EXECUTIVE DIALOGUE

AMBIENT INTELLIGENCE

Reducing clinician burnout and enhancing patient care through artificial intelligence

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AMBIENT INTELLIGENCE

Burnout is a significant challenge for health care organizations, especially in rural hospitals that struggle with recruiting new clinicians. The loss of a single provider in a rural hospital can have tremendous impact on patient care, creating a strain on other clinicians as well as financial implications. Emerging artificial intelligence (AI) technologies can help organizations create more value for their patients and communities by converting time-consuming, labor-intensive and often inefficient tasks and functions into actionable information to produce better outcomes.

This executive dialogue examines AI technologies, including ambient clinical intelligence and listening systems. It explores how these systems can transcribe a conversation between a doctor and patient and upload key portions of it into a medical record, alleviating clinician burnout by reducing administrative and regulatory requirements and allowing clinicians more time with patients. It also explores current barriers to AI adoption and how organizations can achieve clinician support and buy-in.

KEY FINDINGS

1. Clinician burnout remains a top challenge for rural hospitals where providers play many roles within the organization. Easing documentation and regulatory requirements through AI can help alleviate some of the strain and improve workflow.

2. Ambient clinical intelligence and listening systems provide more accurate summaries of the patient visit, enhancing clinical quality and improving patient satisfaction.

3. AI and machine learning can provide more face-to-face time during the patient-physician encounter though time saved from physicians no longer having to type up notes into the EHR.

MODERATOR: *(Suzanna Hoppszallern, American Hospital Association):* **Our discussion today focuses on how AI can reduce clinician burnout — not just for physicians, but for clinicians broadly. Describe your organizations and what issues you are having with regard to burnout.**

TIM RICE *(Lakewood Health System):* We're a small, rural, critical access hospital (CAH) that has a full contingency of services. We are independent, and we have 55 advanced practice providers. In 2016, the Minnesota Hospital Association began conducting statewide surveys to assess the level of burnout among physicians and advanced practice providers, in which our clinicians participate. After our resiliency committee reviews the data, it looks for solutions within our facility. The level of burnout really varies within the group.

MODERATOR: Who's on the resiliency committee at your hospital?

RICE: The committee, which meets monthly, is headed by one of our vice presidents and members include our chief nursing officer, a certified nurse anesthetist (CRNA) and other clinicians. And we have representation from our quality and customer service teams.

MODERATOR: What's your biggest challenge now? Who's at risk for burnout?

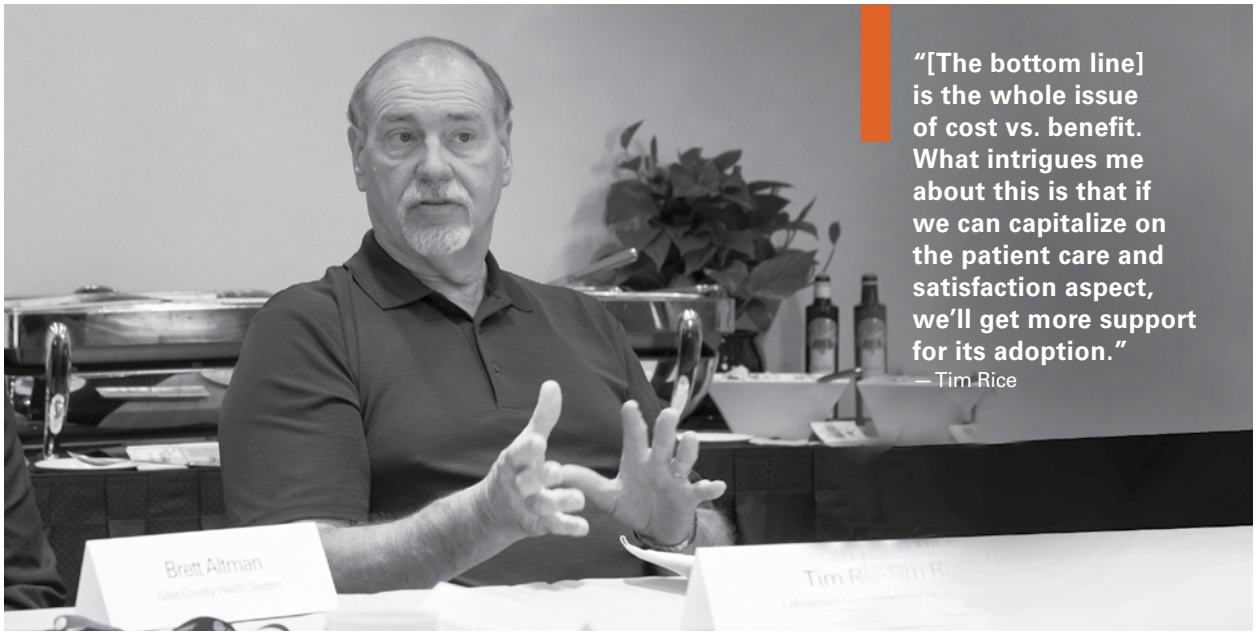
RICE: When we started tracking a few years ago, our CRNAs gave us the lowest ranking. When we looked closely at the numbers, we realized that there was a simple solution. The next year we received all fives. Right now, our advanced practice clinicians — the nurse practitioners and physician assistants — have communicated a number of challenges. They feel they need more of a voice, so we've made some changes. It will be interesting to see next year if those changes have had an impact.

MODERATOR: Brett, are you experiencing burnout challenges, particularly with clinical documentation. What have you done to address this problem?

BRETT ALTMAN *(Cass County Health System)*: We are a CAH with obstetrics and a 4-bed behavioral health unit, which makes us a bit unique. We have a rural health clinic (RHC) with four locations in our county, and an urgent care, called Rapid Care, which is within the main RHC. We employ our own providers in the ED, including hospitalists, certified registered nurse anesthetists and a psychiatrist. It's about 25 people in total, plus over 25 visiting specialists. We have robust general, podiatric and orthopedic surgery practices. Our orthopedic practice completes nearly 100 total joints per year. With net revenue well in excess of $50 million and growing, we have added 24 providers in less than three years triggering significant growth in our region. Of the 87 CAHs in Iowa, we are in the top 10 largest. Our facility is located halfway between Omaha and Des Moines encompassing an elderly population that prefers not to travel for their health care and is the epitome of critical access.

GORDY LEWIS *(Burnett Medical Center):* We're not only a CAH. We also employ a primary care model for our clinic and have a 50-bed, long-term care facility and a 24/7 emergency department (ED). We do have an issue with burnout, and it often keeps me up at night. Our family practice physicians and advanced practice providers do it all. The workload is immense. They are stretched thin, and I hear about it. It's hard to recruit new providers, which is a problem we all are experiencing. Even though we have an electronic health record (EHR), it's been a challenge. Bringing on an EHR requires a lot of learning and growth. Many of our providers are older and have not had much exposure to newer technology, so there has been pushback. Using scribes has helped to reduce the stress. And, as Tim mentioned, it's not just the physicians. Our nurses have to cover the broad spectrum of care by taking on multiple roles. We contract out the ED, so that isn't as much of a stressor.

EARL SHEEHY *(Ray County Memorial Hospital):* We are a CAH about 30 miles from Kansas City, Mo. We're kind of a dinosaur in that we do not employ any physicians. We own the clinic building, but the majority of our physicians are employed by North Kansas City



"[The bottom line] is the whole issue of cost vs. benefit. What intrigues me about this is that if we can capitalize on the patient care and satisfaction aspect, we'll get more support for its adoption."
— Tim Rice

Hospital and they rent the clinic space from us. We have an independent general surgeon who works at two other hospitals nearby. All after-hours surgeries are done at our facility. We have a small family practice in our community, but the surgeons do not have privileges because they don't want to be available after normal hours. We also contract out for our ED. Our biggest challenge now is aging physicians. We have one younger physician, who likely will leave at the end of the summer when her contract is up. We're looking for replacements. Our biggest admitter will turn 72 this summer. He also works for the ED group overnight and then goes to the clinic and gets off every morning. He's become receptive to our looking at hospitalists now that the other physician is leaving. We really haven't measured burnout, but we know we have a problem.

BARBARA SHORT *(Cameron Memorial Community Hospital):* We are a CAH in Angola, Ind. Our medical group comprises our employed and independent physicians in the community. Some of the community physicians are employed by one of two health systems located approximately an hour away. That makes medical staff meetings interesting, because some of the physicians are employed by other health systems, some are employed by us and others are independent. They all work in our small community and they're dedicated to our patients.

A big focus has been trying to add additional services, so that our patients don't have to travel so far for those services. We now have orthopedics and ear, nose and throat, psychiatric services and full obstetrics. As a result, we are recruiting more physicians. As Earl mentioned, our physicians also are aging. Many are nearing retirement or have retired. Primary care is a big problem for us, so we're trying to recruit for both primary care and specialty care. Our community physicians worry that bringing new physicians on board may negatively impact their volume. It's a delicate balance. I'm sure there's burnout, but there's also a fear of losing business that keeps them moving and resistant to bringing in younger doctors. We get pushback mainly from the independents, because they fear losing volume the most. But we've looked at our community patient-physician ratio and we are short a couple physicians.

LEWIS: Are you designated as an underserved area because of that?

SHORT: Yes, we are, and we are starting to take full advantage of the clinic model. But we still need

to bring in more primary care. And our primary care physicians are aging as well — the employed ones, especially, are not going to work that long.

DANNY ROBINETTE, M.D. *(Fairbanks Memorial Hospital & Denali Center):* Are you considering employing the independent physicians?

SHORT: Many see that as a threat. And the cost-benefit ratio doesn't justify our employing some of the independent physicians. We employed one and the reason the math worked was that the independent physician had been established at a rural health clinic. From a financial perspective, it didn't make sense for some of the other independents to be employed.

ROBINETTE: They are probably struggling with the same factors that many other primary care independents are facing around marketing, decreasing reimbursement and increasing regulatory issues.

SHORT: Yes, regulatory issues are a big thing. But some of the independents turned down offers from the two nearby health systems. They felt it was in their best interest to stay independent.

SHEEHY: Are the two systems in the same city?

SHORT: Yes, and they're competitive systems. And now, we have a third system coming into our community from Indianapolis, and I don't think that three health systems will be sustainable in the city that's an hour south of us.

ROBINETTE: We're an independent hospital, bigger than the others here. We have 150 beds and our average daily census is about 75. We have a 90-bed long-term care facility with one wing for dementia patients and another for short-term rehabilitation and post-acute care. We also employ about 65 physicians in a multispecialty clinic, mostly primary care, and we have a mixed medical staff of employed and independent physicians. If they're employed, they're employed by us because our next competitor is 350 miles away. We're geographically isolated. Most of the primary care in the community is part of our employed physician workforce now. There are few independent primary care physicians who are progressively aging out and we're not successfully attracting new physicians. And there are some nurse practitioners who can practice independently in Alaska, which has some independent practices. Our big issue really is workforce, and not just physician workforce. Recruiting in Fairbanks is difficult. It's a bigger community than some of the smaller areas, and while clinicians have more peer support, we're also a long, long way from anywhere. The winters are cold, dark and long and we're in a geographically isolated area, so where do you recruit staff from? Nursing staff? Certified nurse assistants (CNAs)? Everything is really difficult.

We've done a lot of work in trying to partner with the local university and technical college to grow our own staff. We provide part-time faculty, at our expense, to help them fill more slots in the class. We were understaffed in our nursing home; there were weeks in which we had 50 or 60 unfilled shifts a week. That leads to burnout, of course. We've put two cohorts of CNAs through programs at the technical college and we paid for 10 of the students to go in exchange for their coming to work with us. In the past year, we've been successful in improving our retention by focusing on staff engagement issues. It was a really big problem. Our first-year turnover in CNAs in the nursing home was about 50%, and we've reduced that to about 23%.

SHORT: Do you own your own nursing home?

ROBINETTE: Yes. It has about 90 beds and is co-located and connected with the hospital. We struggle with physician burnout. We struggle with nursing staff burnout, especially due to behavioral health issues in the ED. We have lot of boarding problems in the ED. We've had as many as 14 patients waiting for placement in our emergency department at peak time. It's not uncommon to have two or four patients boarding at other times. Alaska does not have enough adolescent behaviorial health beds. The main state hospital closed its pediatric inpatient behavioral health clinic,

and we've boarded adolescents in our unit for up to three weeks while they wait for a place. Last week, we sent a patient to Arkansas. We've added some behavioral health professionals and social workers to support the ED. Our psychiatrists round daily, but because of the shortage of psych inpatient beds, they've had to treat these patients in the ED, which isn't ideal. Now that we've increased our psychiatry staff, we can reduce their burden. We're doing better than we were a year ago, but it's still a problem.

On the primary care side, the primary clinic is the physician clinic. They're doing some trials with scribes, but it's difficult to find time for training. We're not aware of any training program for scribes in the state, so we have to create our own. The clinicians who are using scribes enjoy it and find it useful. They're working through a complete redesign of their workflows and staffing models in the clinic to create a more functional, integrated team. We're also building integrated behavioral health into the primary care clinic.

LEWIS: Danny, you're a physician and use the EHR. Do you find yourself facing alert fatigue?

ROBINETTE: Yes. We've had a challenging transition to our EHR. The physicians were provided only two hours of training, and the nursing home staff received a similar length. There was no follow-up. No "How are you doing?" from the vendor. So people have figured out shortcuts and workarounds. If I look up patient information, depending on which nurse documented it and who trained them how to do it, it might be in five different places. We're now focusing on optimization and fine-tuning the EHR to eliminate alert fatigue and make sure the alerts are clinically relevant.

We're also looking at nontechnical solutions to burnout. We've started a medical staff wellness committee that meets monthly at a different physicians' homes. So far, about 15 to 20 people attend regularly. Some find it very useful. We're doing something similar for the nursing home staff.

SHORT: We've experienced similar issues with our EHR. One of our challenges is that our independent physicians work on different systems. Because we're unable to share information easily, it can be frustrating on all sides and can contribute to burnout.

ROBINETTE: We have 14 different EHRs in our system. The hospital and nursing home are on different systems. Dermatology has its own, as does primary care and cardiology. We're moving everyone over gradually. It's a process.

JARED PELO, M.D. *(Nuance Communications):* I'm an emergency medicine physician and have worked in two rural emergency departments. When I was in my residency at the University of Virginia, we were given scribes. The promise was that we'd see more patients in three years because someone else would be writing our notes. It paid for itself because residents aren't highly incentivized to document well. If you have a professional scribe documenting, you can increase reimbursement. After that, I would only interview with organizations that had a scribe program. I worked in large, urban EDs for a few years and then decided to diversify my practice and try medical directorship at one of our rural hospitals that didn't use scribes.

In 2014, I decided to start a virtual scribing company to help support the rural market. I believed that some day computers would be able to write notes but, to get there, we had to train them. And we needed data. We record the doctor-patient encounter, finish the physician's notes and enter them into the EHR. When we started, we thought we were just going to be a platform in between doctors and health care organizations or doctors and scribe companies. We began with orthopedics.

Two years ago, we were acquired by Nuance Communications and we're using ambient clinical intelligence to transcribe the notes. We're now working in orthopedics, dermatology, ear, nose and throat, ophthalmology and podiatry. Later this year, we'll add primary care. And we're also working on emergency medicine, hospitalist medicine and critical care. The technology is now cloud-based and it gets smarter every day. Rural hospitals can use us because they don't have to implement servers, etc. And we can interface with any EHR.

SHORT: How fast is this technology moving?

PELO: It's easier for some specialties than others. And it's easier for certain procedures. Surgery, for example, is a little bit easier, because surgeons have certain things they put in every operative note. Ninety percent of the cholecystectomies are done exactly the same, for example. I would say that we'll get there in the next couple years with op notes. It's much more difficult in primary care or hospitalist medicine, where there are multiple complaints for the same patient.

LEWIS: What are the legal implications?

ROBINETTE: Probably no different would be my guess. The physician has to document what's there. The problem is whether or not they read their notes. Physicians don't always read their notes, but they should. For years, when dictations were transcribed, physicians would sign them without reading them. Trust me, I read every one because I'm on the hook for

it. I think we have to establish what the liability is. The documentation says what happened and, when you sign it, you're verifying that.

LEWIS: I'm curious about the additional volume of transcription. Will that create more challenges?

SHORT: I think it would be better for patients, for one thing.

PELO: We've been in business for six years and, so far, we've haven't seen anything subpoenaed. But when patients are presented with their notes, they will say that the doctor was rude or failed to say something to them. But when we pull up the recording, they change their minds.

RICE: Has there been any research into patient privacy and comfort level? I don't know where that fits in with this.

PELO: It's different per specialty. In general, about 90% of patients are willing to be recorded. In pediatrics, it's closer to 80%. We haven't moved into women's health, but we anticipate that number will be lower because of the nature of some of the topics discussed, such as domestic abuse and sexual assault. Our recording device includes a camera that can be removed at the patient's request.

MODERATOR: How much time have physicians gained back through this technology?

PELO: It averages about five minutes per patient per day. If a physician sees 20 patients, that's 100 minutes a day.

SHORT: That's significant.

PELO: What surprised us was that we thought most hospital systems and clinicians would not want to keep recorded audio data around long. Quite a few want all of the data because they want to be able to share it. Some have Open Notes, so patients see their notes and can attach the audio. If you take your 83-year-old mother to the doctor, your siblings would be able to listen to the doctor visit. And some organizations have used the audio to prove to the patient that something was done. As I said before, we can replay the recording and verify what occurred.

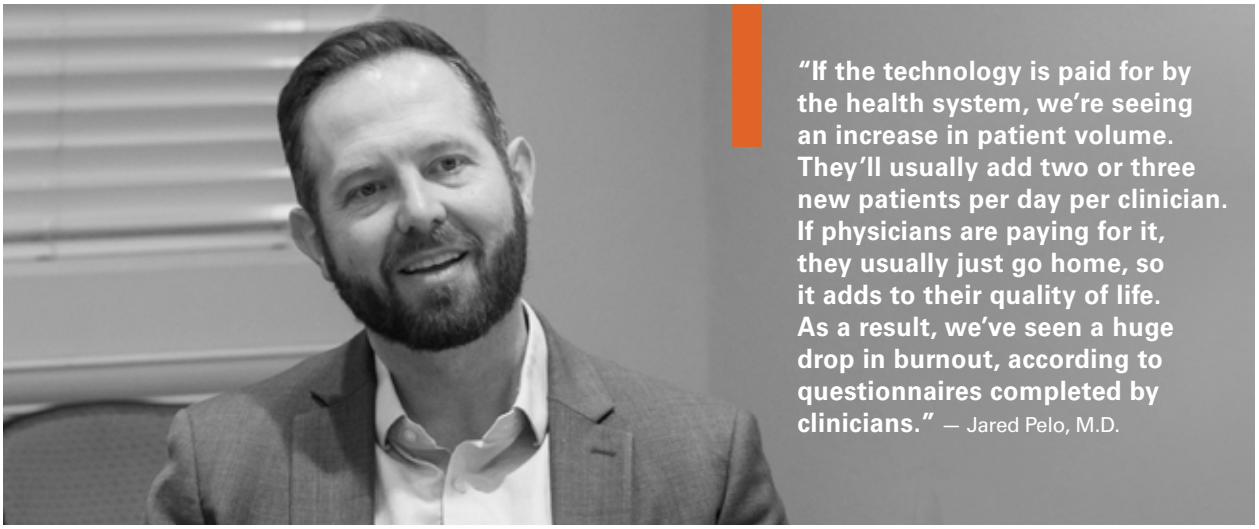
MODERATOR: We've talked about different things that you've done to reduce burnout, and you are working on everything from wellness to workflow. How do you feel this will be received by patients?

LEWIS: There will be acceptance. We'll need to educate them on why it's important and how it can help them. It's new, of course, and there will be a learning curve. And maybe we use it in a way that adds face-to-face time to their appointments, rather than adding more patients to the physician's day. This is innovation in action, and something we need to move forward to improve both the patient and physician experience.

SHORT: I agree that patients will come to accept this, especially if it's explained in a way that shows how it will improve accuracy and communication of information, especially for patients during discharge. Too often, patients are discharged and they — and their families — struggle with understanding their discharge instructions. This potentially could help patients understand what they're supposed to do through greater accuracy and better data. Maybe they won't be as fearful of it.

ALTMAN: Accuracy is a big deal. It's easy to inadvertently leave something out of documentation, given the amount of information that physicians deal with in a given day. Capturing the patient encounter and transcribing it for the patient's record, would be extremely useful to physicians. And it will help with reimbursement as well.

RICE: That's the bottom line: the whole issue of cost vs. benefit. What intrigues me about this is that if we can capitalize on the patient care and satisfaction aspect, we'll get more support for its adoption. We can enhance patient engagement by giving physicians more time to listen to them and providing an accurate description of their visits.



"If the technology is paid for by the health system, we're seeing an increase in patient volume. They'll usually add two or three new patients per day per clinician. If physicians are paying for it, they usually just go home, so it adds to their quality of life. As a result, we've seen a huge drop in burnout, according to questionnaires completed by clinicians." — Jared Pelo, M.D.

MODERATOR: Earl, do you think that this is something that would benefit your patients?

SHEEHY: Yes, I believe it would. We do get complaints from patients about the doctor turning away from them to type into the EHR. It's a distraction and gives the perception that they aren't listening to them. Language process automation would bring back the human touch, and that would be a plus.

SHORT: I think so, too. And it may impact the quality of care because the documentation would be more accurate, as stated earlier. Each individual who touches that information will see more accurate data and have more information to make better decisions, resulting in a higher quality of care for the patient.

ROBINETTE: Language process automation addresses the issue of "copy and paste" and continues to bring forth erroneous or unclear information. I believe that patients will love this. It's all in the messaging. As a physician, it is off-putting to have to turn your back to the patient to input patient data and keep looking over your shoulder once in a while. We want both face-to-face contact and engagement. And the patient certainly wants that.

ALTMAN: As with most things, there are some patients who will think this is cool and some who will not want to be recorded because they perceive it as an invasion of privacy. For the most part, I believe we can educate them about why this is important and how it can help them.

SHORT: Some areas, such as women's health may be more difficult to get buy-in, especially if there is an incident of domestic abuse being discussed. If a patient does not give persmission, what's the default?

PELO: The video and recording would be turned off and the physician would go back to inputting the notes. Returning to something Gordy brought up earlier, we've found that for health systems, they need to add one patient per clinic day to cover the cost of the service. It translates to more direct patient time.

LEWIS: This establishes a new standard of care, which is exciting. We are looking at AI and how it can improve our operations in areas like the revenue cycle. We know that it can help on the administrative side. Now we're seeing how it can assist in care delivery and satisfaction and improve workflow.

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