

## Community Partners HealthNet Occasional Papers, Number 1

### Ethnic Disparities and Diabetes Outcomes at Greene County Health Care

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#### Abstract

**Objective:** The purpose of this paper is to analyze and disseminate diabetes outcomes data from Greene County Health Care, a member of Community Partners HealthNet. A scientific study of data de-identified data extracted from the EHR for calendar year 2006 has already been done in conjunction with Wake Forest University<sup>1</sup>. The above paper adds to the growing body of scientific evidence that community health centers provide higher quality care than private practices and in a more cost effective manner<sup>2</sup>. The purpose of this paper, using data directly from an EHR, is to begin to analyze the quality and policy implications of the data as well as demonstrate the power of the business intelligence software in use by Community Partners HealthNet. The results discussed in this paper are entirely consistent with the data discussed in the paper cited above.

**Data sources and methods:** GCHC has used an EHR since 2000. CPH delivers the EHR and warehouses the data. A sophisticated report writing program was used to create reports from the data warehouse. These reports were compiled in spreadsheets and statistical analysis of the data was completed.

**Principal findings:**

**Conclusion:**

**Relevance:** Health care costs continue to rise at a rate disproportionate to the gross national product, and the number of Americans who are uninsured or under-insured is also increasing. More than 50 million Americans have no health insurance and more than 1 million North Carolinians have no health insurance coverage. Rates of diagnosis of chronic disease statewide have increased steadily for the last 10 years. Diabetes diagnosis prevalence, for example, has increased by almost 50% in North Carolina since 1998 and African-American, American Indian and Hispanic patients are disproportionately affected. The Racial and Ethnic Health Disparities in North Carolina Report Card 2003 cites diabetes death rates in the two former groups as more

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<sup>1</sup> **Evaluation of Quality of Diabetes Care in a Multi-ethnic, Low-Income Population**, Julienne K. Kirk, PharmD, CDE, Alain G. Bertoni MD, MPH, Joseph G. Grzywacz PhD, D. Alden Smith, MBA, Thomas A. Arcury, PhD (submitted to Journal of Clinical Outcomes).

<sup>2</sup> "The role of Community Health Centers in reducing health disparities", North Carolina Journal of Medicine, D. Alden Smith, Ben Money, January 2005.

than double that in whites.<sup>3</sup> While the same disparity is not cited for Hispanics, the latter is almost certainly attributable to sampling bias, that is, the Hispanic population is largely too young to have developed fatal diabetes complications. Since 70% of all medical spending in the United States is spent on chronic disease management, it is imperative that we continue to develop cost-effective approaches to the management of chronic diseases.

The community health center model has demonstrated for decades that primary care for everyone, including minorities, can be delivered in an efficient and effective way. CHCs have now implemented chronic disease care models that have demonstrated effectiveness in improving chronic disease management and reducing overall health care costs. Health center controlled networks (HCCN) have pioneered both quality and HIT initiatives and demonstrated the economies of scale of the network model in HIT implementation<sup>4</sup>.

## **Introduction**

### **Community Partners HealthNet (CPH)**

Community Partners HealthNet (CPH) is a nine year old health center controlled network of community and rural health centers that work together to optimize their limited resources in service to the medically underserved through the use of sophisticated information technology. CPH enables the members to access resources more efficiently and provide programs and services more cost effectively through collaboration and integration of core information tools.

Information systems and technology are the central tools delivered by the network. CPH provides centralized servers and support for EHR, DER and PMS products as well as data warehousing functions. CPH has built the capacity to automate the internal work flows of member practices for efficiencies and to capture 100% of the EHR data.

Achievements in information systems infrastructure include:

Wide area computer network: This central computer system model is the core support for a number of shared business applications for the medical practice sites (EHR, DER, PMS). All data is protected using the same enterprise level, state of the art security software that is used by DHHS and other federal agencies. A team of network staff develop and maintain the systems and a help desk function.

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<sup>3</sup> 2003 Racial and Ethnic Health Disparities in North Carolina Report Care 2003, Office of Minority Healthcare Health Disparities and State Center for Health Statistics North Carolina Department of Healthcare and Human Services.

<sup>4</sup> D. Alden Smith, "Bringing Affordable EMR Capabilities to Community Health Centers: Federally Qualified Health Centers Cooperate to Achieve Economies of Scale and thereby Overcome Financial Barriers to Investing in Healthcare IT", HealthLeaders IT Magazine, April 2007.

Integrated business software: Member practices utilize state-of-the-art electronic health records, dental electronic records and practice management system software through CPH's central enterprise servers. These products are interfaced to each other to exchange appropriate information.

Disaster recovery: CPH has a contract with a data center in Raleigh NC and has additional servers at that facility. Data is backed up to this facility on a real time basis. Should CPH's main facility become non-functional, the EHR product can be run from that facility. Planning is underway to expand this service to the DER and PMS products.

Reporting and analytical functions: The Network provides the lead on the clinical outcomes and operations report development and production for the member sites, utilizing the CPH data warehouse and Cognos reporting tools. Any report developed for any center can be used by any of the member centers. CPH provides the data back to the member CHCs for QI activities and is also involved in a number of data analysis/research projects with GCHC.

Health information exchange: Member practices are equipped with secure data links and communication software to conduct health information exchange.

- Data transfer linkages with diagnostic laboratories automatically update the electronic medical record system with results and service information.
- Primary care providers have remote access to the electronic patient record 24/7 through secure web technology.
- A secure web portal allows health center staff to exchange information.
- Working on electronic information carrier project with First Genesis (a contractor to US Army).

### **Greene County Health Care (GCHC)**

For calendar year 2007, Greene County Health Care's medical, dental and mental health providers have served 27,966 patients with 33,425 medical, 7,602 dental and 1,050 mental health encounters. Other staff provided 36,798 enabling encounters for a total of 78,875 encounters for the year. The addition of the Bernstein Community Health Center site as well as dental services and medical family therapy services has greatly increased GCHC's ability to serve the needs of patients. Slightly over half of GCHC's patients (54%) are migrant and seasonal farmworkers, primarily from Mexico. The majority of GCHC patients are uninsured (83.5%), with 7.4% Medicaid, 6.5% private, and 2.6% Medicare. GCHC's patient population is 68% Latino, 18% African American, and 12% white. The vast majority of our patients report incomes at or below 100% of the Federal Poverty Level (FPL), with only 24 reporting incomes over the FPL. Nearly one third of GCHC patients are under age 20. GCHC served 27,966 patients in 2007 a 51% increase from the 18,509 patients in 2004. GCHC has rapidly expanded services and sites under the President's Initiative.

GCHC has participated in the HRSA collaboratives and used an EHR since 2000. GCHC would be classified as what some are calling a Level IV medical home (NCQA level III plus meeting some additional access and cultural competency requirements).

## **Methods**

GCHC has used an EHR since 2000. CPH delivers the EHR and warehouses the data. A sophisticated report writing program was used to create reports from the data warehouse. These reports were compiled in spreadsheets and statistical analysis of the data was completed.

[expand]

## **Results**

Table 1 shows means, standard deviations, n, and significance levels (difference between the sample means at p less than or equal to .05) for seven diabetes measures by race/ethnicity for the years 2005 to 2007. In order to screen for false lab results returned from the lab the following screens were applied: HbA1C not > 20, systolic BP not > 300, diastolic BP not < 40, LDL not > 300, and cholesterol not > 500. The number of diabetic patients being served increases significantly over the three years.

Table 1 clearly shows that:

1. There are no disparities in HbA1c diabetes outcomes between African-American and white patients in this system of care over the three years, despite the increase in patient volume. Hispanics, who are mostly farmworkers from Mexico, clearly show a disparity in terms of HbA1C values with both white and African-American patients.
2. Hispanics had significantly better systolic BP than whites or African-Americans. African-Americans had worse systolic BP means than whites.
3. Hispanics had significantly better diastolic BP means than African-Americans who, in turn had worse means than whites.
4. Hispanics had worse total cholesterol means than African-Americans. African-Americans and whites did not show a disparity in two of the three years.
5. Hispanics had worse LDL means than whites. There was no significant disparity between whites and African-Americans.
6. Hispanics and African-Americans had significantly better HDL means than whites.
7. African-Americans had better triglyceride means than whites and Hispanics.

Table 2 shows the significance levels of the Table 2 shows the percentage of diabetes patients with HbA1C, LDL and BP under control at their most recent clinic visit (last visit in that

calendar year). The sample size is small and there is variability based on race/ethnicity from year to year.

Table 2 clearly shows that:

1. In each of the three years the percentage of diabetes patients under strict control was higher than the national average of 7.3% <sup>5</sup>. In fact, the 13.36 % in calendar year 2007 was 83% better than the national average.

Table 3 shows the means and percentage of patients under control for the individual measures for the three years.

Table 3 clearly shows that:

1. That the patients control ranged from 46% to 77% across the three years. These results are better than the national averages <sup>6</sup>.

Tables 4 through 6 show the ranges of HbA1C results for the last visit of each patient in each of the three years.

Tables 4 through 6 show that:

1. The percentage of African-American patients and white patients with HbA1C results less than 8 are substantially the same in each of the three years. This again indicates no disparity. Hispanics have a significantly lower percentage under 8.

## **Discussion**

The data clearly show the role that GCHC has in reducing health disparities amongst its patients and that the quality of care is constant even as the volume increases dramatically. The Community Health Center model of care, the HRSA collaboratives and the use of HIT are part of the reason for the demonstrated high standard of care. It is not possible from this data to postulate the effects of each individually. Further analysis of some of the older data in the EHR may be instructive.

GCHC is piloting an innovative integrative care model using medical family therapists as part of the normal patient visit. CPH will track clinical outcomes to measure the impact of this strategy on patient care over the next several years. GCHC expects that this integrated care model will not only improve quality of life and psychological issues with patients, but will also improve clinical outcomes by reducing non-compliance. With these systems in place, CPH will be able to track the outcome and demonstrate whether this hypothesis is valid. The pilot study with diabetic patients has been positive after one year.

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<sup>5</sup> Ford ES, Chaoyang L, Little RR, Mokdad AH. Trends in A1C concentration among U.S. adults with diagnosed diabetes from 1999 to 2004. *Diabetes Care* 2008; 31:102- 04.

<sup>6</sup> *Ibid.*, 31:102- 04.

