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## Assessment of patient perceptions concerning a community pharmacy-based warfarin monitoring service

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**Keywords:** warfarin, drug monitoring, community pharmacy services

### Abstract

*Objective:* To assess patient perceptions of a North Carolina community pharmacy-based warfarin monitoring service. *Methods:* Prospective study of patients 18 years of age and older, who filled a prescription for warfarin, in one of five Raleigh area community pharmacies, between May 1, 2010 and October 31, 2010. A 14 item survey, along with a self-addressed stamped envelope, was mailed to 330 identified patients. The survey inquired about details of current anticoagulation monitoring services, interest in utilizing a local community pharmacy for this service, and confidence in a pharmacist-managed program. *Results:* 26% of surveys were returned. 48% of surveyed individuals responded that they would be interested in having their warfarin monitoring performed by a trained pharmacist in a community pharmacy setting. *Conclusion:* Many participants responded that the community pharmacy would be more convenient than or as convenient as their current location. This may be a new clinical service that could be offered in certain community pharmacies.

### Introduction

Warfarin provides an effective pharmacological option for the prevention and/or treatment of thromboembolus due to multiple conditions<sup>1</sup>. Although warfarin offers many benefits, it also has potential risks and adverse effects associated with its use, with bleeding as the major risk of concern. This risk can be minimized with proper administration, monitoring, and patient education<sup>2</sup>.

The CHEST guidelines recommend the use of a “systematic process” involving a knowledgeable provider who can offer reliable monitoring, structured follow-up, and appropriate patient education<sup>1</sup>. Historically, this process has been driven by the patient’s physician or primary care provider. However, trained pharmacists are qualified individuals to facilitate this process, as they are the “medication experts”, with vast experience in managing medications and providing patient education. Recently, there has been an increasing movement toward more clinical involvement within the healthcare team and pharmacists have been effectively managing anticoagulation services for many years.<sup>2,3,4,5,6</sup> Positive benefits seen with pharmacist-directed management include:

maintaining goal INR range, decreased warfarin-related hospital admissions, decreased length of stay, decreased number of major thromboembolic events, increased patient education, and improved compliance<sup>2,6</sup>. The usual settings in which pharmacists manage anticoagulation services include community hospitals, ambulatory care clinics, and physician offices<sup>3</sup>.

The community pharmacy offers an accessible, convenient location for patients to receive clinical services. Patients often visit the pharmacy at least once monthly, if not more frequently, to pick up prescriptions. Despite the suitability of community pharmacies for such services, there are surprisingly few that have ventured into providing anticoagulation services, such as warfarin monitoring. Within the state of North Carolina, to the best of our knowledge, there are no well-defined on-site warfarin monitoring services performed by community pharmacies. It can be difficult for pharmacists to provide such services as there are often state-specific limitations or restrictions regarding pharmacist-implemented therapy changes. However, North Carolina allows pharmacists to become Clinical Pharmacist Practitioners (CPP) with prescribing capabilities under a physician collaborative practice agreement<sup>7</sup>. This provides a unique opportunity for a CPP and a physician to jointly manage anticoagulation patients in a variety of settings<sup>7</sup>.

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Kerr Drug is a regional pharmacy chain located throughout North Carolina with 76 locations. For the past 14 years, Kerr Drug has been at the forefront of offering clinical pharmacy services to patients. These services include preventative screenings, disease state management, American Diabetes Association (ADA) recognized diabetes education, and immunizations<sup>8</sup>. This unique setting presents an excellent opportunity to expand and offer additional clinical services such as anticoagulation management.

Literature documenting community pharmacy-based anticoagulation monitoring clinics is limited; and no studies exist evaluating such a service in North Carolina. A literature search revealed a few abstracts looking at prescriber perspective on this particular service<sup>9,10,11</sup>. There also have been some abstracts and studies looking at implementation in other states; these studies examined the successfulness of community pharmacists in managing anticoagulation patients (looking at maintenance of goal INR) in more traditional settings<sup>4,5,12</sup>. However, these did not look specifically at the community pharmacy setting.

### Objective

To assess patient perceptions of a North Carolina community pharmacy-based warfarin monitoring service. The purpose of this study was to establish if a community pharmacist-managed warfarin monitoring service would be a viable new clinical service for Kerr Drug to pursue. The end goal is to provide patients with an accessible, reliable location for warfarin monitoring.

### Methods

This was a prospective survey-based study. To be included, patients had to be 18 years of age and older, who had filled a prescription for warfarin, Coumadin, or Jantoven between May 1, 2010 and October 31, 2010. Individuals had to be patients of one of five Raleigh-area Kerr Drug community pharmacies, located within a 15 mile radius of each other. A report of eligible patients was generated from a centralized database at the Kerr Drug corporate office, according to the above parameters. Institutional review board (IRB) approval was obtained.

A prospective 14-question survey (appendix A), along with a self-addressed stamped envelope, was mailed to the identified patients in December 2010. Informed consent was obtained from voluntary participation in the study, as noted in the cover letter describing the purpose of the survey (appendix B). Demographics such as age and gender were recorded. The survey inquired if the patient was still currently taking warfarin. If the patient was not taking warfarin at the time of survey distribution, the survey ended

following this question. If the patient was still taking warfarin, he/she was asked to complete the rest of the survey. The remainder of the survey inquired about details of patients' current warfarin monitoring services, including location, frequency of INR monitoring, out-of-pocket cost, and overall satisfaction. The survey also asked about interest in utilizing a local community pharmacy for this service, confidence in a community pharmacist-managed program, and amount willing to pay out-of-pocket. The survey was pilot tested on a small cohort of individuals to check for readability/understanding.

An incentive, in the form of the opportunity to be included in a drawing for one \$20.00 Kerr Drug gift card, was offered to patients for return of completed surveys. Surveys were returned to the principal investigator's office address. Results were analyzed using descriptive statistics. All surveys and envelopes were destroyed after the completion of this study.

### Results

Of the 330 surveys distributed, 86 completed surveys were returned (26% response rate) and analyzed using descriptive statistics. Of the 86 responders, 43/86 (50%) of responders were male and 43/86 (50%) of responders were female. 69/86 (80.2%) of responders were 65 years of age or older. 70/86 (81.4%) of patients responded that they were currently still taking warfarin when the survey was completed. Only individuals still currently taking warfarin were asked to answer the remaining questions about current anticoagulation monitoring location and utilization of a community pharmacist-managed monitoring service. Of these respondents, 61/70 (87.1%) reported that they had their INR checked at least monthly, if not more frequently. More than two-thirds of respondents noted that their INR samples were provided via a finger stick.

### Confidence

Approximately half of individuals (48%) indicated that they would be interested in having their warfarin monitoring service performed by a trained community pharmacist within their local community pharmacy. 63% of patients responded that they were very confident or confident in a trained community pharmacist's ability to manage their warfarin monitoring (*figure 1*).

### Location

Patients were asked to specify the location of their current warfarin monitoring service as physician's office, outpatient/ambulatory care clinic, lab, or other. 68% of individuals were having their warfarin monitoring conducted at a physician's office. Individuals that selected other for

location specified home monitoring or location at an assisted living facility.

#### *Convenience*

Of the 68% of patients currently being monitored in physician offices, up to 30% of those patients did not view that setting as convenient (*figure 2*). When asked about perceived convenience of using a community pharmacy as the monitoring location, patients indicated it would be more convenient than or as convenient as their current location (*figure 3*).

#### *Cost*

43% of patients responded that they would be willing to pay something out-of-pocket per visit to have their warfarin monitored at the community pharmacy. 74% of those willing to pay indicated that they would pay more than \$5.00 per visit. Almost 12% of individuals, most being 65 years or older, that currently pay nothing out-of-pocket responded that they would be willing to pay some amount out-of-pocket to have this service performed by a trained community pharmacist.

#### **Discussion**

Overall, results were encouraging in regards to a community pharmacy-based warfarin monitoring service. As historically warfarin monitoring services have been conducted in ambulatory care settings such as community hospitals, outpatient clinics, or physician offices, the community pharmacy presents as a novel, convenient location for such a monitoring service. Utilizing a community pharmacy for warfarin monitoring may also be especially helpful in rural areas, where access to healthcare tends to be more limited.

The survey was designed to first ascertain information regarding the respondent's current monitoring location. Respondents were asked to indicate the type of setting and then rate their satisfaction with location and convenience. Approximately two-thirds of patients are currently being monitored in physician offices and up to one-third of these patients do not view this setting as convenient. This represents a target population for individuals for a community pharmacy-based warfarin monitoring service.

As community pharmacies can be found on most street corners, it was thought that convenient location may play into an individual's decision to use a community pharmacy rather than a typical clinic setting, which potentially could have accessibility and/or parking issues. Many individuals already frequent their local community pharmacy at least monthly, if not more often, to pick up prescriptions. Most patients responded that they have their INR tested at least once monthly, so being able to pair this appointment with

their monthly pharmacy visit may be desirable. With such frequent visits and generally easily accessible locations, community pharmacies offer an alternative location for such clinical services.

The survey was also designed to gain an understanding of patient confidence in the trained community pharmacist's ability to provide such a service. Often, patients do not have a full appreciation or understanding of a pharmacist's ability to offer clinical services. These misconceptions could influence a patient's willingness to utilize a community pharmacy as his/her monitoring location. Based on the survey results, patients seem to be open to the idea of utilizing a trained pharmacist in a community pharmacy setting. Two-thirds of patients were very confident or confident in a trained community pharmacist's ability to manage their warfarin monitoring. This is a positive reflection of patient confidence in pharmacists' ability to provide clinical services. As the profession advances and develops, more emphasis will be placed on the role that pharmacists can play in clinical practice.

A warfarin monitoring service is just one example of the many innovative clinical services a pharmacist can potentially provide. Demonstration programs such as the Asheville Project and Project IMPACT have shown that pharmacist-provided clinical services related to chronic disease states, such as diabetes, hyperlipidemia, asthma, depression, and osteoporosis, can have a positive impact on patient care<sup>13,14</sup>. As the face of the profession evolves and healthcare continues to change, it will be prudent for community pharmacies to start thinking outside of the box in regards to services provided. Community pharmacies could build upon the successes of these programs by possibly expanding clinical services to include warfarin monitoring.

For the individuals that stated that they would not be interested in coming to a community pharmacy for their warfarin monitoring services, many stated specific reasons in the comments section of the survey. Some of these patients were eligible for in-home monitoring and were unable to ambulate to the neighborhood pharmacy. Another subset of respondents indicated that they did not have to pay any copay for current monitoring services and would not change if that meant having to pay out-of-pocket. Other factors that could have caused individuals to respond as not interested include: lack of understanding of pharmacist ability to perform clinical services, unclear expectations of how prescribers would be involved, satisfaction with current setting, and novelty of the idea.

Many patients that participated in this survey expressed an interest in having warfarin monitoring performed in a community pharmacy by a trained pharmacist. Some patients were so excited about the idea that they stopped by the principal investigator's office to express their interest in person. The results of the survey, in regards to patient confidence in a community pharmacists' ability to provide a clinical service such as warfarin monitoring, reinforce that pharmacists are indeed amongst the most trusted healthcare professionals. We are perceived as the medication experts and can be an indispensable member of the healthcare team.

In order to implement this innovative service, the next step in the process would be contacting the prescribers to determine if they would be agreeable to forming collaborative practice agreements, such that the clinical community pharmacist could perform the anticoagulation monitoring. If so, interested community pharmacists would need to take the steps necessary to establish a collaborative relationship, based on the appropriate state laws and regulation. Challenges, such as obtaining clinical laboratory improvement amendments (CLIA) waivers and establishing appropriate billing and documentation, would also need to be addressed to ensure long-term feasibility.

#### Limitations

As is common with many surveys, not all survey questions were answered by all responders. This meant that analysis could not account for 100 percent of responses. This could have affected some of the final statistics and numbers. In addition, not all of the addresses in the Kerr Drug database were accurate, resulting in surveys being returned to sender, thereby limiting the available data pool. In regards to willingness to pay, survey patients were asked how much they would be willing to spend out-of-pocket for this particular service per visit. However, willingness to pay can be affected by socioeconomic status which was not assessed in this study. This could potentially impact the sustainability of this service if patients in a particular area are unwilling or unable to pay.

The survey only asked patients if they would feel comfortable having the pharmacist manage their anticoagulation monitoring. It did not discuss how dosing changes would be addressed and it did not state that the prescriber would remain informed of all changes. Patients may have been unclear about how this part of the process would be handled, which could have impacted how they responded to questions about their confidence in the trained community pharmacist's abilities. Often, patients are not aware of the full scope of clinical services that pharmacists can provide, especially in states such as North Carolina, which allow for

pharmacists to become mid-level practitioners. This may have also impacted how respondents answered these questions.

The survey only addressed patient interest and perceptions regarding a warfarin monitoring service offered within a community pharmacy. Prescriber perception and acceptance was not evaluated. In order to have a successful monitoring service, a collaborative practice agreement would be necessary between prescriber and pharmacist. This would require prescriber buy-in for this type of program. Additionally, it may be useful to distribute surveys to identify if there is an unmet need for anticoagulation monitoring or high rates of unattained INR goals in the area. The results of these surveys would help determine appropriateness of the location for this service.

The survey participants were limited to the Raleigh, North Carolina area. Results may not be the same for different areas within North Carolina or within the United States. This may limit the applicability to other community pharmacies. As previously discussed, not all states have the same flexibility regarding collaborative practice.

#### Conclusions

Overall, many patients indicated that they were interested in utilizing a community pharmacy for their warfarin monitoring service. A majority of patients were very confident or confident in a community pharmacist's ability to manage their warfarin monitoring. Many patients responded that their community pharmacy would be more convenient than or as convenient as their current location. Based on the results of this survey, anticoagulation may be a potential new and innovative clinical service that Kerr Drug or similar community pharmacies could explore.

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## Appendices

## Appendix A: Patient Survey (2 pages)

**KERR DRUG**

Please answer the following questions. The survey can be returned via the included return addressed stamped envelope. Please return by **FRIDAY, JANUARY 14<sup>TH</sup>, 2011**.

1. What is your gender?  
 Male                       Female
2. In which range does your age fall?  
 18-29                       30-49                       50-64                       65 and older
3. Are you currently taking one of the following anticoagulation medications: warfarin, Coumadin®, or Jantoven®?  
 Yes                       No

If **NO**, survey ends here. Thank you!

If **YES**, please answer the remaining questions. Thank you!

4. On average, how often do you have monitoring for this medication (also referred to as PT/INR testing) done?  
 Every week  
 Every 2 weeks  
 Every 3 weeks  
 Every month  
 Every 2 months  
 Every 3 months  
 Other (please specify \_\_\_\_\_)
5. Which setting best describes your current monitoring location?  
 Physician's office  
 Outpatient clinic (associated with a hospital or medical office)  
 Lab (not located within physician's office)  
 Other (please specify \_\_\_\_\_)
6. Is your current blood sample collected from a fingerstick or a venous draw from your arm?  
 Fingerstick                       Venous draw (arm)
7. Please rate the convenience (accessibility) of your current monitoring location:  
 Very convenient  
 Convenient  
 Neither convenient nor inconvenient  
 Inconvenient  
 Very inconvenient

8. Please rate your overall satisfaction with your current monitoring service:
- Very satisfied  
 Satisfied  
 Neither satisfied nor dissatisfied  
 Dissatisfied  
 Very dissatisfied
9. On average, how much is your out-of-pocket cost per monitoring visit?
- \$0                       \$1-5                       \$6-10  
 \$11-15                       \$16-20                       More than \$20
10. Would you be interested in having your monitoring performed by a trained pharmacist within your community pharmacy (results would be immediately available from a fingerstick)?
- Yes                       No
11. Do you feel that your community pharmacy would be more convenient (or accessible) than your current monitoring location?
- Yes                       No                       No difference
12. Please rate your confidence in a trained pharmacist's capability to manage your monitoring service:
- Very confident  
 Confident  
 Neither confident nor unconfident  
 Unconfident  
 Very unconfident
13. On average, how much would you be willing to spend out-of-pocket per monitoring visit within your community pharmacy?
- \$0                       \$1-5                       \$6-10  
 \$11-15                       \$16-20                       More than \$20

Please provide any additional comments concerning the above questions or additional thoughts on the addition of this potential service:

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Thank you for your time and participation!



## Appendix B: Cover letter

**KERR DRUG**

Dear loyal Kerr Drug patient,

We, here at Kerr, aim to provide the highest quality of patient care. Kerr Drug has been a familiar name in North Carolina for many decades. Kerr Health is a division of the Kerr Drug family. There are Kerr Health Care Centers located within some Kerr Drug stores. Kerr Health Care Center pharmacists provide many clinical services to patients, including cholesterol screening, blood pressure monitoring, diabetes education services, and immunizations. We are always looking for new services to provide to patients.

My name is Jennifer Waitzman, and I am a community pharmacy resident at the Kerr Health Care Center, in the North Hills Kerr Drug. I am conducting a research project to determine if patients would be interested in a particular new service regarding monitoring of the anticoagulation medications warfarin, Coumadin®, and Jantoven®. These particular medications require close monitoring for both safety and efficacy. This monitoring is often done at the prescriber's office or an outpatient clinic, under the management of the prescriber or a pharmacist.

Our records indicate that you have filled a prescription for warfarin, Coumadin®, or Jantoven® within the last six months at one of our Kerr Drug Stores. I would like to survey you about possibly implementing this monitoring service in our Kerr Health Care Centers in the future.

To participate in this study please complete the enclosed survey and return in the addressed, stamped envelope provided. Please return the survey by **FRIDAY, JANUARY 14<sup>TH</sup>, 2011**. Completion of this survey indicates your consent to participate in this study. Your participation in the study will remain anonymous. Your responses will only be used for data collection. Your feedback provides valuable insight as to what new services are of interest.

In appreciation of your time and participation, you may enter into a drawing for a chance to win a \$20 gift card for Kerr Drug. Winners will be notified upon completion of the study. Please know that your contact information will be kept confidential and separate from your survey responses.

All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have any questions about your rights as a research participant you can contact the Institutional Review Board at 919-966-3113 or by e-mail at [IRB\\_subjects@unc.edu](mailto:IRB_subjects@unc.edu).

Thank you so much for your time! If you have any questions, please feel free to contact me via phone (919-534-1393) or email ([jwaitzman@kerrhealth.com](mailto:jwaitzman@kerrhealth.com)).

Sincerely,

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Figure 1 - Confidence In Having A Trained Community Pharmacist Manage Anticoagulation (n=65)

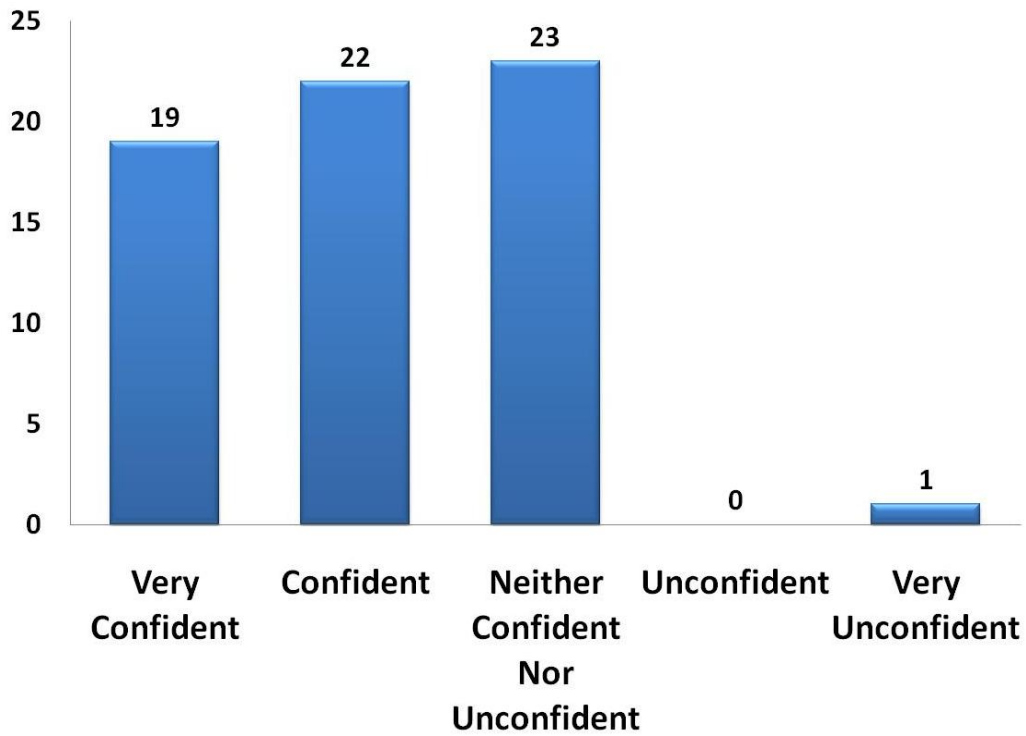


Figure 2 - Perceptions Regarding Convenience (Accessibility) Of Current Monitoring Location (n=69)

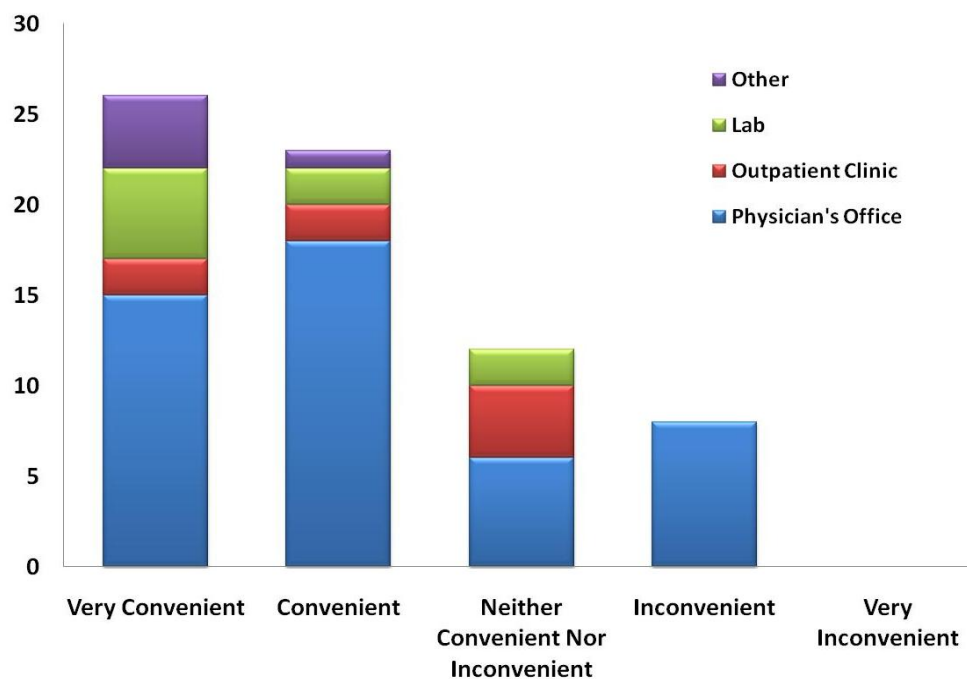


Figure 3: Perceptions On Whether The Community Pharmacy Would Be More Convenient (Accessible) Than Current Location (n=69)

