

## Case Presentation to Physicians

### A. Enhancement Objectives

When a pharmacist first joins a practice site, the practice site physicians may not be clear on how or why to refer a patient to a pharmacist. Presenting case studies to the physicians helps educate them about a pharmacist's role in the health care team and informs them about the various reasons why patients can be referred.

The physicians' objective can differ from the pharmacist's, depending on the physician. The physicians may want more general continuing education (i.e., Continuing Medical Education) that is more patient specific. These case study presentations may be submitted for credit. Also, the practice may use these presentations as an opportunity for physicians to discuss cases.

### B. Tool or Enhancement Description

PowerPoint presentations (or similar software) and handouts are used. For example, an IMPACT pharmacist provided handouts that detailed a patient's list of medications before and after meeting with the pharmacist. Handouts can also include guidelines related to a specific disease; for example, chronic obstructive pulmonary disease (COPD).

Please see the end of this chapter for examples of case study presentations and handouts.

### C. Medication Management Improvements

For a pharmacist, each case study is an example of improved medication management and the presentation can show the practice site physicians how the pharmacist managed the patient's medication.

For example, presenting the case study of a very complicated patient can demonstrate to the practice site physicians how patients manage their own medication without the physicians' knowledge. It may lead the physicians to **consider** how they manage their own patients and may help them realize that more can be done during a consult than has been done in the past. It could lead the physicians to ask the patients more questions or to spend a few extra minutes going over their medications with them.

Because case study presentations have the potential to teach the physicians what other questions could be asked of their patients about their medications, theoretically the physicians may be able to more thoroughly manage their

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patients' medications by improving **communication** between the patient and the physician (if the physicians have more time for extended consultations). This could then assist patients in providing better information to their physicians as to how they are taking their medications (e.g., taking more or less than the amount prescribed) and then lead to appropriate changes in drug therapy (by identifying drug-related problems) and improved medication management. Because case presentations have the potential to change the approach physicians take with their patients, patient engagement in medication use could improve their candidness with their physicians.

In addition, the presentations may lead to an increase in the referrals to the pharmacist and other health care professionals by the physicians. An increase in referrals may improve the flow of the referral process and the **efficiency** of the physicians and the practice by having the pharmacist (and/or other health care professionals) assist in managing the health of their patients.

An increase in the number of referrals would also have the potential to improve the patients' engagement in the use of their medications. A pharmacist has the time to explain what each medication is and its purpose. A pharmacist can also determine whether patients are taking their medication correctly and if dosing changes are needed. More **drug-related problems** can be identified and resolved, which, in turn, leads to better health outcomes.

### D. Development Process

Physicians ask or the pharmacist suggests presenting case studies to the team. All patients in the practice could benefit from this enhancement, depending on the number of physicians who attend the case study presentations.

Discuss possible cases with peers and physicians. Create a first draft of the presentation that can be sent to peers for review. Incorporate the feedback into a final draft for the presentation.

After giving one presentation, the pharmacist may be asked to continue presenting case studies if the first is well received.

## Case Presentation to Physicians

### References and resources

The case study presentations should incorporate information from clinical practice guidelines and related articles to help a pharmacist provide documented information for a case study, information the physicians would also find helpful. The following articles were used for the example case studies shown:

Canadian Diabetes Association. 2003 Clinical practice guidelines for the prevention and management of diabetes in Canada. *Can J Diabetes* 2003;S1-S140.

Genest J, Frohlich J, Fodor G, McPherson R, for the Working Group on Hypercholesterolemia and Other Dyslipidemias. Recommendations for the management of dyslipidemia and the prevention of cardiovascular disease: 2003 update. *CMAJ* 2003;169:1-10.

Global Initiative for Chronic Obstructive Lung Disease. Pocket Guide to COPD diagnosis, management, and prevention. A guide for health care professionals (Update July 2004). GOLD Pocket Guide. Available at: <http://www.goldcopd.com>.

Hemmelgarn BR et al. The 2004 Canadian Hypertension Education Program recommendations for the management of hypertension: Part I – Blood pressure measurement, diagnosis and assessment of risk. *Can J Cardiol* 2004; 20:31-40.

Hunter MH, King DE. COPD: Management of acute exacerbations and chronic stable disease. *Am Fam Physician* 2001;64:603-12.

Khan NA et al. The 2004 Canadian recommendations for the management of hypertension: Part II – Therapy. *Can J Cardiol* 2004; 20:41-54.

O'Donnell DE et al. Canadian Thoracic Society recommendations for the management of chronic obstructive pulmonary disease – 2003. *Can Respir J* 2003;10(Suppl A):11A-65A.

O'Donnell DE et al. Canadian Thoracic Society COPD Guidelines: Summary of highlights for family doctors. *Can Respir J* 2003;10:183-5.

Touyz RM et al. The 2004 Canadian recommendations for the management of hypertension: Part III – Lifestyle modifications to prevent and control hypertension. *Can J Cardiol* 2004;20:55-9.

### E. Implementation Process

The pharmacist may not be directly involved in organizing meetings for the presentations. Often, the lead physician organizes the meetings, tracks the physicians attending the meetings and books the projector. The lead physician informs participants about the meeting date, time and location; however, be prepared to organize meetings if that is the lead physician's preference. This may entail:

- Coordinating a date that is acceptable to all (or the majority) of the physicians at the practice site
- Booking a room and projector for the designated day
- Informing all practice site physicians of the day, room and time of the presentation

Present the case study and supply handouts to the physicians. One-page handouts are more likely to be read than longer ones.

Ask for informal or formal feedback after the first case study presentation.

### F. Overcoming Challenges

Researching and writing the presentation in the time allotted may be a challenge. Budgeting time and asking physicians for direction and suggestions for relevant resources can focus a pharmacist's work, saving both time and effort.

Gathering all physicians together at one time may not be possible because of varying schedules. Hold presentations when a majority of physicians are available, and offer to hold them again to ensure all physicians attend at least once.

### G. Facilitating Factors

Starting and continuing case study presentations are helped by many factors at the practice site: the team members' openness to new ideas, willingness to use them, and ability to make changes when they recognize ideas that do not work.

### H. Evaluation Results

No strategy to evaluate this enhancement was undertaken.

## PRACTICE ENHANCEMENT EXAMPLES

### Case Presentation to Physicians

#### Case Study I Presentation Example

### Meet the patient

### Patient Demographics

- JM, 70 y.o. female
- Dx: Type 2 Diabetes, High cholesterol, Hypertension, OA, Polymyalgia Rheumatica, Constipation, Coronary Artery Disease, Hypothyroidism, Depression, GERD, Migraines, Asthma/COPD
- Smoker, (5 cigs 2 x week), 5'6", 87.3kg
- No exercise, no alcohol, sleeps – 3 pillows

### Current medication list from the PATIENT

- She self-increased the following
  - Arthrotec 75mg – 2 bid
  - Morphine SR 30mg – 2 bid
- Was the doctor aware?

**NO**

### DATA Creatinine

DATE	CR
August 8	76
February 10	108
June 10	165

### CREATININE CLEARANCE

Modified Cockcroft-Gault Formula (CPS):

- Male:  $Cl(cr) = \frac{1.2 (140 - age [y]) \times (weight [kg])}{serum\ creatinine\ (\mu mol/L)}$
- Female: multiply above equation by 0.85
- Usually use IBW if BMI > 30 or TIBW
- IBW (Male) =  $51.56 + (1.85 * [ht-60])$
- IBW (Female) =  $48.67 + (1.65 * [ht-60])$
- Ht in inches

### DATA Creatinine & Creatinine Clearance

DATE	CR	Cl (cr) (mL/min)
August 8	76	56 mL/min
February 10	108	39 mL/min
June 10	165	26 mL/min

■ Normal Cl(cr) > 90 mL/min

## ASSESSMENT

- Potential medication which may ↑ Cr
  1. Arthrotec 75 mg 2 bid
  2. Losartan 50 mg od
- Medications that may be affected by ↑ Cr
  1. Metformin 500 mg bid
  2. HCTZ 25 mg od

## ARTHROTEC 75MG 2 BID

- Maximum dose = 75 mg bid
- NSAIDs may cause a dose dependent reduction in prostaglandin formation and may precipitate overt renal decompensation (> risk in impaired renal function, heart failure, liver dyafx, diuretics and elderly)
- D/C NSAID is usually followed by recovery to the pretreatment state

## LOSARTAN 50MG OD

- Pt has been on losartan since at least 5 years
- Minor increases in serum creatinine were observed in < 0.1 of patients with essential hypertension treated with losartan alone. No patient discontinued taking losartan alone due to increased serum creatinine. [CPS 2004]

## METFORMIN 500MG BID

**Canadian Diabetes 2003 Clinical practice guidelines:**

- Metformin is contraindicated in pts with Cr(cl) < 60 ml./min because of risk of lactic acidosis
- 0.03 cases/1000 patient-years with approximately 0.015 fatal cases/1000 patient-years

## HCTZ 25MG OD

- Thiazides may decrease GFR and precipitate or increase azotemia
- Treatment should be d/c or withheld in the presence of increasing azotemia, oliguria and in severe progressive renal disease
- Suggest further renal investigation for JM

Speak to physician  
(to discuss plan)



## PRACTICE ENHANCEMENT EXAMPLES

## Case Presentation to Physicians

## PLAN

1. Suggest titrate Arthrotec 75 mg 2 bid to a lower dose or discontinue
2. Suggest d/c metformin 500 mg bid
3. Suggest continue hotz 25 mg od until further investigation regarding renal fx
4. Suggest monitor Cr, BUN, FBS, HbA1C, albumin to creatinine ratio

## PLAN cont'd

5. Patient education
  1. Monitor blood sugars bid
  2. BP weekly
6. Pharmacist follow-up in 1-2 months
  1. Pain – OA and migraine
  2. Diabetes – blood sugars

## Call Patient: July 21, 2004

- Discontinue metformin
- Check blood sugars at least twice daily
- Reduce Arthrotec 75 mg bid
- Pt also complained of constipation
- Make a f/u appointment to review blood sugars, pain and constipation

## Follow-Up Assessment Report

- Constipation (Rome Criteria Questionnaire)
- Suggest D/C docusate sodium because evidence shows that it does not help constipation
- Suggest Lactulose 15-30 mL od

## Follow-up



## Review the following

1. Pain
2. Diabetes
3. Constipation

## PRACTICE ENHANCEMENT EXAMPLES

### Case Presentation to Physicians

#### PAIN

- Low back, leg & knee pain (pain=9)
- Morphine SR 45 mg bid, pred 5 mg bid
- Experience btp around 2:00 pm and in am
- Suggest morphine 5 mg 1-2 q4-6h prn btp (10% of total daily dose given q4-6h prn)

#### DIABETES

- BS: July 28 – August 10
- Average AC breakfast = 9.3 [4.0-7.0]
- Average AC dinner = 7.4 [4.0-7.0]
- Average HS = 9.6 [5.0-10.0]
- Current dose: Novolin 30/70 42IU qam
- Suggest: Add Novolin 30/70 3IU qpm

#### CONSTIPATION

- Rome Criteria Questionnaire
- No longer constipated (but doesn't like taste of lactulose)



#### RENAL FUNCTION

- ◇ After lowering dose of Arthrotec 75 mg 2 bid to 1 bid (July 21 to August 31):
  - Creatinine = 94 (August 31)
  - Creatinine clearance = 45 mL/min
- ◇ Diabetes – still need to f/u
- ◇ Pain – still need to f/u

#### ANY QUESTIONS



## PRACTICE ENHANCEMENT EXAMPLES

## Case Presentation to Physicians

## Case Study Presentation Handout Example

JM's current medication list according to patient, chart and pharmacy	
Medication name, dose, frequency	Indications, comments
Atorvastatin (Lipitor) 20mg once daily	Cholesterol
Losartan (Cozaar) 50mg once daily	Hypertension
Hydrochlorothiazide 25mg once daily	Hypertension
Metformin 500mg bid	Type 2 Diabetes
Novolin GE 30/70 42units qam	Type 2 Diabetes
Levothyroxine 0.15mg once daily	Hypothyroidism, increased from 0.125mg June 24/04
Prednisone 5mg 2 once daily ( <b>she takes 1 bid</b> )	Polymyalgia Rheumatica pain, <b>she changed sig on her own</b>
Arthrotec 75mg one tab bid ( <b>she takes 2 bid</b> )	OA back, legs, knee, <b>she self-increased dose</b>
Morphine SR 30mg one tab bid ( <b>she takes 2 bid</b> )	OA back, legs, knee, <b>she self-increased dose</b>
Fluoxetine 20mg three (60mg) once daily ( <b>she takes 2 qam, 1 qpm</b> )	Fatigue, depression, <b>she changed sig on her own and she thinks it is for pain</b>
Lorazepam 1mg bid prn	Irritable, uptight ( <b>usually in the afternoon, takes 1 tablet twice a week</b> )
Pantoprazole 40mg bid	GERD
Cimetidine 400mg bid prn	GERD, usually takes one tab twice a week
Docusate Sodium (Soflax) 100mg 3 capsules (300mg) once daily	Stool softener, not working, she still has hard stools & constipation
Sumatriptan (Imitrex) 100mg once daily prn tid prn	Migraines, almost every day, sometimes bid prn, rarely
Parke Davis Analgesic balm	Migraines
Gravol Suppository prn	Migraines

**Cockcroft-Gault Formula for Creatinine Clearance:**<sup>10</sup>

Male:

$$Cl(cr) = \frac{1.2 (140 - \text{age [y]}) \times (\text{weight [kg]})}{\text{serum creatinine } (\mu\text{mol/L})}$$

Female: multiply above equation by 0.85

Usually use TBW or IBW if BMI &gt; 30:

$$IBW (\text{Male}) = 51.56 + (1.85 * [\text{ht}-60])$$

$$IBW (\text{Female}) = 48.67 + (1.65 * [\text{ht}-60])$$

Ht in inches

On August 5, JM discontinued her docusate sodium and started lactulose 30mL at bedtime. She now has a bowel movement every other day and does not feel constipated. Compared to June 24, her constipation symptoms from the Rome Criteria questionnaire include:  
[Scale: Absent (0), Mild (1), Moderate (2), Severe (3), Very Severe (4)]

Symptoms in the last week	June 24, 2004	August 11, 2004
Discomfort in the abdomen	Severe	Absent
Pain in the abdomen	Moderate	Absent
Bloating in the abdomen	Moderate	Absent
Stomach cramps	Severe	Mild
Painful bowel movements	Severe	Absent
Rectal burning during or after a bowel movement	Moderate	Absent
Rectal bleeding or tearing during or after a bowel movement	Absent	Absent
Incomplete bowel movement, like she didn't finish	Moderate	Absent
Bowel movements that were too hard	Severe	Absent
Bowel movements that were too small	Absent	Absent
Straining or squeezing to try to pass bowel movements	Severe	Absent
Feeling like she had to pass a bowel movement but she couldn't (false alarm)	Severe	Absent

Therefore, the lactulose has improved her constipation.

<sup>10</sup> Repchinsky C., ed. *The Compendium of Pharmaceuticals and Specialties (CPS)*. Ottawa, ON: Canadian Pharmacists Association, 2005; p.L7.

## PRACTICE ENHANCEMENT EXAMPLES

## Case Presentation to Physicians

## Case Study 2 Presentation Example

## OBJECTIVES

- To review COPD guidelines
- To illustrate the role of the pharmacist in assessing medications

## Reason for referral

1. Suboptimal control of chronic disease (COPD)
2. Review inhalers



## Meet the patient



## Patient Demographics

- JM, 62 y.o. female
- Dx: COPD, Chronic bronchitis, OA, OP, Swollen ankles/hands
- Smoker, (3-4 cigs/day) since 16 y.o.
- 5'3", 50.5 kg
- No exercise, no alcohol
- Drinks 2-3 bottles of water/day

## Medication list from the PATIENT

- Tiotropium 18 ug od
- Ipratropium 20 ug inh – 2 pf 4-6x day
- Salbutamol 100 ug inh - 2 pf qid
- Salbutamol 2.5 mg or 5 mg neb bid
- Fluticasone 250 ug inh – 2 pf bid

## OTHER MEDICATIONS

- CES 0.625 mg od
- Arthrocee 50 mg qhs
- Lorazepam 1 mg qhs
- Rabeprazole (Pariet) 10 mg prn
- Risedronate (Actonel) 35 mg once/week
- ASA 650 mg – 2 qam

## PRACTICE ENHANCEMENT EXAMPLES

### Case Presentation to Physicians

#### DATA - COPD

- Sx: SOB, wheezing, difficulty breathing
- August 18: FEV1 = 22%
- August 18: FEV1/FVC = 39% [83%]
- Chronic obstructive lung disease, emphysema, and early respiratory failure
- Does not qualify for home oxygen
- ECG: sinus tachycardia, VR=105 bpm, right atrial enlargement

#### GOALS OF COPD MANAGEMENT

- Smoking Cessation
- Prevent disease progression
- Relieve symptoms
- Improve exercise tolerance
- Improve health status
- Prevent and treat complications and exacerbations
- Reduce mortality
- Prevent or minimize side effects from treatment

#### PATIENT EDUCATION

Review the use of inhalers with JM

1. No straight posture
2. Neck and chin bent forward
3. Did not hold breath during inhalation
4. Inhaled, then opened mouth – expel drug
5. Shake inhaler between puffs

#### GLOBAL INITIATIVE FOR COPD, JULY 2004

Figure 5-3-8. Therapy at Each Stage of COPD

Old	I: Mild		II: Moderate		III: Severe
New	I: At Risk	I: Mild	II: Moderate	II: Severe	III: Very Severe
Classification	FEV1 > 80% FEV1/FVC > 70% No chronic symptoms	FEV1 > 50% FEV1/FVC > 60% With or without symptoms	FEV1 30-50% FEV1/FVC > 60% With or without symptoms	FEV1 30-50% FEV1/FVC > 60% With or without symptoms	FEV1 < 30% FEV1/FVC > 60% With or without symptoms
	Avoidance of risk factor(s), influenza vaccination				
	Add short-acting bronchodilator when needed				
	Add regular treatment with one or more long-acting bronchodilators			Add rehabilitation	
				Add inhaled glucocorticosteroids if frequent exacerbations	
				Add long-term oxygen if chronic respiratory failure Consider surgical treatments	

#### PHARMACOLOGIC TX

- Short-Acting/Long-Acting B<sub>2</sub>-Agonists
- Short-Acting/Long-Acting Anticholinergics
- Methylxanthines (Theophylline)
- Inhaled glucocorticoids
- Systemic glucocorticoids
- Combination products

#### B<sub>2</sub>-AGONISTS

- Bronchodilators
- SABA – wear off within 4-6 hours
- LABA – duration of effect ≥ 12 hours
- Regular tx with LABA is more effective and convenient than tx with SABA

**B<sub>2</sub>-AGONISTS A/E**

- Resting sinus tachycardia
- Fine tremors of skeletal muscle → hands
- Headache, palpitations, transient muscle cramps, insomnia, nausea, weakness and dizziness

**Anticholinergics**

- The bronchodilating effect of SA inhaled anticholinergics lasts longer than that of SABA, with some bronchodilator effect generally apparent up to 8 hours
- Tiotropium: duration > 24 hours
- A/E: dry mouth, urinary incontinence, bitter metallic taste, acute glaucoma (mask)

**METHYLXANTHINES**

- Theophylline SR is effective in COPD, but due to its potential toxicity, inhaled bronchodilators are preferred
- Small therapeutic window
- A/E: atrial and ventricular arrhythmias, grand mal convulsions, headaches, insomnia, nausea, heartburn

**INHALED  
GLUCOCORTICOSTEROIDS**

- Regular tx of inhaled glucocorticosteroids does not modify the long-term decline of FEV1 in pts with COPD
- **Appropriate to use in Stage III and IV and repeated exacerbations (3 in last year)**
- Reduce the frequency of exacerbations and improve health status

**INHALED  
GLUCOCORTICOSTEROID A/E**

- Oral candidiasis → rinse mouth
- Hoarseness, sore throat
- Skin bruising (forearms)
- Possible decrease in bone density

**ORAL  
GLUCOCORTICOSTEROIDS**

- Long-term treatment is not recommended in COPD b/c of lack of evidence of benefit
- Beneficial in the management of **exacerbations** of COPD
- Shorten recovery time and help restore lung function more quickly and may reduce the risk of early relapse
- Prednisone 40 mg od x 10 days

## PRACTICE ENHANCEMENT EXAMPLES

## Case Presentation to Physicians

## WHAT DO WE DO FOR JM?

1. Identify stage of COPD
2. Simplify her medication
  1. Stop tiotropium or ipratropium
    1. What is the difference?
  2. Consider combination products
    1. Symbicort or Advair?
  3. Stop Fluticasone
  4. Suggest Salbutamol to be used PRN only

## PATIENT EDUCATION

- Smoking Cessation
- Do not stop using inhalers, even when feeling better (she did that the week she was on prednisone and Levaquin)
- Inhaler technique – review with every visit

## FOLLOW UP – 1 WEEK

- JM feeling better
- Was able to vacuum



## REFERENCES

- Canadian Thoracic Society COPD guidelines, May/June 2003
- Global Initiative for Chronic Obstructive Lung Disease, July 2004

## PRACTICE ENHANCEMENT EXAMPLES

### Case Presentation to Physicians

#### Common COPD Drugs<sup>11</sup>

Drug	Inhaler (µg)	Nebulizer Solution (mg/ml)	Oral	Injection Vials (mg)	Duration (hours)
<b>B<sub>2</sub>-agonists (short-acting)</b>					
Fenoterol	MDI: 100–200	1	0.5% (syrup)		4–6
Salbutamol (albuterol)	MDI, DPI: 100, 200	5	5 mg Syrup 0.024%	0.1, 0.5	4–6
Terbutaline	DPI: 400, 500		2.5, 5	0.2, 0.25	4–6
<b>B<sub>2</sub>-agonists (long-acting)</b>					
Formoterol	MDI, DPI: 4.5–12				≥12
Salmeterol	MDI, DPI: 25–50				≥12
<b>Anticholinergics (short-acting)</b>					
Ipratropium bromide	MDI: 20, 40	0.25–0.5			6–8
Oxipropium bromide	MDI: 100	1.5			7–9
<b>Anticholinergics (long-acting)</b>					
Triotropium	DPI: 18				≥24
<b>Short-acting B<sub>2</sub>-agonists + anticholinergic</b>					
Fenoterol/ipratropium	MDI: 200/80	1.25/0.5			6–8
Salbutamol/ipratropium	MDI: 75/15	0.75/4.5			6–8
<b>Methylxanthines</b>					
Aminophylline			200–600 mg	240 mg	Up to 24
Theophylline (SR)			100–500 mg		Up to 24

<b>Glucocorticosteroids (inhaled)</b>					
Beclomethasone	MDI, DPI: 50–400	0.2–0.4			
Budesonide	DPI: 100, 200, 400	0.20, 0.25, 0.5			
Fluticasone	MDI, DPI: 50–500				
Triamcinolone	MDI: 100	40		40	
<b>Long-acting B<sub>2</sub>-agonists + glucocorticosteroids</b>					
Formoterol/Budesonide	DPI: 4.5/80, 160 (9/320)				
Salmeterol/Fluticasone	DPI: 50/100, 250, 500 MDI: 25/50, 125, 250				
<b>Glucocorticosteroids (systemic)</b>					
Prednisone			5–60 mg		
Methyl-prednisolone	10–2000 mg		4, 8, 18 mg		

DPI: dry powder inhaler; MDI: metered dose inhaler

LU 132 (Formoterol, Salmeterol, combinations): For the treatment of asthma in patients who are using optimum anti-inflammatory treatment and are still experiencing breakthrough symptoms. The drug is not used for relief of acute symptoms.

<sup>11</sup> Global Initiative for Chronic Obstructive Lung Disease. Figure 5-3-6. Commonly Used Formulations of Drugs Used in COPD. *Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease*. Updated 2004. Based on an April 1998 National Heart Lung, and Blood Institute/World Health Organization Workshop. 2004: 69. Available at: <http://www.goldcopd.com/Guidelineitem.asp?l1=2&l2=1&intId=1385&archived=1>

## PRACTICE ENHANCEMENT EXAMPLES

## Case Presentation to Physicians

Most Common Inhaled Bronchodilators							
Agent	Short-Acting B <sub>2</sub> -Agonists		Long-Acting B <sub>2</sub> -Agonists		Anticholinergics		Combination
	Salbutamol	Terbutaline	Salmeterol	Formoterol	Ipratropium	Tiotropium	
Brand Name	Ventolin® Generics	Bricanyl®	Serevent®	Oxeze®	Atrovent®	Spiriva®	Combivent®
System	MDI Diskus® Inhalation	Turbuhaler®	MDI Diskus®	Turbuhaler®	MDI Inhalation	HandiHaler®	MDI Inhalation
Colour	Blue	Blue bottom	Green/aqua	Green/aqua bottom	White with green cap	Grey	Clear with orange cap
Onset	5-15 min	5-15 min	20-30 min	5 min	5-30 min	30 min	5-15 min
Duration	4-6 h	4-8 h	12 h	8-12 h	4-8 h	> 24 h	4-8 h
Adult Dose	1-2 pfs TID-QID PRN	1-2 pfs TID-QID PRN	MDI: 2 pfs BID Diskus®: 1 pf BID	1 pf BID	2 pfs TID-QID	1 capsule inhaled OD	2 pfs QID
Maximum Dose	800 ug (8 pfs)	3 mg (6 pfs)	100 ug	48 ug	160 ug (8 pfs)	1 capsule	12 pfs
Supplied	MDI (200 dose) 100 mcg/puff Nebules/Soln: 5mg/mL-10mL 1mg/mL-2.5mL 2mg/mL-2.5mL	0.5 mg/inh (200 doses)	MDI: (120 dose) 25 mcg/pf Diskus®: (60 d) 50 mcg/inh	6 mcg/inh 12 mcg/inh (60 doses)	MDI (200 dose) 20 mcg/puff Nebules/Soln: 250ug/mL- 20mL 125ug/mL-2mL 250ug/mL-2mL	18 mcg/cap (30 caps/pk)	120 mcg/20 mcg (200 doses)
Ontario Drug Benefit Coverage LU = Limited Use	MDI Covered Inhalations - LU (Codes 265-9) Diskus® = Not covered	Covered	LU (Code 132)	LU (Code 132)	MDI Covered Inhalations - LU (Codes 256-9)	Covered	MDI Covered Inhalations - LU (Codes 256-9)

Table created by: Margaret Jin, Stratford Family Health Network, Stratford ON; 2005.

Case Presentation to Physicians

Most Common Inhaled Corticosteroids					
Agent	Beclomethasone	Budesonide	Fluticasone	Salmeterol + Fluticasone	Budesonide + Formoterol
Brand Name	Vanceril® QVAR®	Pulmicort®	Flovent	Advair Diskus®	Symbicort®
System	MDI	Turbuhaler®	MDI Diskus®	Diskus®	Turbuhaler®
Colour	Brown	Brown bottom	Orange	Purple	Bright red bottom
DOSE	Doses should be delivered BID				
Low Dose Adults	200-500 mcg	200-400 mcg	100-250 mcg		
Medium Dose Adults	500-1000 mcg	400-800 mcg	250-500 mcg		
High Dose Adults	> 1000 mcg	> 800 mcg	> 500 mcg		
Max Daily Dose	1000 mcg	2400 mcg	2000 mcg		
Supplied	Vanceril® 50 mcg/puff (200 doses)  QVAR® 50 mcg/puff 100 mcg/puff (200 doses)	MDI: (200 doses) 100 mcg/inh 200 mcg/inh 400 mcg/inh  NEBUAMP 0.125 mg/mL 0.25 mg/mL 0.5 mg/mL	MDI: (120 doses) 25 mcg/puff 50 mcg/puff* 125 mcg/puff* 250 mcg/puff* Diskus®: (60 doses) 50 mcg/puff 100 mcg/puff 250 mcg/puff* 500 mcg/puff*	MDI: (120 doses) 25/125 mcg 25/250 mcg  Diskus®: (60 doses) 50/100 mcg 50/250 mcg 50/500 mcg	100/6 mcg 200/6 mcg
Ontario Drug Benefit Coverage LU = Limited Use	MDI Covered	Turbuhaler Covered Nebuamp - LU (Codes 260-4)	* MDI & Diskus® Covered	MDI & Diskus® Covered LU (Code 330)	Covered LU (Code 330)

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# The IMPACT Program

*Pharmacists in Family Practice:  
A Resource*

## PRACTICE ENHANCEMENT GUIDE

### Optimizing Medication Use in Family Practice: Medication-focused Practice Enhancements

**Get the most out of your IMPACT Pharmacist**



**The IMPACT Program**  
*Pharmacists in Family Practice:  
A Resource*

**REFER IF YOUR PATIENT:**

- Needs help with optimal control of a **chronic condition** (such as diabetes, blood pressure, cholesterol, pain, arthritis)
- Is taking **multiple medications** (to simplify, ensure appropriate dosing times, manage or prevent drug related problems)
- Might be having an **adverse drug event**.
- Has **recently been hospitalized** (for counselling on medication changes)

**Most Common Inhaled Bronchodilators**

Agent	Short-Acting B <sub>2</sub> -Agonists		Long-Acting B <sub>2</sub> -Agonists		Anticholinergics		Combination
	Salbutamol	Terbutaline	Salmeterol	Formoterol	Ipratropium	Tiotropium	Salbutamol/Ipratropium
Brand Name	Ventolin® Generics	Bricanyl®	Serevent®	Oxeze®	Atrovent®	Spiriva®	Combivent®
System	MDI Diskus® Inhalation	Turbuhaler®	MDI Diskus®	Turbuhaler®	MDI Inhalation	HandiHaler®	MDI Inhalation
Colour	Blue	Blue bottom					
Onset	5-15 min	5-15 min					
Duration	4-6 h	4-8 h					
Adult Dose	1-2 pfs TID-QID PRN	1-2 pfs TID-QID PRN					

**Table 1: How Medication-focused Practice Enhancements Improve Medication Management**

Medication Management Process	Problems in Family Practice	Example of Enhancement Developed
Provide group education regarding medications	Patients need additional information on their condition; physician unable to provide all that is needed	Cholesterol Clinic Day (Chapter 5) — provides information that would benefit the patients and physicians of the practice site, and that is often not
Completing Section 8 forms	Forms are neither available nor easily completed	
Reporting adverse drug reactions (ADR)	Rarely done; voluntary system; forms not readily available or easily completed	

**DIABETES PATIENT CARE FLOWSHEET**

**Practice Site Letterhead**

Name: \_\_\_\_\_ D.O.B.: \_\_\_\_\_ Chart # \_\_\_\_\_ Diagnosis Date: \_\_\_\_\_ Type of DM: \_\_\_\_\_

Risk factors: Obesity  Fam Hx  Smoker  CVD  BP  Lipids  Gest DM

Complications/Comorbidities: Retinopathy  Nephropathy  Neuropathy  Foot Disorders  Other

Past Medical/Surgical Health: \_\_\_\_\_

Medications	Date				
Diabetic medications: Oral Insulin					
BP medications: ACEI/ARB Diuretic Beta blocker CA++ channel blocker					

**Chart Audit for Prevalence of Drug and Disease Indicators**

Patient sex:  M  F

Patient age: \_\_\_\_\_ or DOB (yy.mm.dd): \_\_\_\_\_

Date of last visit (yy.mm.dd): \_\_\_\_\_

Physician name: \_\_\_\_\_

Chart #: \_\_\_\_\_

Site #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_  
D M Y

**Excluded patients**

Less than one visit to the family physician in the last 12 months  Yes  No  Don't Know

More than 20 visits to the family physician in the last 12 months  Yes  No  Don't Know

Awaiting placement to a nursing home or long-term care  Yes  No  Don't Know

Alcoholism  Yes  No  Don't Know

Palliative care patient  Yes  No  Don't Know

Family physician only sees as a home visit (i.e., patient cannot come to the clinic)  Yes  No  Don't Know

**If you chose Yes for any of the above criteria, DO NOT collect any further information on this form.**



The goal of the IMPACT program, as the acronym suggests, is to Integrate family Medicine and Pharmacy to Advance primary Care Therapeutics. A growing body of research supports our belief that having pharmacists working in family practice settings enhances patient care.<sup>1</sup> This guide is the product of more than 10 years of planning and collaboration between investigators, government and community leaders.

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1. Sellors J et al., A Randomized Controlled Trial of a Pharmacist Consultation Program for Family Physicians and their Elderly Patients. *CMAJ* July 8, 2003;169(1):17-22.