FQHC Improvement in Adult Pneumococcal Immunization Rates in Tennessee—Replicating A Successful Model

A. Abstract

Tennessee is one of the poorest states with a large African American population, a sizable rural population and pneumococcal immunization rates below those for the U.S. population as a whole. The goal of this project is to replicate the New Jersey Academy of Family Physicians (NJAFP) education model to provide quality improvement (QI) support to ten Federally Qualified Health Clinics (FQHC) offering primary care services using an Electronic Health Record (EHR), and to increase pneumococcal immunization rates in at-risk rural and urban adults age 19 and older. Qsource has secured letters of participation from FQHC organizations made up of multiple practice sites, and will also partner with the Tennessee Primary Care Association (TPCA) to identify additional practices in counties with the lowest immunization rates who provide access to medical services to the target population. The duration of this project is 12 months.

Qsource will: 1) recruit 10 primary care FQHC practices with an EHR in rural/underserved areas; 2) attend two training sessions; 3) initially assess each practice, collect baseline and re-measurement data and provide feedback to participants; 4) provide three educational sessions using the NJAFP model and other tools and resources as needed; 5) provide ongoing Quality Improvement support to the practices; 6) increase pneumococcal screening rates in patients age 19 and older by a minimum of 5%; and 7) disseminate best practices, tools and resources to improve pneumococcal immunization rates.

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B. Table of Contents

C. FQHC Improvement in Adult Pneumococcal Immunization Rates in Tennessee—Replicating A Successful Model

C.1. Current Assessment of Need in Target Area

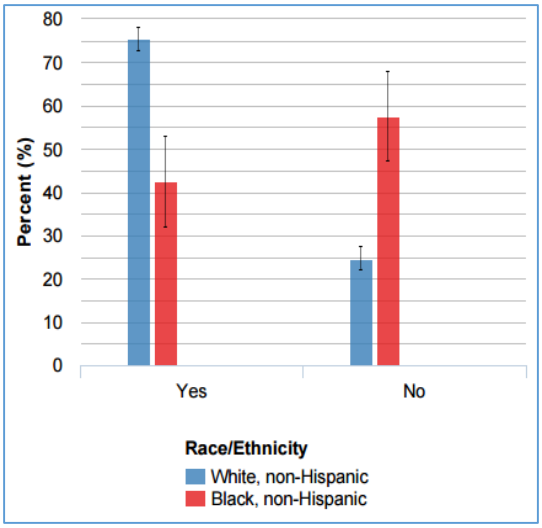
Based on a comparison of Medicare pneumococcal vaccine data and 2014 Census estimations, Tennessee is a state with higher proportions of elderly (65 years of age or older), underserved and/or African American populations who are at high risk for pneumonia or invasive pneumococcal disease (IPD) and/or at high risk of not receiving the appropriate immunization, as shown in **Table 1** (United States Census Bureau, 2016; CDC MMWR, 2015, October 23). Information available on IPD indicates Tennessee reported 4.5 percent of the total number of cases in 2015. Tennessee was fourth in the United States in 2014 with a death rate of 22.1 per 100,000 people for influenza and pneumonia (CDC, 2014). Since these are both vaccine-preventable illnesses, this suggests low immunization rates and/or a population at high risk of complications.

Table 1. U.S. and Tennessee Populations

Demographics	United States	Tennessee
Population estimates, July 1, 2014, (V2014)	318,857,056	6,549,352
Persons 65 years and over, percent, July 1, 2014, (V2014)	14.50%	15.10%
Black or African American alone, percent, July 1, 2014, (V2014) (a)	13.20%	17.10%

According to the latest Behavioral Risk Factor Surveillance System, only 25 percent of Tennessee's surveyed African American population over the age of 65 answered "yes" to receiving a pneumococcal vaccine, while 75 percent of the state's white, non-Hispanic population answered "yes," as shown in **Figure 1** (CDC, 2015).

Figure 1. Pneumococcal Vaccine Survey Responses by Race/Ethnicity



Furthermore, the overall pneumococcal vaccine rate for age 65 and greater is 71.2 percent and ranks Tennessee as 32nd in the nation (TFAH, 2016). Based on Medicare claims data, **Table 2** provides details specific to Pneumococcal Polysaccharide Vaccine (PPV) rates for Tennessee populations over the age of 65. Tennesseans are therefore at a considerable risk of not receiving sthe appropriate immunizations invasive pneumococcal disease.

Table 2. PPV Rate for Tennessee by Race/Ethnicity, Rural Region

Race/Ethnicity	PPV Rate	Numerator	Denominator
White	55.35%	274,580	496,084
Black	40.15%	18,786	46,789
Asian	45.18%	1,063	2,353
Hispanic	34.98%	339	969
North American Native	50.38%	132	262
Other/Unknown	42.11%	2,963	7,036
Rural	51.50%	103,946	201,830
State of Tennessee	53.82%	297,863	553,493

Source: Medicare claims data spanning 10/01/2014 – 9/30/2015

Tennessee is also one of the poorest states, with an adult poverty rate of 20 percent and a 16-percent African-American population (KFF, 2014), a sizable rural population and a considerable literacy problem. Tennessee residents were also among the most likely to have a variety of physical health problems in 2013, including diabetes, high cholesterol, high blood pressure and chronic pain. Other state demographics are provided in **Table 3** (NCES, 2016).

Table 3. Tennessee Demographics

Well-being index score	64.3%
Life expectancy	76.3 years (8th lowest)
Percent obese	31.3% (7th highest)
Median household income	$42,764 (7th lowest)
Percent with high school diploma	85.1% (13th lowest)

To improve pneumococcal immunization rates using the New Jersey Academy of Family Physicians (NJAFP) model, Qsource will conduct this project at Federally Qualified Health Centers (FQHCs) in Tennessee serving the minority, rural and urban counties with the lowest

pneumococcal vaccination rates (≤60 percent) based on current Medicare pneumococcal vaccine data. Additionally, these FQHCs will all have a fully functional electronic health record (EHR).

C.2. Target Audience and Recruitment

The target audience for this study will include all adult patients ages 19 and older who receive care from a participating FQHC, rural health center (RHC) or FQHC lookalike and who fall into a medically indicated category for pneumococcal vaccination based on current recommendations from the Advisory Committee on Immunization Practices (ACIP), most recently updated in September 2015 (CDC MMWR, 2015, September; CDC MMWR, 2010).

Possible FQHCs and FQHC lookalikes for this study include rural and minority health clinics in all three of Tennessee's Grand Regions (East, Middle and West). The total FQHC patient population is 384,109. In 2012, the total FQHC racial or ethnic minority population was 40.1 percent with 30 percent of these patients self-identifying as African American and less than 10 percent as Hispanic/Latino (HRSA, 2016).

Recruitment Plan

Qsource has already received a letter of intent from the Tennessee Primary Care Association (TPCA), the membership society for the FQHC community, which represents 35 organizations with 207 practice sites. Additionally, Dr. Mathew Rafalski has provided a letter of intent. He was honored by TPCA as Outstanding Physician of the Year in 2013 and has served for three years as a Vanguard/Consultant to the Office of the National Coordinator to promote the use of health information technology (HIT) to improve care. Currently, Dr. Rafalski practices in an FQHC with two separate rural practice sites in Claiborne and Campbell counties. According to Medicare claims data, these counties have PPV rates of less than 43 percent.

Because we have worked closely with FQHCs in the past and have observed their commitment to previous projects firsthand, we are confident that they will bring their full allocated time and resources to this project. Qsource is the consultant for EHR and population management technical assistance for TPCA and the FQHCs, and provides Meaningful Use (MU) assistance to ensure practices are able to meet the federally required clinical guidelines for EHR use. We also provided assistance with the implementation of TPCA's and its participating FQHC's population and care management software system. This system is used to help practices achieve Patient Centered Medical Home (PCMH) status, which better insures and facilitates the robust use of data in patient care delivery. All FQHCs in Tennessee have a well-integrated EHR system.

We will be conducting phone calls and on-site visits with each potential participant to discuss the opportunity to participate in the project. All participating groups will complete a Letter of Participation indicating and acknowledging the practice's commitment of time and resources, including attendance at three separate learning events, monthly data aggregation activities, and weekly project check point meetings with the Practice Solutions Advisor to ensure best practices from the NJAFP model are implemented. Practices IT staff or Administrators are expected to commit to a weekly review of their pneumococcal activities and monthly reviews of reports extracted from their EHR systems, for a monthly minimum total of 6 hours per practice site

monthly. Learning events will require two or three individuals from each site to attend a day-long training session or 16-24 hours every four months for each attendee.

FQHC participants will be guided through a quality improvement (QI) pathway on this project, as illustrated in **Figure 2**. Qsource will assist with an initial practice assessment to determine how practices are currently capturing pneumococcal immunization data and reviewing current workflows, orders or clinical decision support rules for adult immunizations. Qsource will assist the practice with monitoring current pneumococcal immunization rates to determine which interventions will be most effective.

Figure 2. The Quality Improvement Pathway

Who Will Benefit

FQHC involvement in this project will affect the overall health of underserved populations throughout the state of Tennessee, and the findings will benefit professionals in the fields of health information technology, QI, public health, rural health, preventative medicine, patient-centered outcomes research and comparative effectiveness research.

Preventing the spread of IPD aligns with TPCA's fundamental objective of improving health for its patient populations through a refined care delivery model. TPCA is assisting its member FQHCs with certification achievement of a PCMH accreditation initiative in order to meet the large majority of each patient's physical and mental healthcare needs, including prevention and wellness, acute care and chronic care. Participating in this project will help TPCA identify best practices for carrying out these goals.

Furthermore, FQHC involvement in improving pneumococcal vaccine rates can potentially influence state and federal policy regarding pneumococcal immunizations. There are 15 Tennessee health departments operated by local FQHCs through an affiliation with the state Department of Health through a 2007 statewide expansion of primary care health services. Some of these expansion funds are from the federal Health Resource Services Administration (HRSA).

Both the Tennessee Department of Health and HRSA monitor cost and quality of care to reduce preventable disease and ensure comprehensive care to all Tennesseans, as well as on a national platform.

Qsource's partnership in the atom Alliance will also make the results of this study available and valuable to a wide audience. A multi-state, federally-designated Quality Innovation Network (QIN), atom Alliance is currently tasked with improving adult immunization rates across Indiana, Kentucky, Mississippi and Alabama is strategically position to disseminate the results of this study to a wide audience. Best practices for increasing pneumococcal vaccinations derived from this study will be integrated into other communications delivered to providers in multiple settings such as;, nursing homes, hospitals, home health agencies and skilled nursing facilities in these states.all atom Alliance states.

C.4. Existing Projects

Qsource is a healthcare QI and information technology (IT) consultancy dedicated to improving lives through a reduction in chronic disease and the delivery of high-quality healthcare. As a Medicare QI organization for more than 41 years, Qsource is dedicated to achieving better health outcomes and improving care delivery at lower costs for providers, patients and communities. Qsource and its affiliate, Qsource of Arkansas (QofAR), are registered as an International Organization for Standardization (ISO) 9001:2008 certified companies.

Qsource is currently funded through a Pfizer Foundation grant, "Addressing Resistance to Pneumococcal Immunization among Rural and Minority Populations in Tennessee." Qsource has been successful in helping providers adopt interventions focused on EHRs to increase pneumococcal immunization rates in nine FQHCs. For this study, the target population group is at-risk patients 19 years and older in rural and underserved areas and patients 65 years of age or older. As of January 2016, patients in the intervention practices are now 14 times more likely to be immunized than controls (OR=13.95; p=0.009). This grant ends in December 2016.

As a result of the work performed on this Pfizer initiative to address resistance to pneumococcal immunizations, we have found that obtaining accurate data from EHR systems is challenging due to variation in how each practice documents or configures their EHR software. In many instances we have found immunization data is captured in different fields of the record. Additionally, some data are stored only as a text notation, making data analysis nearly impossible, while other data are stored in discreet, quantifiable fields. Training the clinical staff on the appropriate documentation methodologies to ensure accurate reporting is paramount to ensure the success in our current work. Building necessary reports to extract the data, with the assistance of the practice leadership is not only crucial, but also dependent upon relationships with practices. Qsource has developed these instrumental relationships which facilitate building the reports to obtain pneumococcal immunization data, allowing the practice to understand how to track progress on a multitude of issues related to population and health management. This experience will be important when to replicating the NJAFP model.

This project will also build on work Qsource has previously conducted on disparities and immunization. Qsource has worked for over 15 years on solving disparities issues and served as a national Disparities QI Organization Support Center (QIOSC) for six years. In that role, Qsource coordinated with organizations throughout the United States on projects relating to minorities and preventative healthcare. We have also served as a consultant on recent diabetes disparity work regarding diabetes.

Qsource is also involved in initiatives for improving immunization rates through our role in the atom Alliance. Directed by the Centers for Medicare and Medicaid Services (CMS), one atom Alliance initiative focuses on improving Medicare beneficiary immunization rates for pneumococcal, influenza and herpes zoster vaccination in Alabama, Indiana, Kentucky and Mississippi. The atom Alliance aims to improve the low immunization rates in these states by working with practitioners, providers and beneficiaries to implement evidence-based practices and systems changes to improve routine assessment of patients' vaccination status through improved tracking, documentation and reporting. This is a four and half year initiative, ending in 2019.

This project will further build on and benefit from Qsource's experience as a recognized leader in facilitating healthcare QI. As a QI organization (QIO) for more than 41 years, Qsource has worked with providers and patients to achieve system-level changes to clinical performance measures, including adult immunization rates and assisting providers in screening annual immunization data in their EHRs and submitting to the state registry. We provide a wide range of expert services, including project management, healthcare QI, epidemiology, analytics, and provider and patient communications, and have worked to assist healthcare providers, including FQHCs, to successfully implement EHR systems and ensure they meet government requirements for Meaningful Use. Among our client base are CMS, the Departments of Health and Medicaid in Arkansas and Tennessee, and multiple private and nonprofit entities. In addition, as a subcontractor for the Arkansas Data Mining and Program Evaluation since 2010, Qsource of Arkansas has performed immunization research, record procurement and electronic registry analysis throughout Arkansas.

Finally, as demonstrated in the NJAFP model for improving immunization rates, Qsource has proven expertise using the Plan Do Study Act model to facilitate QI adoption and improve preventative measure rates among providers in Tennessee.

C.5. Dissemination of Results

Monthly data collection and dissemination of results has been a successful model for Qsource. In our current work on improving pneumococcal vaccine rates, our extraction for each practice contains two separate data sets: one for patient's ages 19 to 64 who are at high risk of IPD, and one for patients age 65 and older. Qsource sanitizes and analyzes the individual data collected from each participating practice on a monthly basis and provides feedback reports, which include the number of patients who have not received a pneumococcal immunization but were seen in the office; the number of vaccines provided; and the overall proportion of patients who have been vaccinated. This data is stratified by location, gender and race and will soon be stratified by individual physicians. Using this experience as a guideline, Qsource can integrate our lessons learned, and data collection and dissemination methodologies with those from the NJAFP model to help foster an increase in vaccine rates.

For this project, redacted data will be shared with TCPA as well as with QIN participants throughout the atom Alliance region (Indiana, Kentucky, Mississippi and Alabama). Findings as well as lessons learned and best practices will also be shared in monthly and quarterly meetings held with QIN participating practices working to improve adult immunization rates. Information

can also be disseminated through relevant Learning in Action events and provided as a resource on the Qsource website.

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