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INSIDE

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Case Managers Can Ease Health Inequities and Barriers to Care

Multipronged collaborative brings positive results

Some healthcare organizations are shifting focus to healthcare access barriers that prevent certain patient populations from achieving optimal outcomes.

These barriers include meeting basic needs for food, medicine, safe housing, and transportation, says **Willow Yerxa**, MSW, director of mental health and case management for Health Equity Alliance (HEAL) in Ellsworth, ME.

"If we can meet those basic needs, we have taken a step to make the playing field just a little more level," Yerxa says. "We cannot eliminate the disparities, but we can minimize the impact of them on their health and access to healthcare."

HEAL was founded as an AIDS service organization in the 1980s, serving a population of people who experienced significant health disparities, Yerxa notes.

"They face significant stigma and marginalization, and we can see how their health is impacted by that," she says. *(See story about case management with a stigmatized population, page 88.)*

> "WE CANNOT ELIMINATE THE DISPARITIES, BUT WE CAN MINIMIZE THE IMPACT OF THEM ON THEIR HEALTH AND ACCESS TO HEALTHCARE."

Healthcare disparities and inequity, like income inequality, is a broad issue that requires multipronged societal action and policy changes to resolve. But case managers and healthcare organizations can make small changes.

For instance, Cedars-Sinai Health System in Los Angeles employs a health equity team that focuses on local issues, such as the high cancer mortality rate

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AUTHOR: Melinda Young
EDITOR: Jill Drachenberg
EDITOR: Jonathan Springston
EDITORIAL GROUP MANAGER: Leslie Coplin
ACCREDITATIONS MANAGER: Amy M. Johnson, MSN, RN, CPN

among Korean Americans and the growing number of liver cancer cases in the Hispanic community.

"Cancer centers take their knowledge, best practices, and research-driven outreach to neighborhoods of high need, and that's exactly what we're doing," says **Zul Surani**, associate director of the Research Center for Health Equity at Cedars-Sinai Health System.

"We collaborate with our community outreach team to identify neighborhoods where populations are disproportionately burdened by cancer," Surani says.

"We've identified neighborhoods with higher proportions of late-stage diagnosis breast cancer, and the predominant populations are Korean and Hispanic/Latino," he adds. "We take evidence-based, science-based approaches recommended by the CDC, and we use a form of case management and culturally tailored information and navigation to work with the populations."

Community-based outreach coordinators, navigators, and health promoters guide eligible patients to screening resources in their neighborhoods, such as federally qualified health center that offers free or low-cost mammograms, Surani explains. This focus on neighborhoods with health inequities is an investment with multiple layers of positive outcomes.

"It has increased people's motivation and intent to get screened," Surani says. "However, we have identified gaps in the system, in our navigation. Even though people may be motivated to get screened, there needs to be clear support for individuals — especially uninsured people — to get into the local clinic, where they can get free or low-cost cancer screening."

This shows the organization what it needs to build. For instance, Cedars-Sinai has brought together stakeholders, including providers and clinics, to think about ways to improve health access, he says.

"This is research-driven outreach," Surani says. "We're looking at data constantly to make sure we're being responsive."

Case managers will fail at addressing health inequity unless they understand the population that lacks access to care, Yerxa says.

"It's about creating spaces and opportunities for connection, understanding, and belonging," she explains. "We know the lack of human connection and support absolutely impact both emotional and physical health outcomes."

Yerxa and Surani offer these

EXECUTIVE SUMMARY

Health inequity and barriers can negatively affect patient care. Case managers can work with community organizations to untangle this societal problem.

- Reducing healthcare disparities requires a multipronged and collaborative approach in which case managers and health systems work with community-based organizations.
- One model uses a health equity team to collect data and focus on equity issues in small, targeted communities and populations.
- Solutions to healthcare disparities must be research- and data-driven.

suggestions for improving health equity:

• **Embrace data and details.** Epidemiological cancer trend data, broken down to the community/ethnic level, can identify high-risk populations and areas.

The program at Cedars-Sinai collects neighborhood-level data, which is very useful for identifying barriers and finding solutions, Surani notes.

"We're lucky that the cancer surveillance unit is providing data to us in terms of diagnostic areas," Surani says. "It helps us prioritize specific neighborhoods where the need is high."

Case managers can use these data to collect information that might answer the question of why residents of certain neighborhoods are not getting screened, he says.

• **Employ "cells to society" model.** "When you identify populations with a heavy cancer burden, there's a multipronged approach that could be taken from neighborhood interventions," Surani says.

The idea is to make a difference with high-risk populations and locations, he says.

"We are customizing interventions, doing those types of things in order to make a difference," Surani explains. "We're looking at creating a seamless system of care for communities that are most affected."

Sometimes, solutions to health inequity can come from the patients affected by disparities.

"People who use our services are the ones offering up the most innovative ways of doing the work, of breaking down the health disparities facing our clients," Yerxa says.

• **Educate stakeholders.** "We start with personal interaction," Yerxa says. "Even when case managers call about major health issues, it's hard to get a doctor on the phone. We start with a personal call, reaching out personally."

Providers are not always aware of the healthcare barriers their patients face. Case managers can talk about these issues with patients' doctors.

Advocacy and education also are used at health conferences, individual and agency trainings, and through legislative actions, Yerxa says. People who are affected by health inequities can be part of advocacy and education, speaking at conferences or to groups of healthcare providers and community leaders, she suggests.

"This gives people the opportunity to give back and make a positive change," Yerxa says. "They are the experts, and we learn from them every day about how to do a better job at reaching and caring for others facing the same stigma and marginalization."

• **Create a team and take action.** Case managers can join a team of providers and community organizations that work to identify opportunities for improving health equity.

"The team occasionally leverages resources available at Cedars-Sinai, so we have a lot of nurses who support our outreach efforts," Surani says. "We also work with physicians within our system, bringing together a team that is truly responsive to the needs of the community vs. thinking one size fits all when we know it doesn't."

Cedars-Sinai also has included community outreach coordinators on its team. For example, Filipino nurses on the team support the outreach efforts and help conduct surveys in the Filipino community, which experiences higher rates of breast cancer, he adds.

The team also has partnered with two Korean churches and Korean clinics. "We have a Korean outreach coordinator who is working to develop a lot of this information in the Korean language," Surani says. "I work with her to talk to the leadership in the different churches to think about how we want to develop this programming."

They worked with leaders, doctors, and others to develop an education series. The outreach coordinator led the workshops, presenting information on cancer prevention.

"We'll continue this series of workshops in different churches — we've proven it works," Surani says. "Our outreach workers, often on Sundays, set up a booth and sign people up for the workshops."

Programs to alleviate health disparities should be evidence-based and tailored to the particular community's issues, he notes. The Cedars-Sinai program works with Latino, Korean, Filipino, African American, and LGBTQ communities to address disparities.

"We're using programs that already have been proven effective," Surani says. "We look at culture, literacy levels, and we've initiated a faith-based approach, where we could reach our target population multiple times to impact health behavior."

A health equity team can identify communication and navigation gaps in the system and develop methods to close those gaps.

"Down the line, we will design large-scale interventions with our research teams to address these disparities," Surani says. "We're not just serving our patients — we're going beyond our patients." ■

HIV/AIDS Organizations Help Patients Overcome Healthcare Disparities

In the early years of the HIV/AIDS epidemic, patients often were marginalized for their sexuality, IV drug use, race — and for the disease itself. Often, they were poor and lived in places where they could not access optimal health services.

AIDS service organizations helped patients meet their basic needs of food, medicine, medical care, transportation, and housing, says **Willow Yerxa**, MSW, director of mental health and case management for Health Equity Alliance (HEAL) in Ellsworth, ME.

HIV patients might have to travel a few hours to see a specialist. In Maine, this can be a huge barrier — particularly in the winter with snowstorms.

"We're lucky in Maine that we have a really great Medicaid waiver program for HIV-positive people, and it provides access to medical transportation," Yerxa says. "If we can find a provider in the patient's area, we'll always push for that. But in the meantime, we will help them work within the structure we have."

HEAL has evolved since its roots as an AIDS service organization, Yerxa notes.

"We moved into a larger space last summer, and we have the Health Equity Center, which is available for allied organizations to use for training or monthly meetings," she says.

Since antiretroviral treatment has turned HIV into a chronic disease, and people with HIV can live longer than before, the health issues and needs are changing.

"Over half our HIV folks are 50 years or older, and that has its own challenges," she says. "For folks diagnosed in the 1980s and 1990s, they might have thought they'd have six months to live, and now they're turning 75."

Because there is a growing number of older HIV patients, case management has to center around health disparities in nursing homes, Yerxa says.

"We have to make sure those providers know enough about HIV to take good care of folks because it's shocking, sometimes, when nurses and doctors have a lack of knowledge about HIV," she says. "Case managers have a role in identifying some of the friendlier practices. They might find that one doctor's office needs a little more education about HIV, and case managers can go out into nursing homes or doctor's offices to give them basic training on the populations we serve, including transgender."

Case managers also can educate staff at nursing facilities and other healthcare settings.

"They provide PowerPoint presentations," Yerxa says. "You could have a training session as short as two hours, although most are for a whole day."

The rest of their educational work concerns building relationships and providing local advocacy.

"We're out there all the time, talking about it," Yerxa says. "We have gender pronoun information on cards, talking about why it's important."

For example, a case manager's email and business card might say that she uses the pronouns "she" and "her."

"We invite folks to tell us which pronouns they prefer, to make sure people feel safe and welcome," Yerxa says.

Case management of HIV patients often centers around economic issues.

"Financial issues are always huge because that impacts everything else," Yerxa says. "It impacts whether you can pick up your medications or whether you have a safe, stable place to get letters from your provider or to get phone calls."

Case managers always are finding ways to fill those gaps, relying on state resources when possible. For instance, Maine will provide transportation for patients to go to the doctor or pharmacy, she says.

"We can't level the playing field, especially socioeconomically, but the more we can take those critical concerns, help with basic needs, and make sure people have access to things they need to be healthy, the more it helps with equity," Yerxa says.

EXECUTIVE SUMMARY

AIDS organizations were decades ahead of other groups in addressing health disparities and barriers.

- Today, patients with HIV can live decades with the disease, creating a need for case management in transitions to nursing homes.
- A chief task for case managers is to help patients with HIV overcome economic barriers.
- Support groups can help patients deal with stigma, access, and other issues.

HIV patients also need emotional support, and Yerxa finds that support groups are very powerful and important to health equity.

"We have these support groups that we use as a tool to try to reduce stigma and to foster connection, helping people build natural support," she says.

People can share their medication experiences, recommend providers, and offer to help each other with rides to appointments.

"We had a health conference just for HIV-positive clients, and having people in the room who have been living with HIV for 20 or more years is helpful to people who have had HIV for a year," she explains. "They come there to share their experience and talk about their biggest challenges, and we could never do as good a job as they do."

HIV patients often belong to marginalized communities and have lost connections to their own families, so support groups provide them with a chosen family, Yerxa says.

"It's not unusual to have people who have no one within 50 miles who aware of their status, so they don't get support locally," she says.

Case management that includes support groups, peer counselors, and/or educational sessions and conferences can help meet that need for support.

"When they are here, they can talk about their challenges related to HIV," she says.

"It's a really positive thing for them, as seeing someone who is healthy can be incredibly powerful for someone who is newly positive," Yerxa explains. "That sense of connection and belonging is huge, when we're talking about people being able to stay healthy and eliminate some of those gaps between marginalized populations and the rest of society." ■

Reducing Long-Term Patient Costs Requires Going Above and Beyond

Focus on social determinants of health

Case managers in hospitals and community settings often have to go beyond point of care activities to help patients make significant improvements in their health and healthcare costs.

This is particularly true with patient populations experiencing major barriers to maintaining disease control and health improvement, including housing, food access, transportation.

"We have a journey ahead of us to make more investments, long-term, in addressing patients' barriers to healthier lives," says **Karen Marie Wilding**, FHIMSS, CHCIOe, senior director, quality and value-based care, and affiliate compliance officer, population health, at the University of Maryland Medical System in Baltimore.

Under Maryland's arrangement with the Centers for Medicare & Medicaid Services (CMS), the state's hospitals are under a global budget program that reduced total costs of care without shifting them to other parts of the healthcare system. *(Learn more at: http://bit.ly/2KB0cW3.)*

The health system has been focusing on the hospital-CMS alignment, Wilding says.

"We have a facility that has partnered with community health workers to address needs in the community," she says.

"It's an expectation that care has to be going forward in the community, and we've tried hard to ingrain it in the culture," she adds. "We don't have it all figured out, but we've taken steps forward in those areas, and it is part of population health discussions."

The University of Maryland Medical System has made investments in improving the health of its patient population. For example, one of its hospitals created a food pantry for diabetic patients to access, Wilding says.

"We had patients who would show up in the emergency department at the end of the month because they ran out of food that was healthy for them, and it impacted their blood sugar levels," she explains. "Their glucose was not controlled, and they had side effects that put them in the ED."

The hospital's food pantry provides shelf-stable healthy choices, such as canned fruits and vegetables.

Care managers and social workers have access to community resources that can help patients overcome health barriers.

"We have many patients we support with community resources like Meals on Wheels, financing housing, and other resources to help them overcome barriers," Wilding says. "Sometimes, we leverage our pharmacist to help patients align

their insurance benefits and copays and costs for specific pharmaceutical regimens."

For example, pharmacists consult with prescribers about a patient's medication regimen and suggest suitable drugs that are more affordable, she adds.

A top case management priority is to teach patients to self-manage their chronic conditions.

"For those with chronic disease, it's about self-management and health literacy," Wilding says. "Sometimes, we have to address patient's other issues before we can teach them how to be more involved in their disease decision-making and owning their disease management."

Case managers can immediately connect patients with services.

"While they're still in the acute care facility, we have care rounds occurring where they are literally identifying patients and engaging them in facilities that offer wrap-around services," Wilding explains. "We know that many readmissions are connected to some of these barriers."

The health system operates a Transitional Care Center, where patients can be seen if the community provider is unavailable in the first few days after discharge.

"The Transitional Care Center has space within a hospital facility," Wilding says. "The smaller clinics have staff that work both in the clinic and in the hospital, while the larger clinics have a full-time staff nurse, social worker, pharmacist, and a mid-level practitioner and/or a physician."

After some trial and error, the health system realized that the most effective clinics had at least a nurse, pharmacist, and physician or advanced practitioner, she adds.

Case managers help patients make appointments before discharge. Following a collaborative care team model, the clinic helps patients address their medical needs and barriers to care, she adds.

"If patients can't get a ride to the clinic, then we arrange for Uber to pick them up," Wilding says. "Our focus is to reduce readmissions, but one of the parallel benefits is we can help our community while addressing social determinants of health."

The health system also has partnered with a technology company to provide patients with digital coaching. "They engage with patients in need of health coaching, and we have targeted patients with diabetes and chronic obstructive pulmonary disease," Wilding says.

Some providers found it to be challenging to incorporate digital coaching into their workflow.

"It's challenging for practitioners to change their normal course of care and integrate these new options," Wilding says. "For some of these providers, it takes time to buy into these innovative programs and also to have confidence in the outcomes they promise."

Providers know that diabetes educators have had positive results with patients, she notes.

"There is less evidence to support social determinants of health interventions than traditional clinical regimens," she explains. "Clinicians want to have evidence associated with the intervention that they are prescribing or referring patients to, and they want to know the outcomes."

When case managers try new methods to improve patient self-management, including addressing patients' social determinants of health or using new technology, it takes time to build a partnership and trust with providers.

"We work closely with our providers to develop workflow and tools. We try to make it easy for them, and we've shared our early successes," Wilding says. "So, when we've had a patient that was able to improve medication adherence because they found medications that were low cost, this helped with showing success and outcomes for provider buy-in."

Wilding offers these suggestions for building trust with providers:

• **Be prepared.** "Be prepared and thoughtful," Wilding says. "Make sure providers understand which patients you are targeting, and what you will be able to accomplish."

For example, one patient visited the ED frequently. Case managers contacted the pharmacist to address the patient's copays, medication access, and memory strategies to help the patient fill prescriptions and take medication as prescribed, she says.

Soon, the patient's provider could see that the patient was not visiting the ED as often, she adds.

• **Communicate with providers.** "Have a thoughtful conversation with the physician," Wilding suggests.

Case managers should keep information thorough, but succinct.

"You could say, 'I reviewed Mrs. Smith's chart, and here are the four conditions she has, and here's what needs to be done to keep her out of the ER,'" she says.

When case managers create a reasonable task for the care team, it helps providers become engaged because they can see how the process works, she adds.

"This is instead of just saying, 'I want to get Mrs. Smith into care management,'" Wilding says. "Saying just that doesn't motivate them to engage, and this is all about engaging and building that relationship." ■

EDs, Community Partners Play Central Role in Slashing HIV Diagnoses in San Francisco

The fact that the Trump administration is getting behind a new effort to end the HIV epidemic is welcome news. However, it is worth noting that some communities are way out in front of this effort in remarkable ways. In particular, an initiative that began five years ago in San Francisco has resulted in a dramatic reduction of new HIV diagnoses in the region. For instance, in the first half of 2018, there were just 81 new HIV diagnoses, according to the latest data, putting the city on track to lower the number of diagnoses to a level not seen since the epidemic began in the 1980s. Further, investigators report that the number of deaths attributable to HIV has declined by more than 50%.[1]

The city's success in addressing the HIV epidemic is largely attributable to the collective efforts of Getting to Zero San Francisco (GTZ), a multisector consortium that aims to reduce HIV infections, deaths, and stigma to meet aggressive 90-90-90 goals, explains **Susa Coffee**, MD, chair of the GTZ's Rapid ART Program Initiative for HIV Diagnoses (RAPID) committee, which focuses on quickly connecting patients diagnosed with HIV to antiretroviral therapy (ART).

As described by UNAIDS in 2017, the 90-90-90 goals establish that by 2020, 90% of those infected with HIV will be aware of their status, 90% of those diagnosed with HIV will be receiving sustained ART, and 90% of those receiving ART will be under virologic control. *(Learn more at: http://bit.ly/2Kf3FZB.)*

To reach these targets, HIV testing and linkage to care from EDs and other frontline providers are a big part of the GTZ plan. "Emergency departments also serve as important sites where re-engagement in care can be facilitated for people with known HIV who have dropped out of care," observes Coffee, a professor of medicine in the Division of HIV, Infectious Diseases, and Global Medicine at the University of California, San Francisco (UCSF) and Zuckerberg San Francisco General Hospital (ZSFGH).

Such functions are particularly important for the safety-net population served at ZSFGH, which includes many patients who are unlikely to present to HIV testing sites, Coffee notes. "Since the Getting to Zero initiative began in 2014, HIV testing performed in the ZSFGH ED has comprised roughly 10% of new HIV diagnoses in San Francisco," she observes.

Establish Links to Treatment

Efforts to expand HIV testing in the ED at ZSFGH have been supported largely by its strong working relationship with the UCSF/ZSFGH Ward 86 Clinic, where the the RAPID team works proactively to connect with all patients who test positive for HIV in the ED. The ZSFGH clinical laboratory will call a designated RAPID pager for every HIV-positive result that it obtains. "Then, the RAPID team will contact the patients, whether they are still in the ED, admitted to the hospital, or discharged to home, to link them into care," Coffee explains. "For outpatients, the RAPID team tries to schedule each person for a same-day or next-day RAPID appointment in the clinic."

While staff members in the ED also are encouraged to contact a dedicated RAPID pager if they are aware of a patient with a new HIV-positive test result, the burden of notification and follow-up is removed from them, Coffee shares. "This has resulted in significantly more HIV testing by ED providers and a higher linkage-to-care rate for newly diagnosed people with HIV," she says. "Emergency staff are also encouraged to refer high-risk, HIV-negative individuals to the RAPID team for PrEP [pre-exposure prophylaxis] and other HIV prevention services."

Interestingly, although several hospitals in large urban locations automatically perform HIV tests on all patients who present to the ED

and have a blood draw for any reason, the ED at ZSFGH takes a different approach. Here, nearly half of patients who present for care do not require a blood draw for their stated complaint. Consequently, it is up to each clinician to determine whether a patient should undergo testing based on their presentation, symptomology, and history, explains **Malini Singh**, MD, MPH, associate clinical professor of emergency medicine at UCSF and vice chief of emergency medicine at ZSFGH.

"When we take a general history … there are multiple questions about sexual practices and drug use, and those are all triggers to think about when ordering an HIV test," Singh notes.

Further, emergency providers are encouraged to test all patients who are admitted to the hospital, patients who do not have an HIV test result indicated in their clinical record, and patients who have had any possible exposures or risk factors since their last negative HIV test result. "These recommendations are posted in ED work areas and are available online with information on risk factors for HIV infection and signs/symptoms of acute HIV," Coffee notes.

The hospital lab conducts routine HIV testing every two hours, seven days per week. For samples with reactive results, differentiation tests are conducted every day (except Sunday). The lab will notify the RAPID team of any positive HIV tests.

"This is external to us in the ED. [The RAPID team] will call us, even before we know about the test results sometimes … and ask if we want them to come down [to the ED] and talk to the patient or counsel the patient about his or her new HIV diagnosis," Singh notes.

The RAPID team, also referred to as the PHAST (Positive Health Access to Services and Treatment) team, is available to discuss any post-exposure or protective medicines that a newly diagnosed partner might consider, Singh adds.

"We have a very active PHAST team through Ward 86 that is involved with patients when tests return positive, and this is 24/7. Any lab notification for anyone who has been tested, whether the tests were positive or negative, the PHAST team knows about them," Singh notes. "The reason why the PHAST team is very instrumental for us is because they [work with] the patients with a very team-based approach where it is not just about medications. It is about lifestyle counseling and partner counseling as well."

Further, there is regular communication between the PHAST team and emergency providers regarding testing and detection rates, and how the ED compares to other HIV testing sites. "We have a real partnership with them," Singh shares.

Partner With Care Resources

Another focus of the GTZ initiative is to increase the number of people who are taking PrEP. Investigators report that this number has grown from 4,400 when the GTZ initiative began to more than 16,000 in 2017. The ED plays a role in this effort, too, although emergency providers typically do not write prescriptions for PrEP. Instead, they will refer patients directly to Ward 86, which is located on the ZSFGH campus and provides drop-in hours for patients.

"There is no formal referral process to get patients over there. [The clinic is] always open to having patients drop in at any time, which is remarkable," Singh says. "That has been really great for us."

Singh credits Ward 86, which was the nation's first HIV clinic, and the PHAST team with contacting the ED and helping change provider behaviors when it comes to testing procedures.

"I am standing on the shoulders of giants who actually started [ED-based HIV testing] when it was not popular and not considered to be emergency medicine," she explains. "Recognizing that … the intervention is extremely important to the times has been something that we have had to learn, but I do think that the generation of emergency physicians here get it, which is why this is snowballing into other things like giving Narcan to patients who are addicted to opiates."

How can other hospitals and communities replicate the work happening in San Francisco? "I think the biggest difference for us in the ED, and why [HIV care] is so seamless, is we partner with a lot of HIV advocates and people in the community who want to help bridge these patients … into long-term management," Singh advises. "Making those relationships real and sustainable is super important for this work to continue."

Singh adds that the culture of emergency medicine has begun to change. "Emergency physicians of today understand … that it is important to recognize these high-risk patients early, and that early treatment makes a difference," she says. "Of course, offering options to their partners makes a difference as well." ■

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Optimize Data Visualization to Improve Communication About Quality Improvement

Data visualization is increasingly important in the communication of quality improvement data, and nearly everyone in the field uses it to some extent. But effective use of data visualization with graphics, dashboards, and other tools requires an understanding of why this approach works and how to optimize its effect.

In the simplest terms, data visualization is taking rows and columns of text and numbers and making it consumable in a picture, explains **Greg Horne**, global principal for healthcare with SAS, a software analytics company based in Cary, NC.

"Visualization technology demystifies data and presents a story that can be used to improve outcomes," Horne says. "We all know the mantra that a picture is worth a thousand words, and this holds very true with data visualization — creating a picture to encapsulate many thousands of data points to facilitate better decision-making."

The most important part of any data strategy is making sure the data can be used by the people who can benefit, he says. In healthcare, this can be as simple as creating a "traffic light" system where clinical staff look for what is red, representing a problem area, he says.

"At the operations level, administrators can review a diagram that identifies care units not meeting goals for outcomes and readmissions. Or they can flip the data to learn about the high-performing units that can teach the others," Horne explains. "For patient portals that aid in provider choice, data visualization can present clear knowledge to inform decisions."

Visualization can be taken further by adding a narrative, telling a story with the data and graphics rather than presenting a static representation. For instance, this might be used to tell the story of how a unit addressed hospital-acquired infections by showing where the unit started, what changes were implemented, how the data changed over time, and where the unit currently stands.

All operational departments at University of Pittsburgh Medical Center (UPMC) use data visualization to some extent, and the quality professionals consider it a primary tool for conveying information, says **Johanna Bellon**, PhD, MS, CFA, senior director of quality analytics and performance at the UPMC Wolff Center for Quality, Safety, and Innovation. The CEO receives a report every morning that uses data visualization for key metrics in the hospital, with others receiving visual representations of the metrics appropriate for their work, down to the floor nurses.

"The delivery and format of those is incredibly important in spurring people to take the actions we hope they will take based on the data," Bellon says. "Our team focuses on quality and quality metrics, but I work with other data teams like the electronic health record, finance, [and] clinical analytics to help get the best data to users across the enterprise. Visualization is a very important way that we get that data across in a meaningful way."

Bellon's department uses an enterprise data warehouse, a system that integrates data from multiple sources and compiles it for analysis, along with a software system that facilitates data analytics and presentations. With vast amounts of data available, the quality department must determine how to present that information in the most useful way possible, and that means converting numbers into something visual and more easily understood.

When preparing data for users within the hospital, Bellon and her colleagues keep in mind several key requirements. The first is what the user needs to know.

"We want to be sure we're answering their questions and giving them the information they need. If they're trying to reduce admissions, we want to make sure that information is being presented front and center in our data visualization, and that it's easy to access," Bellon says. "After that, we want to be able to drill into the whys. If they are seeing in a chart that they are having an increase in readmissions, part of QI's task is to delve into the root causes. We want to have drill-through capability in our data visualization so they can access process measures and outcome measures related to that main question."

For instance, the initial graphic showing an increase in readmissions might lead to another visualization illustrating an increase in patient volume or severity of illness, or a turnover in staff.

The third key ingredient is providing an intuitive information hierarchy. That means Bellon wants UPMC users to see the data visualization and understand it readily.

"We have filters and data specification elements on one side and the data visualization on the other side, with graphs and other elements, making

it easy to see the elements they have specified as important for them and the outcomes," Bellon says.

Bellon's department also tries to make the data visualization a self-service resource. A few years ago, data visualization was usually flat files, just graphical representations of data with no drill-through capability, she says. But now, users are getting to be much more sophisticated with the use of data.

"We are trying to deliver to their doorstep a data visualization that puts all the answers at their fingertips so they can drill through and not have to keep coming back to us asking for more and more reports that get down to the data they really need to act," Bellon says.

Documentation also is essential in the data visualization product, she says. It is not the most interesting part of the product, but it must be available to the user to show how the data were calculated. The click-through graphics allow the user to see how the numerators and denominators were determined to support an informed interpretation of the data, she explains.

Users Can Build Own Reports

All UPMC executives, nurse leaders, and frontline staff can access a readmissions dashboard that follows those principles in presenting data visually, Bellon says. The dashboard shows data for the overall hospital, but also broken down by unit, specialty, and other divisions.

"There is another feature called a report builder. If they want to answer questions they may have about why the data is showing something in particular, they can drag and drop data to prepare their own report to answer those questions," Bellon says. "They can always contact us if they need more support, but it's more efficient if they can prepare those reports themselves. We've had some departments implement new strategies such as risk stratification that resulted in reduced readmissions, so we're hoping that this kind of data visualization supports that going forward."

Data visualization also has been used to address sepsis at UPMC. Bellon's department uses dashboards to show unit leaders and clinicians their volumes of patients with sepsis, along with sepsis mortality and readmissions. "The data visualization helps us provide the feedback loop to say you're using a power plan over 80% of the time, you're getting your lactates done in a certain number of patients, and we have seen a dramatic reduction in sepsis mortality across our hospital," she says. "That's exciting because it brings together quality improvement efforts with data visualization and feedback loops to support that work."

Formalize Visualization Principles

To optimize the use of data visualization, Bellon urges close engagement with users. She also says it is important to formalize the key drivers of data visualization, such as answering the user's questions and providing documentation, rather than assuming quality improvement professionals will just know to include those aspects.

"Often, data teams are overwhelmed with requests, and people will skip steps to try to push things out faster," Bellon says. "We have a principle here that says 'go slow to go fast,' meaning that if we take the time to follow the important steps with data visualization, you're going to get more bang for your buck. Even if you don't have the greatest software tools and you're working in Excel, you can set up the processing guidelines to ensure that you're identifying the questions from your users and developing templates so that they can easily use the data you're providing."

Healthcare is catching up to the ways other industries have used data visualization, Bellon says. The next frontier may be using data visualization for patient-specific outputs, she says.

"It's kind of easy to aggregate at the hospital level because that covers up problems with the individual data, whereas if you drill down to the individual doctor or patient, the data has to be really clean. If there is one problem with the data in the background, it can throw off the metrics quickly," Bellon says. "We've been developing reports at the physician level and some techniques to automatically send the report to the physician so they can have that report in their inbox without having to sign into a system. It's exciting how much data and the different types of data that can be presented with good visualization."

The general idea of graphs and dashboards is nothing new, of course, and people have tended to think of that level of data visualization as just a routine part of any quality improvement profession, notes **Scott Berinato**, senior editor at *Harvard Business Review* in Brighton, MA, and an expert on data visualization. But data visualization is moving way beyond just making a pie chart.

"Data visualization is not just a nice-to-have skill. You have to get good at it because it's a competitive imperative," he says. "Other people are starting to get good at it, they're going to get better, and those who get good at it will find opportunities that others won't. The people who develop

skills in data visualization are going to impress their bosses more and advance their careers."

Information design is emerging as a profession of its own, Berinato notes. Colleges are beginning to offer information design courses that teach data visualization, and employers are seeking those skills, he says.

The good news is that improving your data visualization skills is not a daunting task, Berinato says. Technology takes care of most of the actual creation of visual representations of data, so the task for quality improvement professionals is to learn what makes good data visualization and how to tailor it to the specific needs of an audience, he says.

Some of the more sophisticated tools have a steep learning curve, but there are many data visualization software programs that are easier to learn, Berinato says.

The only danger lies in falling behind the curve, he adds.

"There were people in the '80s who thought Excel was a bad idea, and they didn't want to put any time and effort into learning it because the ledger system they did by hand worked just fine," he says. "You can imagine someone now saying they don't want to use Excel and they'll just do it by hand. That's as crazy as how it will be very soon if you balk at using data visualization, or if you don't understand that it's more than making a simple bar graph."

Technology vendors often will offer education on using their software for data visualization, but Berinato says one of the simplest ways to learn more about data visualization is to follow the Twitter hashtag #datavis.

"You will be amazed at how many people are trying this, showing their work, trying out new techniques, and talking about the tools that are available to learn," Berinato says. "Google 'data visualization tools' and you'll find many free tools that will have data sets to play with, or you can upload your own data sets. There are tools that make it easy to start using data visualization more, and there are good books that will give you an understanding of the principles behind data visualization and how to make the most of those tools."

Good data visualization will provide much-needed feedback to team members on the frontlines of quality improvement efforts, says **Jeanette Ball**, BSN, RN, PCMH, CCE, client solution executive with CTG, based in Buffalo, NY.

"It's hard to run a quality improvement program without feedback that shows people their efforts are bearing fruit. It creates incentives for them when they see that line going up on the graph," Ball says. "Data visualization also gives you the ability to demonstrate to your executives that you are working on the edicts they've given you. It's important to roll out the data in ways that allow good visualization at different levels of your organization, from top executives to management, middle management, and right down to the provider level so they can gauge themselves against their peers."

Ball notes that data visualization can be particularly helpful with physicians because they tend to be competitive and will respond when the graphics show how they stand against their peers.

Good data visualization also can be useful with compliance efforts, Ball notes. With compliance dashboards, you can track multiple areas that might be auditable during a compliance period, and data visualization can help manage information from multiple sites, she says.

"If an audit occurs, you have all the documentation at your fingertips and can produce reports from that data," she says. "That can be hard to do on the spot, especially if you have 10 or 20 sites to account for. When the auditor shows up and wants that data, you can produce reports that are effective in showing that data when you have it all tied in to a dashboard already."

Data visualization also can improve quality of care and patient safety by presenting information in a way that is quickly accessible to clinicians, says **David Williams**, general manager of the healthcare provider business unit at Conduent, a process services company based in Florham Park, NJ.

"While a lot of organizations can make information available to clinicians, that information is not always presented in a way that enables clinicians to understand it and make quick decisions," Williams says.

For data presented to clinicians, standardization of that information can be better than giving physicians the option to customize how they want the information presented to them, Williams says. Some physicians will find the customization to be just one more task and never get around to it, so it can be better to just present them with a format that will work for everyone, he says.

Even with data visualization being adopted much more in healthcare over recent years, Williams sees room for improvement in both how and how much it is used.

"We've seen organizations use this tool to improve patient falls, pressure ulcers, and surgical site infections. It can free up time for clinicians who can access this data and act on it quickly without spending a lot of time trying to find and understand the raw data," Williams says. "We see success when projects are based around patient safety and quality of care, matched up with all the regulatory requirements out there today." ■

CASE MANAGEMENT ADVISOR™

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CE QUESTIONS

1. **The health equity initiative at Cedars-Sinai reduces health disparities through which of the following methods?**

   a. The cancer center assigns a personal case manager to each patient who is at risk because of health equity issues.
   b. The program identifies neighborhoods with higher proportions of late-stage cancer diagnoses and uses evidence-based approaches.
   c. Case managers hold focus groups with various populations, identifying their chief concerns.
   d. The health system refers ED patients to free health clinics for primary care services.

2. **How have health needs changed for HIV patients over the last 40 years?**

   a. HIV patients can be cured.
   b. HIV patients have become more middle-class and health equities are improved.
   c. People with HIV can live much longer, and health needs now include nursing home care.
   d. Most states have case managers work one-on-one with HIV patients to improve care access.

3. **How does the University of Maryland Medical System use its Transitional Care Center to improve care transitions?**

   a. Patients are referred if community providers are unavailable in the patient's first few days after discharge.
   b. The center moves case managers from one bedside to another with referrals and services to meet patients' needs.
   c. Case managers divide the hospital's patient population into caseloads, focusing on specific discharge instructions for their groups.
   d. Before patients leave the hospital, they visit the center to meet with physical therapists, pharmacists, RNs, and social workers.

4. **Which of the following are good methods for case managers to employ to improve communication with providers?**

   a. Set up an appointment with their front desks and go over case files at the appointment.
   b. Send patients to providers with a written list of case management notes.
   c. Be prepared with information they will need to know about the patient, and start a conversation.
   d. Invite physicians to a round-table discussion of patient needs.