

Findings

NORTH TEXAS RESEARCH



2012 FOUNDATION RESEARCH

www.dfwhcfoundation.org

Volume 1, Issue 1





Findings

Developing a Strategic Plan to Address Diabetes: A Formative Review	5
Diabetes In Dallas County	10
Readmissions	22
Healthcare Workforce Planning and the North Texas Journey	28
Overview of North Texas Regional Extension Center	40
ICD-10 Compliance and Implementation	46
The Burden of Clostridium Difficile Infection	56
About the DFWHC Foundation	62
Acknowledgments	64

Facts can sometimes get lost in a complex world filled with multiple forms of data. We can all suffer from data overload, with the conclusions lacking meaning or context. At the Dallas-Fort Worth Hospital Council Foundation (DFWHC Foundation), our vision is to become the community resource to create knowledge, insight and wisdom for the continuous improvement of healthcare.

To achieve this vision, we've created our first *Findings* publication. This is our attempt to discover the community's truth by pulling facts from our extensive data and research. We hope this document has produced a clear picture about the health of our residents and the strengths of healthcare in North Texas. The DFWHC Foundation must effectively communicate these statistics to partners and the community at large.

Our hope is that *Findings* will bring attention to relevant issues and create a common consensus on the needs of our community. This will support concerted action to change the face of health in the area. The discovery of such facts by combing through months of research and data is a long and arduous process, but one that is significant when discovering issues within our community.

Findings is intended to be part of the achievement of our vision. We thank our Board of Trustees for their encouragement in making this critical portion of the DFWHC Foundation's communication plan a reality. And most of all, we offer our sincere gratitude to the many hospital, university, business and community partners for sharing information with us to create a "big-picture" view of the community as a whole. The courage and leadership demonstrated by this transparency is a gift to our patients and all residents of North Texas.

We hope you enjoy these *Findings*, and look forward to your comments, contributions and recommendations for future publications.



Kristin Jenkins, JD, FACHE
President, DFWHC Foundation
Senior Vice President, DFWHC



Kristin Jenkins

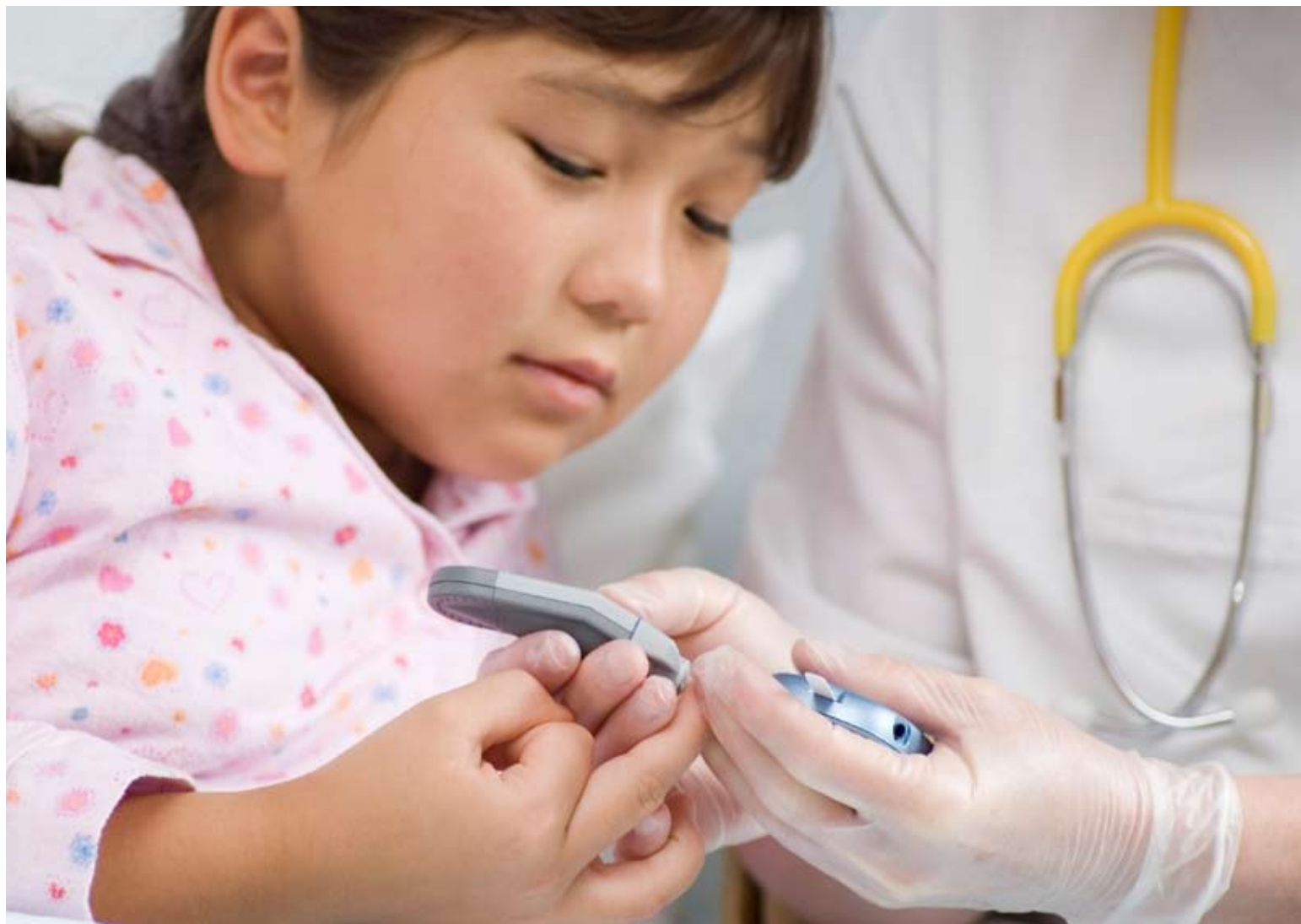


Developing a Strategic Plan to Address Diabetes: A Formative Review



By Summer Collins, MPH

Director of Population and Public Health Research



A data website was developed to provide citizens of North Texas the information needed to improve knowledge about health conditions.

In order to identify, understand, and address the social factors that impact health outcomes, the Dallas Fort Worth Hospital Council Foundation (DFWHC Foundation) created a Community Health Collaborative in 2006. The purpose of this group is to provide the citizens of North Texas with a sustainable mechanism for:

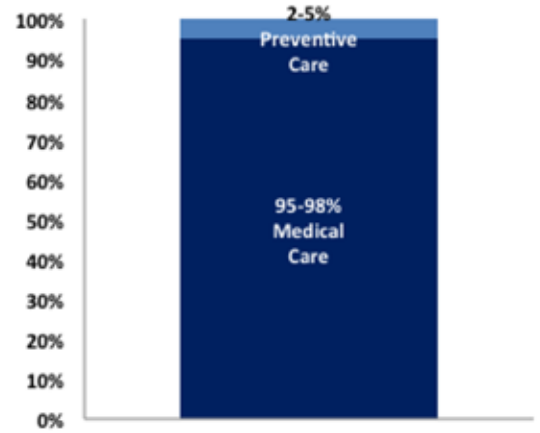
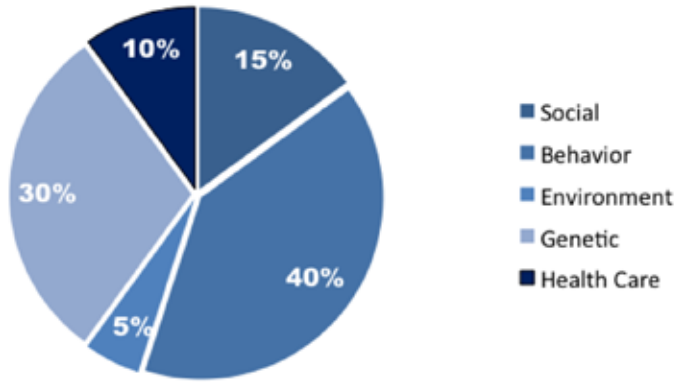
- Assessing the health of their communities
- Identifying areas of need
- Collaborating on initiatives to address areas of unmet need

- Measuring outcomes
- Identifying community resources

Recognizing that the strengths and resources of many various types of individuals and sectors is required to accomplish the tasks, the Community Health Collaborative developed a diversity of membership to include professionals with expertise in:

- Public Health
- Community Health
- Prevention
- Data Analysis
- Health Disparities

The Leading Determinants of Health in the U.S.



\$2.2 Trillion in Annual Healthcare in the U.S.

The 2009 Behavior Risk Factor Surveillance Survey (BRFSS) estimates that among adults in Texas, the prevalence of diabetes is higher among males, non-Hispanic blacks, 45-64 year olds, and those adults without a high school diploma.

was developed to provide citizens of North Texas the data and information needed to improve knowledge and information about priority health conditions, leverage resources through a central repository and data library, and to provide the information needed to conduct needs assessments and gaps analyses. Having completed a recent

societal and social influences on health, and specifically the development of diabetes. The World Health Organization and the U.S. Centers for Disease Control and Prevention agree that over 80% of all chronic disease is preventable and yet only a small amount of the annual healthcare budget is allotted to prevention.

North Texas

Diabetes is a serious health condition with significant consequences for individuals, families, communities and institutions. The two main types of diabetes are type 1 and type 2. Additionally, there is another type of diabetes experienced by pregnant women called gestational diabetes, as well as pre-diabetic populations of individuals with higher than normal blood glucose levels. While type 1 cannot be prevented, type 2 diabetes can be prevented or delayed through lifestyle and environmental changes. In the years 2002 - 2007, diabetes

needs assessment scan, the Community Health Collaborative felt equipped to take a proactive stance and develop an action plan to address diabetes.

As the healthcare community expands beyond medical care to population health management, the Community Health Collaborative felt it important to address the

- Strategic Planning
- Advocacy

The years 2010 and 2011 were particularly rewarding for the Community Health Collaborative as leadership was transferred, engagement fostered and new projects were identified and executed. A robust, online, publically accessible data website (www.healthyntexas.org)

Table 1. Texas 2009 BRFSS Diabetes Breakdown

		95% Confidence Interval
Diagnosed Diabetes Prevalence by Gender		
Male	10%	(8.6 – 11.5)
Female	8.6%	(7.8 – 9.6)
Diagnosed Diabetes Prevalence by Race and Ethnicity		
White, non-Hispanic	8.0%	(7.2 – 8.9)
Black, non-Hispanic	14.4%	(11.0 – 18.7)
Hispanic	9.7%	(8.1 – 11.5)
Other	9.2%	(5.7 – 14.5)
Diagnosed Diabetes Prevalence by Age		
18-29 Years	0.7%	(0.2 – 2.6)
30-44 Years	5.2%	(3.8 – 7.1)
45-64 Years	13.7%	(12.2 – 15.3)
65+ Years	20.7%	(18.7 – 22.9)
Diagnosed Diabetes Prevalence by Educational Attainment		
No High School Diploma	11.2%	(9.2 – 13.7)
High School Graduate	10.2%	(8.7 – 11.9)
Some College	10.3%	(8.4 – 12.5)
College +	7.1%	(6.0 – 8.4)

was the sixth leading cause of death in the state of Texas. Compounding that statistic is the issue of under-reporting on death certificates leading to a likely higher mortality rate. The 2009 Behavior Risk Factor Surveillance Survey (BRFSS) estimates that among adults in Texas, the prevalence of diabetes is higher among males, non-Hispanic blacks, 45-64 year olds, and those adults

without a high school diploma (see Table 1).

Overall, the prevalence rate for diabetes is slightly higher than that of the national average, 9.3% as compared to 9.1%.

Complications

Diabetes also results in serious health consequences. The most common associated

health problems include eye complications (glaucoma, cataracts), foot and leg complications (neuropathy, ulcers), heart disease, hypertension, hearing loss and mental health issues.

There is a substantial cost associated with diabetes as well. In Texas, it is estimated that while the direct medical cost of diabetes is

\$216,500,000, the total direct and indirect costs are approximated at \$341,900,000. In congressional districts 32 and 26 of Dallas and Tarrant Counties, the total costs are \$341,900,000 and \$328,300,000, respectively. Indirect costs include such factors as absenteeism, reduced productivity and loss of productive capacity due to mortality.

Obesity

The Community Health Collaborative of the DFHCF Foundation was developed to provide the citizens of North Texas with a sustainable mechanism for assessing the health of their communities, identifying areas of need, collaborating on initiatives to address areas of unmet need, measuring outcomes and identifying community resources. Through the work of the diverse individual members and participating organizations, the group aims to identify and support initiatives that seek to address unmet need and document performance by the use of indicators and outcome metrics and provide a forum for networking, collaboration and sharing for organizations involved in community health.

Based on the analysis of health metrics and data for the North Texas area, members identified the health condition of diabetes as a pivotal impact point for improvement and

\$116 billion was spent in medical costs in 2010 for diabetes (\$58 billion in indirect costs of disability, work loss, premature deaths)

coordination of community health efforts. Consequently, the Community Health Collaborative held its first Diabetes Strategic Planning Retreat, with support from the American Diabetes Association, to initiate the development of a comprehensive strategic plan. This would be designed to align, enhance and coordinate the resources and expertise of the Community Health Collaborative to reduce the impact and burden of diabetes in our local communities.

Strategic Plan

In preparation, Community Health Collaborative members were presented three data presentations in prior meetings to increase knowledge and understanding of the distribution of the disease. Additionally, unique patterns of burden were discussed as related to most frequent comorbid conditions, salient precursors, associations with obesity and inactive lifestyle, gender and ethnic populations

with higher incidence, and geographic areas of North Texas with a high prevalence of diabetic populations. Some of the key national and regional baseline diabetes metrics include the following information:

- Diabetes affects 25.8 million people in the U.S.
- Four out of 10 patients with the highest readmission had diabetes as a primary diagnosis in North Texas
- Out of every 100,000 people with diabetes in North Texas, 41 people will have amputations of lower extremities
- Race/ethnicity disparities in North Texas per 100 population: Black - 47.2, Hispanic-31.8, White-18.3
- Diabetes was the 7th leading cause of death in the U.S.
- 60% of North Texas adults are overweight or obese
- Dallas County patients with diabetes as an underlying condition stay on average 1½ days longer in the hospital than others
- 18% of low income preschoolers are obese in North Texas
- \$116 billion was spent in medical costs in 2010 for diabetes (\$58 billion in indirect costs: disability, work loss, premature deaths)
- 23 people out of 1000 die due to diabetes (age

- adjusted death rate)
- 23% of Dallas County adults eat at least five servings of fruit and vegetables per day
- Diabetes was the 6th leading cause of death in Texas in 2010
- North Texas patients with any diagnosis of diabetes were two times more likely to readmit within 30 days than patients without a diabetes diagnosis
- In 2010, Dallas County patients with an underlying diabetes condition, the most common comorbidities were: 45% acute kidney failure, 39% septicemia, 34% urinary tract infection, 31% other rehab, 29% pneumonia
- Diabetes affects 11.4% of the population in Dallas County, which is three points higher than the national average of 8.4%

The Diabetes Strategic Retreat was attended by more than 75% of the membership. Five individuals were invited guests, and 22 members of the Community Health Collaborative (CHC) were in attendance. The meeting's objective was to develop a strategic direction for an effective and coordinated approach to CHC's addressing of diabetes in North Texas. The all-day meeting was held at the Irving Convention Center in Irving, Texas. The group participated in discussions to develop ways to leverage CHC strengths, facilitate change and take action.

Action Strategies

Thematically, five key strategies were proposed in various areas representing a collective of similar themed "idea clusters." The summary and distillation of the themes included:

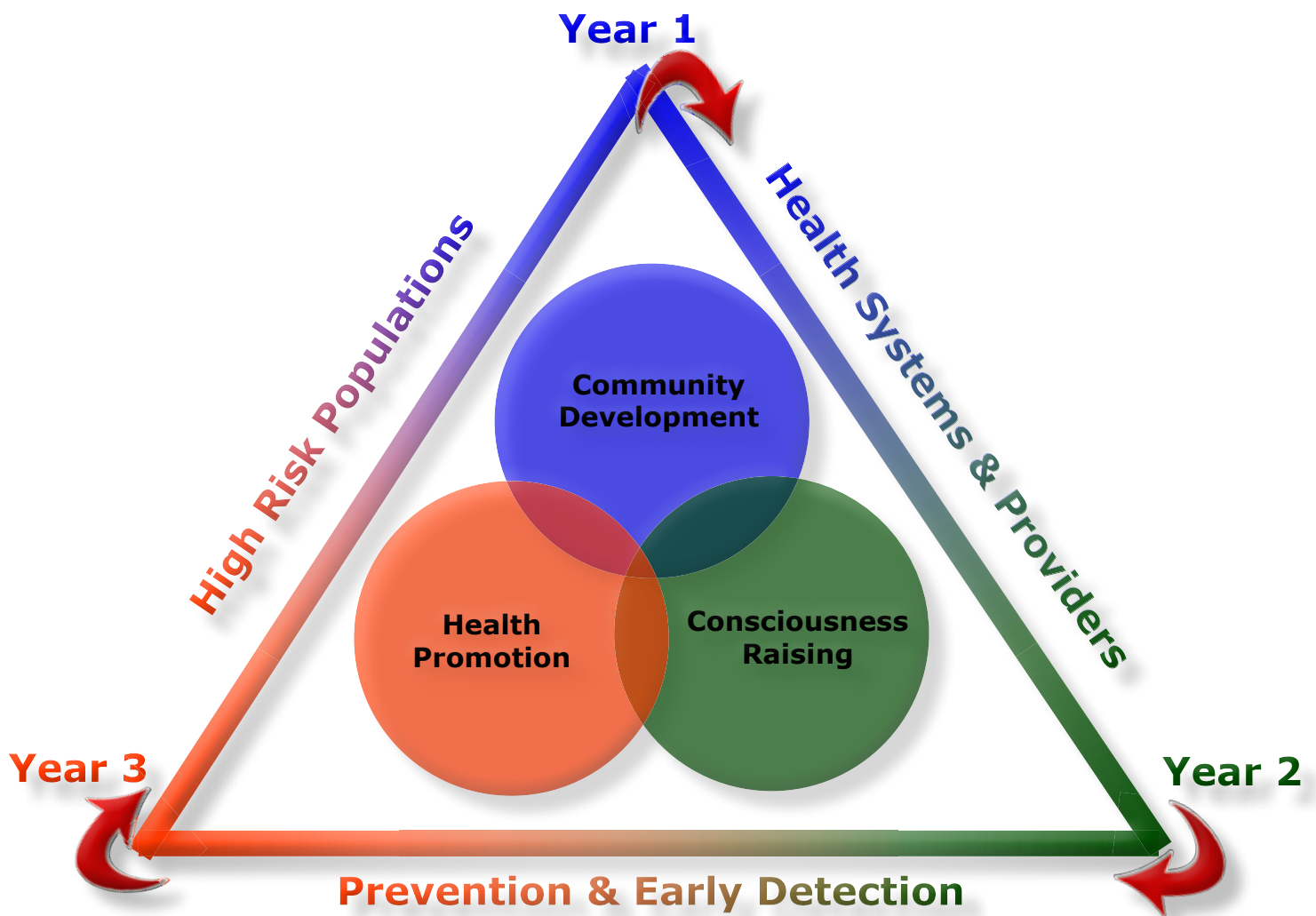
1. Educate those at high risk for diabetes utilizing current and future means of communication and technology including social media, co-branding, use of municipal resources and innovative programs.
2. Create opportunities for health food by improving access and education by community support of fresh fruit and vegetables, addressing food deserts and advocating for subsidies for healthier food choices.
3. Develop and implement engagement process with businesses, communities and governments to improve health of diabetic community by identifying stakeholders, bringing stakeholders together and developing an action plan.
4. Increase awareness about diabetes through community partnerships by identifying stakeholders and educating partners about key issues.
5. Increase physical activity where we learn, earn and live through social events, activity being a part of learning and business support of community activity.

It was expressed that the Community Health Collaborative is:

- reducing the impact of diabetes on the North Texas communities by coordinating resources and engaging communities in setting actionable regional priorities
- tackling the epidemic of diabetes in the North Texas region through education, community engagement and creating an environment with sustainable results.
- identify and educate those at high risk for or who have diabetes through a comprehensive involvement of stakeholders using creative, innovative and enjoyable means.
- addressing the challenges of diabetes in North Texas including high mortality and health complications by increasing opportunities for healthier choices.
- mobilizing North Texas communities to effectively prevent and manage diabetes, the 6th leading cause of death, using innovative strategies and tools

Strategic Plan

Creating interventions to address improved diabetes care and prevention will be most successful when incorporating a variety of approaches to the



social determinants of health. Based on the strengths of the collaborative, the approaches were chosen because they were evidenced based, align with a change approach that is complimentary to the strengths of the Community Health Collaborative. In this way, the following approaches fit the needs of the partnership.

- Environments
 - o epidemiology and surveillance
 - o communication and public awareness
 - o health systems and providers
 - o population-based community

interventions

- o populations with increased risk of diabetes and related complications

- Strategies
 - o consciousness raising
 - o social action
 - o community development
 - o health promotion
 - o media advocacy
 - o environmental change

Specifically, in the first year, the work will be working with health systems and providers

to promote community development and consciousness raising about the impacts and influences of the determinants of health on diabetes outcomes, both within and outside of the typical hospital care settings. Secondly, the following year will be when health promotion and consciousness raising activities occur with the prevention and early detection resources. To understand the scope of these partners, current work included conducting a resource scan to determine which organizations may be providing this service and how incorporation of strategies that align with the social determinants of health model

would enhance their ability to impact individual clients.

Finally, in year three, the collaborative will reach out to specific high risk populations in a partnered, community-based participatory approach to determine what solutions may arise from a specific geography in the metroplex to demonstrate change and support long-lasting and sustainable effects in high-need communities.

Conclusion

In order to successfully execute the strategic plan and improve the prevalence and severity rates of diabetics in North Texas, it is anticipated that the needs assessment will be ongoing for a period of months to conduct intense analysis of the preliminary diabetic metrics.

Secondly, indicator development will be ongoing to identify what information needs to be collected and the ways in which the information can be captured in the North Texas community. Additional resources will be made available to the Community Health Collaborative and the North Texas community via



the online database, trainings and seminars, and resources such as reports, GIS mapping capability and ad hoc data exports to be provided upon approved requests. The success of the North Texas Diabetes Strategic Plan is integrally connected to the efforts of the collaborative members and their commitment to improve the health of our community.

Through this process, the DFWHC Foundation has identified actionable steps currently underway to dramatically impact the ways in which those in our community live, work, play, and learn. It is the hope of the collaborative that both the formative and outcome goals of this work facilitate a

healthier North Texas and align agencies to create change for our neighbors, friends and families.

References

- American Diabetes Association. (2008). *American Diabetes Association 2008-2011 Strategic Plan*.
- Dallas Fort Worth Hospital Foundation. (2011). *Summary Report of North Texas Diabetes Data and Information*.
- Department of Health & Human Services, Office of Minority Health, National Partnership for Action to End Health Disparities. (2011). *National Stakeholder Strategy for Achieving Health Equity*.
- Department of Health Services, D. o. (2010-2015. December 2010.). *Wisconsin Diabetes Strategic Plan*.
- State of Alaska, D. o. (2005). *Alaska Diabetes Strategic Plan*.
- Texas Department of State Health Services, Texas Diabetes Council. (2011). *Changing the Course: A Plan to Prevent and Control Diabetes in Texas 2012-2013*.
- U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. (2008). *Promoting Health Equity: A Resource to Help Communities Address Social Determinants of Health*.
- Steven Woolf, MD, Virginia Commonwealth University. *Will Prevention Save Money?* Slide presentation from the AHRQ 2009 Annual Conference ●

Diabetes in Dallas County



**By Pamela D. Doughty, Ph.D., Director of Health Services Research
and Jaylene Jones, Health Educator**



Diabetes affects 11.4% of the Dallas County population, which is above the state and national average.

Type two diabetes diagnoses in the U.S. have continued to increase, especially among states with high incidences of obesity. States with high prevalence of obesity include Texas, Kentucky, Louisiana, South Carolina and Tennessee with a rate of 31%. At 34%, Mississippi has the highest rate of obesity in the nation. Other state populations are beginning to show increased rates with 30.9% in Michigan and 30.4% in Oklahoma and Missouri.¹

Diabetes has become the seventh-leading cause of

death and affects 25.8 million people in the U.S.² Patients with diabetes experience a reduction in quality of life and suffer complications including heart disease, stroke, high blood pressure, blindness, kidney disease, nervous system disease (neuropathy) and amputation.²

In 2010, the nation's fiscal cost of diabetes was \$116 billion for direct medical costs and \$58 billion for indirect costs, such as disability, work loss and premature mortality.² Diabetes affects 11.4% of the Dallas County population, which is above the state

Table 1: Diabetes Frequency within the Top Conditions for Inpatients and Outpatients for the Dallas County Area

Top Five Diagnosis INPATIENTS 2009-2010 Dallas County	Number of Patients	Number of Patients with Diabetes	% with Diabetes	Mortality %	Mortality % with Diabetes
Pneumonia	4,359	1,279	29%	3.1%	3.5%
Septicemia	3,142	1,217	39%	21.4%	23.0%
Other Rehabilitation	2,816	872	31%	0.1%	0.1%
Urinary Tract Infection	2,447	822	34%	0.5%	0.6%
Acute Kidney Failure Unspecified	2,355	1,068	45%	3.2%	3.5%
Top Seven Diagnosis ER VISITS 2009-2010 Dallas	Number of Patients	Number of Patients with Diabetes	% with Diabetes	Mortality %	Mortality % with Diabetes
Acute URI Unspecified	23,979	392	2%	0%	0%
Otitis Media	18,576	84	0%	0%	0%
Abdominal Pain	14,677	1,516	10%	0%	0%
Unspecified Chest Pain	14,511	3,010	21%	0%	0%
Urinary Tract Infection	14,302	1,254	9%	0%	0%
Headache	13,531	1,228	9%	0%	0%
Other Chest Pain	13,217	2,980	25%	0%	0%

average of 10% and the national average of 8%.³ Dallas County is urban with a population of 2.4 million people in about 880 square miles (approximately 2,692 people per square mile). The median income is \$46,044. The population is 53.5% white, 22.3% black with 38.3% of Hispanic Origin. The total number of people in Dallas County diagnosed with diabetes is 273,600 and of those 25,992 are of Hispanic origin.

The question remains why this county has such a high frequency of diabetes and what factors possibly contribute to this elevated prevalence. Contributing factors to diabetes include

obesity, lack of physical activity, family history and environmental resources (availability of fresh fruits and vegetables, healthcare access and parks/recreation center availability). This study focuses on the environmental factors that could influence the control of diabetes in Dallas County.

Methodology

The Dallas-Fort Worth Hospital Council Foundation (DFWHC Foundation) has a claims data warehouse receiving information from 77 North Texas hospitals. Managed by the Information, Quality and Safety Center (IQSC), the claim records are available from 2001 for inpatients and 2006 for outpatients. Fields

within the records include a patient's demographics, payor type, diagnosis codes, procedure codes, disease severity, total charges and risk-adjusted charges for individual services.

The DFWHC Foundation developed the Regional Enterprise Master Patient Index (REMPI), which allows the tracking of individual patients over time, hospital, and payor. REMPI has an algorithm accurately matching 99% of all patient encounters. To date, there are 23 million patient encounters and 7.3 million identified patients in the warehouse. Currently, 80% of new patient encounters are currently patients in the claims data warehouse.

Table 3: Top Five Diagnoses with Diabetes as an Underlying Condition

	Diagnosis	Dallas County	75227	75217	75150	75149
1	Pneumonia	29.3%	33.0%	24.0%	22.5%	31.2%
2	Septicemia	38.7%	33.3%	47.9%	34.4%	25.0%
3	OTH Rehabilitation	30.9%	43.1%	50.8%	32.4%	39.3%
4	Urinary Tract Infection	33.6%	40.9%	42.6%	41.9%	33.9%
5	Acute Kidney Failure	45.4%	57.4%	55.9%	42.1%	38.5%

In order to better understand the demographic and environmental influences on diabetic patients, this project applied the data received from the DFWHC Foundation warehouse and geographically mapped the results. Blinded patient data from the IQSC was mapped using residential zip codes for each patient in Dallas County.⁴ Using census data and other sources, maps were developed to depict the environmental influences of diabetic patients. Permission to utilize warehouse information was obtained from the hospitals through the North Texas Healthcare Quality and Information Center (NTHIQC).

No patient-level data was used for the research other than aggregate zip code information. Using a business intelligence tool, aggregated data was pulled for patients with a diabetes diagnosis, inpatients/outpatients with comorbidity of diabetes and other encounters from 2008-2009. ArcGIS, a geographical

mapping system, was used to connect diabetes diagnoses with corresponding zip codes. These maps were analyzed to determine the location of medical, nutritional, recreational resources and patients by zip code.

Results

In 2010, Dallas County’s top-five primary diagnoses were pneumonia, septicemia, other rehabilitation, urinary tract infection and kidney failure. Of those five diagnoses, the percentage of patients with an underlying condition of diabetes were 29% for pneumonia, 39% for septicemia, 31% for other rehabilitation, 34% of urinary tract infection and 45% for kidney failure (See Table 1).

Those with diabetes had a higher mortality rate in four of the five diagnoses, revealing a co-morbidity of diabetes increasing the risk for mortality. Dallas County’s top seven diagnoses for emergency room department patients were acute URI,

Otitis media, abdominal pain, chest pain, urinary tract infection, headache and other chest pains. Within those diagnoses, 20%-45% had an underlying condition of diabetes. Specifically, of all patients who came to the ER with chest pains, 21%-25% had a comorbidity of diabetes. Of the patients with abdominal pain, urinary tract infections and headaches, 10% had diabetes (See Table 1).

Data was pulled to review the percentage of other diagnoses with a comorbidity of diabetes. Results are reported for the number of patients with other diagnoses with a minimum of 10% of the population with diabetes.

In 2008-2009, 35% of the top-five inpatient diagnoses in Dallas County had diabetes as an underlying condition, with the top being pneumonia (see Table 3). Data was analyzed to determine the top-four zip codes in Dallas County with the highest percentage of the top diagnoses. The zip

Table 4: Zip Code Demographics

	75217	75227	75149	75150
Age				
Median Age	27 Years	28 Years	31 Years	33 Years
Median Age w/ Diabetes	58 Years	58 Years	60 Years	63 Years
Gender				
Male	50.4%	48.5%	48.1%	48.2%
Males w/ Diabetes	36.6%	43.7%	43.0%	43.1%
Female	49.6%	51.5%	51.9%	51.8%
Female w/Diabetes	63.4%	56.3%	57.0%	59.9%
Race/Ethnicity				
Caucasian	34.6%	35.6%	71.2%	76.9%
Caucasian w/ Diabetes	21.8%	22.5%	60.3%	60.7%
African American	34.8%	37.1%	15.2%	10.4%
African American w/Diabetes	39.9%	48.0%	17.4%	14.0%
Hispanic	46.4%	43.1%	16.8%	16.1%
Hispanic w/ Diabetes	35.1%	26.2%	16.3%	18.6%
Asian	0.3%	1.4%	3.0%	4.0%
Asian w/ Diabetes	0.2%	0.9%	3.2%	2.1%
Other	30.3%	25.8%	10.6%	8.7%
Other w/ Diabetes	2.7%	2.1%	2.6%	4.3%

codes were 75227, 75217, 75150, and 75149. Table 3 describes the comparison between those zip codes and Dallas County as a whole. Zip code 75227 had the highest incidence of pneumonia (33%) compared with Dallas County (29.3%). Septicemia was (47.9%) compared with Dallas County (38.7%). Acute kidney failure (57.4%) compared with Dallas County (45.4%). Other rehabilitation diagnosis was highest in 75217 (50.8%)

compared with Dallas County (30.9%) and of urinary tract infection (42.6%) compared with Dallas County (33.6%).

Demographics of those four zip codes were pulled from census data. The median age, gender, race and ethnicity are shown in Table 4 as well as the percentage with diabetes. The median age was late 20s to early 30s. The median age of diabetes patients ranged from 58-63 years. A higher

percentage of Hispanics live in zip codes 75217 and 75227 than in other areas of Dallas County. Nationally, 24.4% of African Americans or Hispanics have diabetes, while in 75217 and 75227, 74% or greater of the diabetic population are African American or Hispanic.² Zip codes 75149 and 75150 had a majority of white residents with 71.2% and 76.9% respectively, in which 60% have diabetes. All four zip codes had a close split of

50/50 of males and females. However, females overall had a higher percentage of diabetes than males in the highlighted zip codes.

The four zip codes identified as having the highest frequency of diabetes patients were mapped in order to reveal environmental factors that could influence the health of those patients. Results revealed the incidence of diabetes was not correlated with a higher population (see Map 1 and Map 2 in Appendix 2). The zip code with the highest number of diabetic patients was 75227. In the Appendix 3 maps, zip code 75227 clearly shows that supermarkets and food banks are not within a mile walking distance or a five minute driving distance of inhabitants, and fast food restaurants are prolific. Convenience stores were the most prevalent (See Appendix 3. Map 1).

Hospitals are not found within walking distance or a five minute driving distance of the zip codes with the most prevalent incidence of diabetes, and clinics are in clusters and not evenly spread throughout the four zip codes (See Appendix 4). Zip codes with the highest prevalence of diabetes had high unemployment and low income (See Maps 1 and 2 in the Appendix 5). Recreation and parks were mapped for the Dallas County zip codes (See Appendix 6. Map 1). The map revealed a small

number of parks within a mile walking distance and only one recreation center near zip code 75227.

Overall, the zip codes with the highest prevalence of diabetes had a very low income (less than \$35,000), an unemployment rate between 6.3% and 9.8%, few supermarkets, few food banks, few hospitals and clustered medical clinics. There were, however, many convenience stores and fast food restaurants.

Discussion

Diabetes is often a comorbidity of chronic illnesses and their symptoms. According to the Centers for Disease Control and Prevention, diabetes is the main cause of kidney failure.² Within the top-five inpatient diagnoses in Dallas County, the fifth is kidney failure with more than 46% of patients having a comorbidity of diabetes with an average of 49% among the highlighted zip codes. Pneumonia is the top diagnosis in Dallas County, and diabetes is a major comorbidity of that disease. Although outpatient data revealed a lower percentile of diabetes, the diagnosis of chest pain and abdominal pain relate to chronic conditions (like CHF) in which diabetes is also a high co-morbidity. The data brings to light that even when diabetes is not a primary diagnosis, it is a prominent condition related to top inpatient diagnoses in Dallas County.

There is quite a divergence in population characteristics of the four zip codes. Such a significant difference in demographics suggest community resources may be a factor for diabetes prevalence. Mapping software allowed the data to be spatially analyzed providing a picture of the resources available to residents. The limited availability of these resources can greatly influence the health of those living in the community.

Medically, only two hospital systems are in the four zip codes with high diabetes prevalence and one is a mental health hospital, demonstrating a paucity of 24-hour health care access for the residents of these zip codes. Appendix 3, Maps 3 and 4, illustrate essentially food deserts within these zip codes. Zip code 75227 does not have a supermarket available. Brown, Vargas, Ang and Pebley suggest the socioeconomic environment and the traveling distance to supermarkets are associated with higher rates of obesity in that area.⁷ Since nutritious foods and a healthy diet are key behaviors for diabetes control, living in a food desert with many fast food restaurants is detrimental for diabetic patients' health. Even with a chain grocery store, there is no guarantee fresh and healthy options are offered. In lower income areas, markets often have a smaller, more limited selection of healthy fruits, vegetables and milk products.⁷

Physical activity is also important in the behavior of diabetes. Although there are some recreation centers and local parks in the area, most have limited hours of availability making it difficult for residents to fully utilize the facilities. The use of parks requires good weather conditions, and Dallas is known for the numerous days over 100° in the summer and fall. The remaining days with good weather are limited in Texas.

Conclusions

Diabetes is a complicated disease with risk factors for cardiac and neurologic comorbidity, especially with uncontrolled diabetes. In order to improve the control of glucose levels in patients, regular exercise and a diet of fresh fruits and vegetables should be a part of their daily routine.

Many Dallas County diabetic patients do not have access to fresh fruits and vegetables due to a lack of supermarkets within a one-mile walking distance or five-mile driving distance. In the top-four zip codes with high numbers of diabetic patients, food banks are few, if nonexistent.

Recreational facilities are very rare in low-income areas with the highest rates of diabetes. The lack of clinics throughout the county is also a problem as they are clustered together

with large distances between clusters.

It may assist diabetic patients in Dallas County to place more supermarkets and food banks with fresh foods in those four zip codes, add low cost recreational sites and more clinics. Community groups may be able to assist by working together to improve the environmental factors for diabetic patients of Dallas County. The data used in this study was only claims data. Actual observations of the zip code neighborhoods may discover some discrepancies

or more evidence of the conclusions in this study. Mortality rate could change with the addition of data from the mortality index for the state of Texas.

References

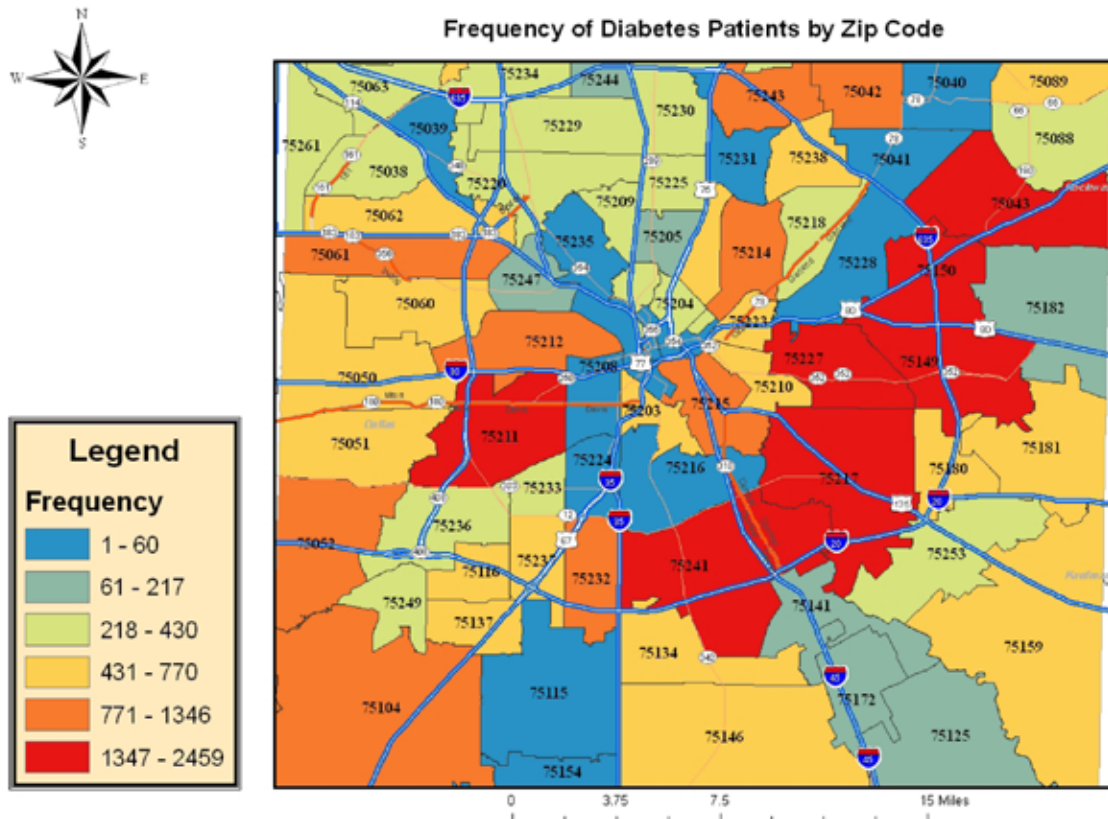
1. *U.S. Obesity Trends*. Centers for Disease Control and Prevention; 2011. <http://www.cdc.gov/obesity/data/trends.html> Accessed August 26, 2011.
2. *National diabetes fact sheet: 2011*. Centers for Disease Control and Prevention; 2011. http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2011.pdf. Accessed July 22, 2011.
3. *Diabetes data: surveillance and evaluation*. Texas Department of State Health Services; 2011. <http://www.dshs.state.tx.us/diabetes/tdcdata.shtm> Accessed July 29, 2011.
4. Texas zip codes, map and detailed profile. 2011. <http://zipatlas.com/us/texas.htm> Accessed July 23, 2011.
5. National diabetes information clearinghouse. U.S. Department of Health Services; 2011. <http://diabetes.niddk.nih.gov/dm/pubs/statistics/#fast>. Accessed August 1, 2011.
6. *State & county quickfacts*. 2011. <http://quickfacts.census.gov/qfd/states/48/48113.html> Accessed August 1, 2011.
7. Brown A, Vargas R, Ang A, Pebley A. The neighborhood food resource environment and the health of residents with chronic conditions: the food resource environment and the health of residents. *Journal of General Internal Medicine*. 2008;23(8):1137-1144 ●



Dallas County Maps

- Appendix 2.Map 1: Dallas County Population/Code and Diabetes
- Appendix 2.Map 2: Diabetes Frequency by Zip Code
- Appendix 3.Map 1: Available Food for Purchase
- Appendix 3.Map 2: Diabetic Patient Resources
- Appendix 3.Map 3: Fast Food Availability
- Appendix 4.Map 1: Medical Resources
- Appendix 5.Map 1: Median Income
- Appendix 5.Map 2: Unemployment
- Appendix 6.Map 1: Recreation Availability

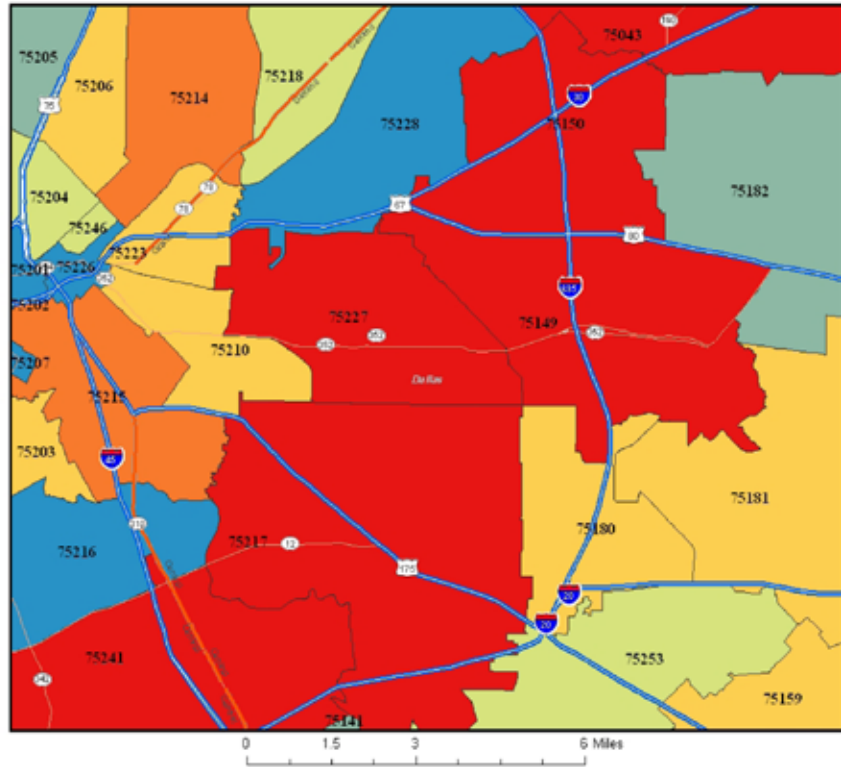
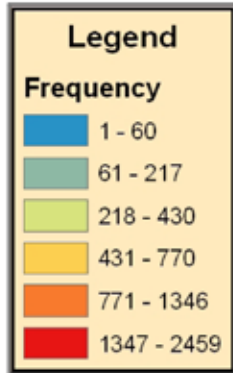
Appendix 2.Map 1: Dallas County Population by Code and Diabetes Incidence



Appendix 2. Map 2: Diabetes Frequency by Zip Code



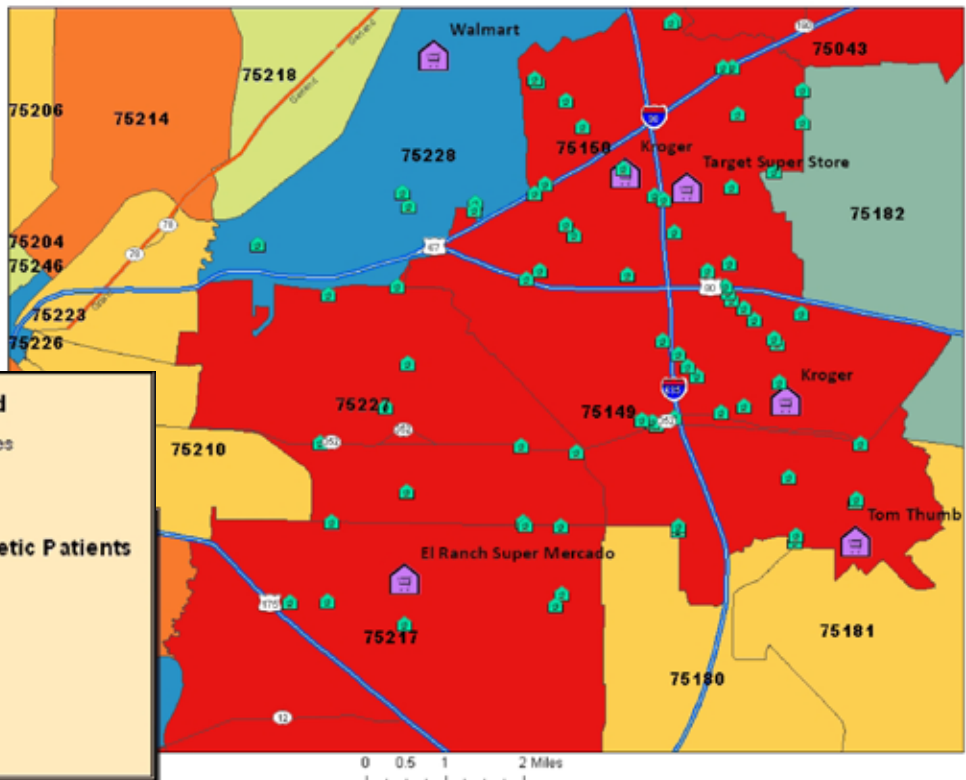
High Frequency Zip Codes



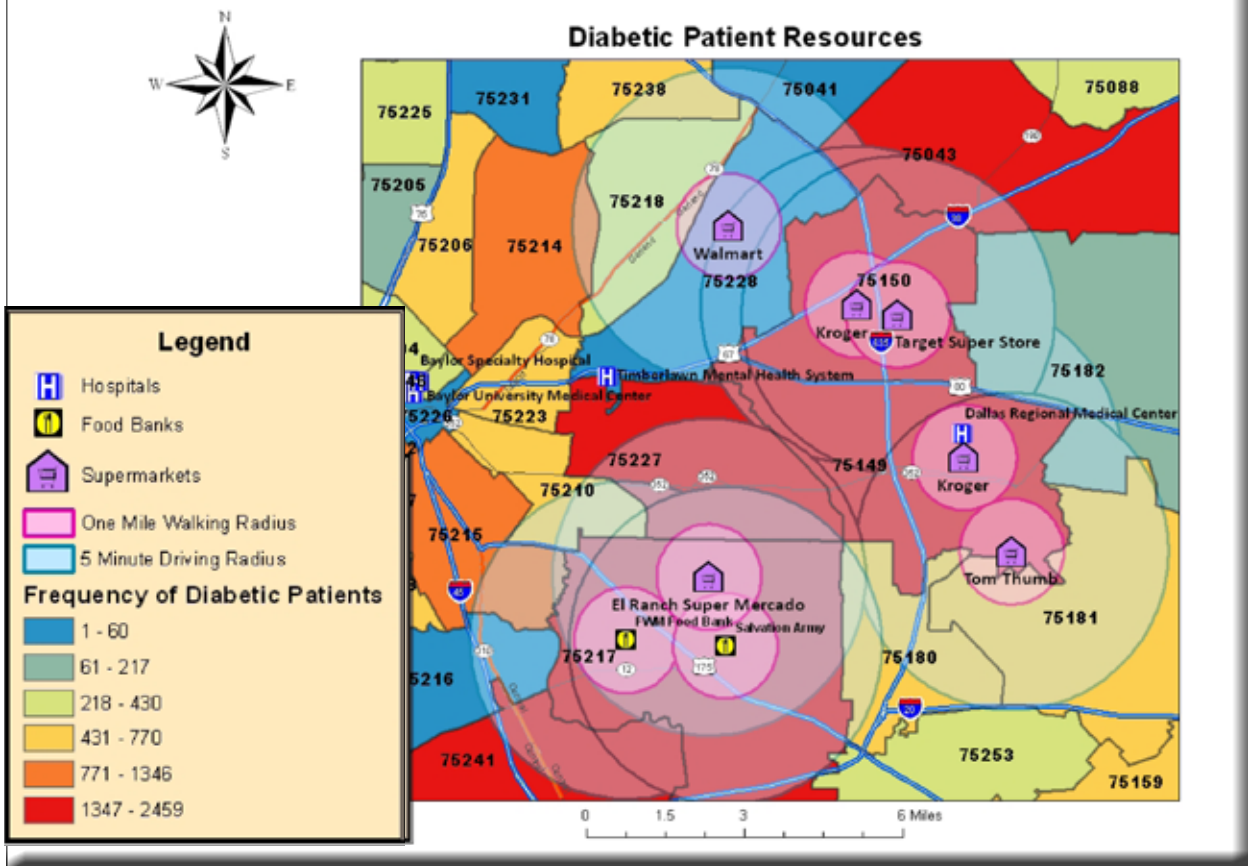
Appendix 3. Map 1: Available Food for Purchase



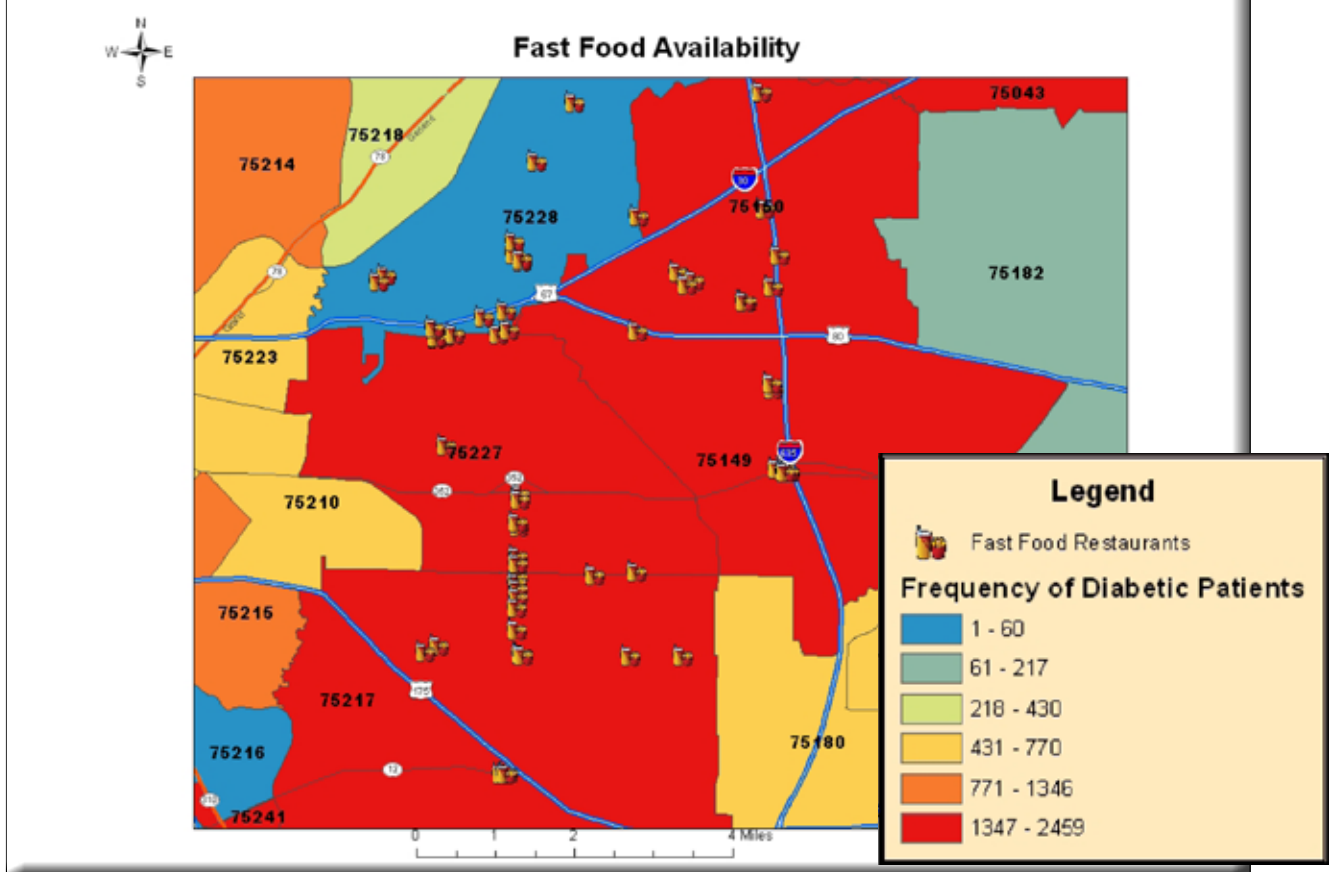
Available Food Resources



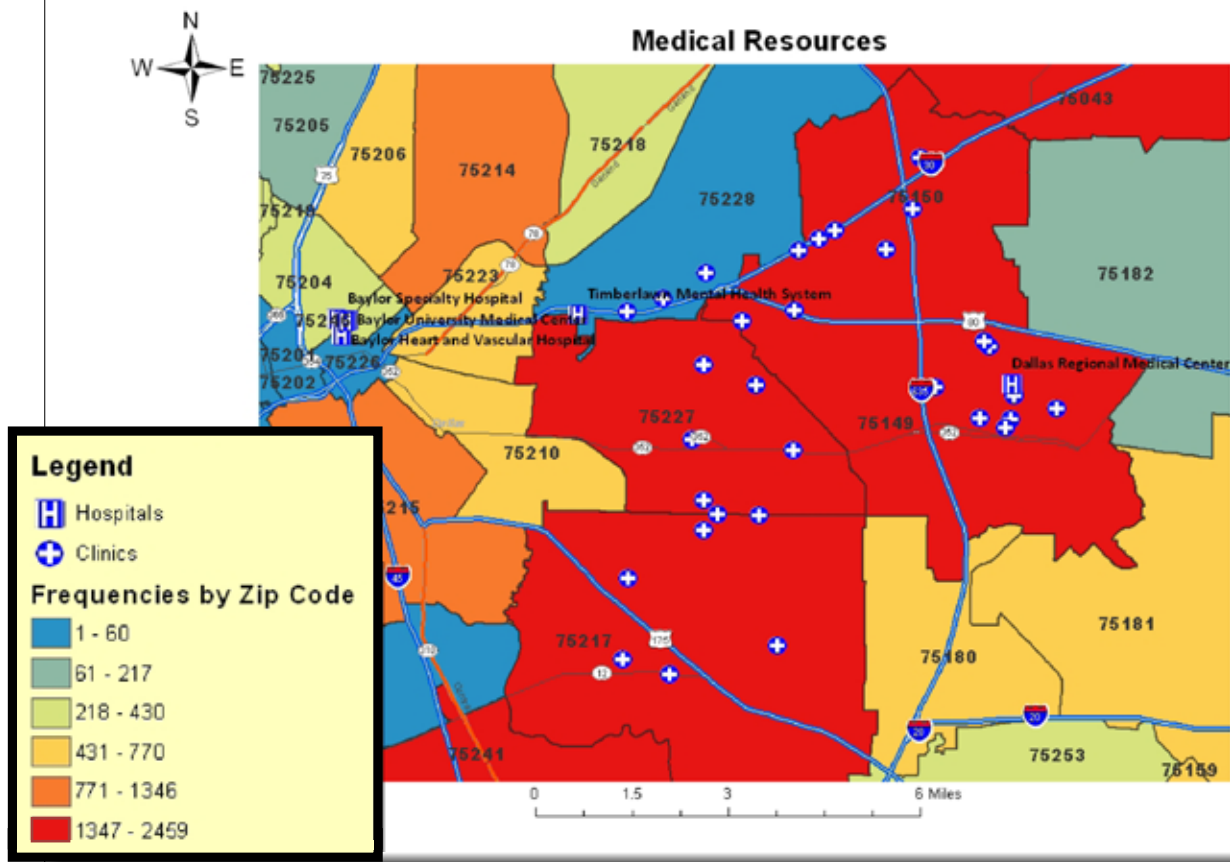
Appendix 3. Map 2: Diabetic Patient Resources



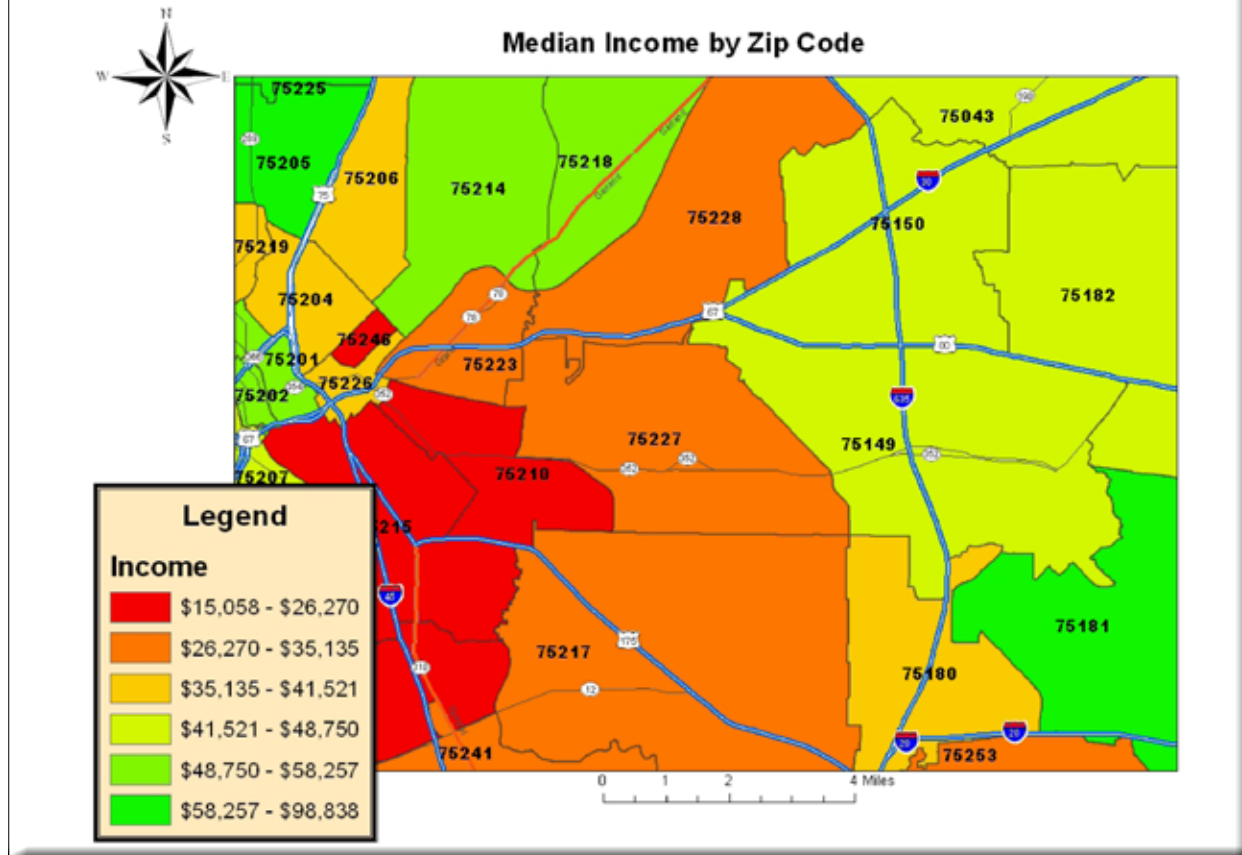
Appendix 3. Map 3: Fast Food Availability



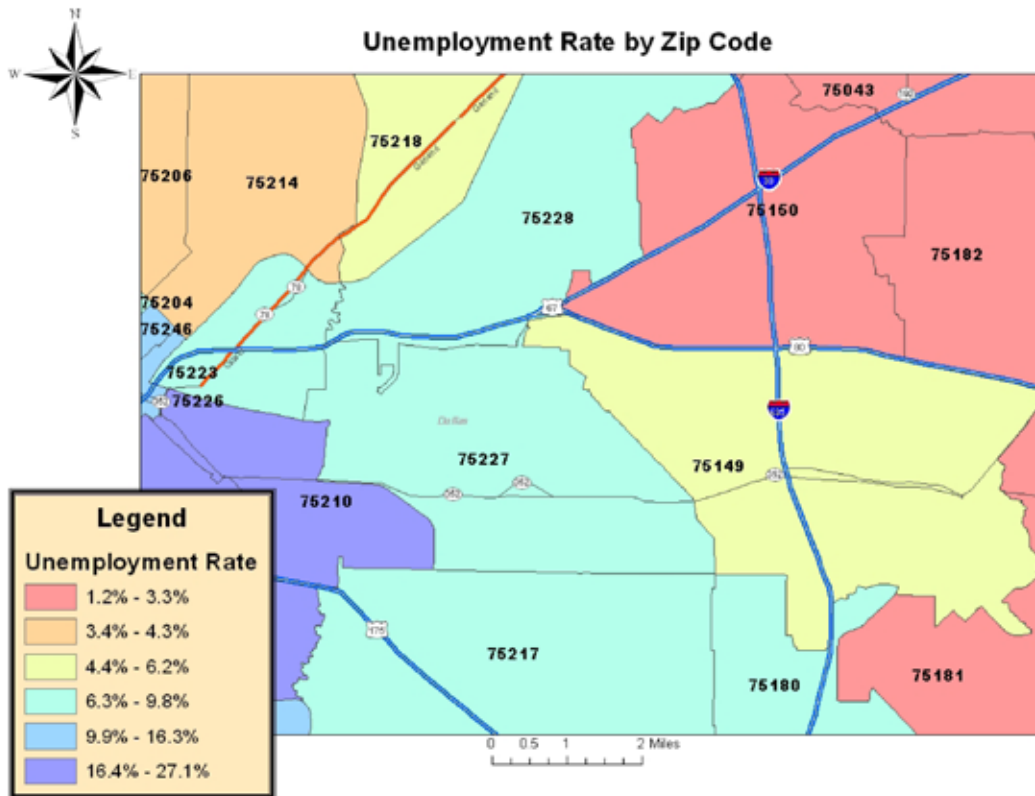
Appendix 4. Map 1: Medical Resources



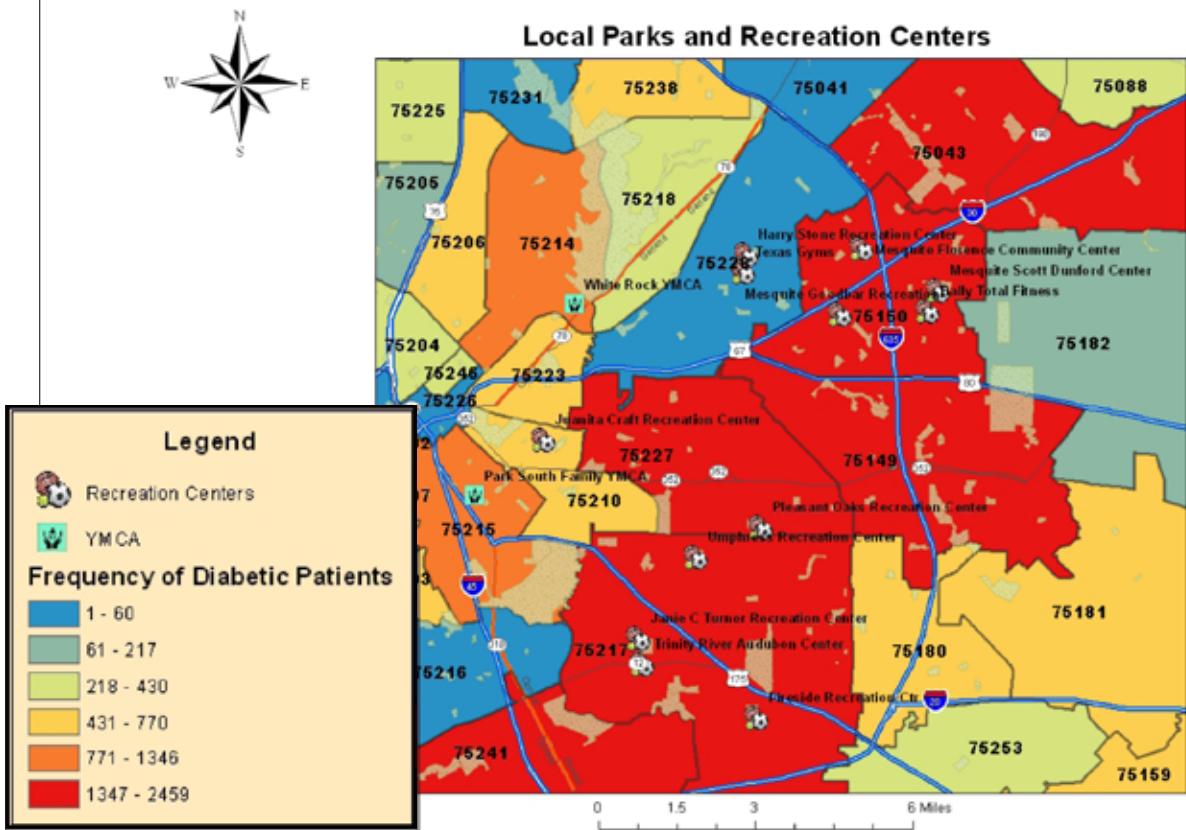
Appendix 5. Map 1: Median Income



Appendix 5. Map 2: Unemployment



Appendix 6. Map 1: Recreation Availability



Readmissions



By Pamela D. Doughty, Ph.D.
Director of Health Services Research



It was determined that while some hospitals knew their readmission rates, they did not know how they compared to the region.

On March 23, 2010, U.S. President Barack Obama signed into law H.R. 3590, the Patient Protection and Affordable Care Act (PPACA; P.L. 111-148). This law allows the Centers for Medicare and Medicaid to reduce or eliminate payments to hospitals, if patients are readmitted within 30 days for congestive heart failure, heart attack and pneumonia. All of these readmissions are considered preventable through improved care before discharge, patients following discharge instructions or patients seeing a family doctor after discharge.

In 2008, when Washington, D.C. discussions involved the Centers for Medicaid and Medicare Services' (CMS) change in reimbursement for chronic disease readmissions (Medicare Provisions in PPACA (P.L. 111-148)¹, both board of trustees of the Dallas-Fort Worth Hospital Council (DFWHC) and the DFWHC Foundation began planning meetings. It was determined that while some hospitals knew their readmission rates for the three chronic diseases, Congestive Heart Failure (CHF), Heart Attack (AMI) and Pneumonia (PN), they did not know how they

Chronic Disease	% Reduction	% Reduction	% Reduction
	2008-2009	2009-2010	2008-2010
AMI	9.75%	19%	26.97%
CHF	- 4%	18.72%	15.39%
PN	4.7%	28.19%	31.56%
Overall/Total	2%	21.82%	23.4%

OUTCOMES: The total avoidable readmissions declined by 23.4%, CHF declined by 15.39%, AMI declined by 26.97% and PN declined by 31.56% between 2008 and 2010.

Measure Name and Definition	Data Source	Baseline 2008		Follow-up Time 2010	
		Measure Value	No. of Hospitals/Hospital Units Included	Measure Value	No. of Hospitals/Hospital Units Included
CHF Readmissions	Data Claims Warehouse-Foundation	3612 = Average Readmissions	71	3056 = Readmissions 15.39% reduction	74
AMI Readmissions	Data Claims Warehouse-Foundation	1917 = Average Readmissions	71	1400=26.97% reduction	74
PN Readmissions	Data Claims Warehouse-Foundation	2704 = Average Readmissions	71	1851= Readmissions31.56% reduction	74
Overall Readmissions	Data Claims Warehouse-Foundation	8233= Average Readmissions	71	6307= Readmissions for 2010 23.4% Overall Reduction	74

compared to the region. Some hospitals also did not have the resources to determine their own readmission rates. The DFWHC Foundation Board decided the only way to track readmissions was to develop a software program that would assign an identifier to each patient in order to track them across time, hospitals and payors. While one hospital knew how often their patient

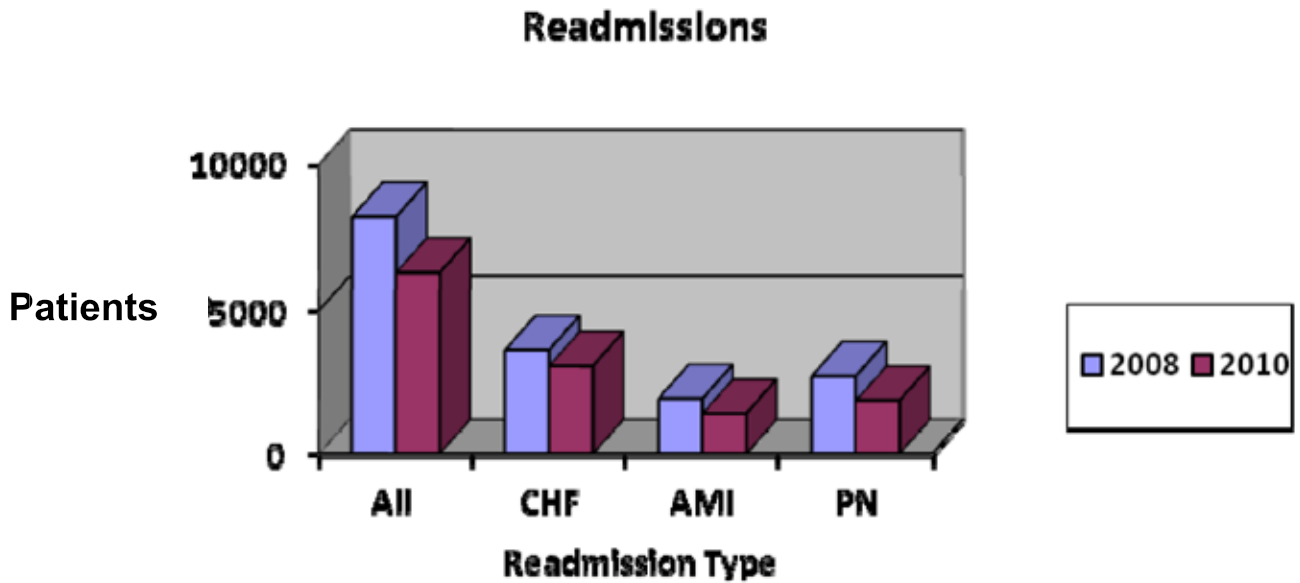
was readmitted, no one knew if that same patient went from hospital to hospital. The new law created by CMS would only pay one admission during a 30-day period, leaving the other hospital with an unpaid bill.

REMPI

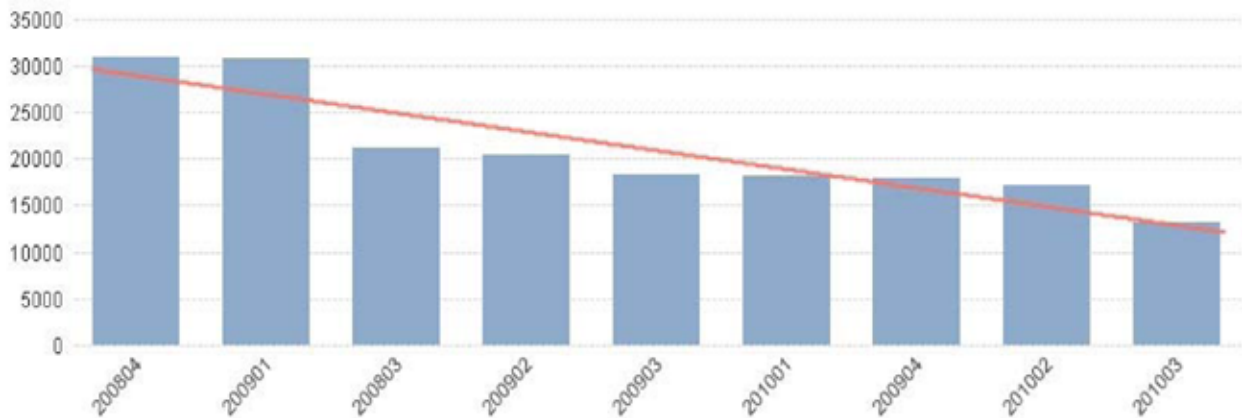
After extensive research, it was discovered no software program was available to

resolve all of the parameters of the database. The product chosen that could match patient encounters was Quadra Med's Enterprise Master Patient Index (EMPI). However, the product would need to be modified in order to make full use of the available data in DFWHC Foundation database. An algorithm was developed in 2008 to match patients in ten

READMISSION REDUCTIONS BY CONDITION



TREND GRAPHIC – ALL TARGETED 30 DAY READMISSIONS BY QUARTER 2008-2010



different areas. The result is a Regional EMPI (REMPI) that matches patients at 98% accuracy. A patient was filed on the REMPI matching algorithm in December 2010.

In the beginning of 2010, all member hospitals were

given dashboards reflecting their readmission rates for congestive heart failure (CHF), Heart Attack (AMI) and Pneumonia (PN). Hospitals were given a dashboard each quarter for comparisons with other hospital members. Results of the implementation

of the new dashboards were reductions in CHF, AMI and PN across the board. Total avoidable readmissions declined 23.4%, CHF declined by 15.39%, AMI declined by 26.97% and PN declined 31.56%. The downward trend in readmissions is the result



of 74 hospitals (approximately 85% of the region's acute care hospitals and 90% of the areas admissions). According to theorists, behavior changes when there is a threat, fear, recognition the threat can be eliminated and the self-efficacy that it's possible for change.^{2,3} Hospital executives were fearful the threat of non-payment or reduced payment for readmissions would occur. Ultimately, they had the recognition and self-efficacy to make changes. The awareness provided by dashboards and discussions between hospital

executives and clinical leaders encouraged hospitals to make the changes necessary to reduce readmissions prior to the law going into effect. With 74 hospitals taking the lead, the improvement in 30-day readmissions in CHF, AMI and pneumonia has spread throughout North Texas hospitals (17 counties encompassing 14,003 square miles with a population of 6,426,992 people). There are 7.3 million patients represented in the DFWHC Foundation data warehouse with 23 million encounters.

References

1. Davis PA, Hahn J, Morgan PC, Stockdale H, Stone J, Tilson S. Medicare Provisions in PPACA (P.L. 111-148). In: Service CR, ed. Vol 7-5700: Congressional Research Service; 2010.
2. Behavior Change Theories and Models. 2007. http://www.csupomona.edu/~jvgrizzell/best_practices/bcttheory.html. Accessed February 21, 2012.
3. Godin G, Kok G. The theory of planned behavior: A review of its applications to health-related behaviors. *American Journal of Health Promotion*. 1995;11:87-98. ●

REMPI

Regional Enterprise Master Patient Index

The Dallas-Fort Worth Hospital Council Foundation developed the Regional Enterprise Master Patient Index (REMPI) in 2010, the first of its type in the United States combined with an all-payor regional data warehouse. This tool allows hospitals to trend regional readmission patterns, ER visits and other patient/hospital encounters across hospitals and systems. REMPI opens new areas of research and exploration for the continued improvement of healthcare.

- Evaluates patient readmissions and ER encounters across the region, regardless of which hospital is accessed by a patient.
- Provides opportunities for quality, safety/process improvement, care coordination and cost reduction.
- Enables new research for epidemiologic and public health purposes.
- Complies with HIPAA and state requirements for privacy and security of patient health information.
- High value and low participation cost for North Texas hospitals.
- Can be utilized as a patient record linking methodology of inpatient and outpatient claims for future Regional Healthcare Information Exchange.



**For information, call:
972-717-4279**

Healthcare Workforce Planning and the North Texas Journey



**By Sally Williams, Workforce Center Director and
Neguiel Francis, HR Workforce Analyst**

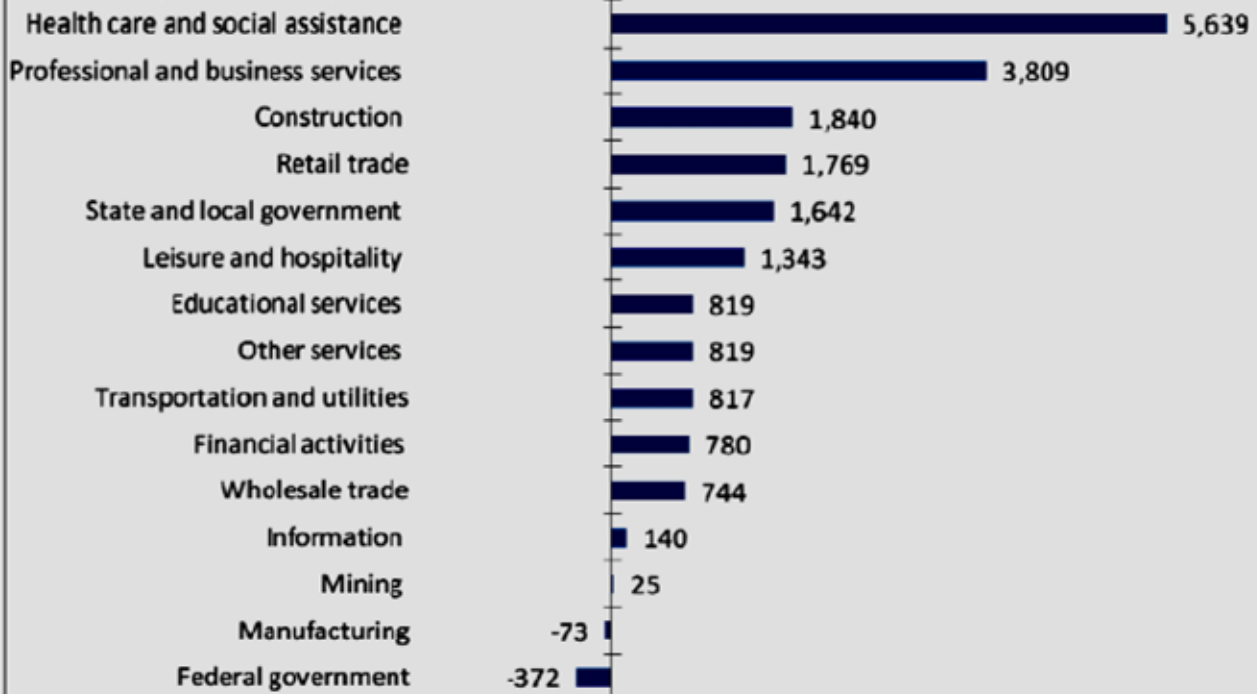


How do we plan for future workforce needs in North Texas?

The U.S. Department of Labor, Bureau of Labor Statistics reports healthcare as one of the industries with the fastest job growth over the next ten years. Hospitals continue to build and add workforce during these difficult economic times. Healthcare needs continue to grow and change with our aging population. So, the question comes - how do we plan for the future workforce needs in North Texas? A journey has begun with the Dallas-Fort Worth Hospital Council Foundation Workforce Center by bringing together key stakeholders to plan for

healthcare workforce needs in North Texas. A collaborative model is being developed for hospitals to understand their workforce supply and demand as well as a regional outlook. Stakeholders include hospitals and educational institutions that will develop the workforce needed in the region. So what does that journey look like? First, we must understand the current landscape. Healthcare workforce shortages start with the demographic changes in the U.S., changes in the U.S. healthcare workforce, and changes in delivery and education.

Chart 1. Projected change in nonagriculture wage and salary employment by major industry, 2010-20 (in thousands)



Healthcare Workforce Outlook

According to the U.S. Department of Labor news release *Employment Projections - 2010-20*, Feb. 1, 2012, healthcare is one of the industries with the fastest projected job growth. Healthcare and the social assistance sector are expected to gain the most jobs (5.6 million). Registered nurses (712,000) and home health aides (706,000) are two of the occupations expected to add the most employment. Over the 2010-20 decade, 54.8 million total job openings are expected. More than half - 61.6% - will come from the need to replace workers who retire or permanently leave an occupation.¹

The Bureau of Labor Statistics has indicated that although the unemployment rate has grown to 10 percent, employment in healthcare has continued to show growth.² "Indeed, the industry has been among the leading contributors to job growth during recessions. In an economy hit with more than 7.5 million job losses, and large declines in gross domestic product (GDP), all since the start of the most recent recession, the healthcare industry stood out as one of a few areas that continued adding jobs, thereby serving as a crutch for the ailing economy," writes Catherine A. Wood with the Office of Employment and Unemployment Statistics,

Bureau of Labor Statistics. This could suggest that during economic downturns persons are becoming sicker and therefore requiring additional staff to provide care. An equally valid argument would be that an aging workforce, the Baby Boomers, is starting to retire from the healthcare industry and are requiring increased healthcare themselves, made possible with the help of COBRA. Some causation and other consideration, according to Wood, is that generally economic downturns bring about fiscal stimuli to hospitals. These, "stimuli also enabled hospitals to increase hiring, improve information technologies and increase emergency care services

Table1. State of Texas Employment Indicators (US Dept. of Labor):

Employment Indicators in Selected State - October 2011

Seasonally adjusted unless otherwise indicated (numbers in thousands)

SECTOR	Texas		
	Oct. 2010	Sept. 2011	Oct. 2011 (P)
Labor Force Data			
Civilian Labor Force	12,173.00	12,300.20	12,340.00
Employed	11,173.90	11,256.50	11,302.60
Unemployed	999.1	1,043.70	1,037.40
Unemployment Rate	8.2	8.5	8.4

Footnotes

(P) Preliminary

NOTE: Numbers may not sum to totals due to rounding. Industry employment and labor force estimates are subject to revision in the spring of each year.

Source: BLS Southwest Information Office, Dallas; CES and LAUS Surveys.

to the unemployed, with Medicaid funding typically covering these services, thus offering a more economical substitution for primary care providers.” The rate of job growth has slowed during this economic downturn due primarily to heightened cost of care resulting in a weakened demand for healthcare. This naturally led to a much slower rate of hiring in the hospital sector. Wood goes on to say that although “hospital work is generally less attractive than other healthcare jobs, more workers were motivated to resort to hospital jobs as other healthcare employment options declined and jobs became more limited and unstable.” As everyone is aware, due to the new

healthcare requirements and financial constraints, hospitals are forced to slow down hiring and entertain a reduction in force.³

The American Hospital Association in its news headlines for Tuesday, Dec. 6, 2011, *Study: Nursing Supply Growing as Young Enter Field*, describes the number of registered nurses aged 23-26 grew 62% between 2002 and 2009. If the trend continues, the nurse workforce will grow at roughly the same rate as the population through 2030. Pamela Thompson, chief executive officer of the American Organization of Nurse Executives, said the study “is welcome news to healthcare. An increase in the supply of this

younger workforce will help tremendously as we prepare for the inevitable retirement of the older workforce in the coming years. Also important is the caution that we must assure that we are producing a workforce that is suited for the population needs of the future. Healthcare reform is moving us to create integrated delivery systems that span the continuum of care from home and community to hospital care. Nurses will be expanding their roles as we build these systems, especially in regard to the coordination of care across the continuum.”⁴

Texas Outlook

The Texas Statewide Health Coordinating Council puts together the Texas State

Figure 2.2 DPC Physicians per 100,000 Population: U.S. and Texas, 1981 to 2009.

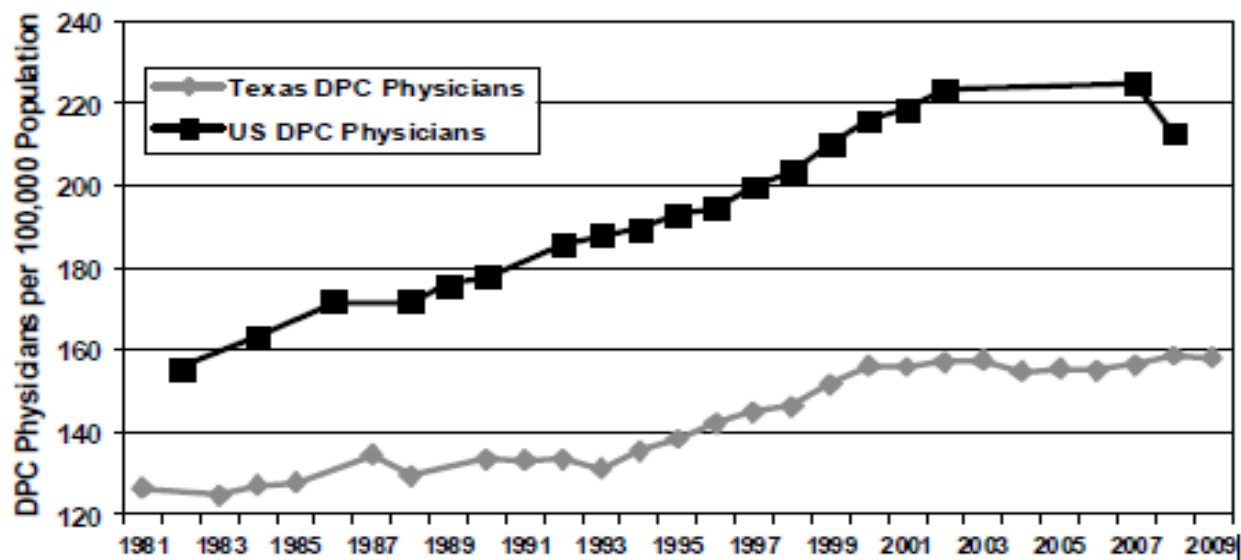
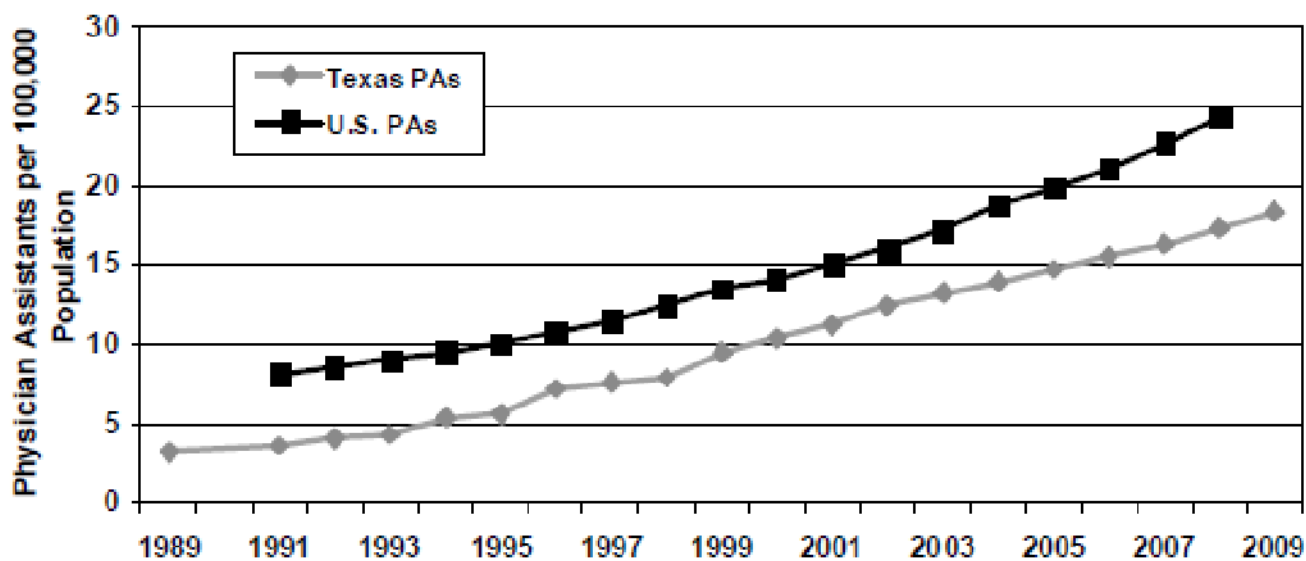


Figure 2.11 Physician Assistants per 100,000 Population, U.S. and Texas, 1989–2009



Health Plan every six years and updated biennially to give recommendations to the governor and legislature to ensure healthcare services and facilities are available to all Texans through health planning activities. The most recent report - Texas State Health Plan 2011-2016 - includes

research on characteristics that affect the healthcare system in Texas.⁵ Several points of this report relate directly to how we do strategic workforce planning in the state of Texas. Considerations from this report to review include the demographics of the general population

in Texas and demographics of the Texas health professions workforce. Other considerations include new healthcare delivery models, technology enhancements providing efficient healthcare delivery and prevention promoting good health. Texas is one of the fastest

Figure 2.4 PC Physicians per 100,000 Population: U.S. and Texas, 1981–2009

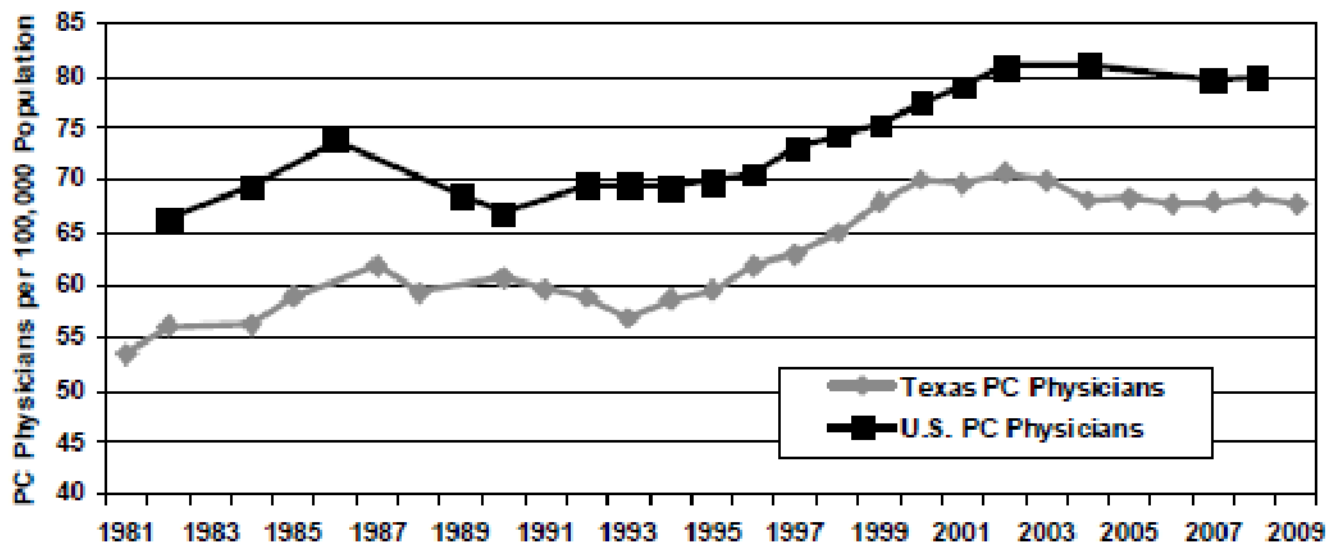
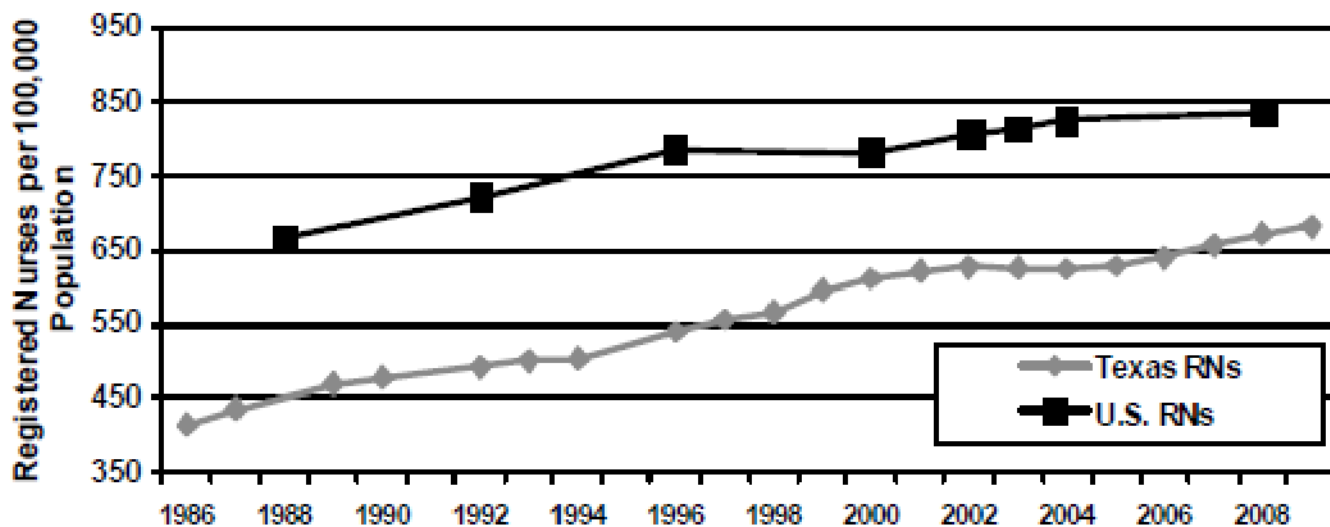


Figure 2.17 Registered Nurses per 100,000 Population, U.S. and Texas, 1986–2009



growing states. In July 2009, the population estimate was 24.78 million, an increase of more than 2.93 million since 2000. From 2000 to 2008, the fastest growing age segment of the population was the population aged 45 to 64 - the “Baby Boomers.”⁶ The aging population and its growth

rate will stress our healthcare delivery system if adequate healthcare workforce is not in place. People are living longer and have complex healthcare needs as they age.

Texas had a civilian workforce of 12.2 million in October 2010 and 12.3 million in the

same period in 2011. Of that number, as the data in Table 1 indicates, the unemployment rate for the state increased from 8.2 percent in October of 2010 to 8.4 percent for the same period of 2011. When compared to other places in the country, Texas seems to be doing well. The national

Figure 2.19 Nurse Practitioners per 100,000 Population, U.S. and Texas, 1990–2009

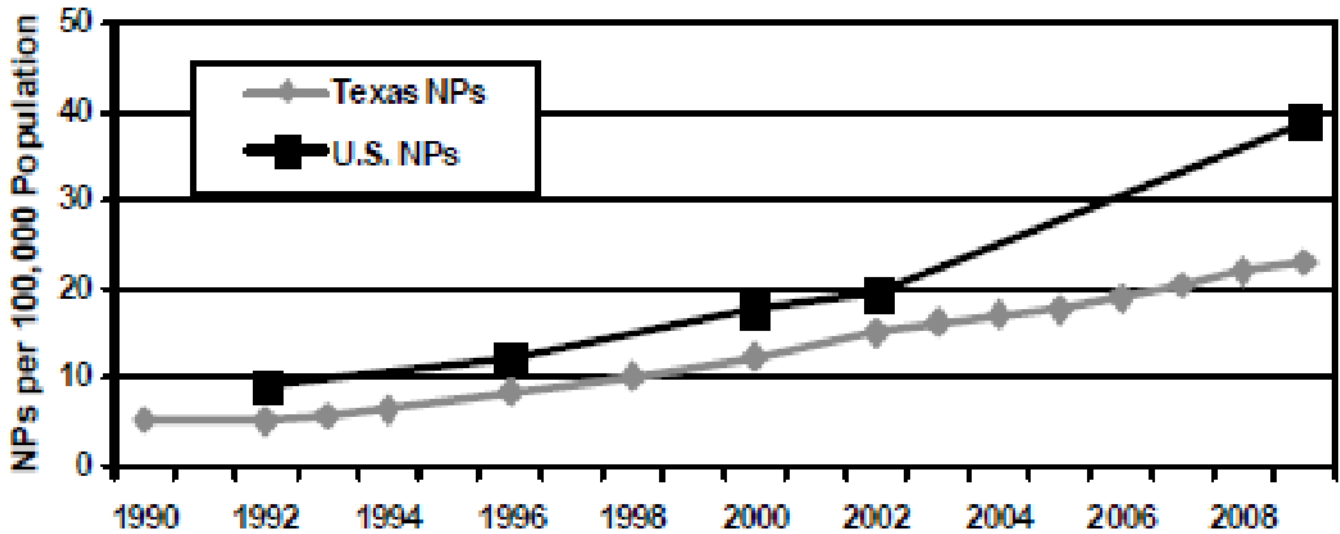
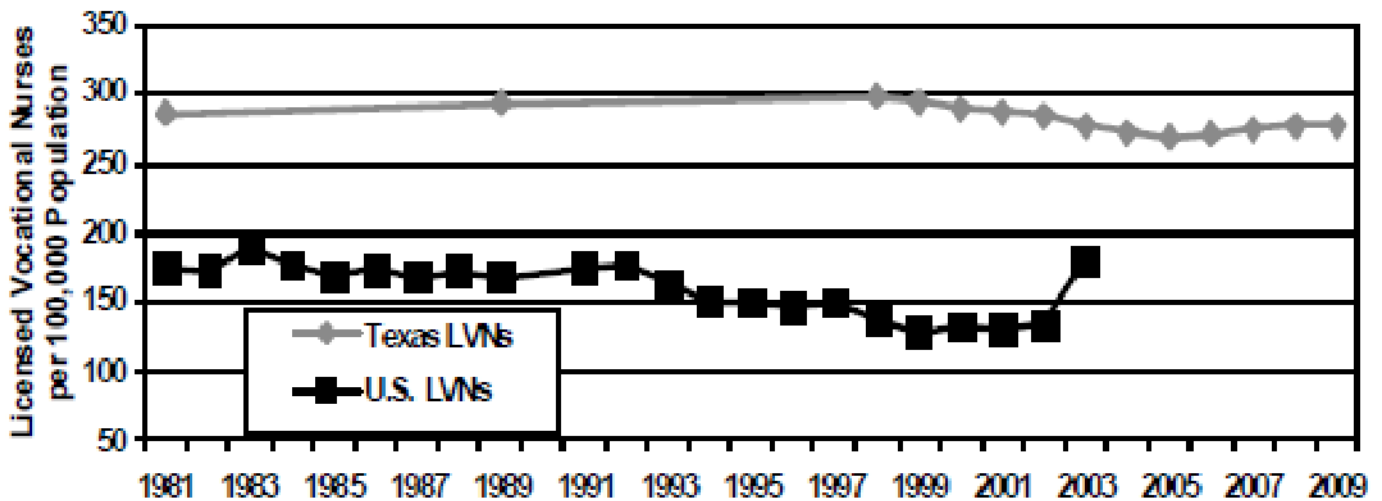


Figure 2.26 Licensed Vocational Nurses per 100,000 Population, U.S. and Texas, 1981–2009



average was 9.8 percent for the same period. According to the Texas State Health Plan 2011-2016, the healthcare workforce and access to healthcare is inextricably connected. By increasing the supply of culturally competent and well-trained professionals and paraprofessionals, increased access to

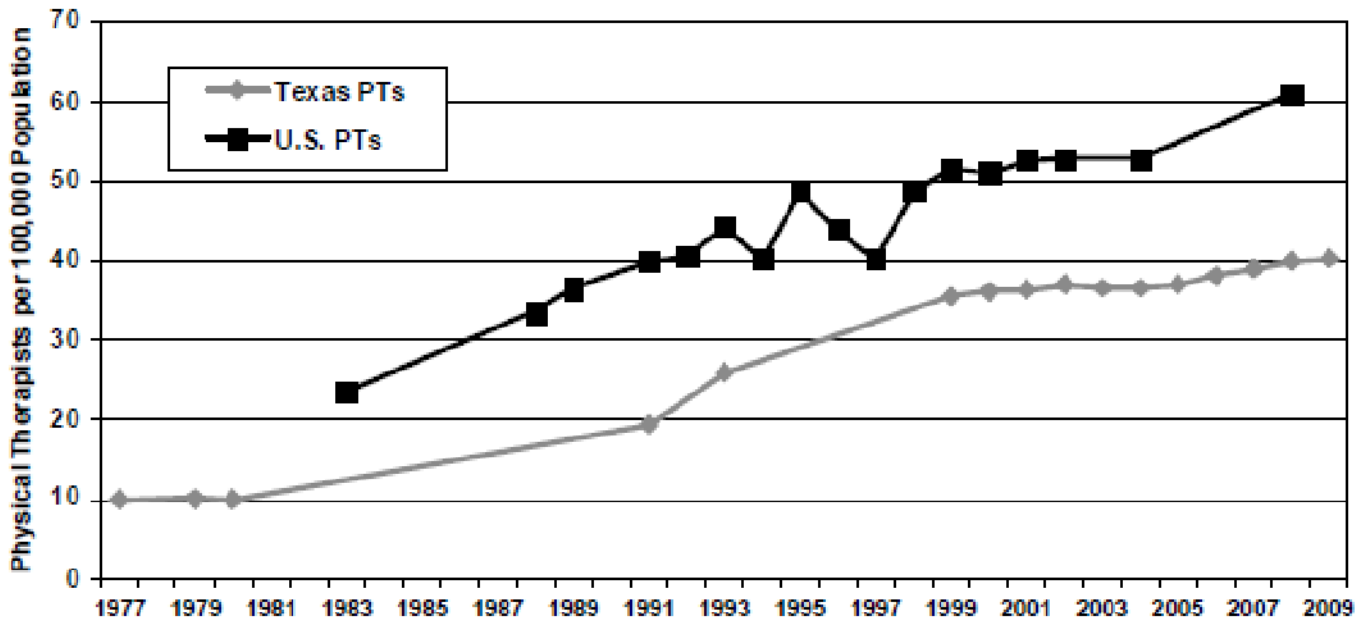
healthcare, improved health and wellness can be achieved.⁷

Several professions lagged behind national levels in the ratio of healthcare workers per 100,000 population. Physician shortages can be seen with the figures showing the gap for Direct Patient Care (DPC) Physicians (Figure 2.2),

Primary Care (PC) Physicians (Figure 2.4), and Physician Assistants (Figure 2.11).^{8, 9, 10}

Registered Nurses show a gap below the U.S. supply in figure 2.17. At 63.7%, the majority of RNs are employed in hospitals. The most common work areas are 14.3% in medical/surgical and 11.2% in intensive care/

Figure 2.41 Physical Therapists per 100,000 Population, U.S. and Texas, 1977–2009



critical care. The aging nursing workforce continues to be a factor with median age of 47 in 2009. RN population age 55 and older jumped from 15.1% in 2000 to 26.4% in 2009. There will be a loss of at least 42.2% of RNs by 2020 due to nurses retiring.¹¹

Nurse Practitioners are also below the national supply trends as shown in figure 2.19. This is an area that can see significant changes over the next few years with health reform and the role nurse practitioners may have.^{12, 13}

Texas Licensed Vocational Nurses (LVNs) are trending above national supply ratios as demonstrated in figure 2.26. More hospitals are requiring the nursing workforce to be BSN-prepared. Many LVNs go into long-term care or home healthcare, which continues

to grow with our aging population.¹⁴

Other shortages in the Texas State Health Plan 2011-2016 include Medical Radiologic Technologist (MRT), Occupational Therapists (OT), Pharmacists, Physical Therapists (PT) and Respiratory Care Practitioners. Most of the professions trend above national supply ratios with the exception of Physical Therapists as shown in the figure 2.41.¹⁵

North Texas

Hospitals are some of the largest employers in North Texas with significant economic impact. A study was done in 2011 by the Dallas-Fort Worth Hospital Council (DFWHC), entitled “The Economic Impact of the Member Hospitals of the Dallas-Fort Worth Hospital

Council on the State of Texas and the Dallas-Fort Worth Area.” The report showed DFWHC-member hospitals generating 237,058 jobs within Texas. Dr. Gerald A. Doeksen, professor at Oklahoma State University, said “The employment and income generated and the ripple effect in other businesses throughout the economy are enormous.”

The majority of the economic impact of DFWHC hospitals occurs in the immediate DFW area, a 30-county region of North Texas, with \$11.9 billion in salaries, wages and benefits, plus \$3.9 billion in retail sales.¹⁶ The 2011 GroupOne Vacancy and Turnover Survey showed North Texas is still facing workforce shortages in nursing and allied health professions. The 2011 vacancy rate of 4.3%



RN population aged 55 and older jumped from 15.1% in 2000 to 26.4% in 2009. There will be a loss of at least 42.2% of RNs by 2020 due to nurses retiring.

is up from 3.8% in 2010 and returning to near 2009 levels of 4.6%.¹⁷

Why are we facing workforce shortages?

Our education pipeline has played a significant role in healthcare workforce shortages. Many programs experience faculty shortages because salaries in education are significantly less than in healthcare. The same aging trends can be seen with faculty members as well. Many are approaching retirement and will soon be leaving the workforce. Nurse faculty workforce in Texas continues to have a higher median age than the RN workforce.¹⁸ We continue to see “degree creep” for healthcare programs where the licensure degree required continues to move from Associates to Bachelors to Masters to PhD. Is this necessary to provide safe practice? How does that develop a pipeline/ career ladder for healthcare workforce? What is needed is an education system creating competent graduates prepared to step into practice with minimum orientation. This requires collaboration between healthcare providers and educators. What do healthcare providers expect of new graduates? Hospitals see length of orientation for new graduates increasing, thus costing them more before the employee becomes productive. Competencies needed should be aligned with licensure requirements.

With health reform, healthcare delivery is changing. The aging population is having a significant impact. More patients are needing higher levels of care for longer terms. These considerations need an adequate healthcare workforce to meet the needs of the region. Healthcare providers should evaluate what they need in a workforce, with key strategies in obtaining this workforce. They need to understand emerging jobs due to new healthcare models and which jobs are no longer necessary. They should also know who will be retiring and have a succession plan for leadership. These are all pertinent concerns that healthcare providers need to address to ensure educational institutions have the relevant programs and training to meet future workforce needs. How is North Texas addressing these workforce issues?

The Journey

The North Texas Regional Healthcare Workforce Planning Collaborative (NTRHWPC) has been on a journey over the past year. The milestones on this journey are a testament to the dedication of the hospital partners including Baylor Health Care System, HCA North Texas, Parkland Health & Hospital System and Texas Health Resources.

The hard work of these professionals and technology partner, Orca Eyes, has made the journey worthwhile. The DFWHC Foundation Workforce

Center has been working collaboratively with these hospitals to create a robust regional workforce tool, a regional data warehouse in which hospital systems submit workforce data. In return, they use workforce metrics to understand their data. The tool will be used to create regional measurements for hospitals to use in their own workforce planning analytics. NTRHWPC's goal is to bring healthcare providers and educational institutions together to plan for the future healthcare workforce of North Texas.

Metrics created from this work involve the aging workforce, retirement, attrition, ethnicity and gender. The study will initiate discussions between hospitals and educational institutions to prepare future generations of the healthcare workforce.

The establishment of the NTRHWPC has transformed how area hospitals view workforce planning. With the implementation of the regional workforce tool, area hospitals are able to view historical trends, demographic distribution and so much more. They are also able to look predictively at their workforce three to five years in advance. The regional benchmarks are around hot jobs and specialty areas in nursing.

The benchmarking capability of the tool allows each hospital to understand how it compares to the region and

inspires informed business decisions about its workforce. Through this effort, colleges will be informed of future needs allowing them to develop programs to prepare the future healthcare workforce - an innovation never before available.

It has been a long journey in building the model. Milestones include data integration for hospital systems, regional benchmarks and a new portal to review data. We look forward to where the journey will take us in 2012 and the workforce insights it will provide. For more information, contact the DFWHC Foundation Workforce Center staff.

References

¹U.S. Department of Labor, Bureau of Labor Statistics News Release, *Employment Projections - 2010-20*, February 1, 2012.

²U.S. Department of Labor, Bureau of Labor Statistics. *Monthly Labor Review. Employment in health care: a crutch for the ailing economy during the 2007-09 recession*. April 2011.

³American Hospital Association, *Nursing supply growing as young enter field*. December 6, 2011. www.ahanews.com/ahanews/jsp/display.jsp?dcrpath=AHANEWS/AHANewsNowArticle/data/ann_120611_nursing&domain=AHANEWS

⁴*Texas State Health Plan 2011-2016, A Roadmap to a Healthy Texas*. Texas Department of State Health Services, Center for Health Statistics, Texas Statewide Health Coordinating



Council. July 23, 2010. www.dshs.state.tx.us/chs/shcc/default.shtm

⁵*Texas State Health Plan 2011-2016, A Roadmap to a Healthy Texas*. Texas Department of State Health Services, Center for Health Statistics, Texas Statewide Health Coordinating Council. Pg 3 & 5. www.dshs.state.tx.us/chs/shcc/default.shtm

⁶*Texas State Health Plan 2011-2016, A Roadmap to a Healthy Texas*. Texas

Department of State Health Services, Center for Health Statistics, Texas Statewide Health Coordinating Council. Pg 115. www.dshs.state.tx.us/chs/shcc/default.shtm

⁷*Texas State Health Plan 2011-2016, A Roadmap to a Healthy Texas*. Texas Department of State Health Services, Center for Health Statistics, Texas Statewide Health Coordinating Council. Pg 22. www.dshs.state.tx.us/chs/shcc/default.shtm



Department of State Health Services, Center for Health Statistics, Texas Statewide Health Coordinating Council. Pg 46. <http://www.dshs.state.tx.us/chs/shcc/default.shtm>

¹²*Texas State Health Plan 2011-2016, A Roadmap to a Healthy Texas.* Texas Department of State Health Services, Center for Health Statistics, Texas Statewide Health Coordinating Council. Pg 54. <http://www.dshs.state.tx.us/chs/shcc/default.shtm>

¹³*Texas State Health Plan 2011-2016, A Roadmap to a Healthy Texas.* Texas Department of State Health Services, Center for Health Statistics, Texas Statewide Health Coordinating Council. Pg 62. <http://www.dshs.state.tx.us/chs/shcc/default.shtm>

¹⁴*Texas State Health Plan 2011-2016, A Roadmap to a Healthy Texas.* Texas Department of State Health Services, Center for Health Statistics, Texas Statewide Health Coordinating Council. Pg 82. <http://www.dshs.state.tx.us/chs/shcc/default.shtm>

¹⁵*The Economic Impact of the Member Hospitals of the Dallas-Fort Worth Hospital Council on the State of Texas and the Dallas-Fort Worth Area.* Dr. Gerald A. Doeksen, regents professor at Oklahoma State University. Dallas-Fort Worth Hospital Council. January 2011.

¹⁶*2011 Group One Vacancy and Turnover Survey.* Group One Services. May 2, 2011.

¹⁷*Texas State Health Plan 2011-2016, A Roadmap to a Healthy Texas.* Texas Department of State Health Services, Center for Health Statistics, Texas Statewide Health Coordinating Council. Pg 52. <http://www.dshs.state.tx.us/chs/shcc/default.shtm> ●

⁸*Texas State Health Plan 2011-2016, A Roadmap to a Healthy Texas.* Texas Department of State Health Services, Center for Health Statistics, Texas Statewide Health Coordinating Council. Pg 26. www.dshs.state.tx.us/chs/shcc/default.shtm

⁹*Texas State Health Plan 2011-2016, A Roadmap to a Healthy Texas.* Texas Department of State Health Services, Center for Health Statistics, Texas Statewide Health Coordinating

Council. Pg 38. www.dshs.state.tx.us/chs/shcc/default.shtm

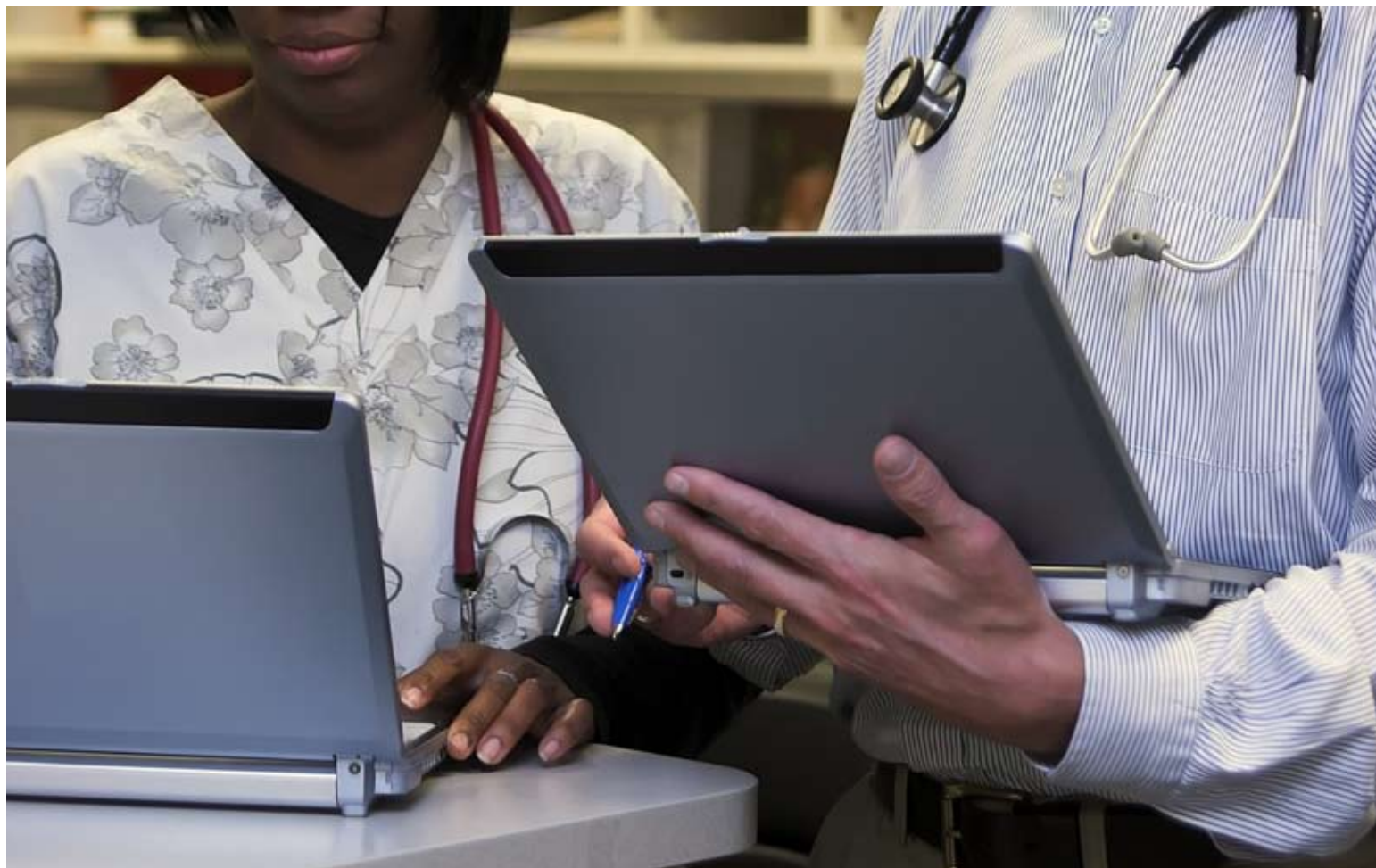
¹⁰*Texas State Health Plan 2011-2016, A Roadmap to a Healthy Texas.* Texas Department of State Health Services, Center for Health Statistics, Texas Statewide Health Coordinating Council. Pg 48-52. www.dshs.state.tx.us/chs/shcc/default.shtm

¹¹*Texas State Health Plan 2011-2016, A Roadmap to a Healthy Texas.* Texas

Overview of North Texas Regional Extension Center



**By Mike Alverson, Executive Director of the
North Texas Regional Extension Center (NTREC)**



Assisting 1,498 providers on their electronic health records journey to meaningful use

The notice of a grant award was issued by the Office of the National Coordinator for Health IT (ONC) in April 2010 to assist 1,498 providers on their electronic health records' (EHR) journey to meaningful use (MU).

Governance

The grantee was the Dallas Fort Worth Hospital Council Foundation (DFWHC Foundation), a 501(c)3 not for profit educational and research organization affiliated with the Dallas Fort Worth Hospital Council, a trade association of 77 member hospitals in the Dallas-Forth Worth area. The

North Texas Regional Extension Center was established as a grant program of the DFWHC Foundation. A NTREC grant review board, whose chairman also serves on the DFWHC Foundation Board, was comprised of representatives from supporting organizations as follows:

- Physician representative of the Texas Medical Association (TMA) from the Tarrant County Medical Society (elected chairman)
- Physician representative of the TMA from the Dallas County Medical Society



- Physician representative of the TMA from the Smith County Medical Society
- Physician education Professor from the University of Texas at Dallas
- Chief Information Officer of the University of Texas Southwestern Medical Center
- President, DFWHC Foundation

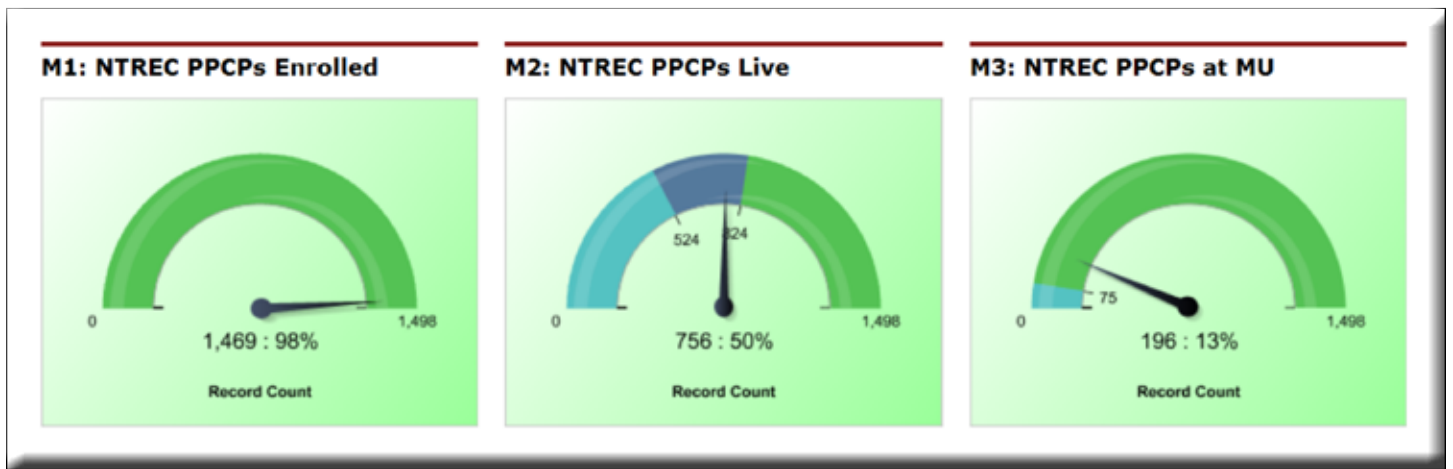
Early Efforts

Because the Regional Extension Center was a new venture, initial efforts were focused on establishing the program. Developing governance policies and procedures, hiring of staff, preparing and obtaining approval of the budget and operating plans by ONC, identifying primary subcontractors to provide technical consulting assistance, securing initial outreach partnerships and

activating a website and enrollment process took place between April-August 2010. Enrollments began in September 2010.

North Texas Market Dynamics

NTREC, in partnership with the Texas Medical Association, conducted the Texas Organization of Rural and Community Hospitals and other professional organizations, a broad and deep outreach effort regarding



EHRs and REC services. The target of these efforts was priority primary care providers in practices for less than 10 providers. NTREC determined that the North Texas provider market exhibited several important characteristics.

Most Texas physicians are independent practitioners and are skeptical of health systems, payers and government programs, and rely heavily on the advice of trusted organizations like TMA (to which 80% of Texas physicians belong). In response, NTREC partnered with TMA, in governance and as the primary outreach and education vendor. Through its successful work, NTREC earned provider testimonials and a reputation as a physician-centric, trusted advisor. Although enrollment trailed national averages for much of the two-year grant period, a large surge of activity in Q4 of 2011 and the first two months of 2012 allowed NTREC to meet enrollment goals. NTREC is now requesting that its target be increased by 152 or about 10%.

Many providers worried about the viability of their small practices. They feared cuts to CMS reimbursements and felt the pressures of Accountable Care Organization formation. Accordingly, they frequently consolidated into larger groups, typically affiliated with large hospital systems, to attain economy of scale and aligned their EHR efforts with those of the larger group. Although still medically independent and practicing in small clusters of less than 10, these eligible providers could only obtain REC services in their EHR and MU activity if NTREC aligned its delivery of services with the EHR initiatives and planning underway at these large provider groups or hospital systems. In response, NTREC developed and implemented ONC approved policies to subcontract with these groups to provide the services and accelerate the providers EHR implementation and achievement of MU.

Texas provider practices were very diverse as to type of care, size of practice,

financial strength and computer sophistication. In response, NTREC, in alignment with the other Texas RECs, adopted a "vendor-neutral" approach. NTREC was willing to support any provider who desired to implement an ONC certified EHR. A "Texas RECs recommended approach to implementing and supporting EHRs" was developed to protect the interests of providers, to recognize the efforts of vendors and to promote best practices in EHR acquisition, implementation and support.

Key Attributes of NTREC Collaborative

NTREC collaborated with many different organizations as the program evolved. The four Texas RECs met weekly and aligned many practices for consistency across the state. A statewide request for qualifications for EHR vendors, a Texas RECs combined website (www.txrecs.org), a statewide webinar education series and a recommended approach to EHR acquisition and vendor recognition are examples.



NTREC collaborated with state agencies like the Texas Health and Human Services Commission (personally briefing the Commissioner and conducting biweekly conferences with the State e-health Coordinator), the state Medicaid agency (multiple meetings and presentations to Medicaid directors and co-planning of a Medicaid program for Medicaid specialists similar to ONC's program for primary care providers) and the Texas Health Services Authority that directs the state's health

information exchange strategy (NTREC Executive Director is on the THSA Collaboration Council).

NTREC has enjoyed a strong working relationship with CMS (personally briefing the CMS administrator during his visit to Dallas and frequent interactions with the Region VI CMS staff). NTREC created agreements for enrollment and services through professional organizations like the Texas Organization for Rural and Community Hospitals and Centex System Support

Services (designated by the Health Resources Services Administration as a Health Care Controlled Network with special capabilities to assist Federally Qualified Health Centers with EHRs).

NTREC has had significant interaction with Public Health agencies, including briefings with the Regional Director of the Texas Department of State Health Services, Health Service Region 4/5N regarding NTREC services). All of these activities have enabled the NTREC to reach

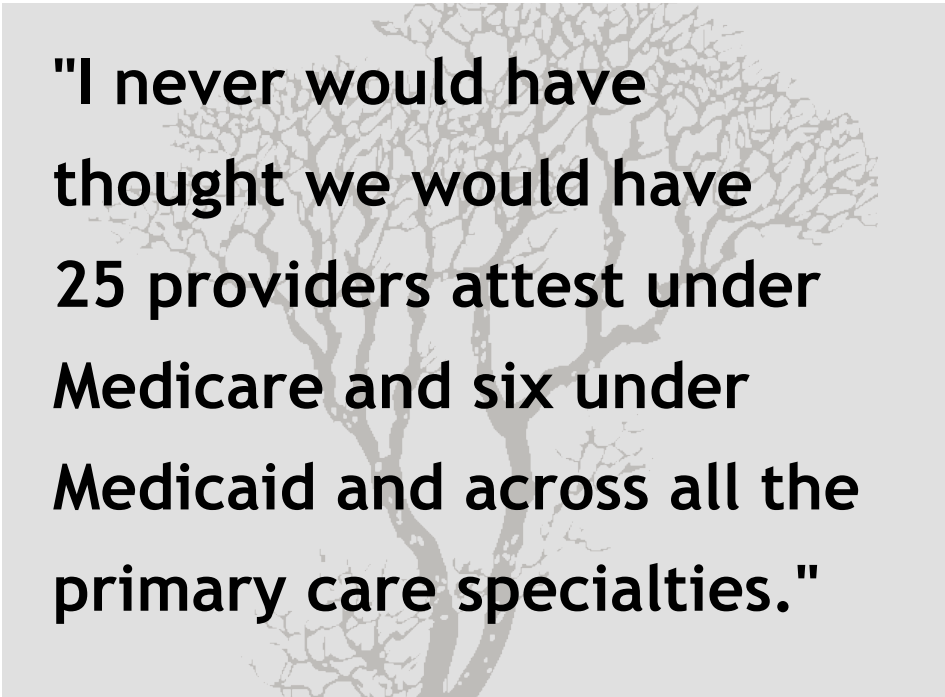
broader audiences of primary care providers and leverage the combinations of related programs for those providers.

Quality Focused

NTREC's purpose has been to accelerate the adoption and meaningful use of EHRs by primary care providers to improve the quality of care in the North Texas region. An underlying theme has been to use EHRs as a tool to achieve the goals of the National Quality Strategy. The DFWHC Foundation has been awarded a Partnerships for Patients Hospital Engagement Network grant to combine quality outcomes from multiple hospitals in the region and perform data analytics. The NTREC has engaged TMF-Health Quality Institute; the state Quality Improvement Organization (QIO), to perform services, including using EHRs more effectively through the state Learning Action Network, in both primary care and critical access hospital practices. DFWHC Foundation/NTREC has proposed a pilot program of distributing diabetes guides for primary care providers and patients based upon materials from the Agency for Healthcare Research and Quality.

Transparent

NTREC has been a highly visible organization that has communicated extensively about its services and progress toward its goals. Examples include sponsoring statewide Health IT Summits, conducting



"I never would have thought we would have 25 providers attest under Medicare and six under Medicaid and across all the primary care specialties."

statewide webinars and educational programs, giving presentations at rural health conferences, professional organization conferences and EHR vendor sponsored events. NTREC has conducted quarterly briefings for the TMA Ad Hoc Committee on Health IT and the Texas Health Services Authority. Twenty monthly leadership updates have been distributed to a broad spectrum of stakeholders in the region and throughout the state.

Effective

The American Recovery and Reinvestment Act (ARRA) Regional Centers Cooperative Agreement Funding Opportunity Announcement indicates that "The ultimate measure of a Regional Center's effectiveness will be whether it has assisted providers in becoming meaningful users of certified EHR technology." As of Feb. 29, 2012, NTREC

had enrolled 1469 physicians, assisted implementation of EHRs to 756 physicians and assisted about 200 or 13% of its targeted number of providers to attain meaningful use. Beyond the numbers is the impact that NTREC services have had on the practices of individual primary care providers.

The comments of Dr. James Sawyer of the Diagnostic Clinic of Longview are powerful in their simplicity, "I appreciate the work you and your team did for us and I think your consulting work was critical and essential for this project to be so successful. I never would have thought we would have 25 providers attest under Medicare and six under Medicaid and across all the primary care specialties. You did everything I hoped you would do and succeeded beyond my most optimistic expectations." ●

ICD-10 Compliance and Implementation



**By Theresa Mendoza, Director of Quality,
Business Intelligence, Data Services**



ICD-10 weighs heavily on the minds of many people including hospital executive leadership

The International Classification of Disease tenth revision (ICD-10) is a coding system created by the World Health Organization. It notes medical records including diseases, symptoms, abnormal findings and external causes of injury. This code development was driven by computerization and data processing allowing for robust research when examining evidence-based medicine.

The classifications were created in the 1970s and ICD-10 was implemented in 1993 as a replacement for the previous version known as ICD-9 in almost every country in the world except the U.S. Almost

all of the other countries have a form of socialized medicine where patient information is stored in a centralized database, thus it's less complicated than the U.S. system which includes many different types of providers, payers and software vendors supporting different functions of patient care.

ICD-10 weighs heavily on the minds of many people including hospital executive leadership, medical records, billing, physician practices and payers. The transition from ICD -9 to ICD -10 is dependent on many moving parts including Information Technology departments,



software vendors, coding, billing, data warehousing, and data analysis. There are many overlapping priorities and deadlines which have financial implication.

The process of sorting disaster victims is commonly referred to as “Triage” in the healthcare industry. Triage determines the priorities in an emergency situation. Hospital and physician providers believe this accurately describes the potentially disastrous

situation with Computerized Provider Order Entry (CPOE), Electronic Health Records (EHR), Meaningful Use, HIPAA 5010 billing format transition, and ICD-10 implementations deadlines looming ever closer.

In November 2011, the American Medical Association’s (AMA) House of Delegates voted to “vigorously work to stop implementation” of the ICD-10 transition due to all the priorities being faced by providers. Dr. Peter Carmel, President of AMA, stated the

2013 timing for ICD-10 is terrible when providers are already intensely working to implement electronic health records. During another November conference hosted by the National Association of Health Data Organizations (NAHDO), Dr. Daniel Duvall from the Centers for Medicare and Medicaid (CMS), confirmed the October 1, 2013 timeline for compliance would not be delayed.

Then on Feb. 14, 2012, CMS Administrator Marilyn Tavenner



Medical science continually makes discoveries of new diagnosis and there are now no more numbers to assign the new diagnosis.

The bonus of ICD-10 is it allows for more detailed codes which in turn provides researchers and analysts better information on patient outcomes - a great advantage for providers. We will be able to clearly identify when a procedure is more complicated with higher risks, which can assist providers in improving patient care and transitions to home. The specificity can also strengthen medical necessity of a provider's service that might have been denied before with ICD-9 coding.

ICD-10 Modifications

The National Center for Health Statistics (NCHS), the federal agency responsible for developing the International Statistical Classification of Diseases and Related Health Problems, 10th revision, in the U.S., has developed a clinical modification of the classification for morbidity purposes. The ICD-10 is used to code and classify mortality data from death certificates. The World Health Organization (WHO) owns and publishes this classification and approved the development of this adaption for the U.S. as long as it conforms to the WHO conventions for ICD.

Additionally, new concepts have been added to ICD-10-CM based on the established

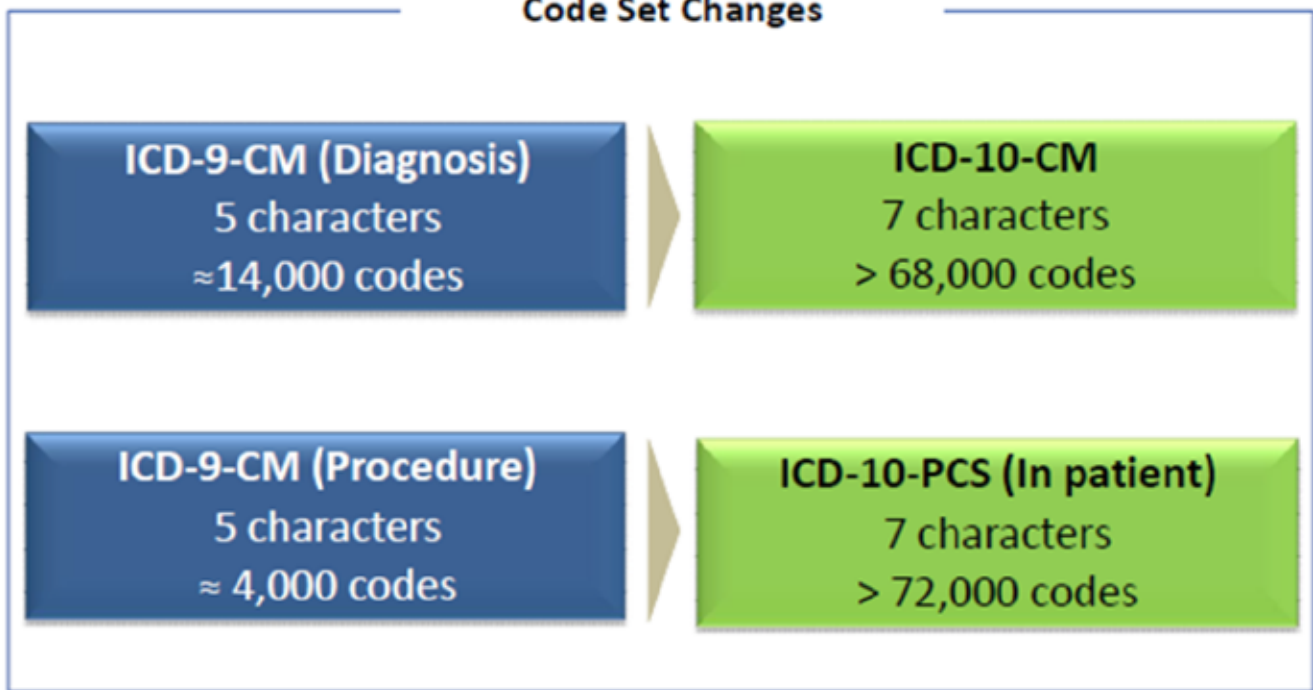
told reporters they would “re-examine the timeframe” through a rulemaking process, with the new deadline scheduled for Oct. 1, 2014.

An extensive public debate about ICD-10 has occurred over the last 15 years and the government has been responsive in delaying the implementation for several years. Regardless of a delay, compliance for ICD-10 is unavoidable and providers should be taking

the necessary steps to ensure they are ready. Why is compliance unavoidable? Why does the U.S. need to transition to ICD-10 when it has been successfully using ICD-9 (ignoring the fact most countries have been on ICD-10 for 19 years)? Quite simply, the ICD-9 is running out of room.

It is scientifically organized where a three-digit category can only have 10 sub-categories. These numbers in the sub-categories have been assigned diagnosis codes.

Code Set Changes



update process for ICD-9-CM and the World Health Organization's ICD-10. The modification represents an improvement over ICD-9-CM and ICD-10 used by other countries. Improvements include the addition of information related to ambulatory and managed care; expanded injury codes; the creation of combination diagnosis/symptom codes to reduce codes needed to describe a condition; the addition of 6th and 7th characters; the incorporation of common 4th and 5th digit sub-classifications; full title codes; laterality; and greater specificity in code assignment.

The new structure will allow more expansion than was available in ICD-9. Modifications for ICD-10 and differences from ICD-9 is akin

to the difference between Spanish and English. The ICD-10 is also seven times larger than ICD-9. Not every code is seven digits long. The ICD-10 can be three to seven digits and has rules on how the code is assigned. For example:

- Digit 1 is alpha Letters A-Z, except U (not case sensitive)
- Digits 2 is numeric
- Digits 3-7 are alpha (not case sensitive) or numeric

Example of the new 3 to 7 digits coding system follows:

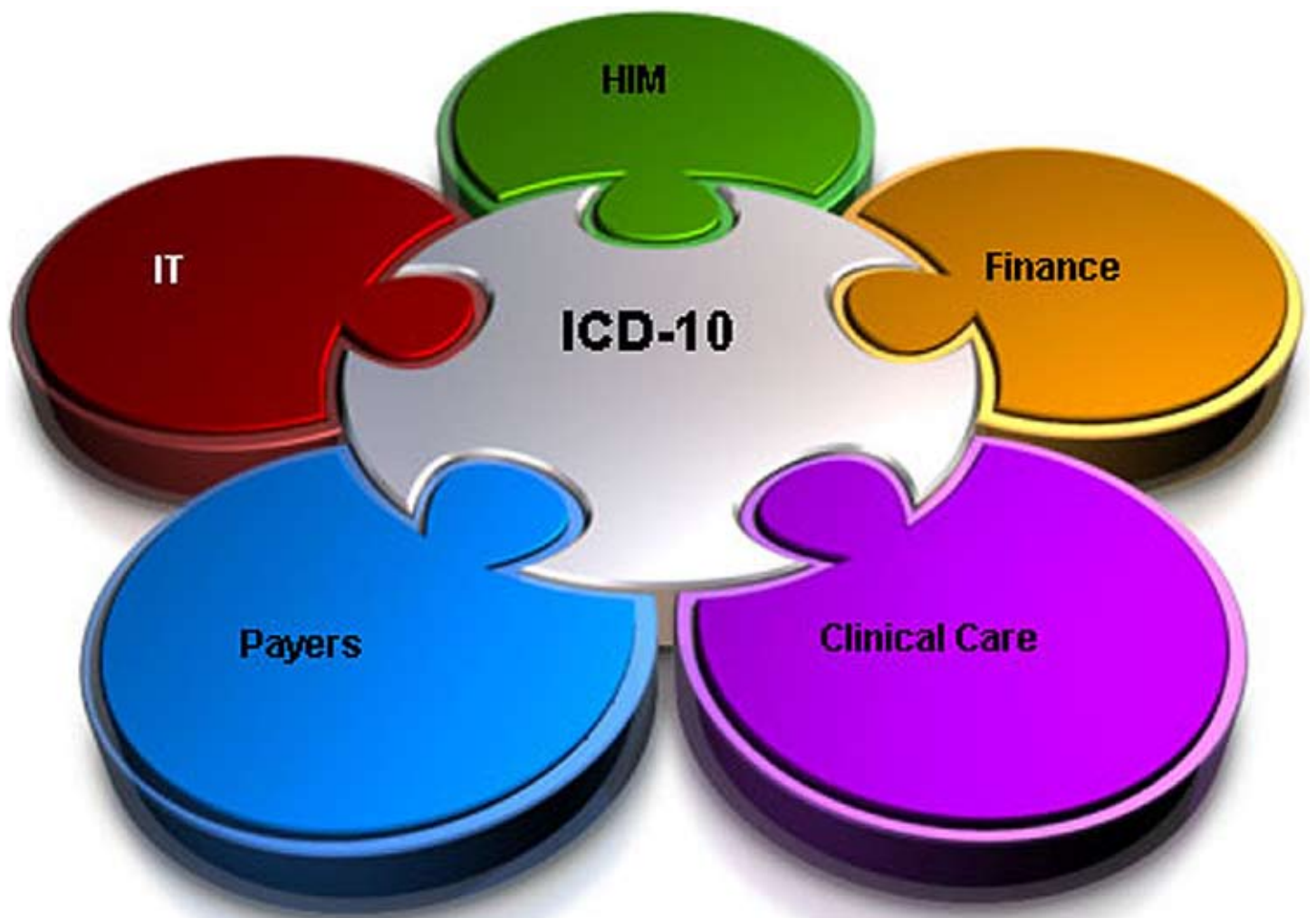
- A78Q Q fever
- A69.20 Lyme disease, unspecified
- O9A.311 Physical abuse complicating pregnancy, first trimester
- S42.001A Fracture

of unspecified part of right clavicle, initial encounter for closed fracture

Implementation

The adoption of ICD-10 requires a massive overhaul to processes, starting when a patient comes through the door, is registered and diagnosis is coded. ICD-9 codes are deeply rooted into the state and national level reporting for research and reimbursement analysis performed. The transformation will inspire new payment schemes, education, coding policies, staffing, public reporting and supporting technology.

Deloitte Consulting LLP proposed a three-prong assessment. The first would focus on operations. This



would involve processes, policies, business partners, and staffing. You should start education early and it should include your coding staff, nursing, medical staff and allied health services. Providers may need to hire temporary help to allow for current staff to attend the training. Early training will lessen the learning curve.

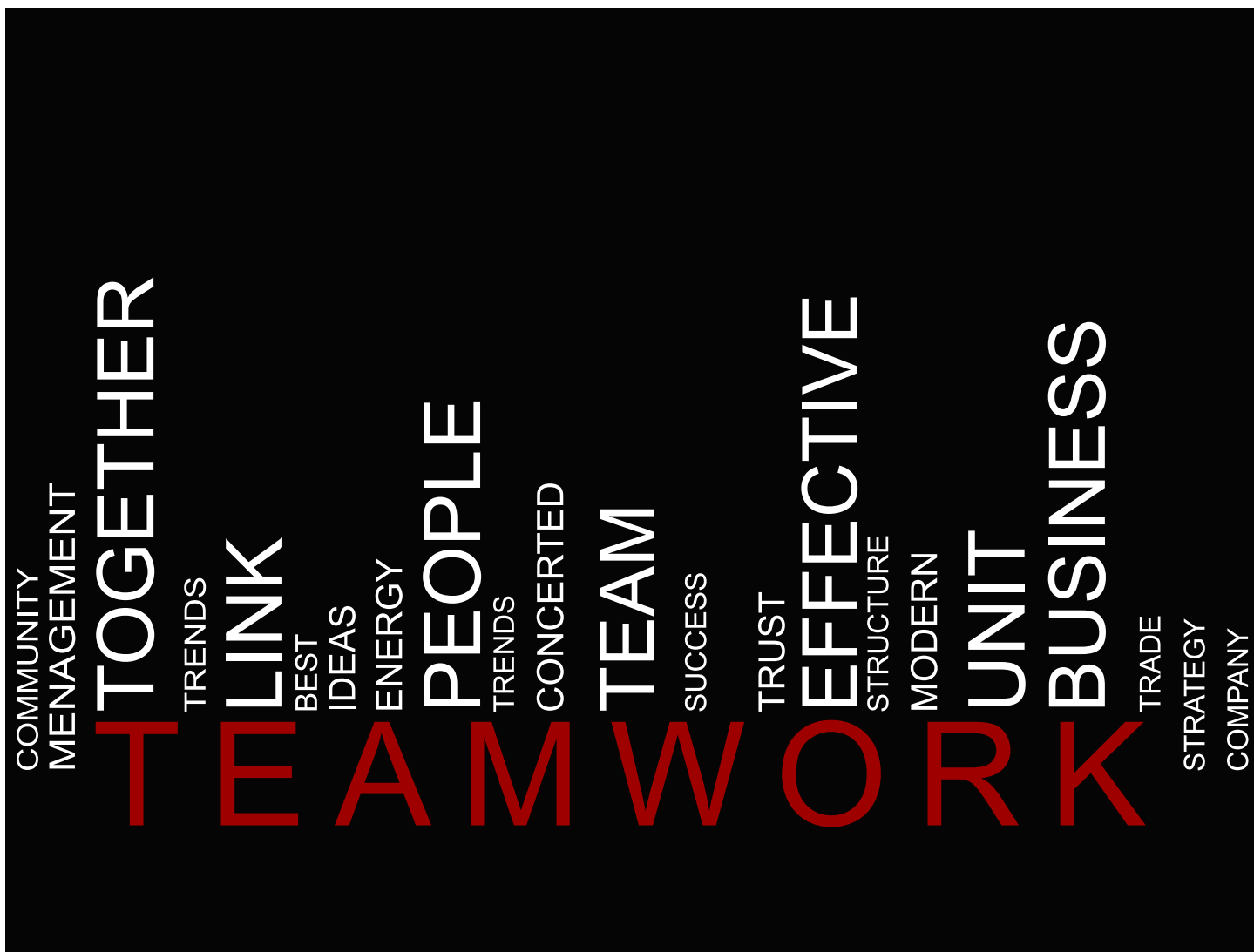
The next focus should be an assessment on changes to financial performance. Conversion will have an impact on all areas of revenue. Additional impact areas

include registration, patient access, financial consulting, utilization management, case management, charge capture integrity, managed care contracting, coding, billing and collections.

Substantial revenue cycle planning will be required. There may be an increased number of claim denials due to poor understanding of the coding. Providers should be prepared for a reduction in productivity. In this example, haste makes waste and it is better for staff to take more time in getting the coding

and claims correct than risk a denial—which means in the beginning you may not be billing at the accustomed rate.

The final focus would be technology assessment. Because of the complex code structure, implementation into electronic health records, billing systems, reporting processes and analytical tools will require major upgrades of systems. This will involve significant expenses associated with upgrades, interfaces and staffing. These system changes will have impact on staff across all operations.



The Centers for Medicare and Medicaid (CMS) presented a 12-step process to follow for implementation. The steps can be used by all providers as a roadmap for planning.

Step 1.

Organize implementation. Establish a point person to oversee the conversion. Choose someone who is familiar with departments the code changes will affect. Create a committee that includes coders, information systems, billing, managed care contracting, physicians and nursing.

Step 2.

Establish a communication plan. Communicate with stakeholders on a monthly basis until six months prior to implementation, at which point you should communicate biweekly. Determine communication most appropriate for executives, managers, departments and committees. Some staff members may not respond to e-mails and may benefit from short meetings.

Step 3.

Conduct Impact Analysis. Follow the three-prong

assessments of Deloitte Consulting LLP. Make sure you follow the established communication plan in disseminating results. These assessments should lend themselves to creating a reasonable timeline. Track timelines in Excel or Microsoft Project.

Step 4.

Contact system vendors to ensure they are ready for implementation in advance of the CMS deadline. Providers should already be talking with vendors about compliance. Ask your vendor when it will be ready to test systems. Find out

Equivalence	ICD-9 Codes	Descriptions
One-to-One	3,458 (24.52%)	Unique equivalent code in ICD-10
Single	9,600 (68.07%)	Single equivalent code in ICD-10, but there are several to choose from
Combination	629 (4.46%)	Multiple ICD-10 codes are required to describe the ICD-9 code
Null	416 (2.95%)	No equivalent code exists

Source: CSC, 2010

what the vendor's plans will be so you can work into your own plan. Be sure to ask when they will be available to begin software testing and if your current hardware is sufficient.

Step 5.

Estimate budget taking into account costs for hardware, software, licensing, training and FTE's required for implementation. The budget will vary depending on the provider size and the tools you currently use.

Step 6.

Begin development and testing of the HIPAA 5010 billing format. Also, you can begin cross-walking current codes to equivalent ICD-10-CM codes. Focus first on the top 10-20 diagnosis coded for your facility to ensure you can code for optimal reimbursement.

Step 7.

Develop a training plan. Find out what resources are available (i.e. web-based, community college,

conferences, workshops, etc.) and make a schedule. The required number of hours for training depends on the role of the staff. You will need to consider if temporary staff or overtime will be necessary to cover for staff in training. Also, what types of materials might the office need for on-going support as far as software or books?

Step 8.

Analyze business processes tied to ICD-9-CM. This could include medical policies and contracts with health plans. Identify every physical form, policy, software and contract that is tied to ICD-9.

Step 9.

Begin education and training at least six months prior to the CMS implementation deadline. This is the actual implementation of the training plan developed in Step 7.

Step 10.

Address policy change. Review payment policies. Do you

have contracts with Medicare Advantage plans that base payments on patient severity of illness? Medicare uses beneficiaries' characteristics (age and health conditions) in its CMS-hierarchical condition category risk adjustment model. The model uses ICD-9-CM diagnoses to predict expected resource utilization for each beneficiary. Medicare Advantage plans benefit from higher capitated payments when their covered lives are deemed high risk. There may be some new opportunities to improve payment with ICD-10 coding, which may better reflect your group's patient severity of illness. Identify opportunities to improve coding processes. Communicate policy changes.

Step 11.

Test your software systems. Seek assistance from your vendor. Make sure there is adequate time to perform testing and allow for necessary customizations. The vendor should ensure updates will be maintained during transition.

"ICD-10 will have significant impact on both business and clinical processes relying heavily on Information Technology."

Step 12.

Track implementation compliance. Monitor activities to identify problems after the implementation is complete. If payments are reduced or slower than usual, investigate whether the problems are related to a certain payer. A general slowdown could indicate the problem is related to the practice's processes.

Ask the following questions to track implementation compliance:

- Are you billing consistently and appropriately?
- Are coders choosing the correct diagnoses in a timely manner?
- Are there delays getting the claims final billed?

- Do explanations of benefits indicate denials were not present before the conversion? Track what payers deny to determine a pattern.
- Are other practices using the same vendors or clearinghouses having the same problems?

Trending

One of the main benefits of moving to ICD-10 is the ability to analyze patient outcomes with more granularity. There is not a one-to-one mapping of codes from ICD-9 to ICD-10 that can be used in trending data during the transition. CMS created the General Equivalence Mappings (GEM) as a tool to assist with

conversion. The GEMs are forward/backward mappings between ICD-9 and ICD-10 coding and can be referred to as "crosswalks."

CMS states these GEMs were meant to be used as a point of reference, but are not a definitive map. There is less than 25% one-to-one matches. There has not been a definitive mapping created for trending and analysis at a national level. While crosswalks are being attempted, it is likely that each organization will develop slightly different routes based upon their priorities.

Rhonda Butler, of 3M Information Systems, suggested a way to consider trending would be to find patients with the same characteristics. She stated "The task is to find the same group of patients regardless of ICD corral used." You cannot map from a less detailed system to a more detailed system. Work within the code constraints to find the same group of patients along with using the clinical definition of a patient population. Creating these groups can help organizations design a "peaceful co-existence" between ICD-9 and ICD-10.

Leveraging the GEMs can save time and is a good starting point. Engagement with trading partners, collaboration in crosswalk development and defining patient groups will help minimize impact. Maintenance



October 1, 2014

and enhancements of these crosswalks will be on-going.

Conclusion

The ICD-10 transition will have significant impact on both business and clinical processes relying heavily on Information Technology. There will be some one-time costs that could be extensive. The change is not just within the coding department, but reaches deeply into an organization from the time a patient arrives to discharge.

Even with CMS delaying the timeline to Oct. 1, 2014, you cannot underestimate the changes involved. It would

be safe to assume that if you have not begun to organize implementation, you are not as far as you need to be in preparing for ICD-10.

Research

Armstrong, C.M. (2011, Dec. 15, 2011). *Ten Things to Know About ICD-10 Implementation*. from www.deloitte.com/view/en_US/us/Industries/health-care-providers/e706f7a157a07210VgnVC M100000ba42f00aRCRD.htm.

Butler, R. (2011). *ICD-10 Implications for State Health Data Organizations*. NAHDO, Alexandria, VA, 3M Health Information Systems.

CDC. *International Classification of Diseases, Tenth Revision (ICD-10-*

CM). 2012, www.cdc.gov/nchs/icd/icd10cm.htm.

Daniel Duvall, M. (2011). *Data Analysis Considerations for the ICD-10 Conversion*. NAHDO Annual Conference, Alexandria, VA.

Daryl Dickhudt, P.S. a. J.B. (2010) *ICD-10 Implementation: Objects on the Horizon Closer Than you Think*.

Zigmond, J. (2012). "CMS will re-examine ICD-10 timeline, Tavenner says." www.modernhealthcare.com/article/20120214/NEWS/302149976?AllowView=VW8xUmo5Q21TcWJOb1gzb0tNN3RLZ0h0MWg5SVgra3NZRzROR3l0WWRMVGJWdndGRWxiNUtpQzMyWmVwNW5nWUpidW4=&utm_source=link-20120214-NEWS-302149976&utm_medium=email&utm_campaign=mp-alert. ●

The Burden of **CLOSTRIDIUM DIFFICILE** Infection



**By Carol Young, Director of Quality
and Patient Safety Services**



It is estimated 20% of individuals who are hospitalized acquire C-diff during their hospitalization

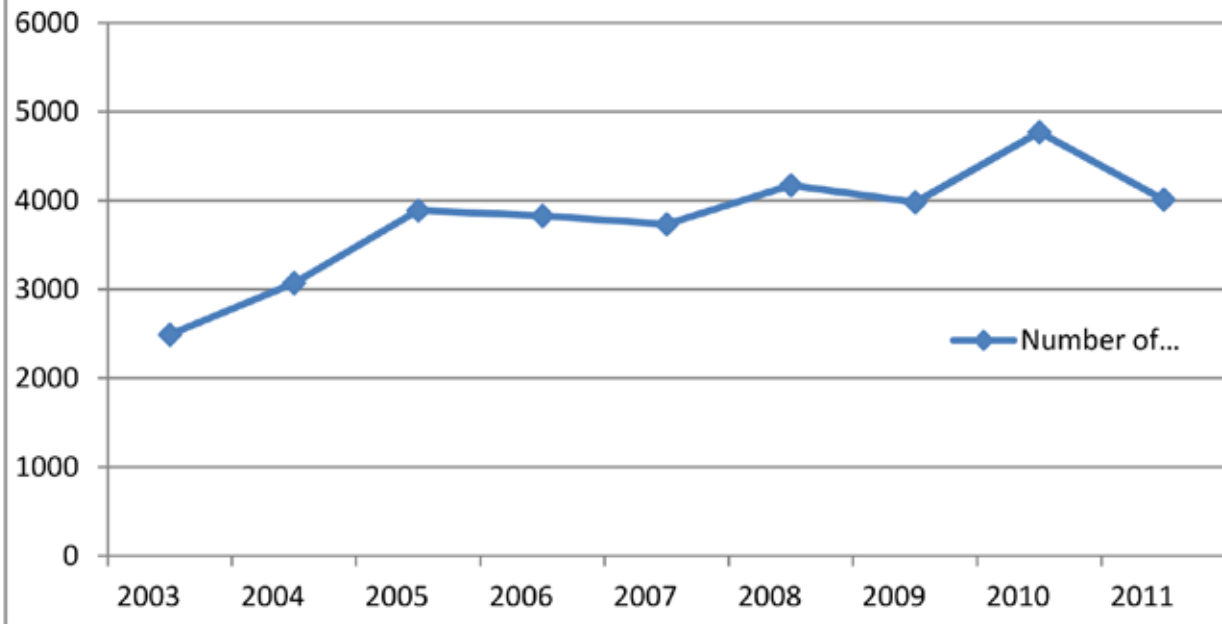
Clostridium Difficile, commonly called C-diff, is a spore-forming, gram-positive anaerobic bacillus that produces two exotoxins. It is estimated 2% of healthy adults are colonized with C-diff and 20% of individuals who are hospitalized acquire C-diff during their hospitalization. People are exposed through surfaces contaminated with the bacteria, most commonly from unclean hands.

Once considered almost exclusively a hospital acquired infection, it is becoming more common in people who have not been to a hospital recently

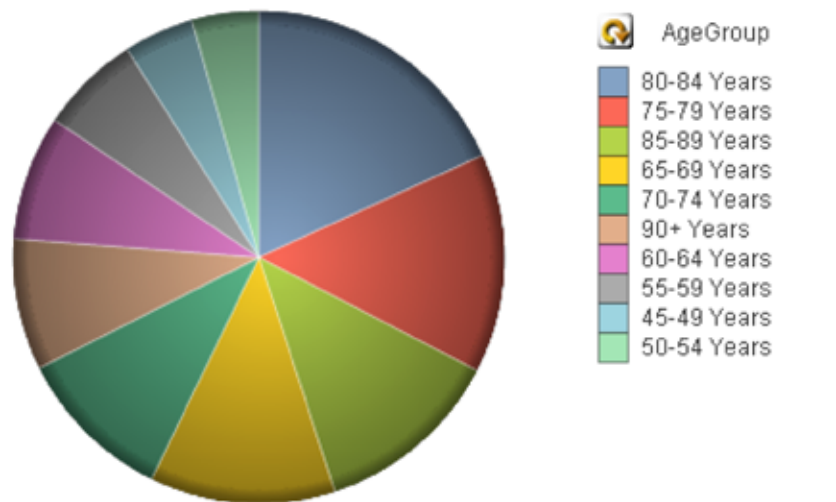
(observe how hands are washed, or not, in a restaurant or public bathroom).

C-diff can live on surfaces for a long time due to being a spore which is a hard shell that protects the bacteria in harsh environments for long periods of time. Once the C-diff spore is in the body, it lives in the large intestine without any problems, kept in check by the normal intestinal bacteria. Once C-diff proliferates, most commonly related to taking antibiotics which not only kill the unwanted bacterial infection, but also the normal bacteria that lives in the gut, the

C-Diff Cases in North Texas



Graph A: Data from ISQC Data Warehouse, DFWHC Foundation Business Intelligence Tools



Graph B: Cases of C-diff by age in DFW area from ISQC Data Warehouse

C-diff infection is higher than the national rate with an 91.5% increase in incidence from 2003 to 2010 (see Graph A). The good news is that it is beginning to trend back down in 2011.

Additionally, C-Diff infection has a high mortality rate for elderly populations who have the higher incidence. The graph below shows that 75% of the DFW population with C-diff in the hospital are 65 years of age and older. Mortality from C-diff is greater for elderly populations which are reflected in the more modest gains in mortality as compared to the reduction in number of cases.

Infection Control and Prevention

Key to controlling colonization

symptoms of a C-diff infection include watery diarrhea, fever, nausea, abdominal pain and tenderness and loss of appetite. The incidence of C-diff infection tripled from 2000-2005 in the U.S. In 2008,

a study by APIC demonstrated a prevalence rate of 13 C-diff infections per 1,000 patients with an increased hospital cost of \$2500 to \$7000 per patient.¹

In North Texas, the rate of



of C-diff is through prevention of transmission through the oral-fecal mode. Clinical Practice Guidelines for C-diff Infections from the Society for Healthcare Epidemiology of America (SHEA) and the Infections Diseases Society of America (IDSA) include Infection Control and Prevention guidelines.

These are listed as “What is the most important infection control measures

to implement in the hospital during an outbreak of CDI?” These measures are separated into people, environmental and medication measures.

People Measures

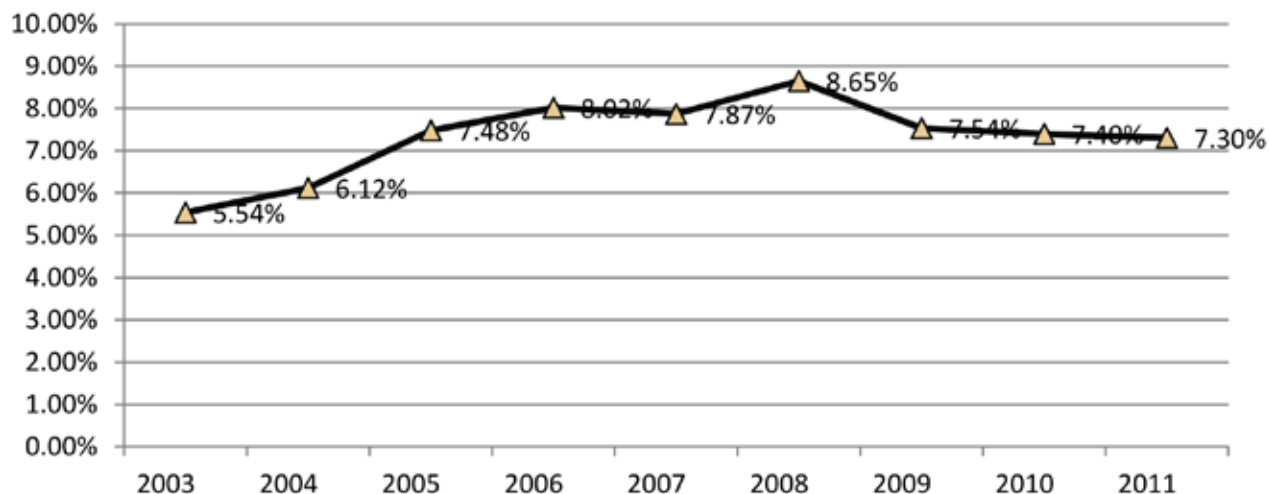
Practices to prevent transmission of C-diff Infection to non infected people apply to all, not just healthcare workers. It is important that patients and their visitors also understand and comply with these guidelines. Of most

importance is compliance with hand hygiene practices. For contact with a patient that has C-diff Infection, this means washing with soap and water, using friction for 15 seconds or more before rinsing. An additional important step is to not touch the faucets with clean hands as they were initially touched with contaminated hands. The best practice if the faucets are not automatic is to dry your hands and then use the towel to turn off water flow before disposal.

Alcohol gel, while widely used for hand hygiene is not effective after contact with any spore forming bacteria. The spore protects the bacteria from the alcohol preventing the effect desired-killing the bacteria. Washing with soap, friction and water leads to removal (not killing) and rinsing down the sink of the spore. Additionally, patients infected with C-diff need to be accommodated in a private room following contact precautions which include donning protective gowns and gloves prior to entering the room and removing before hand washing and leaving the room.

If private rooms are not available, room patients that both are infected together while providing dedicated commodes for each patient. Contact precautions are to be maintained throughout the duration of the diarrhea. Not recommended is routine identification of asymptomatic carriers (patients, visitors or

Mortality Rate for C-Diff in North Texas



Graph C: Mortality rate for C-diff from ISQC Data Warehouse

healthcare workers colonized but without symptoms of the disease). If carriers perform appropriate hand hygiene, the bacteria will not be spread from them to the environment.

Environmental Measures

Cleaning the environment during and following resolution of a C-diff infection to kill the spores is important to prevent re-infection of the individual. As spores can survive for a prolonged period on surfaces, appropriate cleansing and disinfection of surfaces with a sporicidal agent (chlorine containing or other EPA approved hard surface disinfectant) in the room of the infected person can minimize ongoing cross contamination. Since C-diff is shed in fecal matter, therefore bathrooms in particular need

to be a focus area for thorough cleaning. Extra attention to toilets and flush handles, grab bars, light switches and sink fixtures in the bathroom is important.

For patients not able to get up to the bathroom, cleaning or disposing of bedpans for single patients between use may prevent retransmission. Patients having C-diff associated diarrhea may contaminate their hands and transfer that to bedrails, mattresses, call bells, telephones, bedside tables and other high-touch objects necessitating similar attention to those as with a bathroom.

Medication Measures

In order to prevent proliferation of C-diff in colonized patients, minimizing both the frequency and the duration of antibiotic therapy will reduce the

risk of developing a C-diff infection. Implementing an antimicrobial stewardship program restricting the use of cephalosporins and clindamycin, which are more likely to target normal intestinal flora, allowing for the overgrowth of C-diff and the production of toxins that lead to diarrhea and other symptoms, is recommended as useful. Also, follow the guidelines for surgical prophylaxis, which does utilize cephalosporins and clindamycin, but limits the length of use. Both Dallas and Tarrant County Departments of Health and Human Services publish AntibioGrams annually to guide practitioners in selecting the appropriate antibiotic for specific bacterial infections.

Not recommended by SHEA and IDSA is the routine use of probiotics, as there is



limited data to support their use and may increase the potential for the development of a bloodstream infection. Treatment of C-diff includes discontinuation of therapy with the inciting antimicrobial agent as soon as possible. If discontinuation does not provide resolution, addition of oral metronidazole, an antifungal agent for mild to moderate infections, may be warranted. For severe infection, oral vancomycin is the FDA-approved treatment. Other treatment options may be considered as well.

Conclusion

While C-diff infection is not exclusively a hospital acquired condition, it is more likely to occur in patients that are hospitalized and

on antibiotics. In order to prevent harm to patients, it is important that facilities adopt practice guidelines to identify, prevent cross contamination and treat C-diff infection. Education of healthcare workers is not adequate. Education and training for environmental services employees on the importance of surface decontamination is imperative.

Educating the public using signs encouraging them to ask anyone entering their room if they have washed their hands, empowers them to be an advocate for their own or their loved ones health in an environment that often leads to apathy in otherwise motivated individuals. With diligence and working together

as a team, we can help reduce C-diff infection in our community.

References

¹ APIC 2008 National U.S. Inpatient Healthcare Facility Clostridium difficile Survey http://www.apic.org/AM/Template.cfm?Section=National_C_Diff_Prevalance_Study&Template=/CM/HTMLDisplay.cfm&ContentID=11333

² Kristen M. Thompson, B.S. *No Magic Bullet for Combating Clostridium Difficile: combining environmental and hand hygiene can help reduce incidents* healthVIE.com, December 2010:28-34

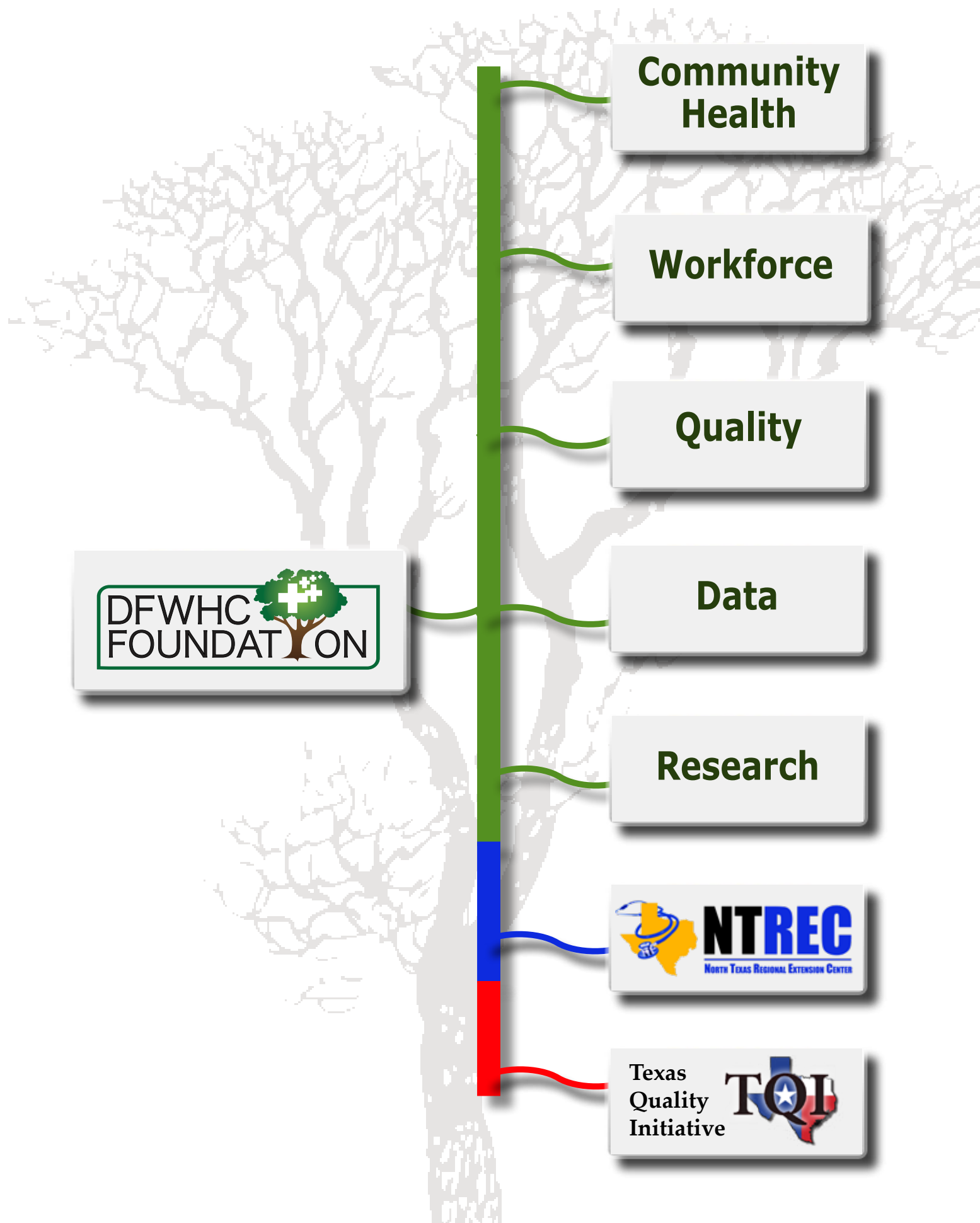
³ Stuart H. Cohen, MD; et. al. *Clinical Practice Guidelines for Clostridium difficile Infection in Adults: 2010 Update by the Society for Healthcare Epidemiology of America (SHEA) and the Infectious Diseases Society of America (IDSA)* Infection Control and Hospital Epidemiology May 2010, Vol. 31, No. 5:431-434 ●

About the DFWHC Foundation

- The DFWHC Foundation was established in 1968 as a non-profit corporation to promote safe, high quality, cost effective, accessible and equitable healthcare by strengthening our healthcare workforce and improving the community's health.
- It is a 501(c)(3) tax exempt organization.
- The DFWHC Foundation operates under the Dallas-Fort Worth Hospital Council umbrella. Established to answer the growing need in healthcare for high quality, standardized data to measure improvement, the DFWHC Foundation today has expanded to include community health, research and workforce initiatives.
- The DFWHC Foundation is made up of seven departments including Community Health, Workforce, Quality, Data, Research, the North Texas Regional Extension Center and the Texas Quality Initiative.

DFWHC Foundation Departments

- The **Community Health Department** empowers healthcare organizations through the use of data to create health programs that benefit the community and provides the information and assistance that helps create positive action plans to improve population health.
- With a shortage of nurses in North Texas hospitals, the **Workforce Center** is developing programs linking nurses and hospitals to fill these areas. These programs increase the number and quality of nurses in each hospital.
- The **Quality Department** provides representatives from area hospitals the opportunity to meet and collaborate in order to address regional hospital quality and patient safety issues. Participants seek to identify and maximize best practices as well as develop initiatives and education to address areas for improvement.
- Through the collaboration of area hospitals, patient visits are recorded in a regional data base. The **Data Center** helps transform this information into knowledge to improve the care patients receive.
- The **Research Department** works with stakeholders and researchers towards improving community health through research and knowledge dissemination. They utilize available resources to investigate community health practices. This department works with universities, health departments and hospitals.
- Created in 2010, the **North Texas Regional Extension Center (NTREC)** provides assistance to primary care providers in overcoming the major barriers of "Meaningful Use" of Electronic Health Records. NTREC has assisted more than 1,500 providers to meaningful use over the last two years.
- The **Texas Quality Initiative's (TQI)** mission is to improve the quality of cardiothoracic care, identify and define best practices, and reduce cost to the patient and healthcare system as a whole. TQI allows leaders to share detailed clinical information within a certified Society for Thoracic Surgery registry with one another in an un-blinded manner (as to hospital and physician), utilizing unique business intelligence tools.



Community Health

Workforce

Quality

Data

Research



DFWHC FOUNDATION



Acknowledgments

Dr. Ron Anderson
Parkland Health & Hospital System

Dr. Paul Convery
Baylor Health Care System

Ruben Esquivel
UT Southwestern Medical Center

Harvey Fishero
Chair of the Foundation Board

Dr. Kathleen Forbes
UNT Health Science Center

Dr. Baron Hamman
HeartPlace

W. Stephen Love
Dallas-Fort Worth Hospital Council

Chuck Lyles
Dell Healthcare

Dr. Matthew Murray
Texas Christian University

Steve Newton
Baylor All Saints Medical Center Fort Worth

Dr. Elizabeth Poster
UT Arlington College of Nursing

Dr. Scott Robins
HCA North Texas Division

Warren Rutherford
Trustee

Dr. Merlyn Sayers
Carter Bloodcare

Pam Stoyanoff
Methodist Health System

Dr. Ferdinand Velasco
Texas Health Resources

Editors and Design

Chris Wilson, Communications Director
Dallas-Fort Worth Hospital Council

Dr. Pam Doughty, Director Health Services Research
Dallas-Fort Worth Hospital Council Foundation

For reprints or questions, please e-mail pdoughty@dfwhcfoundation.org.

Mission

Continually improve the community's health by promoting safe, high quality, cost effective, accessible and equitable healthcare and by strengthening the healthcare workforce through education, research and collaboration.





2012 FOUNDATION RESEARCH

www.dfwhcfoundation.org

