

# **AN OVERVIEW OF PHARMACY ADAPTATION SERVICES IN BRITISH COLUMBIA**

**Authors:** Carlo Marra, Larry Lynd, Kelly Grindrod, Pamela Joshi, Alana Isakovic

*This evaluation was completed by the Collaboration for Outcomes Research and Evaluation at the Faculty of Pharmaceutical Sciences, University of British Columbia ([www.core.ubc.ca](http://www.core.ubc.ca)).*

## **ABSTRACT**

### *Objective*

The purpose of this study is to provide descriptive and costing information on pharmacy adaptation services.

### *Methods*

From the BC PharmaNet database, information about prescription adaptations was extracted including the total number, types, temporal frequency, geographic region and distribution by gender and drug therapy. Labour costs were assessed by direct observation of prescription workflow in 10 high adapting pharmacies. Capital costs, barriers and facilitators were assessed at 20 high adapting pharmacies and 11 low adapting pharmacies by structured qualitative interviews with pharmacy managers, owners and regional managers.

### *Results*

From January 2009 – December 2009, adapted prescriptions accounted for less than one percent (0.2%) of all prescriptions in BC. Approximately 96,890 prescription adaptations occurred. The month with the highest number of adaptations was May, day of the week was Monday and time of day was 12:00 pm – 3:59 pm. Renewals accounted for 80% of adaptations and the most commonly renewed drug was Ramipril.

The workflow of 1,109 prescriptions was observed (91 adapted, 1,018 non-adapted). On average, adapted prescriptions took 6:42 longer ( $SD = 3:45$ ) to complete than non-adapted prescriptions. Based on current average pharmacy salaries, the cost of providing an adapted prescription was, on average, \$6.10 higher than a non-adapted prescription.

Minimal capital costs associated with provided adaptation services included additional human resource costs (training and staff), updating computer software to produce adaptation forms, fax machine upgrades, additional physical storage and paper.

### *Discussion*

Adapted prescriptions accounted for a small proportion of prescriptions in BC and renewals were the most common form. Adapted prescriptions took longer to complete and had higher associated labour costs than non-adapted prescriptions. These findings suggested that the existing remuneration model for adaptation may not reflect the actual costs. In general, few changes were being made as a result of adaptation program and minimal capital costs were incurred.

# **AN OVERVIEW OF PHARMACY ADAPTATION SERVICES IN BRITISH COLUMBIA**

**Authors:** Carlo Marra, Larry Lynd, Kelly Grindrod, Pamela Joshi, Alana Isakovic

## **EXECUTIVE SUMMARY**

### **Introduction**

- In 2008, the BC government's Health Professions (Regulatory Reform) Amendment Act (Bill 25) formalized a pharmacist's authority to "renew existing prescriptions."
- This legislation led to the development of a framework by the College of Pharmacists of British Columbia or a Professional Practice Policy #58 (PPP-58), entitled "Protocol for Medication Management – Adapting a Prescription," to guide pharmacists in the safe and effective adaptation, including renewal of existing prescriptions.
- This initiative took effect January 1, 2009 and was entitled "Pharmacist Clinical Services Associated with A Prescription Adaptation" and defined adapting a prescription as consisting of three professional activities:
  1. Change: Changing the dose, formulation, or regimen of a prescription to enhance patient outcomes;
  2. Renewal: Renewing a prescription for continuity of care; and
  3. Therapeutic Substitution: Making a therapeutic drug substitution within the same therapeutic class for a prescription to best suit the needs of the patient.
- Information regarding the costs of providing pharmacy adaptation services, patient health outcomes and health resources use are all key considerations.
- The purpose of this study is to examine the costs associated with pharmacy adaptation services as well as associated barriers and facilitators from the perspective of pharmacists.

### **Methods**

- Phase I was completed using a mixed methods study in both high adapting pharmacies and low adapting pharmacies. Different methodologies were used to assess labour costs, capital costs, facilitators and barriers to implementing pharmacy adaptation services. Results are stratified the results by high and low adapting pharmacies.

- Labour costs were assessed at 10 high adapting pharmacies using direct observations on workflow to determine the average time required to complete adapted and non-adapted prescriptions.
- Capital costs, barriers and facilitators were evaluated in 20 high adapting pharmacies and 11 low adapting pharmacies by structured qualitative interviews with pharmacy managers, owners and regional managers.
- Data on the frequency, distribution, and type of adaptation were provided by the Ministry of Health Services, Pharmaceutical Services Division based on data extracted from BC PharmaNet.

## **Results**

- From the data provided by the BC PharmaNet database, it was determined that 96,890 adaptations took place from January 2009 - December 2009, with renewals accounting for approximately 80% of adaptations.

### Workflow Observations

- Ten high adapting pharmacies participated in the workflow observations. In total, the workflow of processing 1,109 prescriptions was observed and characterized (91 adapted prescriptions and 1,018 non-adapted prescriptions).
- The average total time (mm:ss) to complete an adapted prescription was 14:39 ( $SD = 4:2$ ) and average total time to complete a non-adapted prescription was 7:56 ( $SD = 3:1$ ). As such, on average adapted prescriptions took 6:42 longer ( $SD = 3:5$ ) to complete than non-adapted prescriptions.
- Based on current average pharmacy salaries, the cost of completing an adapted prescription was, on average, \$6.10 higher than for a non-adapted prescription.

### Structured Qualitative Interviews

- From structured qualitative interviews, 31 interviews were analyzed. Of the 20 high adapting pharmacies, 15 pharmacy managers/owners and 5 regional managers participated in interviews. Of the 11 low adapting pharmacies, 8 pharmacy managers/owners and 3 regional managers participated in interviews.

- Few structural or workflow changes were required in the pharmacy in order to provide adaptation services. As such, the capital costs were low.
- Changes that were made included additional human resource costs (training and staff), updating computer software to produce adaptation forms, additional physical storage and paper.

## **Discussion**

- Adapted prescriptions were found to both take longer to complete and as a result, have higher associated labour costs than non-adapted prescriptions.
- Few capital costs were found to be incurred by pharmacies to facilitate the provision of adaptation services.
- Documentation when adapting a prescription was the most labour intensive aspect of providing adaptation services.

# An Overview of Pharmacy Adaptation Services in BC

Larry Lynd

May 17, 2010

Canadian Pharmacists Association Conference



Collaboration for  
Outcomes  
Research and  
Evaluation



# Acknowledgements

We gratefully acknowledge the funding and support of the BC Pharmacy Association and BC Ministry of Health Services, Pharmaceutical Services Division for this study.



British Columbia  
Pharmacy Association

*Pharmacy — trusted advice, accessible care*



BRITISH  
COLUMBIA  
The Best Place on Earth

Ministry of  
Health Services



# Study Team

- Dr. Carlo Marra
- Dr. Larry Lynd
- Dr. Kelly Grindrod
- Pamela Joshi
- Alana Isakovic
- Jiamei Liu
- Stephanie Harvard
- Omid Zargaran
- Ahmad Abouzant
- Diana Lam
- Alicia Lin



# Pharmacy Adaptation Services

- Initiative was implemented on Jan 1, 2009
- Adaptations applied to:
  - Renewing a prescription;
  - Changing a dose, formulation or regimen;
  - Therapeutic drug substitution within the same therapeutic class
- In addition to their dispensing fee, for clinical work that results in adaptations, pharmacies receive \$8.60 for renewals and changes and \$17.20 for therapeutic substitutions from the government





# Data Overview

- From Jan 1, 2009 – December 31, 2009:
- Adaptations accounted for less than 1% or 0.17% of all filed prescriptions in BC
- 96,890 adaptations took place
- Renewals accounted for 77,039 adaptations (80.0%)



# Temporal Distribution

- On average, 8,074 adaptations took place each month, peaking in May 2009
- 12:00 – 3:00 pm was when most adaptations occurred\*
- Relatively well distributed across weekdays

\*consistent with provincial data trends



# Patient Demographics

- More females than males
- Persons aged 65+ years
- Persons in the Fraser region\* , specifically Fraser South had the highest percentage of adaptations

\*consistent with provincial data trends

# Top 5 Adapted Chemicals

	Renewals (N =77,039 )	Change in Dose (N = 6,993)	Change in Regimen (N = 4,401)	Change in Formulation (N=4,744)	Therapeutic Substitutions (N = 3,713)
1	Ramipril (4,764)	Unspecified Therapeutic Class (501)	Unspecified Therapeutic Class (187)	Diltiazem (498)	Rabeprazole Sodium (1,098)
2	Hydrochlorothiazid e (4,208)	Warfarin (481)	Metformin (125)	Unspecified Therapeutic Class (323)	Beclomethasone * (211)
3	Levothyroxine (4,140)	Ramipril (223)	Salbutamol (118)	Lorazepam (236)	Naproxen (161)
4	Atorvastatin (3,401)	Levothyroxine Sodium (202)	Ramipril (112)	Betamethasone (182)	Unspecified Therapeutic Class (122)
5	Metformin (3,069)	Hydrocholorthiazid e (143)	Clarithromycin (96)	Hydrocortisone (139)	Dexamethasone and antiinfectives* (122)



# Workflow Observation

- In 10 high adapting pharmacies, approx. 40 hrs per pharmacy
- Assessed adapted and non-adapted prescription workflow by all staff
  - Pharmacist, pharmacy technician, pharmacy assistant
- Provided information on labour costs associated with pharmacy adaptation services

# Prescription Workflow

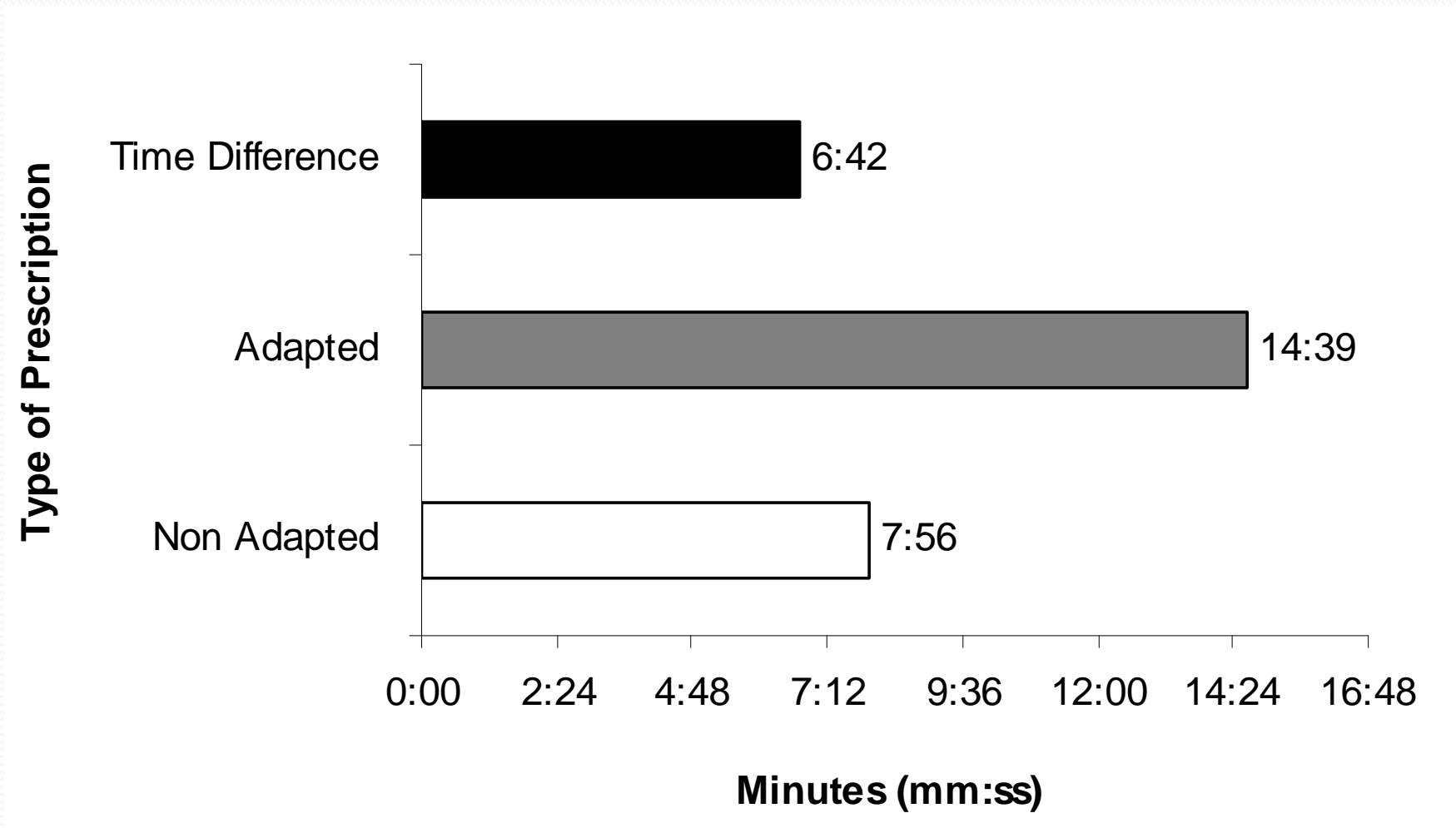
<b>Non-Adapted Prescription (6 stages)</b>	<b>Adapted Prescription (10 stages)</b>
<ul style="list-style-type: none"><li>▪ Receiving the prescription</li><li>▪ Processing prescription order</li><li>▪ Filling the prescription</li><li>▪ Validating and dispensing the prescription</li><li>▪ Counseling the patient</li><li>▪ Collecting payment</li></ul>	<ul style="list-style-type: none"><li>▪ Receiving the prescription</li><li>▪ Interviewing the patient</li><li>▪ Finding the Original Prescription</li><li>▪ Documentation</li><li>▪ Processing prescription order</li><li>▪ Filling the prescription</li><li>▪ Validating and dispensing the prescription</li><li>▪ Counseling the patient</li><li>▪ Collecting payment</li><li>▪ Contacting physician</li><li>▪ Further documentation (if required)</li></ul>



## Workflow Observation Results

- 1018 non-adapted prescriptions and 91 adapted prescriptions were observed
- Average total time to complete an **adapted prescription** was 14:39 ( $SD = 4:24$ )
- Average total time to complete a **non-adapted prescription** was 7:56 ( $SD = 3:08$ )
- Completing an adapted prescription took 6:42 longer than completing a non-adapted prescription

# Average Total Time To Complete an Adapted vs. Non Adapted Rx



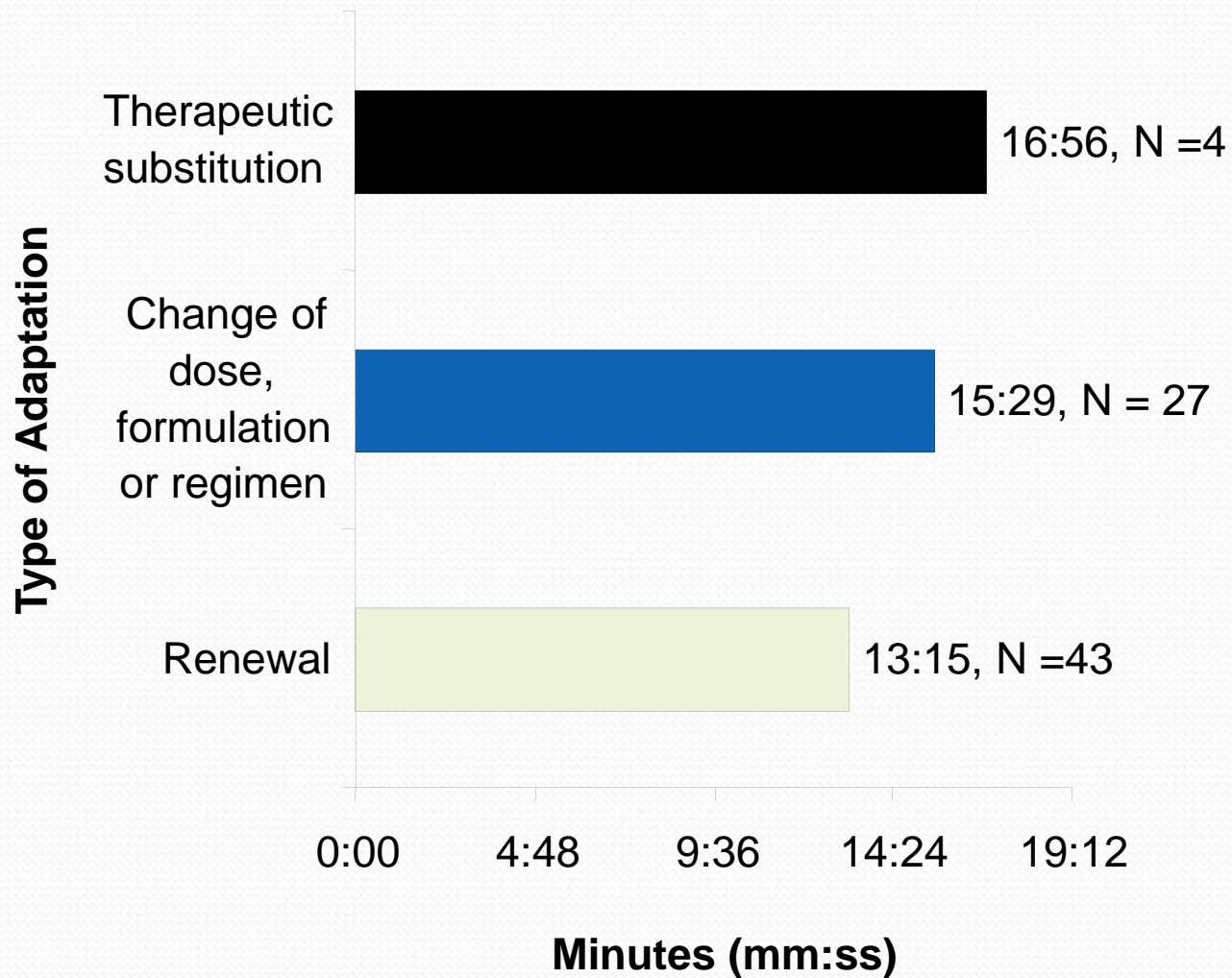




## Average Cost of An Adapted Rx

- Using data from the BCPhA 2009 Wage and Benefits Survey
- Average cost **non-adapted** prescription was \$6.35
- Average cost of providing an **adapted** prescription was \$12.45
- Completing an adapted prescription cost \$6.10 higher than an non-adapted prescription

# Average Total Time by Type of Adaptation





# Conclusions

- Adaptations accounted for a very small proportion of all prescription claims in BC
- Adapted prescriptions were found to both take longer to complete and as a result, have higher associated labour costs than non-adapted prescriptions.
- Adapted prescriptions took longer than non-adapted prescriptions and cost \$6.10 more