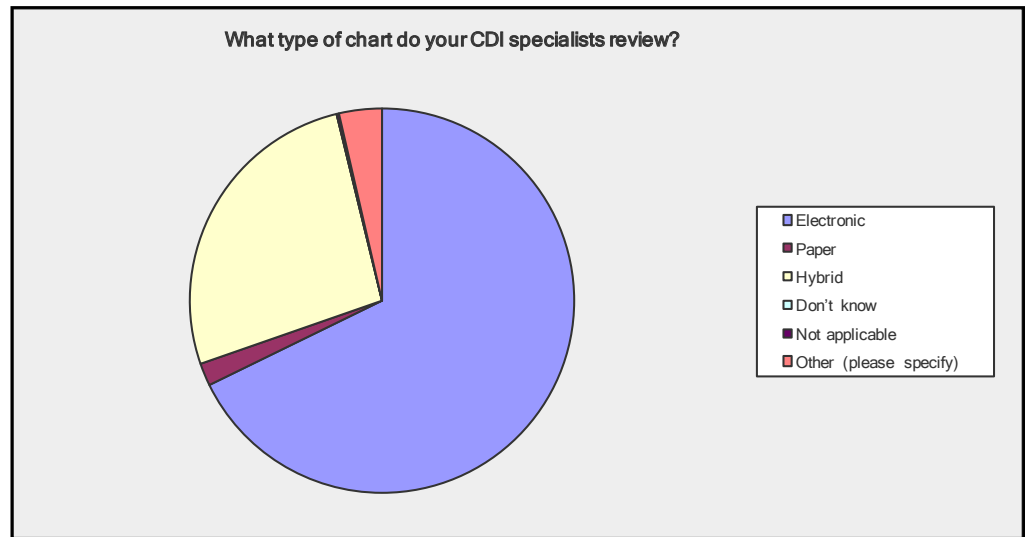
Answer Options	Response Percent	Response Count
Concurrent medical record review	98.6%	408
Retrospective, pre-bill medical record review	40.8%	169
Rounding with physicians on the floor	34.3%	142
Posting concurrent written queries (paper or electronic)	90.1%	373
Asking verbal queries	78.7%	326
Reviewing queries submitted by HIM/coding	28.0%	116
Following up on concurrent queries post-discharge	76.1%	315
DRG reconciliation	65.2%	270
Don't know	0.0%	0
Not applicable	0.7%	3
Other (please specify)	12.1%	50
<b>answered question</b>		<b>414</b>
<b>skipped question</b>		<b>0</b>

**Open-ended responses**

- Daily interdisciplinary rounds
- We follow up on coder queries which takes so much time.
- Review concurrent records during 1:1 education sessions with providers
- Mortality chart reviews, MD education at MD meetings
- Concurrent query follow-up pre-discharge
- Concurrent coding
- Physician education, quality measure coordination
- Resident and physician CDI education
- PSIs, HACs, Admit Type/Source; complication, coding correction, service line audits, HCCs
- denial review, review all payers, physician education
- 1 time intervention on open query post discharge per query escalation process
- Utilization review, core measure notifications to nursing staff, quality indicators, report adverse events to quality, report infections not POA to infection control
- New physician orientation
- Collaborating on quality issues like HAC and PSI, physician education
- Second level HAC, PSI, and mortality reviews

What type of chart do your CDI specialists review?		
Answer Options	Response Percent	Response Count
Electronic	67.7%	279
Paper	1.9%	8
Hybrid	26.5%	109
Don't know	0.0%	0
Not applicable	0.2%	1
Other (please specify)	3.6%	15
<b>answered question</b>		<b>412</b>
<b>skipped question</b>		<b>2</b>

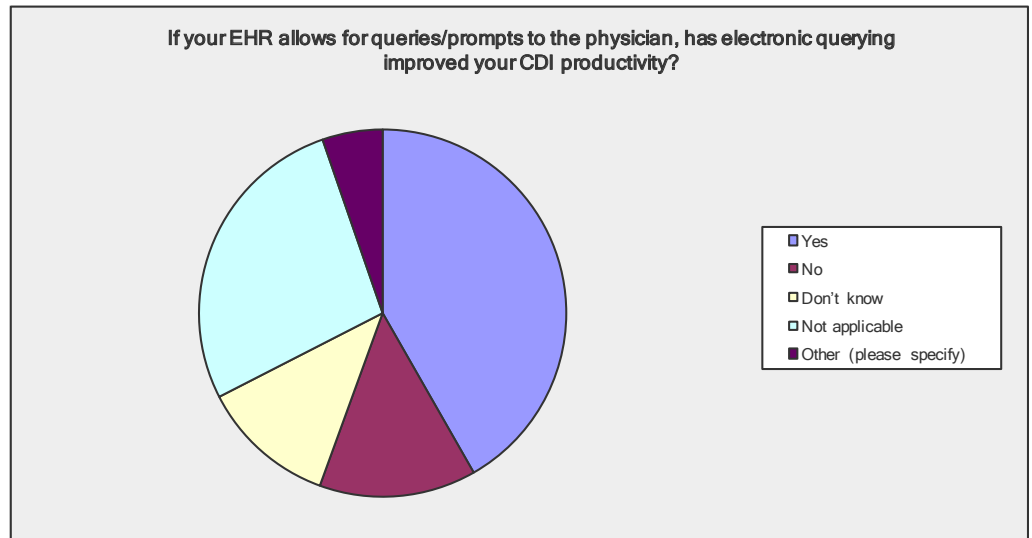
## Set CDI productivity expectations, but don't look for a national standard



If your EHR allows for queries/prompts to the physician, has electronic querying improved your CDI productivity?		
Answer Options	Response Percent	Response Count
Yes	41.7%	172
No	13.8%	57
Don't know	11.9%	49
Not applicable	27.2%	112
Other (please specify)	5.3%	22
<b>answered question</b>		<b>412</b>
<b>skipped question</b>		<b>2</b>

### Open-ended responses

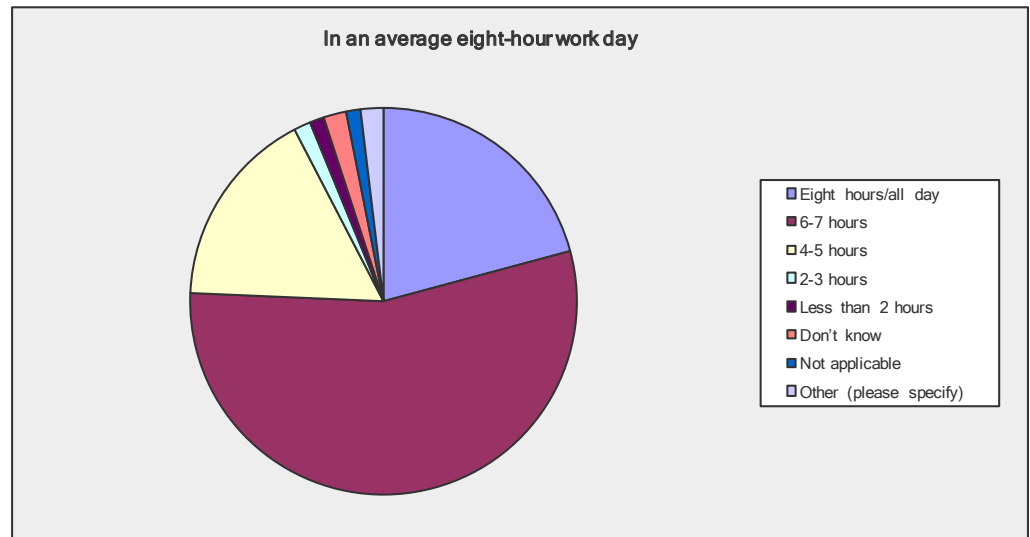
- Due to legal concerns we don't send electronic queries
- Started out with EHR, no basis for comparison
- Not all physicians will reply to electronic queries
- equals about the same as on paper; they do not have to go to floor to place on hard chart but they do have to transcribe into EMR
- We do not have electronic querying yet. We email to a couple of hospitalist groups only, but most clarifications are left on the chart
- Our EHR does not prompt providers
- MD requested verbal queries only even though our EHR does written queries very well



**In an average eight-hour work day, approximately how much time do your non-manager CDI specialists dedicate to focused record review? Focused record review is defined as time spent on record review alone, not performing physician education, participating in meetings, writing appeals, etc.**

Answer Options	Response Percent	Response Count
Eight hours/all day	20.8%	86
6-7 hours	54.8%	227
4-5 hours	16.7%	69
2-3 hours	1.4%	6
Less than 2 hours	1.2%	5
Don't know	1.9%	8
Not applicable	1.2%	5
Other (please specify)	1.9%	8
<b>answered question</b>		<b>414</b>
<b>skipped question</b>		<b>0</b>

## Set CDI productivity expectations, but don't look for a national standard



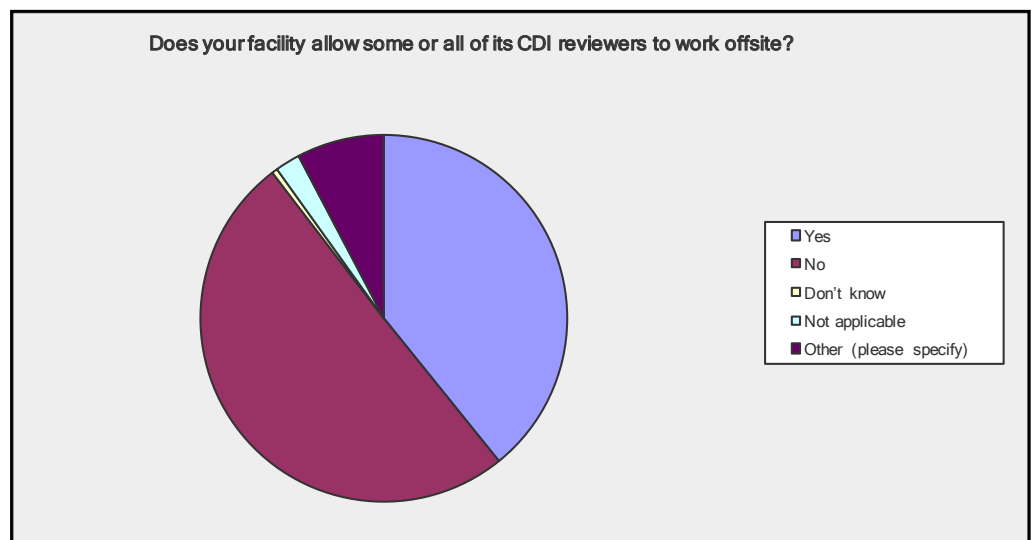
**During dedicated chart review time, in your experience which of the following variables make the greatest impact on CDI productivity? Please rate in order of importance (1=greatest impact, 2=next greatest impact, etc.)**

Answer Options	1	2	3	4	5	6	7	8	Rating Average	Response Count
Experience of reviewer—seasoned vs. inexperienced CDI	191	67	41	20	15	7	7	3	2.17	356
Complexity of the account and/or diagnosis(es) under review	78	97	67	44	30	35	14	4	3.23	375
Reviewing charts on an electronic record vs. reviewing paper or hybrid charts	44	61	64	51	35	30	13	4	5.11	358
Composing free-text queries vs. using preformatted query templates	11	28	49	76	69	69	28	9	5.25	365
Reviewing for financial metrics only (CC/MCC) vs. severity of illness/risk of mortality or other quality elements	12	52	55	68	59	33	28	12	5.27	357
Verbally querying physicians vs. electronic or written prompts only	7	26	42	43	76	71	55	19	5.97	375
Remote working environment vs. onsite	37	22	20	18	25	25	52	38	10.50	385
Computer assisted coding (CAC)/ natural language processing (NLP) tools that flag nonspecific documentation vs. no CAC/NLP	19	27	26	28	26	27	33	20	11.63	367
<b>answered question</b>										<b>412</b>
<b>skipped question</b>										<b>2</b>

Does your facility allow some or all of its CDI reviewers to work offsite?		
Answer Options	Response Percent	Response Count
Yes	39.2%	162
No	50.4%	208
Don't know	0.5%	2
Not applicable	2.2%	9
Other (please specify)	7.7%	32
<b>answered question</b>		<b>413</b>
<b>skipped question</b>		<b>1</b>

**Open-ended responses**

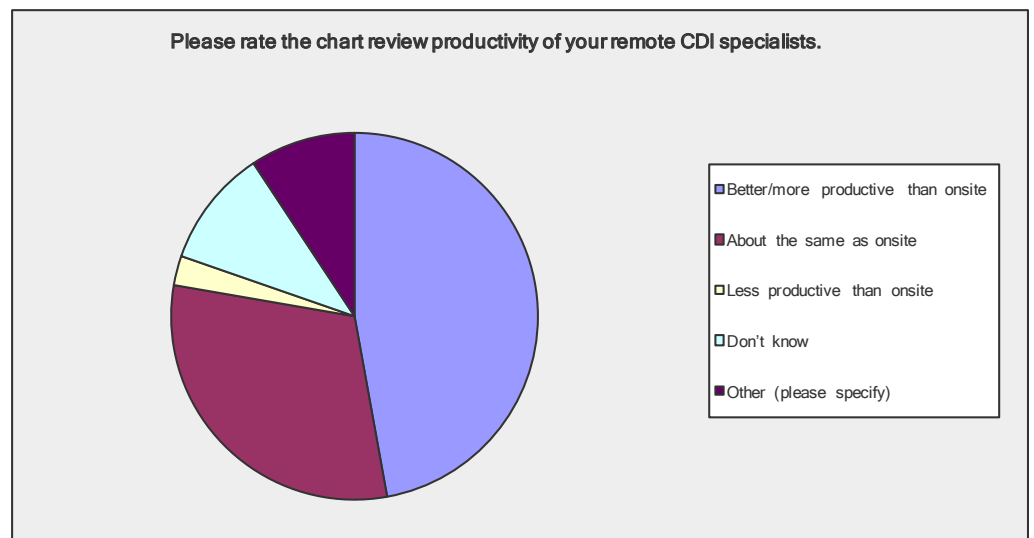
- On a very rare occasion.
- Only one, due to medical condition
- CDI reviewers work off site 2 days a week and onsite 3 days a week
- 2 days a week from home and the rest on site
- Agency staff are remote permanent staff are onsite
- Only for post discharge reviews
- 1 day per week
- Only during inclement weather
- All work offsite





## Set CDI productivity expectations, but don't look for a national standard

Please rate the chart review productivity of your remote CDI specialists.		
Answer Options	Response Percent	Response Count
Better/more productive than onsite	47.2%	91
About the same as onsite	30.6%	59
Less productive than onsite	2.6%	5
Don't know	10.4%	20
Other (please specify)	9.3%	18
<b>answered question</b>		<b>193</b>
<b>skipped question</b>		<b>221</b>



Please explain why remote CDI specialists in your facility are less or more productive from a chart review perspective than those onsite.	
Answer Options	Response Count
	144
answered question	144
skipped question	270

### Open-ended responses

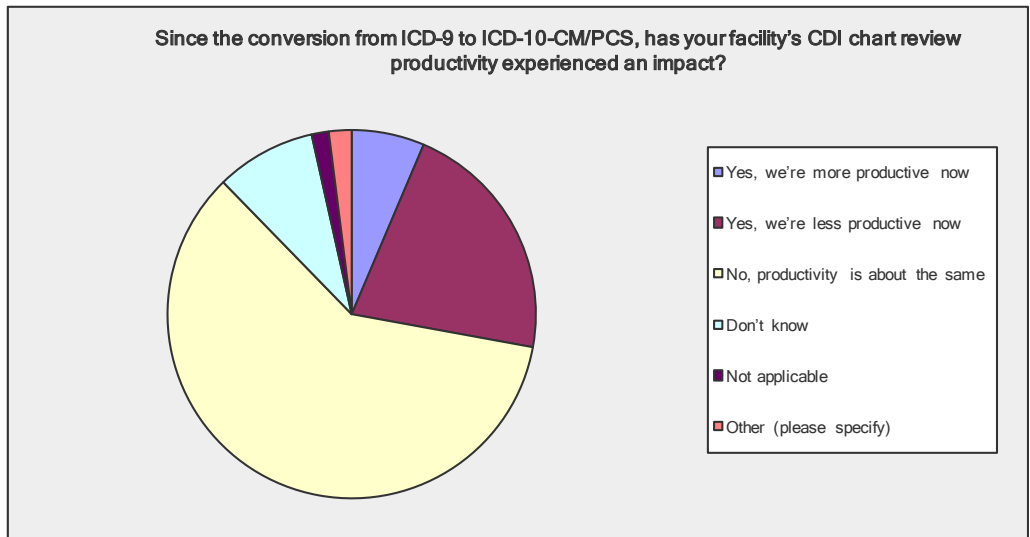
- Less distractions from co-workers
- They strive to be more productive and are less distracted by environmental factors seen when on-site. They make out time to work and they concentrate and work.
- Less in office chit chat and commute time in a very heavy traffic city that lasts 4 hours morning and evening
- Review all hours of the day or night.
- Most of us know the physicians and mid-levels that round on patients and they know us and the response for queries about the same
- Productivity is the same.
- Less productive since there is no physician education. Remote CDI's changing the profession by multiple written queries and providers are coached with the terms by multiple queries for same diagnosis which leads them to write these diagnoses frequently, when its not warranted
- Onsite CDIS's attend presentations. more social interactions, and require time to get from office to other locations at the facility which all take time away from productivity.
- Remote CDIs have less responsibility--i.e., following up on coder queries.
- I believe they don't track their time appropriately--leave their work for personal tasks and don't realize how much time they actually used away from work.
- We will feel more independent, trusted, and that our lives are respected.
- Review process in EPIC is the same, regardless of location
- The remote CDI specialists are less distracted by outside influences, but they have less interaction with staff and physicians, which is why I think it is a good idea to do both.

## Set CDI productivity expectations, but don't look for a national standard

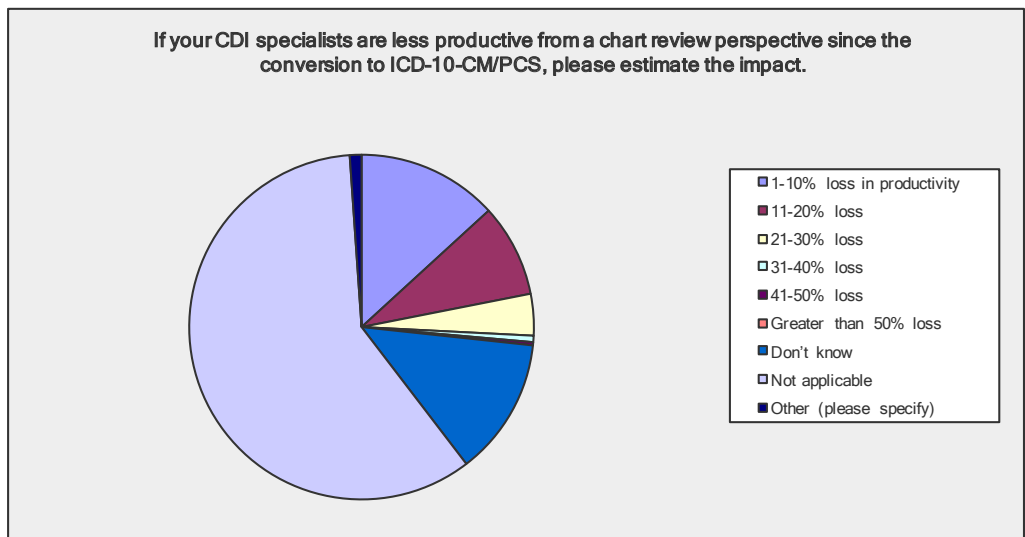
Since the conversion from ICD-9 to ICD-10-CM/PCS, has your facility's CDI chart review productivity experienced an impact?		
Answer Options	Response Percent	Response Count
Yes, we're more productive now	6.4%	26
Yes, we're less productive now	21.5%	88
No, productivity is about the same	59.9%	245
Don't know	8.8%	36
Not applicable	1.5%	6
Other (please specify)	2.0%	8
<b>answered question</b>		<b>409</b>
<b>skipped question</b>		<b>5</b>

### Open-ended responses

- At the beginning less productive but we are back to baseline
- Encoding is much more time-consuming, which is a significant impact, but we are reviewing the same number of charts.
- I know initially it hurt productivity.
- PCS has been a challenge even with the encoder. The CDS depending on their exposure to surgical procedures can be slowed down quite a bit with something they are unfamiliar with coding.



If your CDI specialists are less productive from a chart review perspective since the conversion to ICD-10-CM/PCS, please estimate the impact.		
Answer Options	Response Percent	Response Count
1-10% loss in productivity	13.2%	47
11-20% loss	8.7%	31
21-30% loss	3.9%	14
31-40% loss	0.6%	2
41-50% loss	0.3%	1
Greater than 50% loss	0.0%	0
Don't know	12.9%	46
Not applicable	59.3%	211
Other (please specify)	1.1%	4
<b>answered question</b>		<b>356</b>
<b>skipped question</b>		<b>58</b>

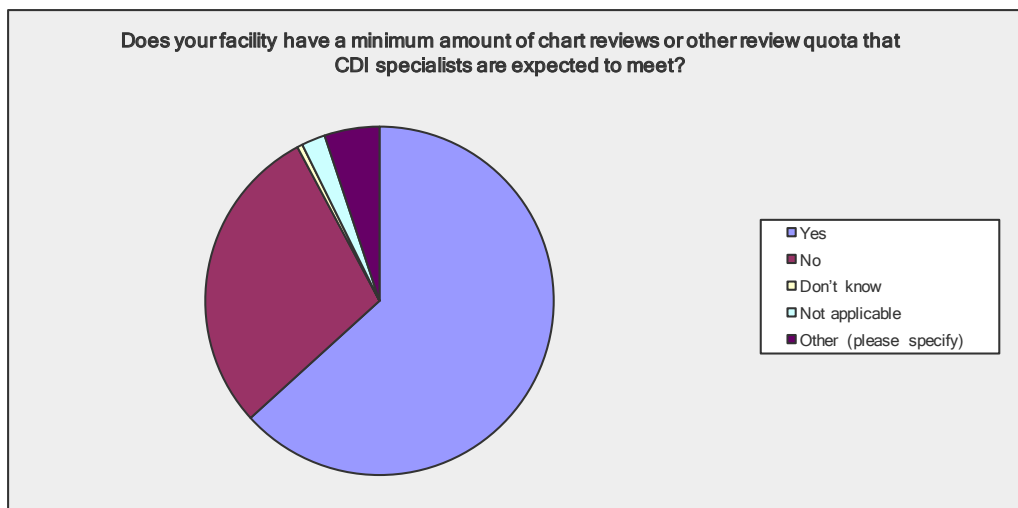


## Set CDI productivity expectations, but don't look for a national standard

Does your facility have a minimum amount of chart reviews or other review quota that CDI specialists are expected to meet?		
Answer Options	Response Percent	Response Count
Yes	63.2%	258
No	28.9%	118
Don't know	0.5%	2
Not applicable	2.2%	9
Other (please specify)	5.1%	21
<b>answered question</b>		<b>408</b>
<b>skipped question</b>		<b>6</b>

### Open-ended responses

- 85% of all inpatients
- New admits are divided up evenly each day
- All that are on our list
- Yes, but it is not achievable
- We are assigned to a floor and the expectation is to complete all new admissions and continued stay reviews as well as all insurance requested reviews for utilization review.
- a preferred target
- Eight to 12 new cases and 8 to 12 re-reviews per day.
- Varies depending on assigned units
- We are expected to capture all inpatients during the weekdays.
- Goal is 100% Medicare, benchmark 90% admissions
- We are assigned areas and expected to get all of our area completed. The team works together to help cover where ever needed depending on census.
- We do not have quotas, but review by payer. Currently increasing the reviews to capture all payer by FY 2018.
- We have guidelines/expectations but not quotas.
- We are in the process of developing productivity standards.



Please leave any other comments you have below about this survey or CDI productivity in general.

Answer Options	Response Count
	88
answered question	88
skipped question	326

**Open-ended responses**

- Other factors affecting productivity are coder mismatch emails and the level of noise in the work environment.
- Reviewing for quality measures such as PSI, HAC, or mortality has decreased our productivity.
- ICD-10 slowed down encoding and review of surgicals, but our review numbers increased in January with Medicaid expansion.
- CDI productivity will continue to improve as we are able to work more days from home. Also our productivity would increase with an educated CDI nurse clinician available to help with our weaknesses.
- With all the technology available with EMR, e-mail, phone messaging, there is little need to be present at the work place.
- Chart reviews are more complex then they were 10 yrs ago. More detail for SOI/ROM, quality metrics/core measures, DRG reconciliation, etc. Back in the day, it was do you have a CC or not? Then you moved on to the next review.

## Set CDI productivity expectations, but don't look for a national standard

- I believe the more seasoned the CDI, the queries are at a higher level concerning SOI/ROM.
- Grand Rounds has yielded the greatest return of documentation with hospitalists for specificity/clarification with a query (or multiple) verbal.
- There is too much focus on quantity versus quality in this specialty. RNs have critical thinking skills and reviews need to have a focus so that the patients reviewed are the ones where there will be the opportunity for the most bang for your buck.
- With our day we do concurrent education with our physicians. This sometimes slows productivity; however the benefit outweighs the extra time.
- We just implemented EMR! Still working out the bugs. From that our productivity is half of what it was before EMR.
- With the implementation of EHRs and electronic queries, the productivity is increasing steadily. Add to that a CDI centric application, such as CAC and CDIS, the efficiency of the specialist has increased tremendously.
- With the increase in CMS metrics, it is taking a CDI longer to review a chart. We are getting the expected quantity done but the quality is suffering. Being a CDI today is a 100% changed from when I started 14 years ago.

### WHAT IS AN ACDIS WHITE PAPER?

An ACDIS white paper discusses CDI best practice, advances new ideas, increases knowledge, or offers administrative simplification. It can be written by an ACDIS Advisory Board member or a smaller subset of the board, or written by external sources subject to board approval. It is less formal than a position paper.