

## Final Report: Grant 100

# Determining Pneumococcal Vaccination Rates after a Pharmacist-Conducted Medication Therapy Review

### **Background:**

Many causes of pneumococcal disease have been identified including bacteria, viral, and fungal.<sup>1,4</sup> In the United States, pneumococcal disease is mainly caused by the bacteria streptococcus pneumonia which has over 90 subtypes.<sup>1,4</sup> Pneumococcal disease includes pneumonia, bacteremia, and meningitis, causes more deaths in the United States than all other vaccine preventable diseases.<sup>1</sup> Children <5 years old and elderly patients > 65 years old are at highest risk.<sup>1</sup> Every year in the United States approximately 175,000 hospitalizations are due to pneumococcal pneumonia.<sup>1</sup> The fatality rate is estimated at 7% and is higher in the elderly (65 years and older).<sup>1</sup> There are numerous high risk populations included in the recommendation for pneumococcal vaccine. All adults 65 years and older should receive the vaccine if it has been >5 years since previous vaccination.<sup>2</sup> Anyone 2-64 years of age who has a long term health condition or a compromised immune system due to disease or medical treatment should also receive the vaccine.<sup>2</sup> Lastly, the recommendation includes anyone 19-64 years of age who smoke or have asthma.<sup>2</sup> The above populations are also frequent customers in the community pharmacy due to their chronic medical conditions. Pharmacists in North Carolina serve as immunizers for the pneumococcal vaccine and are readily accessible for the recommended populations requiring vaccination. Medication Therapy Review (MTR) is another means to improve pneumococcal vaccination rates. MTR is a comprehensive review service provided by pharmacist to a patient. The patient brings in all of their prescription and over the counter medications for the pharmacist to review. Demographic and medical history information is obtained from the patient which provides an opportunity for the pharmacist to inquire about vaccination status. Recommendations on medication use, preventative care tests, and any other necessary health information is provided to the patient. Issues that require physician consultation are faxed to the physician with recommendations on how to resolve. When a patient may require the pneumococcal vaccine, this may also be faxed to the physician for authorization to administer at the pharmacy. The accessibility of pharmacists as immunizers can help improve pneumococcal vaccination rates.

The adult polysaccharide vaccine is known as PPSV23. There are 23 subtypes of pneumococcus bacteria included in the inactivated vaccine.<sup>1</sup> Since 2000, there has been routine use of the pneumococcal conjugate vaccine which is indicated for age six weeks through five years.<sup>1</sup> Currently this childhood vaccine only includes 13 subtypes of pneumococcus bacteria.<sup>1</sup> The PPSV23 vaccine is administered IM or SubQ. PPSV23 is 60-70% effective in preventing invasive disease.<sup>1</sup>

After exposure to pneumococcal bacteria, symptoms of disease may begin within 1-3 days.<sup>1</sup> Antimicrobial therapy used in treating pneumococcal disease is facing increased

resistance.<sup>1</sup> Resistance to common therapy has been reported up to 40%.<sup>1</sup> Patients with resistant infection may require lengthy hospital stays and costly broad spectrum antimicrobial agents.<sup>1</sup>

Recommendations for the PPSV23 vaccine from the CDC include:

<b>Who should receive PPSV23</b>	<b>Conditions</b>
Adults 65 years of age and older	All
2-64 years of age with a long-term health problem	Heart disease Lung disease Sickle cell disease Diabetes Alcoholism Cirrhosis Leaks of CSF or cochlear implant
2-64 years of age with a disease or condition that lowers the body's resistance to infection	Hodgkin's disease lymphoma or leukemia kidney failure multiple myeloma nephrotic syndrome HIV infection or AIDS damaged spleen, or no spleen organ transplant
2-64 years of age who is taking a drug or treatment that lowers the body's resistance to infection	Long term steroids Certain cancer drugs Radiation therapy
19-64 years of age	Smoker Asthma

In the US in 2009, 68.5% of patients surveyed who were 65 years old or greater had ever received a pneumonia vaccine.<sup>3</sup> In NC, the rate is 69.9%.<sup>3</sup> The local rate for Guilford, Rockingham, and Randolph counties is 70.6%.<sup>3</sup>

The research plans to answer if pharmacist conducted MTR sessions improve the pneumococcal vaccination rates as compared to the US, NC, and Rockingham County rates. In NC, pharmacists are only permitted to administer influenza, shingles, and pneumococcal vaccines. I practice pharmacy at three sites in rural Rockingham County. There is a tremendous need to expand the pneumococcal vaccination rate due to lack of providers and oversight in care. Pharmacist conducted MTM sessions screen patients for immunization history. This provides great opportunity to improve the pneumococcal vaccination rate.

## **Methodology:**

This was a prospective, multi site study conducted at two rural community pharmacies and one private physician practice. The study was from July 1, 2010 through February 4, 2011. During the MTR, patients were asked to report their vaccination history. For patients who were unsure or had not received the pneumococcal vaccine the pharmacist followed up with the patient's primary care provider (PCP) via fax to clarify vaccination status. The fax asked the PCP if the patient had received the vaccine. If they had not, the fax asked if the vaccine should be administered at the PCP office or at the pharmacy. Patients must have met the CDC criteria for pneumococcal vaccination. The CDC recommendation for the pneumococcal vaccine is listed above. Research assistants were utilized for developing a database, entering collected data, and contacting patients for appointment scheduling and reminders. Vaccination rates after the pharmacist conducted MTR were compared to national, state, and county pneumococcal vaccination rates. Data was analyzed using chi-square analysis. A statistician conducted the final analysis. An initial goal of 150 patients using the MTR service was decided upon for the study dates.

## **Results:**

During the study dates, 104 MTRs were conducted. Before the MTR, 77 patients (74%, 77/104) were up-to-date with their pneumococcal vaccination. However, 27 patients (26%, 27/104) were eligible for vaccination. Of the 27 patients eligible for vaccination, upon follow-up with the primary care provider (PCP), 21 patients (77%, 21/27) received vaccination. Six patients (23%, 6/27) refused vaccination, stating that they do not receive any vaccines. Following MTR, 98 patients (94%, 98/104) were up-to-date with pneumococcal vaccination. This was a significant increase from the before MTR rate with a P-value <0.001.

## **Discussion:**

MTR is a great avenue for improving vaccination rates. Community pharmacists in North Carolina serve as immunizers and patients utilize this convenience. Patients slip through routine vaccinations for many reasons including: multiple providers, paper charting at the provider's office, supply of vaccine, time constraints with providers, cost and reimbursement issues, along with many others.

In Rockingham County, approximately 19% of the population has Medicare Part A or B or both. To qualify for Medicare Part D prescription drug coverage, you must have Medicare. In Rockingham County, approximately 15.5% of the population has Medicare Part D. At the study locations, Medicare Part D patients are ideal for MTR because their insurance is billed for the service with no out of pocket expense for the patient.

In the study location, many patients do not want to pay out of pocket for an MTR service. This led to selecting a convenience sample for study participants versus a truly random sample. The ideal sample would be randomly selected from the population under consideration in this region. In our convenience sample for a 65 and older age group we have some homogeneity, at least of

age, sex, and the sample's initial vaccination rate of 74% was in line with the local rate of 70.6%. For 65 years and over there are 2 males to 3 females in Rockingham County based on data from the 2005-2009 US Censuses. Our study population reflected this ratio. However, there are many populations that were left out of our convenience sample. These include patients who visit another pharmacy or do not use pharmacy services. Also patients who visit the pharmacy or the physician's office usually have a medical condition and thus are more likely to seek medical advice. Patients also had to be ambulatory to meet with the pharmacist which excludes homebound patients. We conjecture that many patients are unsure of their vaccination status, may be unaware that pharmacists serve as immunizers in North Carolina or that they are in better health because they did not go to the pharmacy for prescriptions.

Of the 27 patients who qualified for vaccination after follow up with the PCP, 21 patients received vaccination. Of the 21 patients who received vaccination, 4 patients received vaccination at the pharmacy, 6 patients received vaccination at their PCP's office, and 11 patients received vaccination by the pharmacist under the collaborative practice agreement with the private physician's site. The high number of patients who received the vaccine under the collaborative practice agreement demonstrates that pharmacists and physicians can work together to improve vaccination rates. The pharmacist saved the physician time by screening the patient for vaccination history as well as administering the vaccine. Many times physicians are caught up in treating the patients chief complaint for the visit and overlook preventative health measures. Six patients refused vaccination, stating that they do not receive any vaccine. Had there been a larger sample size, we may have had other reasons for refusing vaccination.

Limitations of our study include scheduling patients for MTR, having the patient show up for their appointment, communication with the PCP, and reimbursement for the MTR service when the patient did not have Medicare Part D.

### **Conclusions:**

Pharmacist-led MTRs are an avenue for improving pneumococcal vaccination rates through patient education regarding CDC recommendations, enhanced access to vaccine, and, when authorized, vaccine administration. Pneumococcal vaccination rates during MTR increased vaccination rates by 20%, which was statistically significant in our patient population ( $P < 0.001$ ). Following MTR, our patient population achieved a vaccination rate that was higher than reported national, state, and local vaccination rates. We strongly encourage pharmacists to review vaccination status during MTR and communicate with PCPs in an effort to improve patient care.

**Appendix 1:** Fax request to PCP

**Appendix 2:** Poster copy as an email attachment

## References

1. Immunization Action Coalition. Pneumococcus: Questions and Answers- Information about the disease and vaccines. Available from [www.immunize.org/catg.d/p4213.pdf](http://www.immunize.org/catg.d/p4213.pdf) Accessed August 2010.
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3. Behavioral Risk Factor Surveillance System. Prevalence and Trends data North Carolina and Nationwide. Available from <http://www.cdc.gov/brfss/> Accessed August 2010.
4. National Heart Lung and Blood Institute Disease and Conditions Index. Pneumonia. Available from [http://www.nhlbi.nih.gov/health/dci/Diseases/pnu/pnu\\_what.html](http://www.nhlbi.nih.gov/health/dci/Diseases/pnu/pnu_what.html) Accessed October 20, 2010.

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To Dr. \_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_ (DOB \_\_\_\_\_) was seen today at Carolina Apothecary / Belmont Pharmacy for a medication review. Patient is unsure if they have received a pneumococcal vaccine, but they are eligible for the vaccine. Will you please check their chart to confirm vaccination status? If the patient has not received the vaccine please check one of the boxes below and return to the pharmacy via fax.

Medical office will provide pneumococcal vaccine

Pharmacy may provide pneumococcal vaccine (this will serve as the prescription)

Provider's Signature \_\_\_\_\_

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Thank you,

Abbey Jenkins, PharmD

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