Canadian Agency for Drugs and Technologies in Health
Agence canadienne des médicaments et des technologies de la santé

OPTIMAL THERAPY REPORT

COMPUS

Current Practice Analysis Report for the Prescribing and Use of Proton Pump Inhibitors (PPIs)

Volume 1, Issue 5
March 2007

Supporting Informed Decisions

À l'appui des décisions éclairées

This report is prepared by the Canadian Optimal Medication Prescribing and Utilization Service (COMPUS), a service of the Canadian Agency for Drugs and Technologies in Health (CADTH).

This report is based on utilization information and information on practice behaviours available at the time of report preparation and has not been reviewed by peers. The information in this report should not be used as a substitute for the application of clinical judgement in respect of the care of a particular patient or other professional judgement in any decision making process nor is it intended to replace professional medical advice. While CADTH has taken care in the preparation of the report to ensure that its contents are accurate, complete and up-to-date, CADTH does not make any guarantee to that effect. CADTH is not responsible for any errors or omissions or injury, loss or damage arising from or as a result of the use (or misuse) of any information contained in or implied by the information in this Report.

CADTH takes sole responsibility for the final form and content of this report. The statements, conclusions and views expressed herein do not necessarily represent the view of Health Canada or any Provincial or Territorial Government.

Production of this report is made possible through a financial contribution from Health Canada.

ISSN: 1921–698X

ABBREVIATIONS

CDTI	Canadian Disease and Therapeutic Index
CEP	Centre for Effective Practice
COMPUS	Canadian Optimal Medication Prescribing and Utilization Service
GERD	gastroesophageal reflux disease
GI	gastrointestinal
H2RA	histamine H_2-receptor antagonist
IMS	IMS Health
ICD	International Classification of Disease
NSAID	non-steroidal anti-inflammatory drug
PAC	PPI plus amoxicillin and clarithromycin
PPI	proton pump inhibitor
PUD	peptic ulcer disease

FOREWORD

In March 2004, the Canadian Optimal Medication Prescribing and Utilization Service (COMPUS) was launched by the Canadian Coordinating Office for Health Technology Assessment (CCOHTA), now known as the Canadian Agency for Drugs and Technologies in Health (CADTH). A service to federal, provincial, and territorial jurisdictions and other stakeholders, COMPUS is a nationally coordinated program that is funded by Health Canada.

The goal of COMPUS is to optimize drug-related health outcomes and cost-effective use of drugs by identifying and promoting optimal drug prescribing and use. Where possible, COMPUS builds on existing applicable Canadian and international initiatives and research. COMPUS goals will be achieved through three main approaches:

- identifying evidence-based optimal therapy in prescribing and use of specific drugs
- identifying gaps in clinical practice, then proposing evidence-based interventions to address these gaps
- supporting the implementation and evaluation of these interventions.

INTRODUCTION

The purpose of this report is to foster an understanding of how proton pump inhibitors (PPIs) are being prescribed and used in Canada. It is critical to have a clear picture of the current practice in Canada regarding PPIs so that gaps between the current practice and the optimal prescribing and use as revealed by the evidence, can be identified and addressed. The optimal prescribing and use of PPIs was identified through the Evidence Statements contained in the *Scientific Report*: *Evidence for PPI use in Gastroesophageal Reflux Disease, Dyspepsia and Peptic Ulcer Disease* (Draft)[1] – posted on the CADTH web site www.cadth.ca on December 6, 2006.

The current practice in the prescribing and use of PPIs is determined from trends identified through contracts with the Centre for Effective Practice (to identify practice issues) and IMS Health Consulting Inc. (for PPI utilization data).

TABLE OF CONTENTS

1 CURRENT PRACTICE ANALYSIS

1.1 Centre for Effective Practice (CEP)

The CEP is a not-for-profit unit of the Department of Family Medicine at the University of Toronto. The mandate of the CEP is to address the growing gap between best evidence and current primary care practice.

The primary objective of the CEP report[2] was to describe the current practice in physicians' and pharmacists' use of PPIs to manage uninvestigated gastroesophageal reflux disease (GERD), uninvestigated dyspepsia and non-steroidal anti-inflammatory drug (NSAID)-induced peptic ulcer disease (PUD).[2]

To achieve their objective, CEP invited potential participants to complete an online survey that focused on the use of PPIs to manage specific gastrointestinal problems from a primary care perspective. A total of 765 family physicians of an invited 10,545 and 179 of an invited 4,507 pharmacists participated in the online survey. Physicians and pharmacists answered profession-specific surveys in order to collect relevant insights from each group.

The majority of physician respondents were from Ontario (66.4% of physician respondents); however, there was participation from British Columbia (8%), Alberta (7.5%), and Nova Scotia (0.8%). The majority of pharmacist respondents were from Nova Scotia (44.7% of pharmacist respondents); however, there was participation from Ontario (17.3%) and Prince Edward Island (6.1%).

1.2 Physician Findings

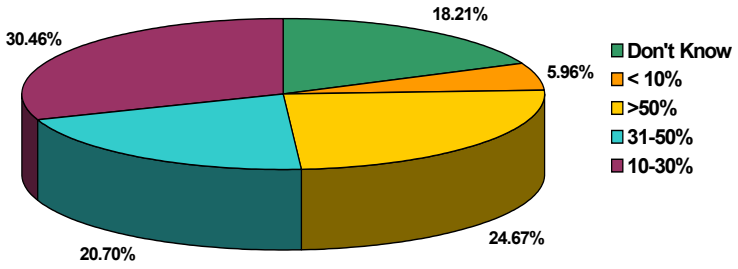
Physician respondents had a wide range of clinical experience, typically seeing 10 to 30 patients a day, but with 18% seeing more than 30 patients each day. Participants worked in a variety of practice settings, including solo (10.3%), community clinics (7.3%), hospitals (8.3%), and Academic Health Centres (22%). Forty-one per cent described their practice as a group practice.

The Physician Survey posed a range of questions including:

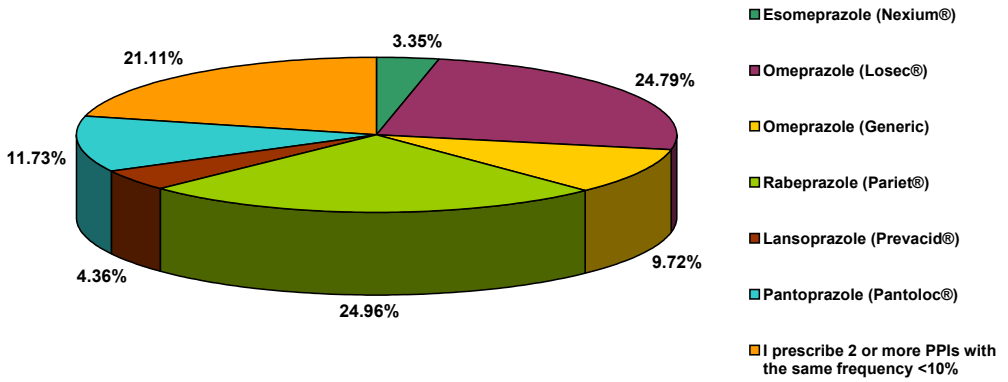
- background questions
- general questions about PPI prescribing for a range of gastrointestinal (GI) conditions
- Clinical Case Scenarios on the management of:
    - uninvestigated GERD
    - uninvestigated dyspepsia
    - NSAID-induced ulcers
- barriers to the optimal management of GI conditions.

The following charts provide the results to key questions from the survey.

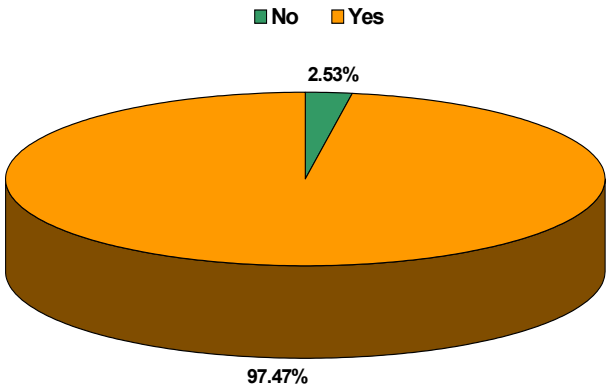
- Approximately what percentage of your patient population has their drug costs covered by your provincial drug plan?



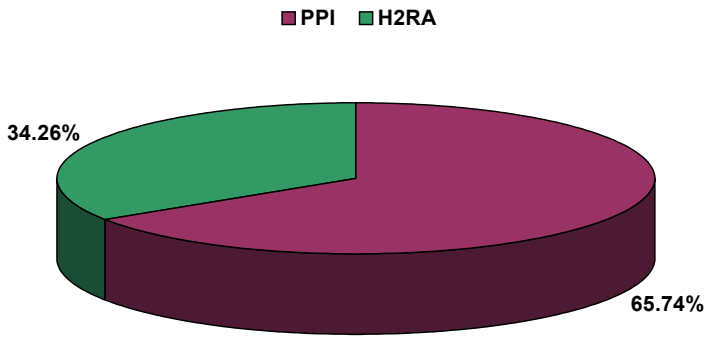
- In your daily practice, which PPI do you prescribe most frequently?



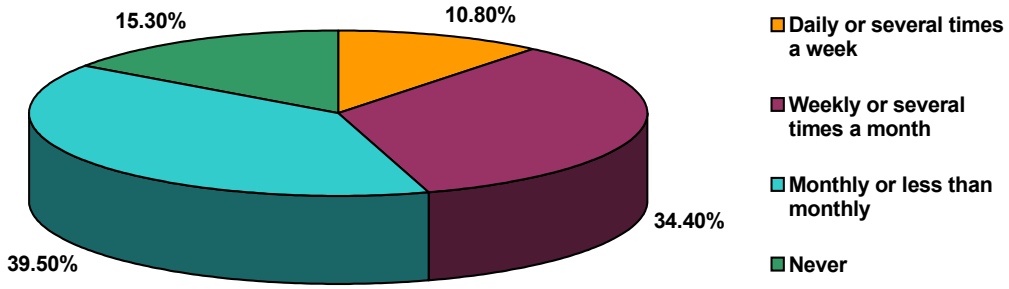
- If a patient presents with asthma symptoms, laryngeal symptoms, or chronic cough associated with reflux, would you consider prescribing a trial of acid suppressive therapy?



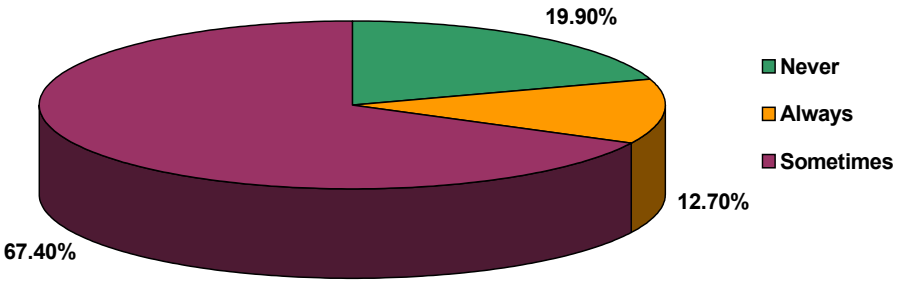
- Which kind of acid suppressive therapy would you prescribe?



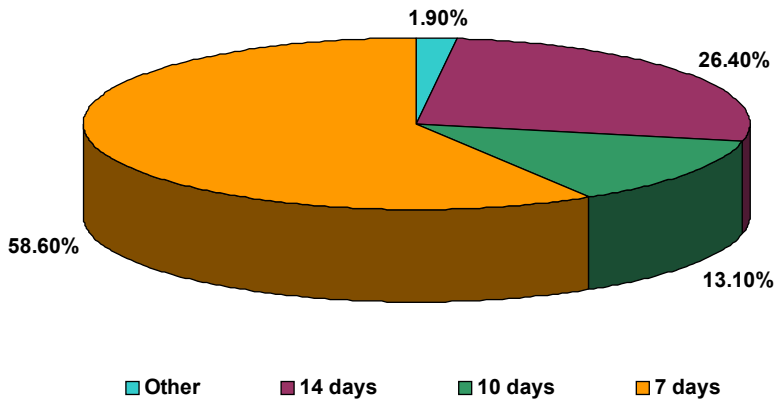
- In your practice, how frequently do patients initiate requests for prescriptions for PPIs for occasional heartburn?



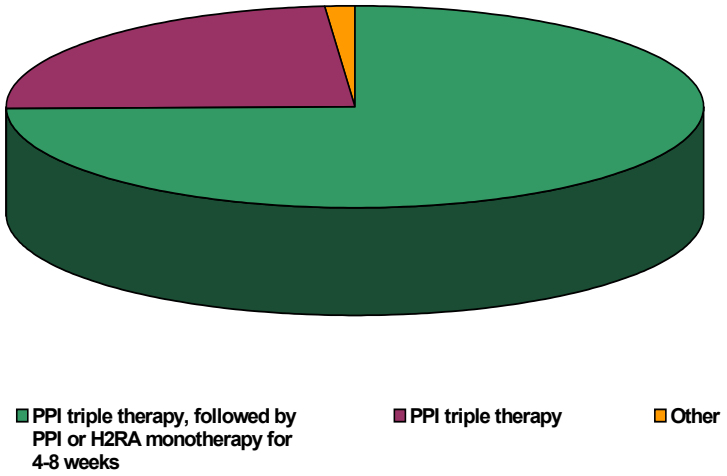
- How frequently do you prescribe PPIs when patients request them for occasional heartburn?



- What duration of triple therapy do you prescribe for initial *H. pylori* eradication?



- What would you prescribe to treat a patient with *H. pylori* infection and uncomplicated duodenal ulcer (i.e. ulcer ≤5 mm)?



- Please rank the three strongest influences on your decision to initiate PPI therapy for a patient presenting with heartburn symptoms (where 1=strongest influence).

Influences on PPI Initiation	N (%)		
	1	2	3
• Severity of symptoms presented (N=414)	234 (56.5)	108 (26.1)	72 (17.4)
• Diagnostic value of symptom response (N=113)	16 (14.2)	49 (43.4)	48 (42.5)
• Failure of H2RA therapy (N=298)	143 (48.0)	100 (33.6)	55 (18.5)
• Efficacy of PPIs or speed of response (N=191)	49 (25.7)	76 (39.8)	66 (34.6)
• Patient preference (N=32)	1 (3.1)	18 (56.3)	13 (40.6)
• Use of clinical practice guidelines (N=182)	73 (40.1)	63 (34.6)	46 (25.3)
• Information from pharmaceutical representatives (N=10)	1 (10.0)	1 (10.0)	8 (80.0)
• Cost/Insurance coverage for medication (N=143)	17 (11.9)	43 (30.1)	83 (58.0)
• Previous good response to PPI therapy (N=168)	19 (11.3)	59 (35.1)	90 (53.6)
• Age of patient (N=27)	3 (11.1)	8 (29.6)	16 (59.3)
• Safety of PPIs (N=82)	4 (4.9)	27 (32.9)	51 (62.2)

- Please rank the three strongest influences on your choice of PPI, once you have decided to prescribe PPI as a course of therapy for managing heartburn symptoms (where 1=strongest influence).

Influences on PPI Choice	N (%)		
	1	2	3
• Severity of symptoms presented (N=242)	85 (35.1)	81 (33.5)	76 (31.4)
• Efficacy of PPI (N=348)	107 (30.7)	134 (38.5)	107 (30.7)
• Patient preference (N=233)	30 (12.9)	100 (42.9)	103 (44.2)
• Use of clinical practice guidelines (N=182)	51 (28.0)	70 (38.5)	61 (33.5)
• Information from pharmaceutical representatives (N=43)	3 (7.0)	11 (25.6)	29 (67.4)
• Cost or insurance coverage for medication (N=442)	253 (57.2)	108 (24.4)	81 (18.3)
• Patient safety (N=139)	34 (24.5)	35 (25.2)	70 (50.4)

2 CLINICAL CASE SCENARIOS

2.1 Uninvestigated GERD

A 36-year-old man presents to you for the first time complaining of heartburn ("burning feeling that rises from the stomach or the lower chest towards the neck") and regurgitation. His symptoms occur more than three times per week and tend to occur after a large or spicy meal and at night. He has no alarm symptoms (e.g. GI bleeding, dysphagia, weight loss, vomiting). He does not smoke or take any medication. He drinks alcohol occasionally and is not overweight.

For this case, slightly more respondents chose to initiate therapy with an H2RA (36%), than a PPI (32%). For those respondents who initiated therapy with an H2RA, 90% would switch to a PPI if the patient's symptoms persisted after an initial course of at least four weeks. The most common PPIs that would be prescribed for this patient are Rabeprazole (Pariet®) and Omeprazole (Losec®), 31% and 21% respectively, at a standard daily dose of 20 mg. Most would choose an initial duration of therapy of four weeks (53%), but 27% would trial for eight weeks with an additional 6.4% choosing an even longer initial therapy duration.

If the patient attained symptom control with initial PPI therapy, most physician respondents would recommend taking PPIs intermittently after relapse of symptoms (25%) or just when symptoms occur (23%), however a significant proportion of physicians (20%) would continue the patient on the same therapy. If the patient's symptoms persisted after PPI therapy, the majority of physicians would refer the patient for a GI consultation (39%), but many would begin by doubling the daily dose of PPI therapy (32%).

2.2 Uninvestigated Dyspepsia

A 42-year-old man presents to you for the first time with dyspepsia that started three months ago. His symptoms occur three to four times a week and are mainly upper abdominal pain, bloating, and nausea. He occasionally has heartburn. He has no other symptoms and he does not take any medication. He thinks that the discomfort may be worse after eating a heavy meal. He is a non-smoker and a moderate alcohol drinker. His weight is within the normal range.

Most physician respondents would prescribe an H2RA as initial therapy for this patient (33%) or first test for the presence of H. pylori and eradicate if the results were positive (26%) with only 16% initiating treatment with a PPI. If the patient's symptoms persisted after an initial course of at least four weeks of H2RA therapy, physician respondents would overwhelmingly switch to a PPI (91%) with no physicians choosing to increase the dose of the H2RA and only a minority of respondents choosing to refer the patient for a GI consultation (6%). The most common PPIs that would be prescribed in this case are Rabeprazole (31%), Omeprazole (Losec®) (25%), and Omeprazole (Generic) (17%) at the standard daily dose of 20 mg. The majority of physician respondents would prescribe a four-week duration as initial PPI therapy (56%), while some would prescribe an eight-week duration (37%).

If the patient attained symptom control, 22% of physicians surveyed would recommend taking PPIs only when symptoms occur, but 19% would recommend discontinuing the PPIs. Some physicians would recommend continuing daily dosing (15%), others would lower the dose of PPIs (15%), with some clinicians specifying to patients that the intermittent prescribing is for a limited time (7, 14 or 28 days) (14%).

If the patient's symptoms persist, most would be referred for a GI consultation (56%); however, one-quarter of respondents would double the daily dose of PPI therapy first. Less than 3% of respondents said that they would switch the patient to a different PPI.

2.3 NSAID-induced Ulcers

A 50-year-old woman presents to you with dyspepsia symptoms with dominant epigastric pain. Her symptoms began four weeks after she started naproxen daily for her arthritis. She tells you

that Tylenol® did not help to relieve her arthritis symptoms. She has obtained some pain relief with over-the-counter NSAIDs previously.

For this patient, most respondents (49%) would stop the NSAID and prescribe a gastroprotective agent such as misoprostol, H2RA, or PPI. A smaller proportion (29%) would continue the NSAID, but add a gastroprotective agent. The gastroprotective agent chosen for initial therapy was a PPI for 70% of respondents, an H2RA for 20% of respondents, and misoprostol for the remaining 10%. For those who would prescribe an H2RA, 80% of respondents would switch to a PPI if a patient's symptoms persisted after an initial four-week course.

The most common PPIs chosen for this patient were Omeprazole (Losec®) (28%), Rabeprazole (Pariet®) (21%), Pantoprazole (Pantoloc®) (20%), and Omeprazole (Generic) (19%); 85% of physician respondents indicating they would choose the standard daily dose.

Once the patient had attained symptom control, 30% of respondents would continue with the same therapy; 29% said they would discontinue the PPI; 14% would lower the dose of the PPI; and 16% said they would recommend taking PPIs intermittently after relapse of symptoms. Less than 2% said they would switch to H2RA therapy.

If the patient's symptoms persisted after an initial course of PPI therapy, 41% of respondents would refer the patient for a GI consultation while 30% would double the daily dose of PPI therapy. Less than 3% of respondents said they would add an H2RA to the existing PPI therapy.

When this question was asked in the context of prevention of NSAID-induced ulcers, the numbers were similar for choosing PPIs, H2RAs, or misoprostol as the gastroprotective agent of choice (67.3%, 19.1%, and 11.7% respectively). The two most commonly chosen PPIs were Omeprazole (Losec®) and Omeprazole (Generic) at 27.4% and 20.8% respectively. The least commonly prescribed PPIs for gastroprotection were Esomeprazole (Nexium®) and Lansoprazole (Prevacid®) both at 8.5%.

2.4 Trends on the use of PPIs across the various indications

- Which PPI would you prescribe as initial therapy for this patient?

Drug	GERD	Dyspepsia	NSAID-induced ulcer treatment	NSAID- induced ulcer prevention
	N=155 n (%)	N=59 n (%)	N=112 n (%)	N=106 n (%)
Esomeprazole (Nexium®)	16 (10.3)	5 (8.5)	7 (6.3)	9 (8.5)
Omeprazole (Losec®)	32 (20.6)	14 (23.7)	31 (27.7)	29 (27.4)
Omeprazole (Generic)	21 (13.5)	10 (16.9)	21 (18.8)	22 (20.8)
Rabeprazole (Pariet®)	47 (30.3)	18 (30.5)	23 (20.5)	15 (14.2)
Lansoprazole (Prevacid®)	13 (8.4)	5 (8.5)	8 (7.1)	9 (8.5)
Pantoprazole (Pantoloc®)	26 (16.8)	7 (11.9)	22 (19.6)	22 (20.8)

- What dose of PPI would you prescribe as initial therapy?

Dose	GERD	Dyspepsia	NSAID-induced ulcer treatment
	N=156 n (%)	N=58 n (%)	N=112 N (%)
Low daily dose (omeprazole 10 mg, lansoprazole 15 mg, pantoprazole 20 mg, rabeprazole 10 mg, esomeprazole 10 mg)	9 (5.8)	1 (1.7)	8 (7.1)
Standard daily dose (omeprazole 20 mg, lansoprazole 30 mg, pantoprazole 40 mg, rabeprazole 20 mg, esomeprazole 20 mg)	143 (91.7)	55 (94.8)	95 (84.8)
Double daily dose (omeprazole 40 mg, lansoprazole 60 mg, pantoprazole 80 mg, rabeprazole 40 mg, esomeprazole 40 mg)	4 (2.6)	2 (3.4)	9 (8.0)

- What duration of initial therapy would you prescribe?

Duration	GERD	Dyspepsia	NSAID- induced ulcer treatment
	N=156 n (%)	N=59 n (%)	N=111 N (%)
Less than 4 weeks	12 (7.7)	1 (1.7)	4 (3.6)
4 weeks	83 (53.2)	33 (55.9)	57 (51.4)
8 weeks	42 (26.9)	22 (37.3)	22 (19.8)
More than 8 weeks	10 (6.4)	2 (3.4)	14 (12.6)
Other (please specify)	9 (5.8)	1 (1.7)	14 (12.6)

2.5 Barriers to the Optimal Prescribing and Use of PPIs

The following question regarding barriers specific to PPI prescribing and use was included in the physician survey.

- In your experience, which of the following (if any) act as barriers to the optimal management of GI conditions (including GERD, dyspepsia, and PUD)?

	n (%)			
	Always is a barrier	Sometimes is a barrier	Never is a barrier	I don't know/ No opinion
Limited time for physicians to spend with patients (N=419)	57 (13.6)	280 (66.8)	77 (18.4)	5 (1.2)
Limited time for pharmacists to spend with patients (N=416)	15 (3.6)	142 (34.1)	67 (16.1)	192 (46.2)
Inadequate staff resources (N=410)	32 (7.8)	167 (40.7)	142 (34.6)	69 (16.8)
Inadequate other resources (specify) (N=382)	12 (3.1)	88 (23.0)	100 (26.2)	182 (47.6)
Lack of adequate tools to guide physician decision making (N=410)	11 (2.7)	242 (59.0)	144 (35.1)	13 (3.2)
Lack of physician knowledge	29 (7.1)	268 (65.2)	98 (23.8)	16 (3.9)

regarding evidence-based practice (N=411)				
Lack of pharmacist knowledge regarding evidence-based practice (N=412)	15 (3.6)	133 (32.3)	81 (19.7)	183 (44.4)
Compensation or remuneration structure for physicians (N=410)	43 (10.5)	156 (38.0)	169 (41.2)	42 (10.2)
Compensation or remuneration structure for pharmacists (N=410)	7 (1.7)	67 (16.3)	93 (22.7)	243 (59.3)
Lack of patients' understanding of their condition and its management (N=407)	46 (11.3)	336 (82.6)	21 (5.2)	4 (1.0)
Patients' reluctance to lowering drug dosage (N=408)	21 (5.1)	295 (72.3)	59 (14.5)	33 (8.1)
Drug plan coverage (N=324)*	77 (23.8)	235 (72.5)	8 (2.5)	4 (1.2)
Drug plan authorization mechanism (N=323)*	64 (19.8)	209 (64.7)	17 (5.3)	33 (10.2)
Cost of medications to patient (N=414)	96 (23.2)	306 (73.9)	6 (1.4)	6 (1.4)
Patients do not follow instructions for taking medication (N=408)	33 (8.1)	346 (84.8)	20 (4.9)	9 (2.2)
Patients do not engage in appropriate lifestyle management (N=409)	80 (19.6)	315 (77.0)	12 (2.9)	2 (0.5)
Direct-to-consumer advertising (N=409)	40 (9.8)	228 (55.7)	56 (13.7)	85 (20.8)
Lack of communication between physicians and pharmacists (N=405)	13 (3.2)	220 (54.3)	99 (24.4)	73 (18.0)

* Includes responses from Physician Surveys I and II – these choices were unavailable in Survey III.

2.6 IMS Health Consulting Inc.

IMS used their Canadian Disease and Therapeutic Index (CDTI) database to generate a report on the estimated utilization of PPIs as initial therapy for the management of GERD and dyspepsia.

The CDTI database consists of records of patient visits and prescribed treatments by diagnosis. Data are collected from a panel of physicians that record the detail of every transaction completed during a set timeframe. Data derived from a sample of 289 physicians are used for identifying the relative proportions of medications prescribed by diagnosis. The data include only office-based physicians (mainly general practitioners and family medicine MDs) from Ontario, Québec, British Columbia, the Prairies (Alberta, Manitoba and Saskatchewan) and Atlantic Canada (New Brunswick, Newfoundland and Nova Scotia). The data analyses was conducted for 2005 and 2006, with 2005 being defined as the 12 months to September 2005, while 2006 is defined as the 12 months to September 2006.

The diagnoses targeted by IMS in this report were uninvestigated GERD and uninvestigated dyspepsia. Diagnosis information for CDTI is collected at the International Classification of Disease (ICD) 9 level. In the analysis the ICD 9 code used to represent GERD is 'esophagitis', which incorporates the following three diagnoses at the ICD 10 level: GERD without esophagitis; GERD with esophagitis; and esophagitis alone. In the analysis the ICD 9 code used to represent dyspepsia is 'dyspepsia and dysfunctions of the stomach', which incorporates the following diagnoses at the ICD 10 level: dyspepsia; other specified diseases of the stomach and duodenum; unspecified diseases of the stomach and duodenum; pain localized to the upper abdomen; and somatoform autonomic dysfunction.

Only first-time prescriptions for a new diagnosis were extracted from the CDTI database to increase the probability of extracting only data linked to the diagnosis of uninvestigated GERD and uninvestigated dyspepsia. Since few general practitioners and family physicians have the access or ability to perform endoscopy, it was assumed that any diagnosis by the participating physicians was uninvestigated.

The following tables summarize the major findings of the IMS report *The Usage Patterns of Gastro-Esophageal Reflux Disease (GERD) and Dyspepsia Treatments in Canada.*

- Percentage of Prescriptions for each Drug Class by Diagnosis

Class	% Prescription for GERD and Dyspepsia*		% Prescription for GERD*		% Prescription for Dyspepsia*	
	2005	**2006**	**2005**	**2006**	**2005**	**2006**
PPI	74	77	76	79	69	70
H2RAs	16	17	18	17	12	15
Other	10	6	7	3	19	15

* All data are for new treatment for first visit

- Percentage of PPI Prescriptions by Diagnosis

PPI	% Prescription for GERD and Dyspepsia*		% Prescription for GERD*		% Prescription for Dyspepsia*	
	2005	**2006**	**2005**	**2006**	**2005**	**2006**
HP-PAC	1	0	1	0		-
Losec® (omeprazole)	10	8	11	9	6	5
Nexium® (esomeprazole)	27	27	25	26	36	31
Omeprazole (generic)	2	1	2	1	-	-
Panto IV® (pantoprazole)	2	0	2	0	-	-
Pantoloc® (pantoprazole)	26	28	30	28	11	30
Pariet® (rabeprazole)	18	23	15	23	27	25
Prevacid® (lansoprazole)	15	12	13	14	19	6
Prevacid Fastab® (lansoprazole)	0	1	-	-	0	4
Rabeprazole	1	0	1	0	-	-

*All data are for new treatment for first visit.

- Percentages of Low, Standard, or High Dosing of PPIs by Diagnosis

	Low Dose PPI*	Standard Dose PPI*	High Dose PPI*
% Prescriptions for GERD and Dyspepsia	9%	61%	30%
% Prescriptions for GERD	8%	61%	31%
% Prescriptions for Dyspepsia	10%	62%	28%

Source: IMS HEALTH INCORPORATED, Canadian Disease and Therapeutic Index (CDTI) database. Reprinted with permission of IMS HEALTH INCORPORATED. All rights reserved.

3 REFERENCES

1. Canadian Agency for Drugs and Technologies in Health. *Evidence for PPI use in gastroesophageal reflux disease, dyspepsia and peptic ulcer disease* [Scientific report]. DRAFT. Ottawa: The Agency; 2006 Dec 6.
2. Centre for Effective Practice. *Understanding the current practice in use of proton pump inhibitors (PPIs): a comprehensive needs assessment report: results and analysis from a survey of physicians and pharmacists* [unpublished report]. Ottawa: Canadian Agency for Drugs and Technologies in Health; 2006 Nov 6.