

## Background

- Unlike urban centers, Northern and rural communities struggle to recruit healthcare providers, and lag behind provincial averages in the quality of health and healthcare
- Warfarin is a high risk medication prescribed to treat and prevent clotting disorders, and reduce the risk of thromboembolism
- Warfarin therapy monitoring with a blood test ensures safe and effective therapy; if not kept within a narrow range, patients are at increased risk of harm due to clotting or bleeding.
- Patient monitoring, prescribing and follow-up is complex requiring close integration between the patient, pharmacist, lab, and physician.
- Pharmacists have demonstrated they can perform an important role in warfarin management
- Pharmacist time requirements to provide care for patients on warfarin therapy and conduct a warfarin therapy program remotely (dosing, monitoring, patient education, and follow-up) has not been studied

## Study Design

**Design:** Prospective cohort study

### Primary Objective:

To describe pharmacist specific program task time requirements in relation to patient encounters, and proportions, administrative and clinical tasks, to conduct a warfarin program remotely.

### Secondary Objective

To determine the proportion of time in therapeutic (target) range

### Methodology

- Pharmacists prescribe, monitor, and counsel patients and conduct program administrative duties
- The following time requirements were documented per patient encounter:
  - **Patient-related duties:**
    - ✓ Clinical assessment, calculate **new warfarin dose**, determine next **INR date**, Dawn AC® entry (program software)
    - ✓ Telephone call to patients and/or health care providers to **obtain pertinent patient and clinical information** related to warfarin therapy
    - ✓ Enter clinical information into software, fax **warfarin letter**
    - ✓ **Call patient/caregiver** with new warfarin dosing and monitoring instructions
  - **Administrative duties (ADMIN time):**
    - ✓ Reports, reminders, program maintenance
- Time in therapeutic range (TTR) was recorded for each site along with the time period of the program at the site. The TTR was used as the quality measure for anticoagulant therapy

## Study Population

Adults enrolled in the Pharmacist Warfarin Program in the James Bay Region, Ontario and a Northern Ontario Family Health Team



### Transportation to James Bay Region:

- Commercial/carter aircraft
- Train to Moosonee (400 km)
- Barge to Moose Factory
- Barge to other communities (seasonal)
- Winter road as far as Attawapiskat

## Disclosure Summary

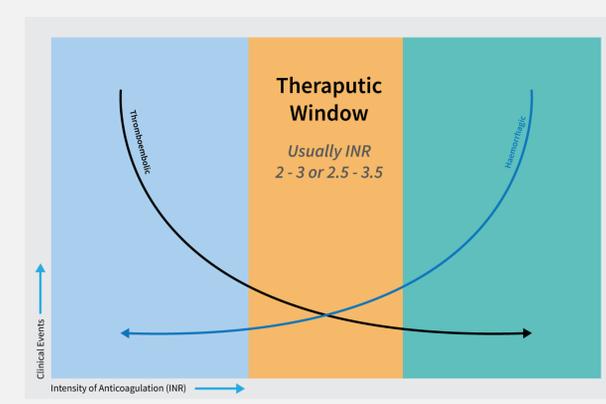
Newman P. Employed by Northwest Telepharmacy Solutions  
 McDonald K. Director, Northwest Telepharmacy Solutions  
 Ruhland L. Employed by Northwest Telepharmacy Solutions  
 Polyakova O. Employed by Northwest Telepharmacy Solutions  
 Dhaliwall S. Employed by Northwest Telepharmacy Solutions



**30 Minutes**  
Per Patient Per Month



**72 %**  
Time In  
Therapeutic Range



## Results

**Table 1: Warfarin program time requirements (N=60 patients)**

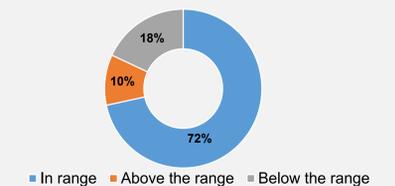
Characteristics		Number	
Total time to conduct entire program (admin + direct patient care) for one month all patients, minutes		2648 (100%)	
Total direct patient care time for one month for all patients, minutes		1787 (68%)	
Total ADMIN time for one month for all patients, minutes		851 (32%)	
ADMIN time min/patient/month		14.1	
Direct patient care/patient in minutes (total direct patient care/total number of patients), minutes/patient/month		30	
Total time per patient (admin + direct patient care) in program, minutes/patient		44.1	
		MEDIAN	IQR
All entries (n=125)	Time to calculate new warfarin dose and follow up INR date, and enter into Dawn AC, minutes	2.0	0-5
	Time required for placing phone calls to obtain pertinent patient clinical information regarding warfarin therapy, minutes	0	0-5
	Time required to enter in EMR and/or complete/fax warfarin letter, minutes	5.0	1-5
	Mean time required to place call to patient/caregiver warfarin dosing and monitoring INR, AND instructions, minutes	2	0-5
Entries with reported patient care time (n=55)	Time to calculate new warfarin dose and follow up INR date, and enter into Dawn AC, minutes	3.0	0-5
	Time required for placing phone calls to obtain pertinent patient clinical information regarding warfarin therapy, minutes	5.0	4-10
	Time required to enter in EMR and/or complete/fax warfarin letter, minutes	5.0	0-5
	Mean time required to place call to patient/caregiver warfarin dosing and monitoring INR, AND instructions, minutes	1.0	0-5

**Table 2: Relationship between different pharmacist activity time requirements (n=125 entries), r<sub>s</sub> (p-value)\***

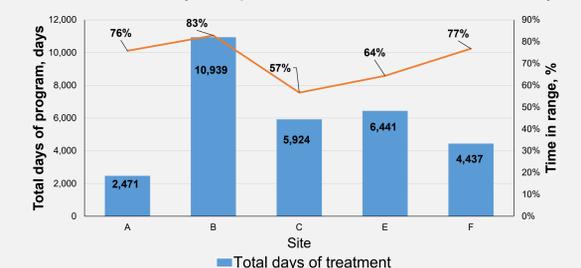
	Enter new warfarin dose & INR date	Obtain patient clinical info	Warfarin letter	Call to patient	Total
Enter new warfarin dose & INR date		0.118 (p=0.19)	0.304 (p=0.01)	<b>0.195 (p=0.029)</b>	<b>0.519 (p&lt;0.001)</b>
Obtain patient clinical info	0.118 (p=0.19)		-0.062 (p=0.493)	-0.124 (p=0.169)	<b>0.432 (p&lt;0.001)</b>
Warfarin letter	<b>0.304 (p=0.001)</b>	-0.062(p=0.493)		<b>0.246 (p=0.006)</b>	<b>0.631 (p&lt;0.001)</b>
Call to patient	<b>0.195 (p=0.029)</b>	-0.124 (p=0.169)	<b>0.246 (p=0.006)</b>		<b>0.446 (p&lt;0.001)</b>
Total Time	<b>0.519 (p&lt;0.001)</b>	<b>0.432 (p&lt;0.001)</b>	<b>0.631 (p&lt;0.001)</b>	<b>0.446 (p&lt;0.001)</b>	

\*The strength of a correlation: very weak (0.00- 0.19), weak (0.20-0.39), moderate (0.40-0.59), strong (0.60-0.79), very strong (0.80-1.00)

**Figure 1: Overall program effectiveness: patient time in therapeutic range INR 2.0 - 3.0 or 2.5 - 3.5 2016/12/01 - 2019/12/01**



**Figure 2: Patient time in therapeutic range on warfarin and duration of treatment at each site (time period 2016/12/01 - 2019/12/01)**



## Conclusions

- Time requirements were described for a pharmacist-led warfarin program conducted remotely for task proportions per patient, overall program tasks, and per clinical task.
- Data may be utilized by telepharmacy providers and healthcare leadership to make informed decisions on human resources required to conduct a remote pharmacist-led warfarin program
- Consistent with other anticoagulation programs, patients were in INR target range a majority of the time
- Pharmacists have an opportunity to address health care disparities and improve the quality of health in remote and rural communities

