Resident integration with inpatient clinical documentation improvement: a quality improvement project

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ABSTRACT

Background Clinical documentation improvement (CDI) is an increasing part of health system quality and patient care with clinical documentation integrity specialists (CDIS) expanding into daily physician workflow. This integration can be especially challenging for resident teams due to increased team size, lack of documentation experience, and misunderstanding of both CDIS and CDI purpose.

Problem The University of Kansas Health System Internal Medicine residency programme reported challenges with CDIS and resident workflow integration specifically in navigating and understanding CDIS documentation queries, CDIS interruption of interdisciplinary huddles, and general misunderstanding of CDI and the role of CDIS.

Methods A quality improvement project was undertaken to integrate CDIS more effectively into resident workflow. Combined with a resident debrief session to identify general areas of concern, surveys were administered to internal medicine residents, resident rounding faculty and CDIS team members to identify specific barriers to CDIS–physician integration.

Intervention A collective group of CDIS member teams, internal medicine chief residents and faculty physicians was formed. Changes made to the CDI process based on survey feedback included (1) improving formatting of CDIS electronic query templates, (2) standardisation of timing for CDIS verbal queries during interdisciplinary huddles, and (3) development of a resident didactic session focused on the role of CDIS and documentation's impact on quality, safety and outcomes as related to the hospital, provider and patient.

Results Surveys completed after implementation showed a positive impact on electronic query template changes and perception of CDIS at interdisciplinary huddles. The didactic curriculum was effective in helping residents understand the role and limitations of CDIS and how documentation affects quality of care.

Conclusion CDIS–physician integration into resident teams can occur through a collaborative focus on specific aspects of physician workflow and improving understanding of the impact of CDI on patient safety and quality of care.

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WHAT IS ALREADY KNOWN ON THIS TOPIC?

⇒ Many studies have been published outlining the benefits of clinical documentation improvement (CDI) and the role of clinical documentation integrity specialists (CDIS) in improving patient care quality and outcomes. While barriers to CDI integration are well known, there are limited studies focusing specifically on CDI integration into resident workflow.

WHAT THIS STUDY ADDS?

⇒ This study focuses on the resident perception of CDI and improving misunderstanding of documentation's use in patient care and outcomes.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY?

⇒ This study shows the importance of physician–CDIS collaboration to integrate CDI directly into existing resident workflow by engaging documentation authors in areas they feel are important.

has been challenging for clinical documentation integrity specialists (CDIS) and physicians alike. Contributing factors included a lack of resident understanding about the roles and limitations of CDIS and the general purpose of CDI.

The TUKHS CDI programme was formed in 2006, and at that time, it focused solely on retrospective chart reviews and querying only specific service lines among Medicare patients. The team of six CDIS members transitioned to concurrent chart reviews and expanded to 12 members in 2013, extending to all payor groups across most service lines. At the time of review, the hospital had 970 licensed beds with 916 staffed hospital beds and reported the Medicare patient population was between 32% and 35% of the total inpatient population. In 2017, CDIS began attending interprofessional team huddles one to two times per week as part of a hospital-wide initiative. During the implantation of this project, internal medicine inpatient resident teams included 20 faculty physicians and over 100 residents from categorical, combined

PROBLEM

The University of Kansas Health System (TUKHS) integration of a clinical documentation improvement (CDI) programme into internal medicine resident rounding teams

med–psychiatry and various preliminary designations. Documentation on these teams was generally completed by residents with attestations by the faculty. The primary method for CDIS documentation query distribution was through secure email delivered to the resident as the primary recipient and copied to the faculty physician, which included the current documentation and clarification question.

In the fall of 2018, a resident debriefing session was held due to increased frustrations with CDIS and the documentation query process. Residents specifically identified concerns related to the CDIS documentation queries, CDIS interruption of interdisciplinary huddles, and general misunderstanding of CDI and the role of CDIS.

Electronic queries

Residents reported challenges related to the query template used by CDIS, both in understanding the specific question being asked and in interpreting what additional information was needed. Further comments focused on query content, namely, misunderstanding the difference in coding and clinical terminology, the purpose for additional diagnostic quantifiers (ie, specific stage of chronic kidney disease), and perception of CDIS focus on non-acute diagnoses such as obesity and malnutrition.

Interdisciplinary huddles

Occurring daily, these team meetings coordinated by Social Work and Nurse Case Management with attendance by faculty physicians, resident physicians, pharmacy, and nursing are intended to be brief touch points focused on each patient's discharge plan and needs. When present, CDIS would ask verbal documentation queries as each patient was being discussed. Many felt this was not relevant to the discharge planning purpose of the meeting and additionally caused delays in nurses resuming patient care. Similar to electronic queries, residents reported difficulty in interpreting what additional information was needed.

CDI and CDIS understanding

No formal educational process existed for physicians about the role of CDIS, documentation regulations, or application of CDI. Consequently, residents perceived CDI, CDIS, and the queries as a primary means for financial gain, benefiting the hospital and their faculty physicians.

In response, our QI project aimed to improve physician-CDIS integration in the three main areas: (1) improving formatting of CDIS electronic query templates, (2) standardisation of timing for CDIS verbal queries in interdisciplinary huddles, and (3) development of a resident didactic focused on the role of CDIS and the effect of documentation on quality, safety, and outcomes as related to the hospital, provider, and patient.

BACKGROUND

CDI programmes have become an increasing part of the health system environment with CDIS teams, often consisting of specialty trained nursing, acting as liaisons between coders and physicians.[1] CDIS team members review charts and identify gaps in documentation for conditions that were evaluated, monitored or treated during a hospitalisation.[2] This documentation has traditionally been associated with patient acuity, complexity and illness severity in terms of payor reimbursement.[3] However, the increasing impact of CDI has shifted beyond a financial focus and is now integrated into care quality, safety, clinical and research domains,[4] health system planning, resource allocation and patient outcomes.[5] The incorporation of CDI programmes has been largely successful, with the collaboration between registered CDIS and physicians resulting in more accurate and complete documentation.[1] As a result, CDI has been effective in identifying patient acuity and anticipated care needs.[6]

While documentation is increasingly important in care quality, the process for providers can be difficult. One contributing factor is increased patient volume, care complexity, and expanding involvement of consultation and care teams.[5] However, despite this increasing complexity, ongoing physician education in this area is often lacking[7] and the use of the electronic medical record (EMR) for documentation can have negative impacts on patient care, workflow and satisfaction.[8] Specifically, the perception of time spent in the EMR for documentation is reported as comparable to time spent in patient care, and more than time on placing orders, admission request calls, physical exams and procedures.[7]

Frustrations with CDI can exist in the query process itself, often related to the disconnect between clinical terminology and the specific codes used to translate into diagnostic-related groups.[1] This process is further complicated with increasing complexity of coding terminology, number of diagnoses and changes in documentation language from International Classification of Diseases, 9th and 10th Revisions.[9] Clinically, there may be additional confusion related to ambiguity surrounding the exact definition of a diagnoses,[7] multiple diagnostic criteria,[10] or evolving medical knowledge and diagnostic capabilities.[4] When these clinical and coding terminologies do not match, subsequent queries for documentation clarification may result[4] and further escalate provider frustration.

Further, the strict guidelines that regulate CDIS related to query delivery may not be familiar to clinicians. This includes inability of CDIS to assume any condition or the inability to provide documentation themselves. There are also specific rules about how documentation must support objective findings and which type of provider must document.[9] Clinicians may assume they do not need to document a diagnosis already noted by another healthcare professional; however, groups determined for establishing diagnoses are limited to those such as physicians,

physician assistants and nurse practitioners.[7 9] This can present a challenge when appropriate assessment and diagnoses are documented by others, sometimes more qualified clinical providers (ie, wound care nurse) who are not part of these groups[2] and consequently require documented confirmation by the primary provider.[9]

Resident integration with CDI may be especially challenging. Similar to other groups, residents indicated negative perceptions of the EMR including reduction in patient time and care quality.[11] Despite resident perception, residency may provide optimal timing for training. When surveyed about their knowledge of documentation practices, most emergency medicine residents felt they did not receive targeted or adequate training for documentation. However, most agreed that formal education on the topic should be provided due to its importance for future practice.[12]

To improve clinician–CDIS integration, documentation experts identified the need to involve physicians, CDIS and coders in the process[13] with expanded attention to groups who provide documentation, including resident trainees and advanced practitioners.[14] With each group involved, it is important to understand their unique needs to deliver a distinct approach to integration,[2] including the adaptation into existing workflows and ongoing training for long-term success.[5] Education should include identification of a CDIS champion as part of an interdisciplinary team and emphasise the importance of documentation, providing transparency with measurements and metrics that may be related to the process.[15] CDIS involvement in physician education is essential to bridge the gap with documentation deficiencies.[1]

Further, physician buy-in is necessary for a successful documentation improvement programme,[1] and this can be sought through deliberate implementation into their current workflow. This includes ensuring documentation queries are consistent with current clinical practice and evidence-based guidelines[2] and sending documentation queries while patients are still hospitalised.[14] Lastly, provider document template standardisation and the use of smart phrases can be helpful to reduce documentation burden or capture common documentation needs.[16 17]

Finally, the impact of an educational curriculum can be beneficial for all stakeholders. Clinicians can learn and understand the impact of documentation on care provided while simultaneously recognising how it helps the health system more appropriately assist with resource allocation.[14] CDIS may benefit from reduced query delinquency, improved response rates and improved understanding of physician workflow.[15]

METHODS
Online surveys were distributed to internal medicine residents, faculty and CDIS team members at the time of the resident debriefing meeting and after the intervention was implemented. Survey items addressed electronic query clarity, huddles, and general physician understanding

of CDI and CDIS. Survey questions related to electronic query clarity focused on template design as related to general ability to locate and understand the questions being asked. Huddle questions inquired about preference for CDIS members at team huddles, preferred timing of query discussion and ability to understand verbal queries. Questions related to physician understanding of CDIS roles were generalised to physician-perceived understanding of how CDI impacts the hospital, the provider and the patient.

Descriptive statistics were calculated for survey respondent characteristics and responses to survey questions. χ^2 tests were performed to evaluate differences between preintervention and postintervention survey responses. RedCap, a Health Insurance Portability and Accountability Act (HIPAA) compliant web-based application was used to collect and manage study data.[18] All analyses were conducted using SAS V.9.4. Statistical significance was determined at the 0.05 level.

INTERVENTION
Following completion of pre-intervention surveys, a collaborative group was formed among CDIS member teams, internal medicine chief residents and faculty physicians. Interventions were assigned to three main themes based on feedback from surveys: (1) improvement of clarity of CDIS electronic queries; (2) standardisation of huddle timing of CDIS verbal queries; and (3) improvement of understanding of CDIS roles, limitations and overall CDI impact. Interventions were implemented on 1 July 2019 to coincide with residency onboarding and transition.

Electronic queries
CDIS query formatting was first reviewed. The template was reorganised and modified to ensure provider ability to quickly find and understand the question being asked. CDIS leadership confirmed updates adhered to their regulations and confirmed ability to standardise use among all CDIS members.

Interdisciplinary huddles
Most providers preferred verbal queries delivered at the end of huddle to avoid interruptions. CDIS leadership confirmed the end-of-huddle objective. Per additional requests, paper handouts were provided to residents that summarised the verbal queries discussed at huddle.

CDI and CDIS understanding
To improve understanding, a didactic session was developed for residents to increase understanding the roles and limitations of CDIS as well as documentation's impact on the hospital, the patient and the provider. Hospital impact discussion included patient acuity, outcomes and mortality, readmissions, allocation of resources and hiring. Patient impact discussion focused on transitions of care and placement, hospital-acquired conditions and complications, and value-based care. Additional impact on the provider included safety in care transitions and

handoff, and the setting safe patient census for rounding and cross coverage.

Clinical scenarios were created to specifically address resident misunderstanding of query content. Changes in anticipated severity of illness, risk of mortality and length of stay were demonstrated through simple modifications such as interchanging coding and clinical terminology, the use of diagnostic quantifiers (ie, chronic stage of kidney disease) and appropriate documentation of non-acute diagnoses such as obesity and malnutrition.

Content was developed with CDIS team members who were present at all lectures to familiarise residents with their roles and limitations including regulations that govern the query process, the differences in coding and clinical terminology and the physician role in affirming diagnoses that may be already present in the documentation of other provider groups.

Lectures were held in the first 4 weeks of the academic year to help new interns and transitioning senior residents understand the specific role of CDI in their workflow.

RESULTS

Preintervention surveys were completed by 8 of 20 faculty (40%), 64 of the 107 residents (60%) and 18 CDIS (100%). For electronic queries, when asked if the form was easy to navigate, 37.5% of faculty and 18.3% of residents agreed or strongly agreed compared with 66.7% of CDIS. When asked if the question in the query was easy to understand, 50% of faculty and 24.2% of residents agreed or strongly agreed (table 1).

For huddles, when asked if having a CDIS presence was helpful, 25% of faculty and 37.7% of residents agreed or strongly agreed compared with 76.5% of CDIS. For verbal queries, 75% of faculty agreed or strongly agreed the question was easy to understand compared with 44.1% of residents (table 1). Most faculty (87.5%) and residents (74.4%) preferred query discussion at the end of huddle.

For resident understanding of documentation impact, only 11.1% agreed or strongly agreed in understanding of the impact on the patient contrasted with 34.1% indicating understanding of impact for their faculty and 95.4% indicating understanding of impact for the hospital. When residents were asked specifically if CDI helps them take care of patients, only 14.3% agreed or strongly agreed (figure 1). While limited, comments about impact on their faculty and the hospital were tied to billing and reimbursement.

Post intervention, surveys were completed by 7 of 20 faculty (35%), 41 of 111 residents (37%) and 13 of 18 CDIS (72%). For the updated electronic query template, ease of navigation and ability to understand the question being asked improved for all groups. For huddles, the

Table 1 Comparison of preintervention and postintervention perception of electronic query navigation and understanding, perception of CDIS presence at huddle, and ability to understand verbal queries during huddle

	Group	Preintervention N % agreement	Postintervention N % agreement	χ^2 (df=1)	P value
Electronic query: ease of navigation	Faculty	8 37.5	7 71.4	1.73	0.1888
	Residents	60 18.3	41 29.3	1.66	0.1981
	CDIS	18 66.7	12 83.3	1.02	0.3318
Electronic query: ease of understanding	Faculty	8 50.0	7 100	4.77	0.0289
	Residents	66 24.2	41 46.3	5.61	0.0178
	CDIS	18 66.7	12 85.7	1.02	0.3318
Huddle: Benefit of CDIS Presence	Faculty	8 25.0	7 85.7	5.53	0.0187
	Residents	61 37.7	41 61.0	5.33	0.0210
	CDIS	17 76.5	13 61.5	0.78	0.3765
Huddle: ease of verbal query understanding	Faculty	8 75	7 85.7	0.27	0.6047
	Residents	59 44.1	41 70.7	6.95	0.0084
	CDIS	17 76.5	11 58.8	1.47	0.2250

CDIS, clinical documentation integrity specialists.

Pre Didactic Understanding of CDI Impact
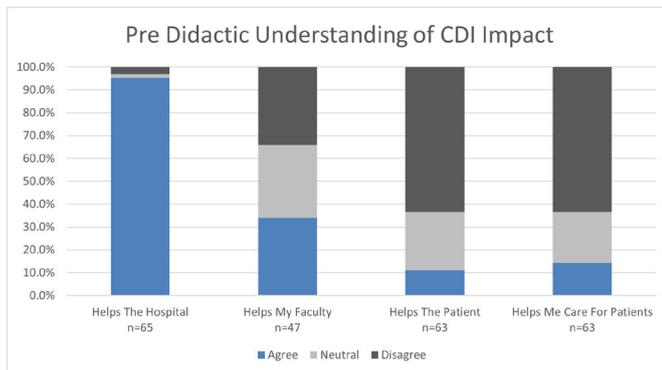
Figure 1 Resident predidactic level of agreement about the importance of documentation on the impact of the patient, the provider and the hospital. Note: not all residents were asked if documentation helps my faculty. CDI, clinical documentation improvement.

majority of faculty (85.7%) and residents (61%) agreed or strongly agreed CDIS presence at huddle was helpful. During huddles, most faculty (85.7%) and residents (70.7%) agreed or strongly agreed the verbal queries were easy to understand (table 1). Most faculty and residents (52%) reported end-of-huddle CDI discussions were occurring often or always.

Of the residents who attended the didactic sessions, the majority indicated an improved understanding of documentation impact on the patient (78.8%), physician (69.7%), hospital (87.8%) and improved understanding of the CDIS role (66.7%) (figure 2). Regarding future training, all faculty (100%) and most residents (58%) felt that ongoing meetings with CDI to review coding and terminology would be beneficial.

DISCUSSION
Summary
Overall, our planned interventions were successful in meeting our goals by aligning our interventions with the recommendations of others, specifically creating a CDIS–physician collaborative team.[1 13] The inclusion of

Post Didactic Understanding of CDI Impact & Role of CDIS
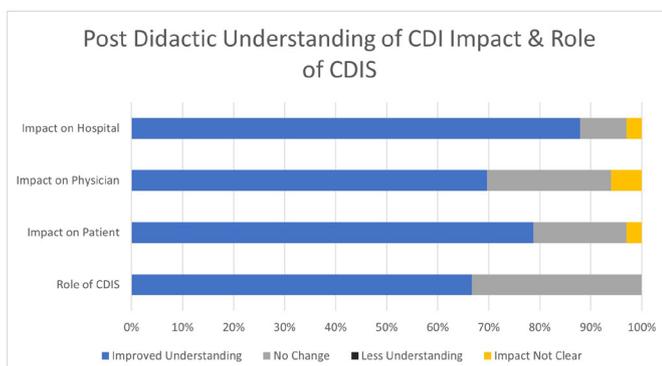
Figure 2 Resident postdidactic assessment in understanding documentation impact on the patient, the provider, the hospital and role of CDIS (n=33). CDI, clinical documentation improvement; CDIS, clinical documentation integrity specialist.

residents' views was essential for implementing changes and understanding of CDI unique to our group.[2 14]

For queries, most physicians during preintervention felt the electronic query was difficult to navigate or understand. After the intervention, physicians indicated a significant improvement to the template and reported greater clarity of query questions. Preintervention, most physicians did not agree that CDIS presence at huddle was helpful. Post intervention, most physicians were favourable of CDIS at huddle. However, the timing of verbal query delivery was not consistent. For understanding of CDI impact, we found that before our intervention most physicians felt CDI primarily benefited the hospital, and the positive influence on patient quality, care and outcomes was less understood. Post intervention, residents felt the curriculum helped increase their understanding about both the role of CDI for the patient and provider and the role of CDIS, and they recommended didactic continuation.

Sustainability
Our curriculum has continued annually for each intern class through collaborative delivery with CDIS. The focus remains on documentation's beneficial effect on patient outcomes, safety and care quality. Similar to other investigators, we found that ongoing training and transparency are important.[14] As such, CDIS presence at these meetings is standard and essential to educating residents about their roles and regulatory limitations. Similar to other reports, our residents indicated low familiarity with documentation impact prior to residency.[12]

The CDIS–physician collaborative team remains active where physician champions can address ongoing resident concerns and questions. Additional educational efforts from the CDIS team included resident handouts to prioritise queries common to internal medicine and intranet-based updates for updates and trend that affect the larger Health System.

Beyond educational interventions, change has continued to improve workflow. Despite the creation of a new electronic query template, there were still challenges with consistent use among CDIS. Electronic queries are now delivered exclusively through the EMR rather than email, which has streamlined the process. Smart phrases were developed to autopopulate common queries that often are overlooked, such as malnutrition and obesity.

For huddles, paper handouts requested by residents were attempted for a brief period but were later abandoned due to time constraints. Since the project started, CDIS no longer attend interdisciplinary huddles, instead focusing on improving improve timeliness of predischarge query delivery.

LIMITATIONS
There are limitations to this study. Small sample sizes and low response rates were noted in both surveys. However, we feel that the responses reflect the general opinions of

the larger group. Additionally, responses to some open-ended questions were difficult to interpret as questions were broad and some answers were not clear, and slight variations in the questions asked preintervention and post intervention did not allow for direct comparison.

Although the advantages of quality clinical data are critical to ensuring timelier reimbursements from insurers and payers and avoiding costly penalties for non-compliance,[19] our major focus was to address the general misunderstanding of CDI and the role of CDIS among residents as a first-step approach to improving communication, documentation skills, coding accuracy and care delivery. Engaging physicians is important to the success of CDI programmes, and the literature on implementing CDI stresses the importance of education as a means of increasing clinician engagement.[3 20] Future quality improvement projects are warranted which measure how improvements in effective and timely documentation results in increased hospital revenue and quality of care provided to patients.

CONCLUSION

In summary, CDIS–physician integration can be challenging but is essential. Our project found successes in prioritising areas specific to our group, namely, electronic query formatting, huddle standardisation, and general understanding role of CDIS and the impact of documentation as related to patient care, quality and outcomes. The creation of a CDIS–physician collaborative team helped target unique areas for our group and provide simple but effective interventions that were sustainable. Further, this collaboration provided a platform for ongoing education, both in understanding CDI regulations and documentation's role in patient care. Replication of this process could be easily adapted to other health systems and residency programmes.

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