

I am grateful for the opportunity to talk to you today about the exciting and revolutionary role health information technology can play in transforming the quality, efficacy and safety of patient care. My name is R. Scott Hawkins and I am the Chief Information Officer at *Boston Health Care For the Homeless Program* (BHCHP), which is one of 52 community health center programs serving more than 760,000 medically underserved patients across Massachusetts. Nationally, 1,200 community health centers provide care to 20 million people.

Community health centers provide primary, preventive and dental care, as well as mental health, substance abuse and other community-based services to anyone in need regardless of their insurance status or ability to pay. In Massachusetts, 90% of health center patients live below 200% of the federal poverty line and more than 67% belong to a racial or ethnic minority group. What's more, many of our patients remain at a higher risk for contracting serious chronic illnesses such as diabetes, cancer and HIV/AIDS and as a result, are more susceptible to utilizing higher cost emergency and specialty care.

There are dozens of national studies on the quality and cost-effectiveness of care provided by community health centers and their demonstrated and historic savings to state Medicaid programs and other insurers. Because of our commitment to quality improvement and eliminating health disparities and inequities, maximizing the latest information technology is priority to enhancing our ability to track and impact a range of measurable health statistics in a more data driven way. These measures include reducing emergency room visits and hospital readmissions, improving care for people with chronic diseases, increasing the utilization of preventive health services, and monitoring the quality and effectiveness of care provided across patient race and ethnicity.

At BHCHP, we care for a particularly vulnerable subset of the medically underserved that includes homeless adults and families who eat in soup kitchens, stay in the emergency shelter system and visit drop-in centers. BHCHP also delivers care to

homeless people who sleep on the streets or in makeshift shelters and to homeless workers who care for racehorses on the hidden "backstretch" of Suffolk Downs Racetrack in East Boston. In addition, we provide care to formerly homeless people who have progressed into transitional and supportive housing programs. Finally, we run the Barbara McInnis House, a 104 bed respite center that provides 24-hour care to homeless patients who are too sick to return to shelters or the street, but are not sick enough to require a costly inpatient hospital stay.

All told, we annually serve more than 12,000 patients, 98% of whom have incomes below the federal poverty line. Our multidisciplinary teams deliver direct medical, dental and behavioral health services to homeless men, women, and children in over 80 unconventional locations, including shelters, under bridges, and along back alleys. In short we improve access to care by bringing care to our patients. In an effort to connect our patients with the full spectrum of medical care, BHCHP has built strong relationships with Boston's renowned academic medical centers, operating primary care clinics on the campuses of three major teaching hospitals.

Although quality on certain US health measures has improved, health disparities continue to persist between racial, ethnic and socioeconomic groups across the country. For the homeless, these disparities are exacerbated by intractable poverty; co-existing diseases like drug abuse and severe mental illness; and multiple barriers to care that result from a competing system of needs that includes obtaining food, shelter and clothing and maintaining personal safety.

Notwithstanding these enormous challenges, my health center colleagues and I remain optimistic about what health information technology (HIT) can and is doing to empower patients, support clinicians, promote quality, safety and efficiency and increase care coordination across the health system – all with the goal of reducing health disparities.

Today, I will talk about what my program is doing with technology to impact health outcomes for our patients. I will also emphasize the necessity for standardizing data

collection and for aligning data collection and reporting for effective and efficient clinical practice. Lastly, I will talk about the value of meaningful use in improving our overall health system and for ultimately eliminating health disparities.

First, imagine the implications of providing continuous care to 12,000 patients who are seeking health services through more than 80 sites across a major city. Early recognition of the role health information technology could play in helping to address the challenges of serving transient patients led to our organization's creation and implementation of the nation's first Electronic Medical Record (EMR) for a homeless program in 1996, allowing a provider access to a patient chart no matter which of our many sites they show up at.

We currently deliver our EMR to providers on hard-driveless laptops and thin client computers utilizing remote access through mobile broadband cards, lease internet lines, and/or internet access provided by host agencies (generally the shelter in which our clinic resides). BHCHP's clinical providers and *Family, Street and Behavioral Health Teams* have the ability to call up critical and timely patient information such as medical histories, allergies, health conditions and medication lists through a secure web portal, on devices which store no data locally, ensuring patient data security.

Our health care outreach professionals also have the ability to record detailed notes in patients' electronic medical records, locate information about particular conditions and medications, file e-prescriptions, process e-referrals, locate nearby pharmacies and assist patients in registering for health insurance and other benefits. Given the transience of homeless patients, having this on-the-spot ability to access and impart information, prescribe medications and make appointments and referrals is crucial. Moreover, by addressing both efficiency and accessibility, BHCHP providers are able to render the highest quality care to their patients.

Boston Health Care for the Homeless continues to embrace state-of-the-art technology, but there is no way we could be where we are today without our collaborative efforts

through both the Massachusetts League of Community Health Centers and a Health Center Controlled Network led by Boston Medical Center. We are also active participants in the Massachusetts Health Data Consortium, where providers (both for and non-profit), insurers, HIT vendors and government entities come together to discuss and debate current HIT issues and trends. Within these collaborative efforts we have advanced our use of technology much further than we would have ever been able to do on our own. Combining common efforts increases learning, allows for experimentation, and most importantly has resulted in greater funding opportunities. Of note, is that several of our most recent successful initiatives were started with HHS and ARRA grants, and have become sustainable due to the measurable benefits they bring.

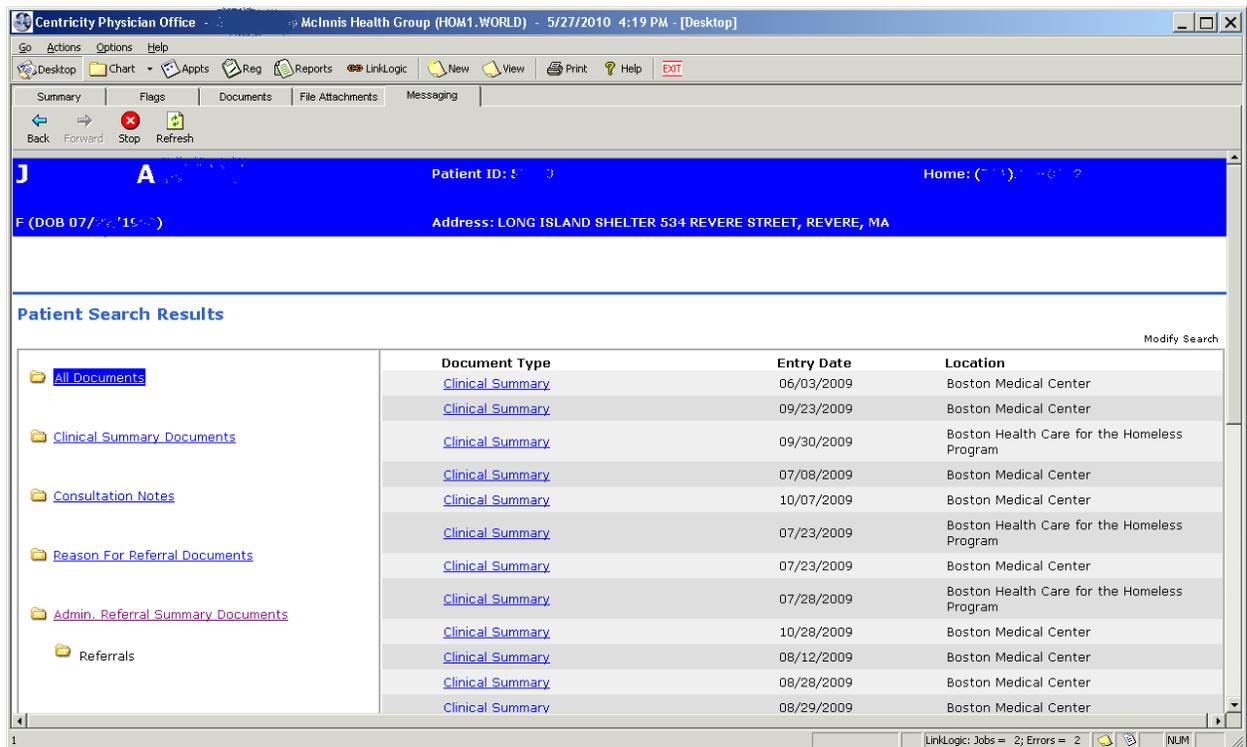
Through our involvement with our Health Center Controlled Network, we have advanced our EMR capacity by using a Community Information Exchange (CIE). The CIE represents one of only 53 Health Information Exchanges (HIE) that exist in the country to date, and one of only a handful which exchange full Continuity of Care Documents (CCD), a patient summary containing a core data set of the most relevant administrative, demographic, and clinical information facts about a patient's healthcare, covering one or more healthcare encounters.

The CIE includes 13 Boston-based community health centers and one academic medical center and was initially funded with a grant from HRSA in 2007. The exchange serves as a repository for patient clinical data that can be accessed by the patient's primary care physician office and shared with other organizations like specialty practices when authorized. Having this has allowed our providers immediate access to records at any of the other clinics, this is already resulting in reduced duplication of tests, and better coordinated care. It also ensures that when our patients housing becomes more stable, care will continue to be coordinated if they continue care at another local community health center.

Clinical summaries are generated for patients after a primary care visit and published to a document registry. Other documents such as lab and radiology reports are also published

to the registry. A key feature of the CIE allows elements of a patient’s clinical document to be imported into the EMR of the specialty practice for the purpose of updating the patient’s chart.

Unfortunately, the CIE does have one significant drawback. We have found that while CCDs are appropriate documents to hand patients at end of visit, they are not the most useful in a CIE. As the screen shot shows below a list of CCDs does not let a provider quickly find any particular result.



The addition of an e-referral portal with a second grant from HRSA in 2008 has had a measurable impact on quality, efficiency, care coordination and patient tracking and safety within the system. Before the portal was launched, referral specialists received inadequate patient information, referring providers lacked timely feedback and referrals for 9 measured specialties took an average of 6 weeks to complete. Delay which often

cause our patients to miss appointment, become frustrated, and lose faith in the ability of us and the hospital to improve their health.

Post launch, the timeline for referrals within those same specialties now average less than 10 days, with a decrease in no show rates. Below is a screen shot of the referral portal, which our medical staff use to track the status of all referrals, and passing along updates as needed to our patients.

The screenshot shows a web browser window displaying the 'Referral List' for Boston Medical Center. The table lists various referrals with columns for Priority, Ref. Date, Name, Ref. Prov., M/R#, From, To, Ref. Status, Submitted, Appt., Appt. Date, Spec., Spec. Note, SC Ack, and Rpt/SC Note. The table contains 20 rows of data, including referrals for specialties like Podiatry, Otolaryngology, Orthopedic Surgery, Dermatology, Ophthalmology, Neurology, Physical Therapy, Urology, Gastroenterology, Radiology, and Gynecology.

| Priority | Ref. Date | Name | Ref. Prov. | M/R# | From | To | Ref. Status | Submitted | Appt. | Appt. Date | Spec. | Spec. Note | SC Ack | Rpt/SC Note |
|----------|------------|------|----------------------|------|---------------|---|-------------|--------------|-----------|---------------------|-------------------------|------------|--------|---------------------------------|
| Normal | 05/11/2010 | MO | Elea Sivasito NP | 001 | BHCHP Site | Podiatry - General (Non-Urgent) | Submitted | Not Required | Confirmed | 07/19/2010 01:15 PM | DeeThey M Habrahaew DPM | Incomplete | | |
| Normal | 05/11/2010 | VEI | Claire Carlo MD | 001 | BHCHP JYP | Otolaryngology - General | Submitted | Obtained | Scheduled | 06/01/2010 01:00 PM | Jacob R Hoozery MD | Incomplete | | |
| Normal | 05/11/2010 | PCZ | Claire Carlo MD | 001 | BHCHP JYP | Orthopedic Surgery - Knee | Submitted | Not Obtained | Scheduled | 06/20/2010 01:00 PM | William R Creevy MD | Incomplete | | |
| Normal | 05/11/2010 | BAI | Brian Klausner MD | 001 | BHCHP JYP | Dermatology - General | Submitted | Obtained | Scheduled | 06/08/2010 08:30 AM | Amal K Kurian MD | Incomplete | | |
| Normal | 05/11/2010 | LV1 | Kathleen Saunders NP | 001 | BHCHP JYP | Ophthalmology - Comprehensive | Submitted | Not Required | Scheduled | 06/25/2010 12:45 PM | Manish A Desai MD | Incomplete | | |
| Normal | 05/11/2010 | DO | Karen Henley MD | 001 | BHCHP JYP | Neurology - Sleep Study | Submitted | Not Obtained | Scheduled | 09/10/2010 08:30 PM | Sanford H Auerbach MD | Incomplete | | 05/24/2010 16:42 Deborah Wilens |
| Normal | 05/11/2010 | NO | Brian Klausner MD | 001 | BHCHP JYP | Physical Therapy - Physical Therapy (PT) | Submitted | Not Required | Requested | | | Incomplete | | 05/13/2010 11:10 Yvette Ware |
| Normal | 05/11/2010 | VA4 | Iana Bica MD | 001 | BHCHP JYP | Urology - General | Submitted | Not Obtained | Scheduled | 07/09/2010 11:30 AM | Ricardo Munano MD | Incomplete | | |
| Normal | 05/11/2010 | VEI | Marguerite Beaser NP | 001 | BHCHP JYP | Orthopedic Surgery - Knee | Submitted | Not Obtained | Scheduled | 07/02/2010 09:30 AM | N/A | Incomplete | | 05/24/2010 16:48 Deborah Wilens |
| Normal | 05/11/2010 | HEI | Betsy Kinspatrick NP | 001 | BHCHP SFE | Gastroenterology - Colonoscopy | Submitted | Not Obtained | Requested | | | Incomplete | | |
| Normal | 05/11/2010 | STV | Kathleen Saunders NP | 001 | BHCHP SFE | Abdomen Ultrasound Complete | Submitted | Not Required | Scheduled | 06/03/2010 11:00 AM | N/A | Incomplete | | |
| Normal | 05/11/2010 | AR | Aileen Hays MD | 001 | BHCHP SFE | Urology - General | Submitted | Not Obtained | Scheduled | 07/06/2010 03:45 PM | David S Wang MD | Incomplete | | |
| Normal | 05/11/2010 | OB | Claire Carlo MD | 001 | BHCHP JYP | Radiology - Screening Mammogram Bilateral | Submitted | Not Obtained | Scheduled | 06/16/2010 11:30 AM | Screening Mammogram | Incomplete | | |
| Normal | 05/11/2010 | OB | Claire Carlo MD | 001 | BHCHP JYP | General Surgery - General | Submitted | Not Obtained | Requested | | | Incomplete | | |
| Normal | 05/13/2010 | KEI | Julia Tyler NP | 001 | BHCHP PSSE/PS | Gastroenterology - Colonoscopy | Submitted | Not Obtained | Requested | | | Incomplete | | |
| Normal | 05/11/2010 | RO | Carlynn Abbant NP | 001 | BHCHP SFE | Gastroenterology - Upper Gastrointestinal | Submitted | Not Obtained | Cancelled | 05/24/2010 10:20 AM | Farraye MD, Franca A | Incomplete | | |
| Normal | 05/11/2010 | RO | Carlynn Abbant NP | 001 | BHCHP SFE | Orthopedic Surgery - Hip | Submitted | Not Obtained | Confirmed | 06/24/2010 10:00 AM | Thomas A Emson MD | Incomplete | | |
| Normal | 05/11/2010 | RO | Carlynn Abbant NP | 001 | BHCHP SFE | Gastroenterology - Colonoscopy | Submitted | Not Obtained | Cancelled | 06/24/2010 10:30 AM | Farraye MD, Franca A | Incomplete | | |
| Normal | 05/11/2010 | WH | Marguerite Beaser NP | 001 | BHCHP JYP | Ophthalmology - General | Submitted | Not Obtained | Requested | | | Incomplete | | 05/26/2010 09:46 Andrea Hill |
| Normal | 05/11/2010 | EL | Kathleen Saunders NP | 001 | BHCHP JYP | Oglyn (Gynaecology) - Gynecology | Submitted | Not Required | Scheduled | 05/20/2010 03:30 PM | N/A | Incomplete | | 05/13/2010 11:39 Yvette Ware |

The e-referral portal has been embraced by our medical staff, and had a noticeable impact on patient access to needed and appropriate specialty care.

In addition to our work with the CIE, BHCHP is one of ten community health centers that participate in CHIA DRVS™, a web-based central data repository and reporting solution developed by the Massachusetts League of Community Health Centers that provides value-added reports and key performance indicators on data captured from community health center electronic health records (EHR). A major focus of the reporting solution is to measure health outcomes based on individual patient characteristics, including race, ethnicity and language.

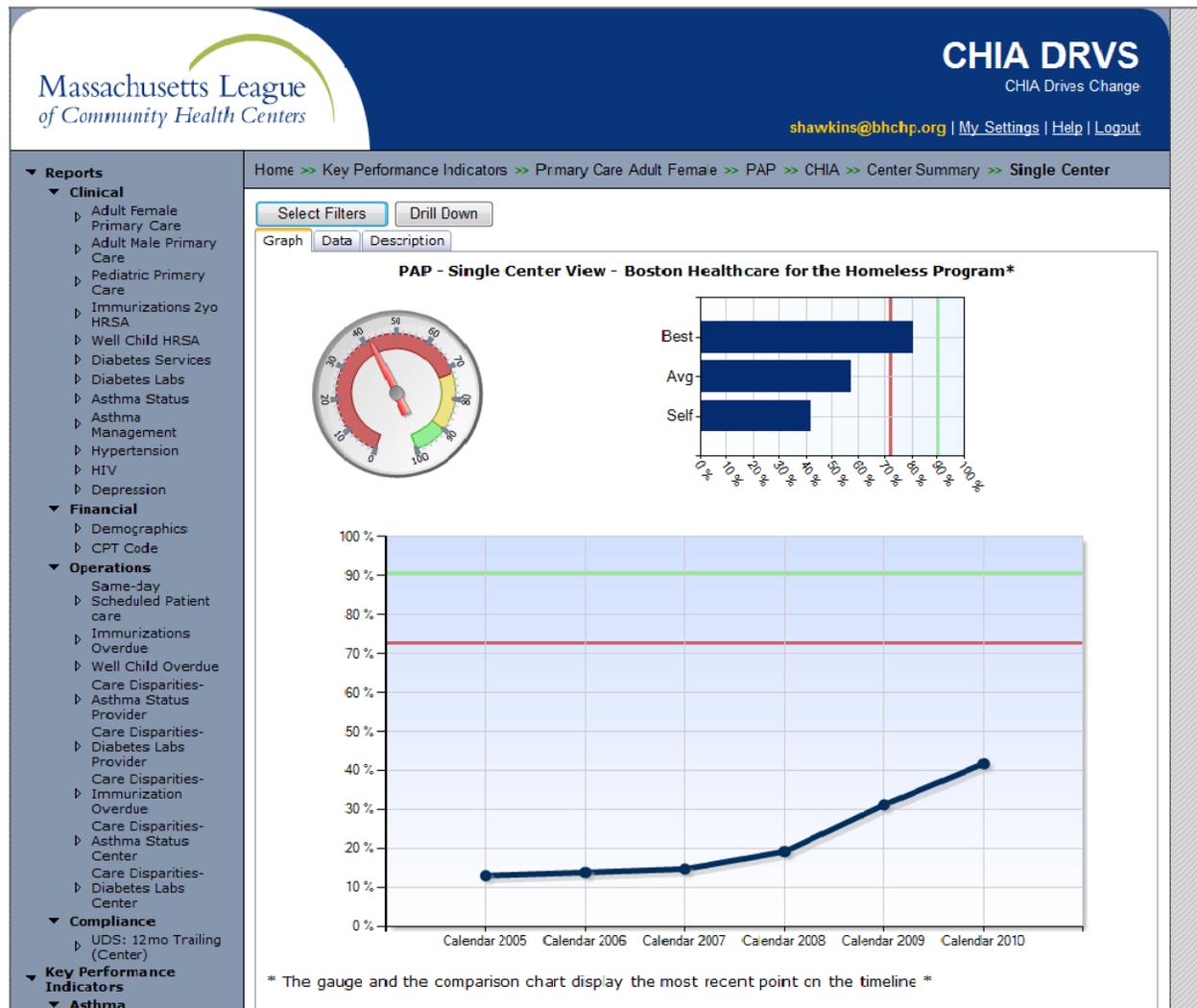
To date, the system extracts data from three EMR and three electronic practice management (EPM) systems nightly, and has the capability for producing more than 20 quality reports and measuring over 40 health center-specific key performance indicators (KPI). The scope of key performance indicator (KPI) charts and reports includes but is not limited to *Primary Care, Chronic Diseases, HRSA UDS Clinical Indicators* and other key measures, including *Core Visit Requirements, Immunizations, and Same-Day Scheduled Patient Care*.

KPI charts provide the ability to produce benchmarking reports at a range of levels. Data can be compared center to center as well as provider to provider within centers. Health centers may also benchmark their progress against aggregate data and nationally established standards. Additionally, data can be compared based on a health center's geographic location or size, as well as individual patient characteristics, including race, ethnicity, language, payer and date of medical encounter.

KPI reports provide the ability to view patient level data across a variety of clinical, financial, operational and compliance areas with the added functionality of selecting individual filters for each report such as race, ethnicity, language, payer and date of medical encounter.

HIT can also make significant improvements even through smaller projects. BHCHP has always struggled with PAP rates for eligible women. Working with providers, we overhauled the entry screens to track PAP results, making data entry more structured and easier for providers, we also added a pop-up box for eligible women who are overdue for PAP tests, and lastly we included data of last PAP test on our triage screen that nurses see during intake, and asked nurses to play an educational role encouraging women to ask about having a test done for those who needed one. While we are still below the national average, as the CHIA produced report below shows, the impact has been

dramatic:



As the nation continues to grapple with the power and potential of HIT in transforming the way health care is delivered and evaluated, one thing is clear: we have to get the data right.

Current reporting requirements -- particularly for federally-funded community health center programs -- can be chaotic, burdensome and a challenge to the “utility/futility” scale. Payers and funders are slow to align their reporting requirements which place undue stress on provider resources and do little to support the needs for operational improvement. For example, reports on health and process outcomes from payers that do

not correspond to specific patient panels, arrive 6 months to a year after the care is delivered, and fail to allow for “drill down” to root causes continue to add little or no value.

Establishing and maintaining a standardized “problem list” of current and active diagnoses will benefit clinicians, patients and provider organizations. The same holds true for allergies which represent a common medical complaint across patient populations. Currently, when organizations exchange data through an HIE there is no linkage between problem lists or allergy nomenclature, thus requiring manual reconciliation. Standardized language would go far in ensuring patient safety and clinical quality and empower patients with a vocabulary they can use with providers at every level of the health system.

While clinical decision support tools are an important part of the EMR, they should include standardized measures, be amenable to metric upgrades and trigger alerts for scheduled care, adverse medication reactions and other patient quality and safety issues.

E-referrals have greatly improved the efficiency and quality of care for patients. However, continuity of care documents (CCDs), which represent the comprehensive clinical history of a patient shared between specialists and referring physicians, are cumbersome. Having the ability to load information by field into the patient medical record will promote greater efficiencies and more clinical time with patients in the primary care provider setting.

Although the EPM system is not addressed directly in the meaningful use criteria, it is a critical tool for collecting meaningful patient health information and report outcomes. Such data is crucial to understanding and addressing disparities and using it in a multidisciplinary patient-centered approach to health care. Staff are the lynchpin in making any kind of data collection system successful; improvement of the patient care process can only come through deploying accurate data that fully reflects the complexity and demographic base of the patients we serve.

In order to achieve meaningful use, we must align data collection and reporting with support for effective and efficient clinical practice. Data collection that has a genuine impact on clinical practice will improve the use of resources and refocus them on the end game: improved outcomes in care across diverse populations.

How can we ensure this promise to our medically underserved patients? First and foremost, we must resist the urge to focus on a one-outcome-measure-fits-all approach at the expense of pursuing outcome targets driven by patient baseline profile data. Rather, we must deploy the data in a way that gets at the nature of disparities in “real time” and apply that feedback in the design of interventions that improve patient health outcomes. In other words, the rush to look good could discourage providers from addressing broader efforts to close the nation’s burgeoning health disparities gap.

I am aware of a provider who was not performing as well as his peers when it came to ensuring that his diabetic patients were monitoring their A1C levels. Upon seeing the data, the provider dug deeper to understand the reasons behind the blatant disparity. He discovered that a large group of his patients were from a culture that fears the drawing of blood. As a result, his patients had been quietly refusing to comply with his instruction. In response, the provider redesigned the clinical and health education approaches for successfully monitoring diabetes in this group of patients.

Much of that story speaks to patient trust – a critical aspect of tackling disparities through meaningful use. Ensuring that a patient’s data is up-to-date across all providers, offering rapid feedback on tests and with referrals and creating patient portals that provide key health information are all ways providers can engender patient trust through technology.

At the same time, we must be mindful of the risks involved for medically underserved patients who lack basic access to technology because of socioeconomic status, race, ethnicity, language or geography. These patients will require on-site access to patient portals as well as on-line content in the languages they speak. This level of patient

engagement is essential for making sure that meaningful use is aligned with state and national guidelines for medical home initiatives.

Ultimately, our EMR systems cannot just monitor care – they must reinforce its constant redesign as we glean important insights from the data about serving diverse patient populations. Often times, the data will direct us outside the health system toward the economic and social conditions that impact the health of a community or a specific patient population. Our commitment to ensuring the health of all communities compels us to develop a data-focused health system that that can direct resources toward identified care gaps in real time; support clinical effectiveness; and engage patients in setting their own health care goals.