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The Impact of CAPD in Epic to Strengthen ICD-10-CM-Pertinent Documentation & Hospital Quality Rankings

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Introduction

Competition amongst hospital systems, both nationally and regionally in the U.S., has increased tremendously in recent years. National and state-wide hospital rankings, such as CMS Star Ratings and US News & World Report (USNWR), are now tangible to hospital system marketing and promotions for attracting patients to their enterprises.

Most hospital quality ranking methodologies rely on a combination of physician survey and hospital claims data along with structural profiles of each provider organization. Since hospital infrastructure and resourcing cannot be easily changed year-over-year, the best opportunity to help providers improve or maintain their rankings is to focus on the physician peer surveys per specialty (i.e., the Process/Expert Opinion component), and document more accurately and completely the various comorbidities predicting patient complexity considering their actual occurrence (i.e., the Outcomes component for mortality or readmissions).

USNWR scores each of these components differently in its annual analyses determining adult hospital rankings as outlined in Table 1 below.

[1] [2]

Table 1. 2021-22 Overall Weight by Component

Component	Cardiology & Heart Surgery (%)	Neurology & Neurosurgery (%)	Rehabilitation (%)	All Other Specialties (%)
Outcomes	37.5%	37.5%	20.0%	37.5%
Structure	30.0%	30.0%	25.0%	30.0%
Process/expert opinion	24.5%	25.5%	55.0%	27.5%
Patient experience	5.0%	5.0%	0.0%	5.0%
Public transparency	3.0%	2.0%	0.0%	0.0%

The Process/Expert Opinion plus the Outcomes components equate to over 60% of the overall score for most specialties. Most organizations compete with very small differences in these scores making it a "game of inches" to incrementally improve the scores to beat the nearest competitor.

The goal for any healthcare provider should be to determine their need to be ranked in the top 50 for each specialty, and if the need is there, to build the improvement and subsequent maintenance of component scores which can be controlled into the daily workflow of the organization. Otherwise, a hospital system is liable to jump up in the rankings one year if they mount a campaign to educate and incentivize providers and administrative staff, but then can fall back to its former position if the scores are not maintained systematically.

The primary measure encompassing 30% of the Outcomes component is the mortality score, i.e., how many patients are alive at 30 days after inpatient hospital admission. (Note: Another additional 7.5% of this score is the rate of discharge status to home, which has little variability and is difficult for a hospital system to control; however, hospitals should assure that these meet the UB-04 and CMS's definitions as to ensure their integrity).

[1] RTI International. Best Hospitals and Best Children's Hospitals Rankings. Available at https://www.rti.org/impact/best-hospitals-and-best-childrens-hospitals-rankings, accessed April 2022

[2] Olmsted, M. G., Powell, R., Murphy, J., Bell, D., Silver, B., Stanley, M., Sanchez, R. T., & Allen, R. (2021). Methodology: U.S. News & World Report Best Hospitals 2021-22: Specialty Rankings. RTI International. Available at https://www.rti.org/publication/methodology-16, accessed April 2022.

Risk-adjustment variables	Description
Patient age at admission	Patient age as a linear variable
DRG roll-up	Rolled up DRG groups that includes the variations w MCC, w CC, and w/o CC/MCC for medical and surgical treatment covered by the project (as shown in the tables in ***Appendix C***).
Sex	Male or female
Year of hospital admission	Quality of care tends to improve over time. This means the risk of adverse outcomes is less year to year. For that reason, year of admission is included as a risk factor.
Elixhauser comorbidities	We controlled for the comorbidities identified by Elixhauser et al as being predictive of mortality.
Medicare status code	The reason or reasons why the patient is eligible for Medicare: age, or age plus end-stage renal failure. This is a proxy for comorbidities.
Socioeconomic status	Patients with lower incomes are typically sicker when they arrive at the hospital and may face more challenges in obtaining or managing their care after they are discharged. This can affect their risk of death, readmission and complications. When hospitals differ by the socioeconomic status of their patients, this can create bias in comparing outcomes. Our risk models include "dual eligibility" as a measure of socioeconomic background. Patients who are eligible for both Medicare and Medicaid are treated as a separate risk group.
Source of admission.	In the discharge to home outcome measure, we controlled for whether a patient came from a skilled nursing facility.

The mortality measure is derived from USNWR's 30-day patient survival based upon their analysis of traditional Medicare (excluding Medicare Advantage) inpatient admission derived from their contractor's analysis of the CMS Inpatient Standard Analytic File (SAF). For each hospital and specialty, USNWR computes a mortality rate for individual service lines defined by their Medicare-Severity Diagnosis Related Group (MS-DRG) or certain principal diagnoses that is risk-adjusted as follows: [3]

Note that most of these variables are predetermined and fixed, such as the patient's age, sex, the reason for being on Medicare in the first place, enrollment in Medicaid, or where the patient came from when he or she entered the facility. What can vary are those factors determined by ICD-10-CM diagnosis code assignment and sequencing that determines what MS-DRG the encounter is assigned to and what chronic conditions predictive of inpatient mortality were present at the time of the inpatient order applicable to the AHRQ Elixhauser comorbidity index (ECI) that is described on the AHRQ website.[4]

Consequently, what facilities, providers, and their clinical documentation and coding integrity (CDI) teams can control is the clinically appropriate documentation which is foundational to the ICD-10-CM affecting ECI-based risk adjustment and other revenue cycle processes determining the UB-04 Source of Admission and Discharge Disposition. Even if a facility performs well in its payment risk-adjustment models, such as MS-DRGs or 3M's All-Payer-Refined DRGs, many may find that their ECI falters since revenue-oriented CDI processes often omit ECI-based risk models. As CDI becomes more complex, reactive, concurrent or post-discharge queries will increase in frequency and difficulty unless some mechanism of capturing ECI-oriented documentation up-front can be accomplished.

Focus on the Elixhauser Comorbidity Index (ECI)

In this case study we show how the implementation of a software technology embedded within the electronic health record (EHR) workflows significantly impacts the ECI for one specialty (Neurology and Neurosurgery) at an urban Midwest hospital system using Epic.

We will also demonstrate our approach to working with CDI queries by focusing on the comorbidities with the highest index weight sorted in decreasing relative weight for expected mortality as described by van Walraven and Moore in the FY2022.1 ECI model. [5] [6] [7]

[3] Ibid.

[4] AHRQ. Elixhauser Comorbidity Software Refined for ICD-10-CM. Available at https://www.hcup-us.ahrq.gov/toolssoftware/comorbidityicd10/comorbidity_icd10.jsp, accessed April 2022.

[5] van Walraven C, Austin PC, Jenings A, Quan H, Forster AJ. A modification of the Elixhauser comorbidity measures into a point system for hospital death using administrative data. Medical Care. 2009 (47):626-633. Available at https://journals.lww.com/lww-medicalcare/Abstract/2009/06000/A_Modification_of_the_Elixhauser_Comorbidity.4.aspx

[6] Moore BJ, White S, Washington R, Coenen N, Elixhauser A. Identifying increased risk of readmission and in-hospital mortality using hospital administrative data: The AHRQ Elixhauser Comorbidity index. Med Care. 2017 Jul; 55(7):698-705. Available at https://journals.lww.com/lww-medicalcare/Abstract/2017/07000/Identifying_Increased_Risk_of_Readmission_and.9.aspx

[7] AHRQ. Elixhauser Comorbidity Software Refined for ICD-10-CM v2022.1, SAS model. Available at https://www.hcup-us.ahrq.gov/toolssoftware/comorbidityicd10/CMR_v2022-1.zip.

Since the top quarter (9 of 38) ECI measures account for over 80% of the total weight, the first nine measures are important focus points for prioritization. While the rest carry less weight, they are still important to identify and devise a strategy for CAPD since many of them also include ICD-10 diagnoses which play a role in DRG and other risk adjustment models.

Note that while certain ECI cohorts have a negative impact on the AHRQ expected mortality regression models, such as Depression and Psychoses, these may have a positive impact in other Elixhauser-applicable risk models, such as the AHRQ readmission measure and the AHRQ Patient Safety Indicators.[8] In addition, due to the proprietary nature of RTI's risk-adjustment methodology involving their USNWR analyses, it is likely that RTI uses different coefficients than those of AHRQ.

Comorbidity Measure	Description	In-Hospital Mortality Index Weight	30-Day, All-Cause Readmission Index Weight
CANCER_METS	Metastatic cancer	23	11
NEURO_OTH	Other Neurology	23	2
LIVER_SEV	Liver disease, moderate to severe	17	10
HF	Heart failure	15	7
COAG	Coagulopathy	15	3
WGHTLOSS	Weight loss	14	6
CANCER_SOLID	Solid tumor without metastasis	10	7
CANCER_LEUK	Leukemia	9	10
RENLFL_SEV	Renal failure, severe	8	8
CANCER_LYMPH	Lymphoma	6	7
DEMENTIA	Dementia	5	1
CBVD	Cerebrovascular disease	5	0
PARALYSIS	Paralysis	4	3
PULMCIRC	Pulmonary circulation disease	4	3
RENLFL_MOD	Renal failure, moderate	3	4
PERIVASC	Peripheral vascular disease	3	1
NEURO_SEIZ	Seizures	2	5
LUNG_CHRONIC	Chronic pulmonary disease	2	4
LIVER_MLD	Liver disease, mild	2	3
HTN_CX	Hypertension, complicated	1	0
ULCER_PEPTIC	Peptic ulcer with bleeding	0	2
CANCER_NSITU	Solid tumor without metastasis, malignant, in situ	0	0
DIAB_UNCX	Diabetes without chronic complications	0	0
HTN_UNCX	Hypertension, uncomplicated	0	0
VALVE	Valvular disease	0	0
ALCOHOL	Alcohol abuse	-1	3
AUTOIMMUNE	Autoimmune conditions	-1	2
NEURO_MOVT	Neurological disorders affecting movement	-1	1
DIAB_CX	Diabetes with chronic complications	-2	4
ANEMDEF	Deficiency anemias	-3	5
THYROID_HYPO	Hypothyroidism	-3	0
AIDS	Acquired immune deficiency syndrome	-4	5
BLDLOSS	Chronic blood loss anemia	-4	2
DRUG_ABUSE	Drug abuse	-7	6
OBESE	Obesity	-7	-2
THYROID_OTH	Other thyroid disorders	-8	0
PSYCHOSES	Psychoses	-9	6
DEPRESS	Depression	-9	2

[8] AHRQ. Patient Safety Indicators (PSI) Parameter Estimates, v2021. Available at https://qualityindicators.ahrq.gov/Downloads/Modules/PSI/V2021/Parameter_Estimates_PSI_v2021.pdf, accessed April 2022.

Consequently, we believe that all ECI cohorts should be captured when possible, no matter what their impact is on one particular risk model.

Artificial intelligence (AI) CAPD (Computer Assisted Physician Documentation) software is meant to help humans in repeatable tasks and for information synthesis. How else would any human being process the 4,500 diagnosis codes to determine which ones were the most relevant to capture and the way the query advice could best be tailored clinically? Also, existing CDI specialists, who are typically coders, nurses or physicians involved in an administrative role, are not resourced or trained to render queries involving quality measures. Consequently, artificial intelligence software can not only facilitate proper CDI workflows, it can predict avoidable healthcare utilization and promote accurate critical thinking and medical decision making.[9]

Elixhauser Comorbidity Index Query Construction Concepts

In preparing its ECI-oriented query process, we examined the definitions manuals for MS-DRGs, APR-DRGs, Hierarchical Conditions Categories (HCCs), the ECI, and CMS mortality and readmission methodologies to identify clinical and coding concepts with the highest impact, investigated how official ICD-10-CM conventions, guidelines, and advice governed code assignment for these models, and integrated physician vocabularies and critical thinking into how to address their potential incomplete or imprecise documentation may inhibit clinically valid code assignment affecting these models.

For example, ICD-10-CM code G92.8, Toxic Encephalopathy, a code assigned when a physician documents toxic-metabolic encephalopathy (TME), does not impact the ECI "Other Neurology" cohort (worth 23 points) whereas delirium due to (not just with) toxic-metabolic encephalopathy (ICD-10-CM F05, Delirium due to known physiological condition) does.[10] [11] In addition, the consensus statement on delirium and encephalopathy written by ten specialty societies, such as the American Academy of Neurology (AAN), American Delirium Society (ADS), and Society of Critical Care Medicine (SCCM), encourages documenting both the underlying acute encephalopathy (and its underlying cause) plus its associated delirium or specified altered level of consciousness in preference to nonspecific terms like "altered mental status", "acute confusional state",[12] "acute brain dysfunction", or "acute brain failure".

Many CDI programs may omit querying for the delirium due to TME since ICD-10-CM code G92.8 is an MS-DRG major comorbidity/complication (MCC) and that adding F05 would have no impact on the MS-DRG. We believe that AI software can efficiently search the encounter to determine if a more precise term describing the alteration of mental status is documented and linked to its underlying cause, or vice-versa. The CAPD software can query the provider for more complete and precise documentation and linkage prior to closing an encounter, while the patient's circumstances are fresh on the provider's mind.

This workflow was then expanded to encompass all the ECI cohorts with provider queries written in a manner that complies with practice briefs authored by the American Health Information Management Association, an ICD-10-CM Cooperating Parties along with CMS, the American Hospital Association, and the CDC.

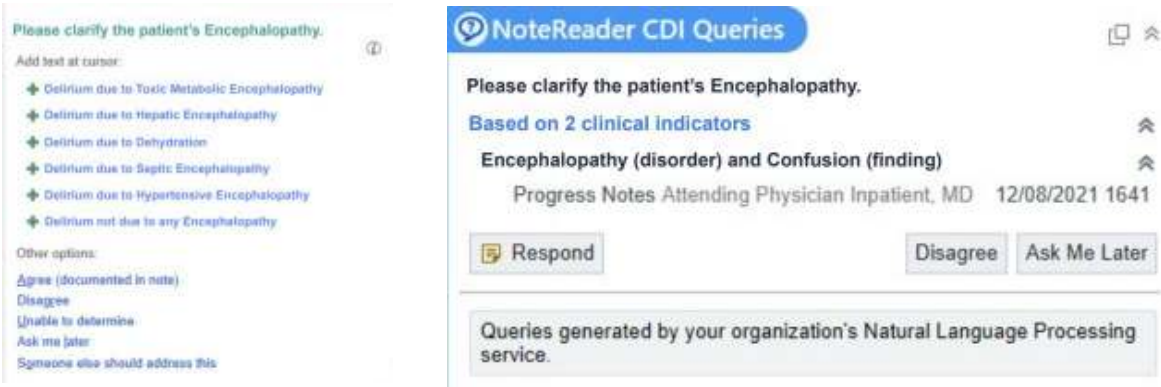
An example of this compliant query building to satisfy the "Other Neurology" Elixhauser Comorbidity and qualify for the 23 Index Points in the ECI is as follows: The Title, Clinical Indicators, Evidence (Inpatient Progress Note) and Suggestions are presented within the EHR as a CAPD query for Encephalopathy as shown here.

[9] Lin S, Shah S, Sattler A, Smith M. Predicting Avoidable Health Care Utilization: Practical Considerations for Artificial Intelligence/Machine Learning Models in Population Health. Mayo Clin Proc. 2022 Apr;97(4):653-657. doi: 10.1016/j.mayocp.2021.11.039. PMID: 35379419.

[10] Coding Clinic for ICD-10-CM/PCS, 1st Quarter, 2022, page 52

[11] American Hospital Association Central Office for ICD-10-CM/PCS. Personal communication.

[12] Slooter, A.J.C., Otte, W.M., Devlin, J.W. et al. Updated nomenclature of delirium and acute encephalopathy: statement of ten Societies. Intensive Care Med 46, 1020–1022 (2020). Available at https://doi.org/10.1007/s00134-019-05907-4.



Specialty Rankings

An urban, Midwest, 4-hospital system had an interest in boosting their rankings in Neurology and Neurosurgery with USNWR. While they were already ranked in the top 50 in USNWR, they had an interest in increasing their placement in the ranking to compete with other local and regional hospital systems. They also wanted a systematic, scalable way to keep up their documentation and coding practices to ensure they were able to accurately identify all the relevant comorbid conditions important for the measurement of the Outcomes component of the scores. If they could accomplish this increase for one specialty like Neurology, they could apply the same methodology to other specialties of interest such as Oncology, Cardiovascular, etc.

Typically, at most hospital systems, there is an intense manual, sometimes computer-guided, effort in chart review to identify deficient documentation and query physicians retrospectively. This review is completed by nurses and other clinicians who function as CDI specialists (CDSs) who, on average, may take 30 minutes to review a record for inconsistent, incomplete, or imprecise documentation and write, deliver and reconcile provider queries when necessary. These queries are often messaged to physicians in the EHR as emails or inbox messages, or some systems require 2 screens to be open so that the providers see the queries in one screen from one vendor as they investigate the EHR record in the other screen.

Queries include clinical evidence outlining the identified issues and questions that can be answered in an open-ended, "yes/no", or multiple-choice manner answers that can be selected. Notification of queries through emails, text messages and other communications back to documenting authors results in further delays in obtaining physician feedback to queries since they are inundated with inbox messages, emails and phone messages. This process typically takes place hours or days after the identified encounter. The retrospective, time-consuming nature of notifying physicians in this manner often delays the final billing of the encounter. Payers also tend to deny claims submissions from encounters where the notes are changed after signing.

The Arrival of Real-Time CAPD

The rapid uptake in the EHR along with advances in interface standards and clinical analytics techniques has afforded the opportunity for a more integrated approach to CDI, especially for quality conditions, which often were not being queried for in prior time periods. The goal of capturing as many of the ECI-applicable diagnoses, while also maximizing clinician efficiency, is to apply CDI advice directly into the workflow process of patient care. Using physician-centric workflows, CDI advice for quality can be seamlessly integrated into the workflow within the EHR prior to the completion of the clinical note, and with limited involvement from CDI Specialists.

Vendors have collaborated with EHR systems to develop "Preferred Workflow" approaches, with initial efficacy described in a previous White Paper: *The Impact of Hiteks' CAPD360™ A.I. Solution to Create Workflow Efficiencies and Increase Health System Revenues.* CAPD is an EHR-integrated and physician-centric software solution that optimizes documentation in real time at the point of care, facilitating the construction of concurrent documentation that aligns with completeness expectations by third parties (CMS, Payers, USNWR). Real-time suggestions in the EHR screen are delivered in conjunction with the note-writing and reviewing processes, along with unobtrusive Task List and To-Do reminders for a fluid Preferred Workflow.

EHR-Integrated CAPD Automation Query Notification

The Preferred Workflow consists of notifications under each note being written, and in the task list and patient list for each physician. Links in each of these three locations bring a physician to the automated query screen (known as NoteReader CDI in Epic). The Screen has the following features, incorporating CAPD query feedback to their note:

1. Query Title is shown at the top of the left-hand panel placed next to the note found deficient in documentation
2. Suggested text (up to 6 options) which is linked to underlying ICD-10 terms can be added with a click wherever the physician places their cursor in the note on the right, which also prompts the physician to add that diagnosis onto the patient's problem list, if warranted
3. Workflow options to Agree, Reject, State as Clinically undetermined, Ask me later, or Defer the query
4. Evidence summarized and linked for the physician to evaluate the reason for the query, which allows streamlined review of the patient's data

Almost as important as the CAPD technology is the clinical reference knowledge used to create the automated query rules. HITEKS' CAPD query library has content for many of the 38 ECI concepts. As part of the real-time nature of the CAPD experience, clinicians become educated on the latest documentation requirements for these quality diagnoses. Documentation is improved at the point of care while the patient facts and physician decision-making are still in recent memory, reducing the administrative burden of wasted reorientation to the patient's chart when a retrospective query is issued.

Results

Increases in the following metrics are shown in the below tables, where the Elixhauser index for these areas measured significant improvements in the Neurology service line, thus allowing the health system to rise 8 points in the USNWR rankings for Neurology between 2018-2021, with these tables showing the 2019-2020 changes:

Table 1: Increase in Elixhauser Comorbidity Capture by 6.75 and Score by 8.3%

Table 2: Increase in Other Neurology Cohort by 12%

Table 3: Increase in Paralysis Cohort by 10.3%

Table 4: Increase in Seizure Cohort by 9.1%[13]

Table 1: Elixhauser Cohort Measure Index (CMI) and Score Change in Study Client with Comparisons

Hospital Name	ST	2020 DC Vol	2020 CM# Avg	2019 CM# Avg	2020 CM#Δ	2020ElixScore	2019ElixScore	2020ElixΔ
Study Client	IL	1,017	4.84	4.5356	6.7%	12.5034	11.5462	8.3%
Local Comparator1	IL	1,371	4.64	4.5538	1.9%	12.1976	11.1655	9.2%
Local Comparator2	IL	768	4.35	4.0692	6.9%	11.3242	11.5572	-2.0%
Local Comparator3	IL	983	4.11	4.1739	-1.5%	11.1607	10.6794	4.5%
Local Comparator4	IL	356	4.24	4.0722	4.2%	10.7359	9.7283	10.4%
Local Comparator5	IL	1,223	4.36	4.1789	4.4%	10.6492	10.5046	1.4%
Regional Comparator1	WI	1,358	4.34	4.2675	1.6%	10.5088	10.2538	2.5%
Nationally Ranked Leader	FL	783	4.06	3.8778	4.6%	10.0868	9.8087	2.8%
Local Comparator6	IL	712	4.00	3.8753	3.3%	9.9803	10.1301	-1.5%
Regional Comparator2	MN	1,835	4.29	4.0346	6.4%	9.3651	9.4105	-0.5%
Nationally Ranked Leader2	AZ	584	4.06	4.0481	0.2%	9.2945	10.0437	-7.5%
Regional Comparator3	MN	730	3.79	3.6025	5.2%	8.4958	7.6418	11.2%
Regional Comparator3	IN	1,104	4.14	4.2432	-2.4%	8.0226	8.3893	-4.4%

[13] Data analytics performed by CDIMD for Medicare patients during FY2020, excluding COVID-19 cases and using the Elixhauser Version 2022.1 model. More information is available at https://www.cdimdtracker.com

Table 2: ECI Other Neurology Cohort Change in Study Client with Comparisons

Hospital Name	ST	2020 DC Vol	OTHNeuro2020	OTHNeuro2019	2020OthNeuroΔ
Study Client	IL	1,017	37.7%	33.15%	12.0%
Local Comparator1	IL	1,371	29.7%	24.92%	16.0%
Local Comparator2	IL	768	30.2%	32.83%	-8.7%
Local Comparator3	IL	983	33.2%	34.33%	-3.5%
Local Comparator4	IL	356	40.2%	33.81%	15.8%
Local Comparator5	IL	1,223	28.8%	23.49%	18.4%
Regional Comparator1	WI	1,358	29.8%	27.82%	6.7%
Nationally Ranked Leader	FL	783	32.1%	32.48%	-1.3%
Local Comparator6	IL	712	32.4%	31.57%	2.7%
Regional Comparator2	MN	1,835	32.0%	33.24%	-3.9%
Nationally Ranked Leader2	AZ	584	26.5%	29.05%	-9.5%
Regional Comparator3	MN	730	19.9%	20.78%	-4.6%
Regional Comparator3	IN	1,104	25.6%	26.69%	-4.1%

Table 3: ECI Paralysis Cohort Change in Study Client with Comparisons

Hospital Name	ST	2020 DC Vol	Paralysis2020	Paralysis2019	2020ParalysisΔ
Study Client	IL	1,017	0.2812	0.2549	10.3%
Local Comparator1	IL	1,371	0.283	0.2618	8.1%
Local Comparator2	IL	768	0.2721	0.3132	-13.1%
Local Comparator3	IL	983	0.298	0.2659	12.1%
Local Comparator4	IL	356	0.2584	0.3063	-15.6%
Local Comparator5	IL	1,223	0.2583	0.262	-1.4%
Regional Comparator1	WI	1,358	0.2216	0.2507	-11.6%
Nationally Ranked Leader	FL	783	0.2171	0.2292	-5.3%
Local Comparator6	IL	712	0.2907	0.234	24.2%
Regional Comparator2	MN	1,835	0.2381	0.2373	0.3%
Nationally Ranked Leader2	AZ	584	0.2243	0.2335	-3.9%
Regional Comparator3	MN	730	0.2381	0.1334	78.5%
Regional Comparator3	IN	1,104	0.2518	0.2955	-14.8%

Table 4: ECI Seizure Cohort Change in Study Client with Comparisons

Hospital Name	ST	2020 DC Vol	Seizure2020	Seizure2019	2020SeizureΔ
Study Client	IL	1,017	11.0%	10.01%	9.1%
Local Comparator1	IL	1,371	11.4%	10.77%	5.3%
Local Comparator2	IL	768	11.3%	11.29%	0.3%
Local Comparator3	IL	983	9.9%	10.92%	-10.8%
Local Comparator4	IL	356	9.0%	8.38%	6.7%
Local Comparator5	IL	1,223	6.9%	7.29%	-6.3%
Regional Comparator1	WI	1,358	9.4%	8.56%	8.4%
Nationally Ranked Leader	FL	783	9.5%	8.41%	11.0%
Local Comparator6	IL	712	10.0%	9.14%	8.3%
Regional Comparator2	MN	1,835	8.6%	8.89%	-4.0%
Nationally Ranked Leader2	AZ	584	9.2%	10.36%	-12.1%
Regional Comparator3	MN	730	6.7%	6.88%	-2.5%
Regional Comparator3	IN	1,104	6.9%	7.67%	-11.5%

Discussion

Response rates to ECI-oriented CAPD concurrent queries are the same as for CC/MCC types of CAPD concurrent queries, at a rate commensurate to the number of queries received. The explanation for this is that since documenting physicians receive the CAPD query within 1.2 seconds at the time of note writing or saving/signing, they are notified immediately as to the presence of a query for that chart. This notification serves to encourage them to either quickly respond while they are in the patient's chart, or know that they need to respond prior to discharge. Also, with HITEKS' CAPD the time required to respond to the query is reduced significantly to seconds, compared to multiple minutes for traditionally received queries, thus allowing the physician to respond efficiently to any number of queries sent to them prior to the patient's discharge.

Each query results in documentation addition which contributes to new, or more specific, claims codes to the patient's encounter. The implementation of CAPD included DRG-associated CC/MCC diagnoses as well as the ECI-defined diagnoses, resulting in approximately 3 times more queries than was the case during the pre-CAPD period.

The newly introduced Preferred Workflow screens in Epic, known as "NoteReader CDI," facilitated concurrent quality queries from CAPD to be presented efficiently to physicians in their workflow, and showed a significant and sustained response in the Preferred Workflow screens of approximately 20% of all queries.[14] The other 80% were satisfied through subsequent documentation, meaning that the same physician, or other physicians on the care team who received the query, satisfied the query with documentation in another note prior to the patient's discharge. These high compliance rates show that most CDI-related feedback to physicians, which is patient and encounter-specific, is best done at the point of care when the patient facts are still fresh in their mind and the time to re-orient themselves to the patient's chart is minimized.

Conclusion

In this case study, CAPD enhanced a Midwest hospital system's ability to favorably impact its ECI cohort capture applicable to its Neurology service line along with its usual CDI processes and workflows. CAPD will not eliminate all query opportunities, nor the need for CDI practitioners. It will, however, enhance ECI comorbidity capture, much like an encoder facilitates ICD-10-CM/PCS capture in a more time-efficient manner.

An overall ECI increase of 8.3% over the 1-year measurement period was enough to positively influence the USNWR rankings. Larger increases are also possible, as evident in the 3 local and regional competitors who had slightly higher 1-year increases in ECI. The goals of the hospital system were satisfied over the 2018-2021 period while they were using HITEKS' CAPD integrated with Epic in the manner described in this paper and the previous White Paper.

[14] Epic Systems Corporation. CAPD360 Insight for NoteReader CDI. Available at https://apporchard.epic.com/Gallery?id=11278, accessed April 2022.