Closing the Influenza Vaccination Disparity Gap

Anita Riddle, BSN, RN

**Author Affiliations:**  Public Health Nurse – “School Wellness Program”, Calhoun County Public Health Department, Battle Creek, MI, USA

**Correspondence:** Anita L. Riddle, BSN, RN, Calhoun County Public Health Department, 190 E. Michigan Avenue, Battle Creek, MI 49015 (ariddle@calhouncountymi.gov)

**Conflict of interest statement:** The author declares there are no conflicts of interest.

Abstract

All areas of the health care industry have long noted health disparities occurring across populations. Public health nurses, possess the knowledge and power to partner with communities to ensure clients within assigned jurisdictions have access to safe quality care. The Calhoun County Public Health Department located in Battle Creek, Michigan, recognized a disparity gap in the administration of influenza vaccines to their adult African American population. Clinical approaches, ethnic beliefs and demographics, along with barriers to education and services, were examined to determine best standards of immunization practice. A process for change employing the Plan-Do-Study-Act method was created. Focusing on the results of a root cause analysis (RCA), and utilization of the theoretical frameworks of Transformational Leadership and the Health Belief Model (HBM), an exploration of the approach to the 2015-16 flu season was completed, including the recommendation of additional flu clinic sites, community partnerships, and the use of social media to improve communication, and increase access to education in this target population.

Keywords: immunization disparities, minority influenza vaccination rates, health disparities,

 preventative care, health message texting.

Closing the Influenza Vaccination Disparity Gap

 Immunizations provide an added layer of protection against vaccine-preventable communicable diseases. The immunization of populations is important to all races, genders, and ages. As public health care providers, local health departments offer a unique health care venue to underserved populations. It is through their mobility, creativity, and dedication to the communities they serve, that these underserved populations can be addressed. Healthy People 2020 promotes this effort through the achievement of health equity as an overarching goal, to improve overall health, and eliminate health disparities for all populations (Healthy People 2020, 2015).

 This article outlines a quality improvement effort to improve the health status of Calhoun County adult African American residents by implementing an intervention to increase their influenza vaccination rate. Utilization of quality improvement helps close the gap in care between what ideally should happen, and what is actually occurring (Sherwood & Zomorodi, 2014). Multiple studies have been conducted searching for viable budget friendly solutions to meet the needs of this population.

These studies identified barriers related to cost and access, not knowing when to get vaccinated, the assumption healthy people do not need vaccinations, or perceptions the vaccine as ineffective or dangerous (Phillips, Kumar, Patel, & Arya, 2014). The immunization of populations is becoming more important as our society has become increasingly transient and mobile. By identifying the cause of low flu vaccination rates among the adult African American population, health care providers may be able to improve Calhoun County’s vaccination rates in general.

**Implications for Quality Improvement**

The Calhoun County Public Health Department (CCPHD) located in Battle Creek, Michigan is one of 45 local public health departments serving the state. As a public health care entity, CCPHD is held accountable to provide primary and preventative services to all Calhoun County residents. As part of their new 2014 Strategic Plan, CCPHD pledged to “promote healthy lifestyles, protect health, and prevent disease”, all of which an effective immunization program supports (CCPHD, 2015).

 In 2011, Calhoun County began the expansion of their “School Wellness Program”. This endeavor facilitated an increase in the immunizations of school age children, allowing them to be immunized in the school setting. As a result, the CCPHD’s immunization program was re-visited to further identify the immunization needs of the adult population. During the evaluation, the disparity of the immunization status of the adult African American population emerged.

 Calhoun County ranked 9th in Michigan for the 2014-15 flu season, achieving a 39.4% influenza vaccination rate for all persons 6 months through 17 years (MDCH, 2015, “County Quarterly”). In the adult arena (18 years +), Calhoun County falls dramatically to a 25.1% influenza vaccination rate, and ranked 24th (MDCH 2015, “County Quarterly). Both age groups fell well below the 80% influenza vaccination rate expectation of Healthy People 2020. Furthermore, the statistics did not meet the vision, mission, values and goals of the county’s newly revised 2014-2019 Agency Strategic Plan.

 Calhoun County has a population of 114,000, with 85% white, 12% African American, and 3% comprising other (MDCH, 2015, “Michigan Population”). CCPHD clients are equally represented with white and African American populations represented at 49% each, with 2% falling into other (M. Thorne, personal communication, September 30, 2014). Although the white and African American population were equal in representation, the African American population was under vaccinated in all areas including influenza. At the national level in 2013-14, white adults >18 were vaccinated for influenza at rates 10% higher than African Americans (CDC, 2015, “2014-15 Flu”).

 With a 12% African American population, or approximately 16,700 people, there was a significant need to explore interventions to improve prevention of influenza. Since the 4 through 17 year old age group was being closely monitored through the School Wellness Program, the personal health officer and staff, deemed the focus of the intervention would be directed toward the 18+ age group. There was a clear need to re-design the CCPHD’s approach to the 2015-16 flu season in order to reach this adult population, and increase their influenza vaccination rates.

 **Devising a Plan**

**Root Cause Analysis**

 A RCA was conducted to help determine the appropriate course of action (see Appendix A). RCAs provide an evidence-based methodology to problem solving, allowing recognition of quality issues, and the opportunity for resolution (Ewen & Bucher, 2013). To provide a multi-disciplinary approach the immunization specialist, Personal Health Officer and clinic nurses were included. Each team member brought the expertise of their individual department to the table.

 The CCPHD nursing clinics serve as primary care providers for many county residents. The current locations of the clinics (Battle Creek and Albion), along with their hours of operation were discussed. The Battle Creek site operates 8-5 M-F, while the Albion site is utilized on a part time basis, and is located in a primarily African American community. Additional deterrents to usage of these sites were long wait times during times of high volume visits, and the lack of an onsite physician. The availability of educational literature and level of health literacyspecific to the African American population was a concern. The clinic nurses also indicated during times of high volume visits it was difficult to provide adequate patient education.

 Many times CCPHD services are provided outside of the clinical setting. Each flu season multiple community flu clinics are offered in various locations, many of which have been held in non-African American locations. Although flu clinics have been offered in several African American churches, the influenza vaccination rates have remained low. The CCPHD marketing practices were felt to be minimal related to budget restraints. At present community flu clinics are listed on the county website, spread by word of mouth, and at times listed in a free local community shopper.

 Finally, several barriers to receiving the influenza vaccine were identified in this population. The nurses felt many of the African American population felt the flu vaccine put them at risk for contracting the flu. They also voiced they usually saw this population when disease treatment was needed, with little attention given to taking preventative measures. Poor or lack of insurance and transportation were additional barriers discussed. The identification of barriers is a key first step towards successful behavioral change (Francis, MacNab, & Shelley, 2014). Individual(s) become more inclined to engage when they can envision even a glimpse of achieving the desired outcome. From the RCA a tentative action plan was revised (see Appendix B).

The RCA members rapidly came to the realization the action plan required refinement in order to streamline the improvement process, complete and implement, prior to the 2015-16 influenza vaccination season. The committee prioritized the top three actions as improving educational opportunities, re-designing the marketing plan, and assessing the locations of past community flu clinics. Each action was viewed as interrelated, impacting the desired result of increasing African American influenza vaccination rates.

**Literature Review**

The RCA committee supported looking at options to combine the identified actions into a new marketing campaign. The campaign would include education, and the restructuring of the 2015-16 community flu clinic locations. This approach was aimed at breaking down some of the perceived barriers, and providing the facts, benefits, and locations of community on-site flu clinics. A literature review was conducted to identify the best standards of practice being used in public health.

Three studies stood out as viable solutions to reaching this target population. In a study by Jones et al., (2014), revealed low flu vaccination rates in this population were directly related to the provider’s attitudes towards preventative interventions, and the patients’ belief of susceptibility. The Mayo Clinic supports using a targeted awareness campaign to educate both specific populations and health care providers on the benefits of preventive medicine (Swanton, Timm, & Roeber Rice, 2010). Yet another study showed promising results through the use of educational text messaging (Phillips et al, 2014).

A study conducted in Rochester, New York utilized primary care offices to employ a patient tracking, recall, and outreach intervention increasing influenza vaccination rates in all ages, genders, races, and insurance types generated (Humiston et al., 2011). The primary physician’s patient schedules were reviewed, and any patients not scheduled during the months of September, October, and November were sent flu vaccination reminder cards during the month of August. Those not responding later received personal calls or home visits. This study guided the initial quality improvement plan.

**Taking Action**

**Community Partnership**

 Since the research revealed the primary physician as an influential source for this population, a local African American physician serving a primarily African American population, was selected to provide his assistance in the vaccination effort. The Personal Health Officer was familiar with his office, as he had practiced in the Battle Creek area for decades.

Through multiple discussions this avenue was explored. It was determined the supervision of a private practitioner’s flu vaccination practices fell outside the county’s jurisdiction. At the time of this project, the manpower was not available to make the initial contacts, calls and follow-up home visits. However, this avenue was not closed from future exploration.

The project hit a standstill, sending it back to the drawing board. The decision was made to revisit the RCA. Through this, it was discovered the county really did not have a handle on the true number of influenza immunizations administered. Although the state recommends all immunizations be recorded in the Michigan Care Improvement Registry, many vaccination sites do not enter their data. Therefore, immunization sites such as box store pharmacies and employers who administer vaccines go undocumented. Another realization for CCPHD was the lack of efficiently tracking race during their off-site flu clinics. The immunizations administered at community flu clinics did require race as part of the registration process. On the other hand, all immunizations provided in the nursing clinic did provide race and ethnicity data.

The CCPHD had just started renovation on a new location within Albion, one more centrally located. Attention quickly turned to the Albion site. The population in Albion is approximately 8,500 with a 30% African American populace. With a high African American population, limited primary care physicians, and no acute care facility, this city was in need of a shot in the arm. The question became how to disseminate information and just as important, provide immunization education. Remembering one of the most influential sources for this population to receive the flu vaccine was their physician, it seemed feasible the CCPHD could fulfill this role without face-face contact with this target population.

**Technology**

In private practices, the use of text messaging has been effective in filling gaps in minority influenza education, notifications to receive vaccinations, and dissipate myths (Phillips et al., 2014). A text messaging campaign held the potential to improve health outcomes for racial and ethnic minorities, as 85% of the Black population send and receive text messages (Phillips et al., 2014). Yet another perceived advantage is the mobility of delivery, including ease of access to the message. The most influential advantage to health care organizations is its low cost, and availability to reach any desired number of patients in an instant (Philips et al., 2014).

 Since this improvement project targeted an underserved population, the question arose related to the availability of phones. Many of the underserved are already linked to Medicaid and Medicare services. For most, this alone qualifies them to participate in the Lifeline Program (Obama Phone). The services vary, however for most plans the texting portion allows 1,000 texts, with some unlimited. Therefore, there is no additional cost to the client. In a recent study, 91% of Americans own a cell phone, with 93% of the African American population owning one, including low income and lower educated persons (Gates, Stevens, & Artiga, 2014).

The “Call-Em-All” system was researched to provide patient text messaging. This system allows automated calling and group text messaging. Dependent on use volume, the pricing is pro-rated monthly. Through the CCPHD electronic medical record system “Insight”, client information could be uploaded, and utilized to reach clients with valuable flu clinic information, vaccine availability, and educational information. The pricing and details are still under review, but appear promising. The newly relocated Albion site would be a viable avenue for an initial trial run.

 CCPHD is a government agency on both the county and local levels. Other county agencies, such as the Calhoun County Sheriff’s Department, already utilize text messaging through NIXLE to alert residents to important information, including emergency preparedness. The Emergency Preparedness Educator was contacted to formulate the details related to the potential use of the system by CCPHD, ownership, cost, and the legality of using this system.

Supporting research was provided to the Emergency Preparedness Educator. This included two evidence-based articles related specifically to the use of text messaging in the promotion of flu immunizations in the African American population.

One concern the educator had was the overuse of this system would “burn people out” on the system. This type of overuse would cause people to unsubscribe, which lead to the next concern. The question arose of the feasibility of this underserved population subscribing in the first place. One disadvantage of using NIXLE included the inability of the patient to return communications to the CCPHD if they desired. However, for marketing and educational purposes this option has the potential to increase attendance at community flu clinics. A proposal was created. It incorporated the use of a monthly text message (September-March) to include a flu tip or abbreviated educational message along with the current month’s scheduled community flu clinic information.

**Flu Clinic Settings**

 Demographical maps were obtained to locate neighborhoods with a high African American population. This allowed a comparison of the neighborhoods to the physical locations of the 2014-15 community flu clinics. Several new opportunities became apparent such as apartment complexes, unvisited neighborhoods, and places of employment. With the new location and expansion of the CCPHD services in Albion, additional flu clinic locations will be targeted both in and around the city.

 The drive- thru flu clinic will again be utilized. The turnout rate was low in 2014, however this was CCPHD’s first attempt at an immunization event of this capacity. The Emergency Preparedness Educator, along with the Personal Health Officer, surveyed all employees involved in the event for improvement input. The event ran efficiently providing quick, safe flu immunizations for patients without leaving their vehicles. The low turnout was related to the lack of marketing for the event. Since this event was the harmonization of CCPHD and the emergency preparedness team, this evidence may support the use of NIXLE for at least this single community flu clinic. The drive-thru flu clinic supports public health’s mission to serve populations, plus provide both primary and preventative services.

 The CCPHD nursing clinic serves as valuable source of providing flu immunizations to patients without primary physicians or are uninsured. Both sites employ staff well versed in the rationale of administering the flu vaccine. This includes efforts to educate patients and their families. All direct care nurses need a self-awareness of their own values and beliefs, and how they may influence their practice and clinical decisions (Webster, 2013).

The Battle Creek site has extended hours on specified days. The Albion site currently offers nursing services two days per week, limiting access for its patients. It employs a single nurse who provides all patient services, not just immunizations. As the Albion site is relocated, the hope of increased patient visits exists, the hours and staff may need to be re-visited. The clinic nurses in both locations are very consistent in offering flu shots during each patient encounter.

**Considerations**

The quality improvement project did not uncover one specific solution to closing the African American influenza vaccination disparity gap. Instead, it brought to light many considerations for ongoing quality improvement opportunities. The health care environment changes almost daily in some aspect. This makes it difficult for organizations on already confined budgets, to stay financially solvent while providing quality services to their target populations.

 The project identified the following quality improvement needs. First, patients are heavily influenced by their primary care physicians, this includes the African American population. For many Calhoun county residents the CCPHD is their primary contact for communicable disease and immunization needs. This allows the CCPHD nursing clinic staff to fill this much needed role through provision of primary and preventative care.

 Next, technology plays an important part in the way patients receive and communicate on a daily basis. Studies have shown African Americans were the most open to receive health information by text-messaging (Duggan, 2013). The studies also provided evidence-based support for the use of text messaging in this target population. There are various text messaging systems available on the market to achieve this objective.

 Finally, location, location, location. Past years of experience have provided insight to successful community flu clinic sites. Essentially no one location had advocated for the African American community to attend in numbers. However along with location, the ability to communicate the location to the public is equally important. In conjunction with the current marketing methods, text messaging appears to be a low cost quality improvement initiative to expand the CCPHD communication process.

The CCPHD nursing staff is effectively offering the flu vaccine to all clients, including influenza education. Through their current documentation system, patients’ race and ethnicity are being recorded. The re-location of the Albion site may provide an opportunity to meet the communities’ needs, through easier access.

**Future Directions**

 After active observation, networking, and ongoing research, the findings led to new questions. Answering these questions will lead to quality improvement measures to close the African American disparity gap. It will also aid in strengthening the current overall immunization program for all races.

First, current nursing practices within the CCPHD clinics are serving its populations well. The county does need to consider the addition of race and ethnicity to their offsite flu registration forms to better gather racial statistical data. Future offsite flu clinics need to be evaluated annually to determine successes, and needed improvements related to timing and location. The problem still lies with reaching the African American communities. The community flu clinics need to have more public exposure prior to holding the event. This includes continuing the current marketing plan with consideration to expansion through the use current technology such as text messaging.

Community partnerships continue to be essential. Although this project did not pursue partnering with a local physician, this door should be kept open for future pursuit, since primary care physicians have been shown to be one of the most influential resources for patients. In the meantime, the nursing clinic staff needs to assume the responsibility of primary care for their patients’ communicable disease and immunization needs. As public health care providers, where patients receive their flu vaccines is not as important as the fact they are being immunized.

CCPHD should continue the pursuit of a text messaging system to reach the African American community. Research has shown this approach to be successful in this target population. It may be the most economical tactic, requiring the least amount of manpower. The “Call-Em-All” system seems a good choice at this time. Once the Albion site is re-located, this smaller, primarily African American community would serve as a suitable trial setting. The initial manpower required to upload data into the system could be supplied by a college intern to lower costs. The pursuit to stay abreast of current technology and patient preferences is key.

**Conclusion**

The continued input from staff is critical for the advancement of this quality improvement initiative. The current processes have been challenged with a common goal. Even a well thought out project can take turns in uncertain directions. With the questions raised during this project, many avenues emerged and still need to be explored. As a county agency, the issue of funding is always at the forefront. Utilizing evidence-based research, the CCPHD has been presented with some new exploration options to close this disparity gap.

References

Calhoun County Public Health Department. (2015). *Welcome to the Calhoun county Public*

 *Health Department*. Retrieved from

 http://www.calhouncountymi.gov/government.health\_department/

Center for Disease Control. (2015). *2014-15 flu season*. Retrieved from

 http://www.cdc.gov/flu/fluaxview/1415season.htm

Duggan, M. (2013). Cell phone activities 2013. *Pew Research Center.* Retrieved from

 http://www.pewinternet.org/2013/09/19/cell-phone-activities-2013/

Ewen, B., & Bucher, G. (2013). Root cause analysis: Responding to a sentinel event. *Home*

 *Healthcare Nurse*, 31(8), 435-443. Retrieved from http://www.homehealthcarenurseonline.com

Francis, S., MacNab, L., & Shelley, M. (2014). A theory-based newsletter nutrition education

 program reduces nutritional risk and improves dietary intake for congregate meal participants

 *Journal of Nutrition in Gerontology and Geriatrics,* *33*(2), 91-107. doi:

 10.1080/21551197.2014.906336

Gates, A., Stephens, J., & Artiga, S. (2014). Profiles of Medicaid outreach and enrollment

 strategies: Using text messaging to reach and enroll uninsured individuals into Medicaid

 and CHIP. *The Kaiser Commission,* March, 2014.Retrieved from http://kff.org/medicaid/

Healthy People 2020. (2015). *Immunization and infectious diseases*. Retrieved December 12, 2014 from http://www.healthypeople.gov/2020/topics-objectives/topic/immunization-

 and-infection-diseases/objectives

Humiston, S., Bennett, N., Long, C., Eberly, S., Arvelo, L., Stankaitis, J., & Szilagyi, P. (2011).

 Increasing inner-city adult influenza vaccination rates: A randomized controlled study.

 *Public Health Reports, 126*(2), 39-47.

Jones, L., Zhang, Y., Ahmed, M., Ekundayo, J., Akhter, S., Sawyer, P., …Ahmed. J. (2014).

 Understanding the reasons for the underuse of pneumococcal vaccination by community-

 dwelling older African Americans. *Journal of American Geriatrics Society, 58*(12*), 2323-*

 *2328.* doi:10.111/j.1532-5415.2010.03181.x

Michigan Department of Community Health. (2015). *County quarterly immunization report*

*card*. Retrieved from http://www.michigan.gov/mdch/0,4612,7-132-2942\_ 4911\_4914\_686361-321114--,00.html

Michigan Department of Community Health. (2015). *Michigan population, 1990-2013.*

 Retrieved January 31, 2014 from http://www.michigan.gov/mdch/0,1607,7-132-

 2944\_5325---,00.html

Phillips, A., Kumar, D., Patel, S., & Monisha, A. (2014). Using text messages to improve

 patient-doctor communication among racial and ethnic minority adults: An innovative

 solution to increase influenza vaccinations. *Preventive Medicine*, 69, 117-119.

Sherwood, G., & Zomorodi, M. (2014). A new mindset for quality and safety: The QSEN

 competencies redefine nurses’ role and practice*. Nephrology Nursing Journal, 41*(1), 15-23.

Swanton, C., Timm, B., & Roeber Rice, H. (2010). Immunization. In P. Varkey (Eds.), *Mayo*

 *Clinic preventative medicine and public health board review* (pp. 93-110). New York, NY:

 Oxford University Press.

Webster, D. (2013). Promoting therapeutic communication and patient-centered care using

 standardized patients. *Journal of Nursing Education, 52*(11), 645-648. doi:

 10.3928/01484834-20131014-06

Appendix A

**Initial Root Cause Analysis**



Appendix B

**Revised Root Cause Analysis Action Plan**

Resource List

American Nurses Association. (2010). *Scopes & standards of practice: Nursing professional*

 *development.* Silver Spring, MD: Nursebooks.org.

American Nurses Association. (2013). *Scopes & standards of practice: Public health nursing*

 (2nd ed.). Silver Spring, MD: Nursebooks.org.

Calhoun County Public Health Department. (2014). *Clinical health services.* Retrieved from

 http://www.calhouncountymi.gov/government/health\_department/

Calhoun County Public Health Department. (2015). *Welcome to the Calhoun county Public*

 *Health Department*. Retrieved from

 http://www.calhouncountymi.gov/government.health\_department/

Center for Disease Control. (2015). 2014-15 flu season. Retrieved from

 http://www.cdc.gov/flu/fluaxview/1415season.htm

Center of Disease Control. (2014). *Flu vaccination coverage: United States, 2011-12 influenza*

 *season*. Retrieved from http://www.cdc.gov/flu/fluvaxview/coverage\_1112estimates.htm

Chen, J., Fox, S., Cantrell, C., Stockdale, S., & Kagawa-Singer, M. (2007). Health disparities

 and prevention: Racial/ethnic barriers to flu vaccinations. *Journal of Community Health,*

 *32*(1), 5-20. doi: 10.1017/s10900-006-9031-7

Duggan, M. (2013). Cell phone activities 2013. *Pew Research Center.* Retrieved from

 http://www.pewinternet.org/2013/09/19/cell-phone-activities-2013/

Evans, M. (2011). Developing the role of the leader. In P. Yoder-Wise, (Eds.). *Leading and*

 *Managing in Nursing* (pp. 36-52). St. Louis, MO: Elsevier.

Ewen, B., & Bucher, G. (2013). Root cause analysis: Responding to a sentinel event. *Home*

 *Healthcare Nurse*, 31(8), 435-443. Retrieved from http://www.homehealthcarenurseonline.com

Fowler, S. (2012). Concepts in program design and development. In A. Cupp Curley, P. Vitale

 (Eds.). *Population-based nursing: Concepts and competencies for advanced practice* (pp.

 155-176). New York, NY: Springer Publishing Company.

Francis, S., MacNab, L., & Shelley, M. (2014). A theory-based newsletter nutrition education

 program reduces nutritional risk and improves dietary intake for congregate meal participants

 *Journal of Nutrition in Gerontology and Geriatrics, 33*(2), 91-107. doi:

 10.1080/21551197.2014.906336

Gates, A., Stephens, J., & Artiga, S. (2014). Profiles of Medicaid outreach and enrollment

 strategies: Using text messaging to reach and enroll uninsured individuals into Medicaid

 and CHIP. *The Kaiser Commission,* March, 2014.Retrieved from http://kff.org/medicaid/

Healthy People 2020. (2015). *Immunization and infectious diseases*. Retrieved December 12, 2014 from http://www.healthypeople.gov/2020/topics-objectives/topic/immunization-

 and-infection-diseases/objectives

Humiston, S., Bennett, N., Long, C., Eberly, S., Arvelo, L., Stankaitis, J., & Szilagyi, P. (2011).

 Increasing inner-city adult influenza vaccination rates: A randomized controlled study.

 *Public Health Reports, 126*(2), 39-47.

Jones, L., Zhang, Y., Ahmed, M., Ekundayo, J., Akhter, S., Sawyer, P., …Ahmed. (2014).

 Understanding the reasons for the underuse of pneumococcal vaccination by community-

 dwelling older African Americans. *Journal of American Geriatrics Society, 58*(12)*,* 2323-

 2328. doi: 10.111/j.1532-5415.2010.03181.x

Johnson, J. (2012). Quality improvement. In G. Sherwood, J. Barnsteiner (Eds.). *Quality and*

 *safety in nursing: A competency approach to improving outcomes* (pp. 113-148). Oxford, UK:

 Wiley-Blackwell.

Kowalski, K. (2011). Building teams through communication and partnerships. In P. Yoder-Wise

 (Ed.). *Leading and managing in nursing* (pp.345-371). St. Louis, MO: Elsevier Mosby.

Michigan Department of Community Health. (2015). *County quarterly immunization report*

*card*. Retrieved from http://www.michigan.gov/mdch/0,4612,7-132-2942\_ 4911\_4914\_686361-321114--,00.html

Michigan Department of Community Health. (2015). *Michigan population, 1990-2013.*

 Retrieved January 31, 2014 from http://www.michigan.gov/mdch/0,1607,7-132-

 2944\_5325---,00.html

Michigan Department of Community Health. (2014). *Michigan influenza.* Retrieved from

 http://www.michigan.gov/mdch

Pender, N., Murdaugh, C., & Parsons, M. (2011*). Health promotion in nursing practice* (6th ed.).

 Upper Saddle River, NJ: Pearson.

Phillips, A., Kumar, D., Patel, S., & Monisha, A. (2014). Using text messages to improve

 patient-doctor communication among racial and ethnic minority adults: An innovative

 solution to increase influenza vaccinations. *Preventive Medicine*, 69, 117-119.

Quality and Safety Education for Nurses Institute. (2014). *Graduate KSAs.* Retrieved from

 http://qsen.org/

Sherwood, G., & Zomorodi, M. (2014). A new mindset for quality and safety: The QSEN

 competencies redefine nurses’ role and practice*. Nephrology Nursing Journal, 41*(1), 15-23.

Swanton, C., Timm, B., & Roeber Rice, H. (2010). Immunization. In P. Varkey (Eds.), *Mayo*

 *Clinic preventative medicine and public health board review* (pp. 93-110). New York, NY:

 Oxford University Press.

Walton, M., & Barnsteiner, J. (2012). Patient-centered care. In G. Sherwood, J. Barnsteiner

 (Eds.), *Quality and safety in nursing: A competency approach to improving* *outcomes* (pp. 67-

 89). Oxford, UK: Wiley-Blackwell.

Webster, D. (2013). Promoting therapeutic communication and patient-centered care using

 standardized patients. *Journal of Nursing Education, 52*(11), 645-648. doi:

 10.3928/01484834-20131014-06