# Reporting of Adverse Drug Reactions by Community Pharmacists in Ontario

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## ABSTRACT

**Objective:** Adverse drug reaction (ADR) reporting constitutes an important element of pharmacovigilance. This study was conducted to evaluate the current level of knowledge and practices surrounding ADR reporting among Ontario community pharmacists.

**Method:** A random sample (n=504) of Ontario community pharmacists was invited to participate in an online survey between September and December 2010.

**Results:** Three hundred and thirty-five surveys (66.5%) were analyzable. While 77.9% of respondents were familiar with Health Canada's ADR reporting system, 72.8% did not recognize lack of efficacy as a reportable ADR. Among those who have previously reported ADRs (54.3%), the most common reasons for reporting were serious reactions (18.1%), patient requests (13.2%), multiple concurrent concerns (12.6%), or generic conversions (9.3%). For ADRs associated with brand to generic conversion there were 333 recollections among 221 pharmacists resulting in 68 unique medications being recalled 285 times. The primary medication classes implicated were CNS (n=16) and cardiovascular (n=11). The top 3 generic medications recalled (>20x) were atorvastatin (48x), methylphenidate ER-C (27x), and omperazole (21x). Less than half the respondents (48.7%) reported receiving the Canadian Adverse Reaction Newsletter and 18.8% subscribed to the Health Canada MedEffect e-Notice.

**Discussion:** Pharmacists in Ontario are exposed to a number of ADRs, but require further education and clarification about Health Canada's reporting criteria and process. Awareness for potential ADRs during medication starts or changes should be heightened and reported. A recent Quebec survey with similar results suggest that pharmacists can contribute significantly to identifying and reporting ADRs, hence optimizing patient care and outcomes.

## BACKGROUND

- Adverse reactions (ARs) are defined as any undesirable, harmful and unintended responses related to the use of a health product, which includes drugs, medical devices and natural health products[1]
- Adverse Drug Reactions (ADRs) form a subcomponent of ARs specific to medications and are an important element of pharmacovigilance reporting once marketed medications are regularly used by patients post regulatory approval
- Underutilization of ADR reporting systems and underreporting of ADRs are well documented in the literature[2-6]
- In Canada, the MedEffect Program is an initiative coordinated by the Marketed Health Products Directorate of Health Canada to provide a consistent and universal reporting system for ARs and a mechanism to compile and analyze information that can be used to generate recommendations to health care providers, regulators and consumers[7]
- Currently, little data exist regarding Canadian community pharmacists' level of knowledge and utilization of the Canadian ADR reporting system

## OBJECTIVE

- To gain an understanding of Ontario community pharmacists' knowledge and utilization of the Canadian ADR reporting system

## METHODS

- Invitations with a link to the online survey (in English) was mailed randomly to Ontario community pharmacies captured by the IMS Health database
- The primary survey was conducted between September and October of 2010, and the follow-up survey was conducted in December 2010
- The ***Primary Survey*** consisted of 17 questions covering: Demographics, Awareness and knowledge of ADR reporting criteria and process, Reporting statistics and behaviours, Practice of pharmaceutical intervention, Maintenance of continuing education related to ADR reporting
- The ***Follow-Up Survey*** consisted of 5 questions, and was designed to evaluate the effectiveness of the survey as a simple interactive educational intervention
- Participants were compensated with $50 for the completion of both surveys

## RESULTS

### Demographics

| | |
|---|---|
| Invitations Sent | 504 |
| Evaluable Responses* | 335 (66.5%) |
| Gender | |
| Female | 45.4% |
| Male | 53.4% |
| Unknown | 1.2% |
| Recent graduates (≤ 10 years) | 58.8% |
| Education | |
| University of Toronto | 69.6% |
| Other International Universities | 20.3% |
| Other Canadian Universities | 9.6% |
| Unknown | 0.6% |

*A total of 504 invitations were mailed and 341 surveys were completed (67.7% response rate).
Six duplicate surveys from 3 respondents were removed, resulting in a total of 335 evaluable surveys.

### Awareness and Knowledge

- Most respondents reported:
  - Having *some familiarity* with the Heath Canada ADR reporting system (77.9%, n=261)
  - *"I know how to report"* ADRs to Health Canada (88.1%, n=295)
- However, majority of respondents *did not recognize "lack of efficacy"* as a reportable ADR (72.8%, n=244)
- Almost all respondents recognized that *a minimum amount of information or details* is required to report (90.4%, n=303), but were uncertain of the specific reporting criteria
  - Only 4 essential items are required by Health Canada (Patient identifier, event description, suspect drug, reporter's contact info)

### ADR Reporting Trends and Behaviors

- More than half of the respondents previously reported an ADR to Health Canada or Manufacturer (54.3%, n=182)
  - Of these, most respondents (85.7%) reported none (26.4%), one (41.2%), or two (18.1%) events over the past 12 months
  - Reports were made at similar frequency to Manufacturer (33.5%, n=61), Health Canada (37.9%, n=69), or to both (18.1%, n=33)
  - Majority of reports were filed via phone or fax (74.7%)
- For those respondents who never previously reported an ADR (45.7%, n=153), a portion (37.9%, n=58) admitted to *"previously recognized an ADR but did not report"*

**Table 1: Top 5 reasons for reporting or not reporting ADRs**

| **Reasons for reporting[1]** | **N** | **%** |
|---|---|---|
| Serious | 33 | 18.1% |
| Patient (requested, initiated, concerned) | 24 | 13.2% |
| Multiple factors[2] (e.g. serious, unexpected, unknown, pediatric, elderly, patient request, new drug, wanted more info, not in product monograph) | 23 | 12.6% |
| Generic conversion (to avoid substitution, observed ADR upon conversion) | 17 | 9.3% |
| Role of pharmacist (part of clinical practice, internship requirement) | 14 | 7.7% |
| **Reasons for not reporting[3]** | **N** | **%** |
| Multiple factors[2] (e.g. lack of time, lack of info, uncertain, doctor reporting & follow-up, already well known, unaware of process, didn't recognize ADR at the time) | 22 | 37.9% |
| Well known/ common/ already in product monograph | 10 | 17.2% |
| Lack of time | 9 | 15.5% |
| Uncertainty (Causality, lack of info and history) | 5 | 8.6% |
| Not serious | 3 | 5.2% |

[1]Of those respondents who reported having ever reported ADRs (n=182), 29 did not provide a reason for reporting
[2]Multiple factors – numerous respondents provided more than one reason
[3]Of those respondents who admitted to *"previously recognized an ADR but did not report"* (n=58)

### Practice of Pharmaceutical Intervention

- Pharmaceutical intervention and care is the practice employed by Pharmacists to ensure patient safety and optimal treatment, *including but not limited to:* prescription refusal, treatment recommendation to the treating physician or patient, and patient education
- End target is to get the right drug to the right patient at the right strength for the right condition in the right formulation at the right time
- Almost all respondents reported the practice of pharmaceutical intervention (88.7%, n=297)
  - Only a minority identified and reported ADRs during an intervention (24.9%, n=74)
- Majority of respondents would follow up with patients after a new or changed medication was dispensed (71.3%, n=239)
  - Timeframe: Usually within 1 week to 3 months, or upon renewal
  - Method: Usually in person or over the phone
  - MD notification: Majority (87.4%, n=209) would notify the responsible MD in case of ADR

### Real-World Scenarios

- Respondents were prompted with a few specific scenarios to support a more complete analysis on ADR reporting behaviors in routine practice

**Table 2: Scenarios for Potential Increase Need to Monitor and Report ADRs**

| | **Responded "No" N (%)** |
|---|---|
| Are you more likely to report adverse drug reactions for certain medications, such as pediatric prescriptions or prescriptions for different disease states? | 243 (72.5%) |
| Are you more aware or likely to report adverse drug reactions after a patient has changed their medication regimen? | 142 (42.4%) |
| If patients were switched to a generic medication, would you monitor them more closely for any potential adverse drug reactions? | 194 (57.9%) |

- While more than half the respondents would not monitor a patient more closely during a Brand to Generic conversion, a similar proportion could recall specific incidents of ADRs when asked
  - There were 333 recollections among 221 respondents (66% of evaluable population) resulting in 68 unique medications recalled 285 times
  - The primary medication classes implicated were CNS (16 unique medications) and cardiovascular (11 unique medications)

**Table 3: ADRs during Brand to Generic conversion – medication names and manufacturers most commonly recalled by respondents***

| **# of Times** | **Brand Name** | **Generic Manufacturers** | **Generic Name** |
|---|---|---|---|
| 48 | Lipitor | Apotex, Ratiopharm, Sandoz | Atorvastatin |
| 27 | Concerta | Novopharm, Teva | Methylphenidate ER-C |
| 21 | Losec | Apotex, Ratiopharm | Omeprazole |
| 19 | Ventolin | Apotex | Salbutamol |
| 18 | Norvasc | Apotex, Cobalt, Mylan, PMS | Amlodipine |
| 13 | Altace | Apotex, Novopharm, Ranbaxy, Ratiopharm | Ramipril |
| 10 | Effexor XR | Teva | Venlafaxine |
| 10 | Alesse | Apotex | Levonorgestrel-ethinyl estradiol |

*Respondents could have provided **both** the Brand **and** Generic product names, **either** the Brand or Generic product name, **or** a general comment on a class of drugs without specifying unique products names. In some cases respondents also specified Generic Manufacturer names.

### ADR Related Continuing Education and Follow-Up Survey

- The Canadian Adverse Reaction Newsletter (CARN) is mailed for free by Health Canada to all licensed physicians and pharmacists across Canada, while individuals can subscribe voluntarily to the MedEffect e-Notice
- Less than half the respondents acknowledged receipt of CARN (48.7%, n=163) while the majority did not subscribe to MedEffect (81.2%, n=272)
- The effectiveness of this survey as a simple interactive educational intervention was investigated by evaluating respondents' abilities to recall information related to ADR reporting criteria and processes one month after completing the initial survey
  - Educational intervention within the initial survey included:
    - The correct response with detailed explanation were presented when respondents selected an incorrect answer
    - Each participant received a brochure on ADR reporting produced by Health Canada along with their compensation
  - A response rate of 39% was reached with 132 of the original 335 evaluable respondents completing the follow-up survey
  - Significant increase in respondents' awareness and knowledge on reporting criteria and processes in general, but there continues to be the need to clarify and educate on the *"minimum amount of information required to report"* and *"methods of reporting"*

**Table 4: Results of the follow-up survey (n=132)**

| **Question** | **Correct Answer** | **% Answered Correct** |
|---|---|---|
| When should I report an adverse drug reaction to Health Canada or the manufacturer? | Whenever I SUSPECT an adverse reaction has occurred | 83.3% (n=110) |
| Is an unusual lack of therapeutic efficacy (e.g. ineffective treatment, drug didn't work as expected) considered a reportable adverse drug reaction? | Yes | 80.3% (n=106) |
| What is the minimum amount of information you need to report an adverse drug reaction to Health Canada? | Only 4 items are required (Patient information, Description of reaction, Name of health product, Contact information) | 50.8% (n=67) |
| What are the different methods of reporting an adverse drug reaction to Health Canada? | Directly to Health Canada (Phone, Fax, Online) or through the Market Authorization Holder (e.g. manufacturer) | 63.6% (n=84) |
| Which publication(s) does Health Canada produce to provide periodic updates to Healthcare Professionals regarding the most current health product alerts, summary of advisories issued, and other relevant topics? | Canadian Adverse Reaction Newsletter (Print and Online), MedEffect e-Notice (Online), MedEffect Canada Website (Online) | 78.8% (n=104) |

## LIMITATIONS

- Random sampling and final survey population dependent on the contacted pharmacies' and pharmacists' willingness to participate
- Survey population was limited to one province (Ontario), and may not be fully representative of the rest of Canada
- Relatively recent graduation of most respondents (<10 years), evolution in recent training curriculum and acceptance of ADR reporting as part of work routine
- Descriptive analysis only, certain discrepancies and correlations between specific factors cannot be fully delineated
- Potentially conservative (under) estimate of the actual rate of ADR non-reporting

## CONCLUSIONS

- Similar to a recent Quebec survey[8], community pharmacists in Ontario are exposed to a large number of ADRs, but require further education and clarification about Health Canada's reporting criteria and processes
- Awareness for potential ADRs during medication starts, conversions between Brands, or conversions between Brands and Generics should be heightened and reported
- Continuing education can contribute to a significant increase in pharmacists' awareness and knowledge, hence optimizing patient care and outcomes

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