

## Scarborough Health Network introduces computer-assisted coding

Inpatient coding is a complex and tedious process that has not changed in the past 30 years. Health records departments are under constant pressure to meet tight coding timelines while competing for a shrinking pool of expert coders. A growing number of requests to collect additional data elements, in addition to increased scrutiny on the accuracy of the information, make turnaround times even more difficult to achieve.

Each patient chart can be the equivalent of reading an arduous textbook; coders end up rushing through documents and feeling pressured to code for quantity versus quality.

In addition to struggling between data residing in hybrid systems (e.g., paper, electronic and scanned documents), there are issues of duplication (e.g., copy and paste of text) and inconsistency (e.g., different diagnosis documented by different care providers).

Finally, the introduction of activity-based funding models has increased the pressure on hospitals to improve the quality of their data. Diagnoses and procedures that are missed or not captured at the greatest level of specificity, are costly to hospitals.

Enabling coders to perform consistently along the productivity and data quality axes is a struggle. Combining digital data and computational technologies may provide a possible solution. Computational coding enhances the coder workflow by reading clinical documents, recognizing evidence and making recommendations to coders to capture all significant diagnoses and procedures.

The Scarborough Health Network (SHN) embarked on a journey with 3M in 2017 to introduce Computer-Assisted Coding (CAC) in its coding practice to improve coding productivity and data quality.

Majid Sharafi, Manager, HIM – Coding and Data Quality at SHN, says the intent was to minimize the time spent reading complex and lengthy discharge summaries and OR notes, and to allow more time for



Advancing coding at the Scarborough Health Network. Pictured left to right: Akeela Jamal, 3M; Hemal Shah, Inpatient Coder; Majid Sharafi, Manager HIM-Coding and Data Quality; Minerva Raymond, Patient Coder.

coders to focus on the complex process of assigning codes.

The implementation of CAC at the Scarborough Health Network had an impact on the way coders accessed and viewed documents, as well as on their workflow.

A prerequisite for CAC is availability and access to clinical documentation and other data feeds in electronic and computer readable form that are required for coding. On the coder side, coders are trained to use the evidence and recommendations made by the computational tools to select appropriate codes.

A key feature of the tool is the 'Coder View' which brings in all documents used in the coding process into a single point of access through HL7 interfaces. This allows the coder to read the patient's clinical story without having to go in and out of multiple sources and search for documents.

The Natural Language Programming (NLP) engine identifies and annotates all diagnoses and procedures from the available list of documents. This frees coders from the non-coding tasks of searching for relevant information and ensures that medical conditions are not overlooked by coders. The annotations enable complete and accurate code selection, and guide the coder to the most appropriate set of codes that reflect the acuity of the patient and the care provided.

A year after implementation, SHN conducted a detailed study to understand the impact of using this tool on their data quality. The objective of the study was to measure the accuracy of the diagnosis codes captured and whether using this tool influenced the hospital's weighted cases.

A black belt statistician compared baseline inpatient data that was coded prior to

the go-live date (about 2,400 inpatient charts) with data coded six months after go-live (about 3,900 inpatient charts) using CAC. The analysis demonstrated that the length of stay and average weighted cases of the two datasets were not statistically significantly different; differences in coding could confidently be attributed to the coders using the new software system.

The study relied on multi-variable regression analysis to measure differences in the following indicators: number of diagnoses and procedures coded, the comorbidity level, the resource intensity level and the weighted cases (both Resource Intensity Weights (RIW) and Health Based Allocation Model (HBAM) Inpatient Grouper (HIG) weighted cases). Overall, the results showed an increase in the level of acuity reflected in the data when coders used CAC to code their charts, particularly when Newborn, Paediatric and Obstetric cases were excluded.

When comparing the baseline data with data coded using the CAC software, it was determined that the absolute number of diagnoses coded per chart increased for all inpatient coders. In addition, there was a 3% increase in the Comorbidity Level and 4% increase in Resource Intensity Level reflected in the data.

Most importantly, there was a statistically significant increase in weighted cases ranging from 5% up to 13% increase in average Ontario-specific HIG weighted cases across all the inpatient coders.

These results were significant from a hospital funding perspective. With additional training, software optimization, and additional documentation being made electronic, it is expected that the outcomes will only continue to improve.

Another exciting opportunity in the CAC roadmap is the benefit from advances in NLP and artificial intelligence. Machine learning technology now exists in being able to analyze coded data and start to suggest the most appropriate diagnosis and procedure codes.

## Apps may benefit First Nations older adults living with dementia

BY REBECCA IHILCHIK

Rising rates of dementia in Canada are a known public health concern. What's less commonly understood is how dementia affects Indigenous communities in Canada.

Rates of dementia in Indigenous communities have been steadily increasing for the past decade – and research shows that onset is now occurring, on average, 10 years younger than in non-Indigenous communities.

The Baycrest-led Centre for Aging + Brain Health Innovation (CABHI) is supporting a pioneering study that explores how language development technology can improve quality of life for Indigenous older adults living with dementia and their caregivers.

The study will introduce a group of

First Nations older adults to apps that use learning, games, and quizzes to engage users in five Indigenous languages (Cree, Saulteaux, Dakota, Lakota, and Nakota). The project will assess how engagement with language stimulates brain activity, as well as identify user needs in adopting the technology.

Participating older adults and caregivers are from 11 First Nations in southern Saskatchewan, represented by the File Hills Qu'Appelle Tribal Council. The 15-month study is being conducted by Indigenous community-based health research lab Morning Star Lodge, led by Dr. Carrie Bourassa, scientific director of Canadian Institutes of Health Research, Institute of Indigenous Peoples' Health.

"We are working with our partner, the File Hills Qu'Appelle Tribal Council, to explore how technology can address

aging at home as well as treatment and prevention of dementia among their communities," says Bourassa.

App use is expected to benefit older adults by making it easier to age at home

for longer – reducing costs to the healthcare system – and to improve the quality of life for caregivers. Many older adults in Indigenous communities are aging at home, often in an intergenerational setting.

Because the participating First Nations communities are far from urban centres, caregivers do not have easy access to mainstream services that could support them. "We

know the caregiver experience in our communities is a bigger burden, if you will, because they're taking care of everything themselves," says Danette Starblanket, lab co-lead.

"We want to help caregivers by giving them access to an educational activity they can do with their loved ones."

The study is also assessing how to best support caregivers and older adults in adopting dementia technologies in general.

"The communities totally understand the benefits of technology, but it's a matter of accessibility and readiness," Starblanket says. "We want to support them to feel more comfortable using technology that will be of benefit."

The lab hopes the study, as a first step, will lead to a shift in cultural mindset and to the uptake of other technologies.



Dr. Carrie Bourassa