Editor's key points

- Overall, 21% of family medicine teaching units in Quebec did not maintain drug sample cabinets, and 67% of health care professionals reported distributing drug samples to patients.
- The products most commonly found in the sample cabinets were not necessarily those the dispensers wished they had access to. Regardless, 51% of dispensers had provided their patients with a drug sample that was not their first choice for treatment.
- Only 64% of dispensers always or often recorded distributing a drug sample to a patient in the medical record, and 75% of dispensers never or occasionally provided written information to patients about the drug samples; 65% referred patients to the community pharmacist. Most dispensers (78%) reported taking drug samples for personal use or for use by a family member, and 37% of those did it at least once every 3 months.

Drug samples in family medicine teaching units: a cross-sectional descriptive study

Part 3: availability and use of drug samples in Quebec

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Abstract

Objective To draw a portrait of drug sample distribution and to assess the concordance between drug samples distributed and the medical problems encountered in the ambulatory primary health care setting.

Design Descriptive cross-sectional survey. A self-administered questionnaire was distributed to all health care professionals (HCPs) in family medicine teaching units (FMTUs) that kept drug samples between February and December 2013. *Dispensers* were defined as HCPs reporting the use of drug samples. Concurrently, an inventory log sheet was completed by managers of drug samples to document the contents of sample cabinets. Data from the Canadian Disease and Therapeutic Index were used as the criterion standard to assess the consistency between the drug samples found in the cabinets and the profile of the most frequent health problems encountered in primary care.

Setting All 33 FMTUs that kept drug samples in Quebec.

Participants Health care professionals authorized to hand out drug samples (practising physicians, residents, pharmacists, and nurses), and managers of drug sample cabinets.

Main outcome measures Dispensing practices of HCPs; number of doses of each drug contained in the sample cabinets; total market value of the samples; concordance between the drug sample categories made available and the most common medical problems encountered in primary care; and data on safe handling, ethical issues, effect of the pharmaceutical industry on prescribing behaviour, and inventory of samples.

Results Among 859 HCPs, 579 (67%) reported dispensing drug samples. A large proportion of dispensers (88%) were unable to find the specific drug they sought and half of them (51%) provided the patients with a drug sample even if it was not their first choice for treatment. The drug sample cabinet inventory revealed products from 292 different companies and identified a total of 382 363 medication doses for a total value of $201 872. We found gaps among types of drugs provided to patients, those the HCPs would consider useful, and those available in the cabinets.

Conclusion Drug samples available in FMTUs do not meet the needs of many patients and HCPs, suggesting that the main driving force for drug sample distribution is not patient care. Policies on drug samples in FMTUs should be uniform across the province, and management should be as strict as in community pharmacies. Otherwise, prohibiting their use should be considered.

Les échantillons de médicaments dans les unités d'enseignement de médecine familiale : une étude transversale descriptive

Troisième partie : Disponibilité et utilisation des échantillons de médicaments au Québec

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Résumé

Objectif Tracer un portrait de la façon dont on distribue des échantillons de médicaments et vérifier si les échantillons distribués correspondent aux problèmes de santé généralement rencontrés dans un milieu ambulatoire de soins primaires.

Type d'étude Une enquête descriptive transversale. Entre février et décembre 2013, on a demandé à tous les professionnels de la santé (PS) des unités d'enseignement de médecine familiale (UEMF) qui conservaient des échantillons de médicaments de répondre à un questionnaire auto-administré. Les *utilisateurs* étaient les PS qui disaient se servir des échantillons. Simultanément, les gestionnaires des échantillons ont complété un registre des échantillons conservés dans leurs lieux d'entreposage. Les données de l'Index canadien des maladies et traitements ont servi de critère de base pour évaluer la concordance entre les échantillons conservés et les problèmes de santé les plus courants dans un établissement de soins primaires.

Contexte Toutes les UEMF du Québec qui gardaient des échantillons de médicaments.

Participants Les PS autorisés à distribuer les échantillons (médecins praticiens, résidents, pharmaciens et infirmières) et les gestionnaires des lieux d'entreposage.

Principaux paramètres à l'étude Les pratiques de distribution d'échantillons des PS; le nombre de doses de chaque médicament contenu dans les lieux d'entreposage; la valeur marchande totale de ces échantillons; la concordance entre les catégories d'échantillons susceptibles d'être distribués et les problèmes de santé les plus courants dans les établissements de soins primaires; et des données sur la manipulation sans risque, sur des questions d'éthique, sur l'effet de l'industrie sur les habitudes de prescription et sur l'inventaire des échantillons.

Résultats Sur 859 PS, 579 (67 %) ont déclaré distribuer des échantillons. Une forte proportion d'entre eux (88 %) étaient incapable de trouver le médicament spécifique qu'ils cherchaient, et la moitié (51 %) donnaient aux patients un échantillon même s'il ne correspondait pas à leur premier choix de traitement. L'inventaire des échantillons présents dans les lieux d'entreposage a révélé des produits de 292 compagnies différentes et un total de 382 363 doses de médicaments, pour une valeur totale de 201 872 $. On a trouvé certaines incohérences entre les médicaments donnés aux patients, ceux que les PS considéreraient utiles et ceux qui étaient disponibles dans les lieux d'entreposage.

Conclusion Les échantillons de médicaments qu'on trouve dans les UEMF ne correspondent pas aux besoins d'un grand nombre de patients et de PS, ce qui donne à croire que le principal motif d'une telle distribution n'est pas le traitement des patients. Les politiques régissant ces échantillons dans les UEMF devraient être uniformes partout dans la province et leur gestion devrait être aussi stricte que dans les pharmacies communautaires. Autrement, il faudrait penser à en interdire l'usage.

Points de repère du rédacteur

- Dans l'ensemble, 21 % des unités d'enseignement de médecine familiale (UEMF) n'avaient pas d'armoires où entreposer des échantillons de médicaments et 67 % des professionnel de la santé (PS) disaient donner des échantillons à des patients.
- Les échantillons le plus souvent trouvés dans le lieu d'entreposage des échantillons n'étaient pas nécessairement ceux auxquels les PS auraient voulu avoir accès. Malgré tout, 51 % des utilisateurs avaient donné à des patients un échantillon qui n'était pas un premier choix pour son problème de santé.
- Seulement 64 % des utilisateurs qui donnaient un échantillon à un patient disaient enregistrer souvent ou toujours cette action dans le dossier médical électronique et 75 % de ces utilisateurs ne fournissaient jamais ou à l'occasion seulement une information écrite au patient à propos de l'échantillon; 65 % référaient leurs patients au pharmacien de leur collectivité. La plupart des utilisateurs (78 %) se servaient des échantillons à des fins personnelles ou pour des membres de leur famille, et 37 % d'entre eux disaient le faire au moins une fois à tous les 3 mois.

Drug samples might be used in family practice as a source of medication for patients in need. They also give family physicians the opportunity to evaluate medication tolerance and efficacy in patients. However, dispensing drug samples might pose a risk of harm to patient health,[1,2] influence prescribing behaviour,[3-8] and increase costs of care by promoting patented medicines.[2,7,9-12] Moreover, the uncontrolled introduction, management, and dispensing of drug samples in clinical settings presents safety and ethical concerns.[8,12-15]

The potential benefits and harms of drug samples have been discussed in numerous publications.[2,15-18] However, little is known about whether "free" medication provided by the pharmaceutical industry is appropriate for health problems for which treatment is sought in primary care, and about how drug samples are used in this context.

This is the third article in a 3-part series on the use and management of drug samples in family medicine teaching units (FMTUs) in Quebec. Our objectives were to draw a portrait of drug sample use in the 4 university primary care practice-based research networks (PBRNs); describe sample inventories, quantify the number of medication doses, and estimate the financial value of drug samples in the FMTUs; and assess the concordance between the drug sample categories made available and the most common medical problems encountered in primary care.

Methods

The general method of this 3-part series of articles is described in part 1 (**page e531**).[19] In brief, we conducted a descriptive cross-sectional survey in all 42 FMTUs affiliated with the 4 Quebec university PBRNs that had existed for at least 1 year at the time of the study. Data collection was performed between February and December 2013.

In the FMTUs keeping drug samples, we invited all HCPs authorized to hand out samples (practising physicians, residents, pharmacists, and nurses) to complete an anonymous self-administered questionnaire on the use and management of drug samples. We defined *dispensers* as those who reported using drug samples in their FMTUs. In addition, HCPs or staff members who were in charge of drug sample management in these FMTUs (ie, *managers*) completed a self-administered manager questionnaire and an inventory log sheet to collect information about the drug sample storage procedures and the content of drug sample cabinets including drug names, manufacturers, quantities, packaging, and expiration dates. The study was approved by the research ethics boards of all involved institutions.

Methodology specific to part 3

In this article, we report data collected in the 33 FMTUs keeping drug samples with the dispensers' questionnaire and the inventory log sheet.

We excluded 3 FMTUs from the analyses of the inventory log sheets because of missing data. The number of doses was calculated as follows:

- for solid oral forms, 1 dose equals 1 tablet;
- for inhaled or vaporized forms, 1 dose equals 1 inhalation or 1 spray;
- for topical forms, 1 dose equals 1 fingertip (0.5 g or 0.5 mL); and
- for dietary supplements, 1 dose equals 1 bottle.

The market value was determined by multiplying, for each drug, the number of units present in the sample cabinet by the unit price as reported in the drug list of the Quebec Medical Insurance Board at the time of the inventory. This market value was calculated as the amount a pharmacist would bill customers insured under the Quebec Public Prescription Drug Insurance Plan, before adding the dispensing fee. We used data from the Canadian Disease and Therapeutic Index[20] as the criterion standard to assess the consistency between the drug samples found in the cabinets and the profile of the most frequent health problems encountered in office-based primary health care.

We performed descriptive analyses of the data collected with the dispensers' questionnaire and the inventory log sheet using SPSS, version 20, and Microsoft Excel software, respectively.

Results

Distribution of drug samples

Thirty-three (79%) of the 42 FMTUs had drug sample cabinets. The response rate to the dispensers' questionnaire was 72%, ranging from 55% to 86% among PBRNs. Of the 859 respondents from the 33 FMTUs keeping drug samples, 579 (67%) reported using drug samples. Among them, 78% reported providing samples to patients at least once every 3 months. The main reasons for distributing drug samples to patients are listed in **Table 1**.

Table 2 presents the proportion of dispensers who reported distributing samples at least once during the past 6 months compared with the proportion who judged samples as relevant to find in the drug sample cabinet according to drug type. Analgesics and oral contraceptives were the most common types of drug provided. Nine of the most common types of drug provided (analgesic drugs, oral contraceptives, intranasal corticosteroids, antacids, topical preparations, inhaled drugs, antidepressant drugs, antihistamines, and migraine drugs) were judged useful in their practices by at least 50% of the dispensers.

Safety issues

Among the 579 dispensers, 64%, 26%, and 11% always or often, occasionally, and never recorded distributing a drug sample to a patient in the medical record, respectively. The 509 who reported writing a note in the

Table 1. Main reasons for distributing drug samples to patients: *N = 579 dispensers.*

REASON	DISPENSERS, N (%)
Helping a patient with financial needs	489 (84)
Testing tolerance and efficacy of a drug	395 (68)
Providing immediate relief of an ailment	295 (51)
Facilitating adherence to a drug regimen	223 (39)
Pharmacy is not accessible	205 (35)
Caring for patients	109 (19)
Other	29 (5)

Table 2. Proportion of dispensers who reported dispensing drug samples at least once during the past 6 months compared with the proportion of dispensers who judged drug sample types as relevant to their practice, by the most common types of drug provided

DRUG SAMPLE TYPE	DISPENSERS WHO GAVE OUT SAMPLES, %	DISPENSERS WHO JUDGED SAMPLES AS RELEVANT, %
Analgesic drugs	64	85
Oral contraceptives	60	93
Intranasal corticosteroids	40	61
Antacids	37	65
Topical preparations	34	65
Inhaled drugs	30	62
Antidepressant drugs	25	51
Vitamins and supplements	23	37
Erectile dysfunction drugs	21	35
Antihistamines	19	57
Migraine drugs	17	52
Antihypertensive drugs	17	47

medical record at least occasionally documented the following information: name of the drug (96%), dosage (77%), quantity given (75%), and therapeutic indication (37%).

Overall, 75% of dispensers never or occasionally provided written information to patients about the drug samples and 65% referred patients to the community pharmacist. Of dispensers who reported providing samples to patients, 68% reported that they used drug samples to initiate or modify the treatment of a chronic condition to verify the tolerance or the efficacy of the new drug. Most (81%) of these reported providing a written prescription for that specific drug.

Ethical issues

A large proportion of dispensers (88%) reported having been unable to find the specific drug they sought and half of them (51%) stated that they occasionally provided a drug sample even if it was not their first choice for treatment. Only 25% of dispensers reported always recording the reason why a drug sample was provided in the medical record. Most dispensers (78%) reported taking drug samples for personal use or for use by a family member, and 37% of those did it at least once every 3 months.

Pharmaceutical industry and prescribing behaviour

Half (51%) of dispensers (85% practising physicians and 15% residents) said they had contact with pharmaceutical representatives. More than one-third of HCPs who dispensed samples stated they met pharmaceutical representatives at least once a month.

Inventory

Among the drug samples found in the 30 cabinets with complete inventory log sheets, 68% were prescription drugs and 32% were over-the-counter drugs or natural products.

Information about the drug sample manufacturer. The inventory revealed products from 292 different pharmaceutical, medical device, or food companies. **Table 3** presents the drug manufacturers whose products were the most frequently encountered in the drug sample cabinets. These 12 manufacturers alone accounted for two-thirds of all drug samples found in all FMTU cabinets.

Quantity and types of drug samples. We identified a total of 382 363 medication doses in the drug sample cabinets. Topical preparations, analgesic drugs, inhaled drugs, oral contraceptives, and vitamins and supplements were the most common products found in the sample cabinets (**Table 4**).

Market value of samples. The total market value of samples found during inventory was $201 872. The monetary value of the content of individual cabinets varied by university PBRN (**Table 5**).

Concordance with the most common medical problems

When considering the number of doses for each drug class in our study compared with the list of most frequent reasons for consultation,[20] we found that the most frequent reasons for consultation do not correlate well with the samples available in the cabinets. According to the Canadian Disease and Therapeutic Index, the main reasons for visits with drug recommendations in Canada are hypertension, diabetes, depression, anxiety, and hyperlipidemia. Likewise, by examining the most frequently mentioned drugs at office visits in the United States (ie, analgesics, antihyperlipidemic drugs, and antidepressants),[24] it emerges that the drugs' rank order differs from that of our study (**Tables 2** and **4**).

Table 3. Number and mean proportion of available drug samples in FMTU cabinets by manufacturer and variability according to university-affiliated PBRN

	DRUG SAMPLES IN CABINETS		
MANUFACTURER	N	MEAN %	VARIABILITY BY PBRN, %
Pfizer	350	17.8	14.2-22.3
Merck	107	6.7	4.8-11.4
GlaxoSmithKline	127	6.7	5.2-7.9
Bayer	119	6.5	5.3-8.5
McNeil	90	5.9	3.9-7.6
Wyeth	84	5.1	3.8-6.9
AstraZeneca	102	4.0	2.3-6.9
Servier	54	3.6	2.4-6.1
Boehringer Ingelheim	45	3.1	1.2-3.6
Valeant	28	2.5	0.8-6.2
Takeda	36	2.2	0.9-2.8
Abbott	36	2.1	0.9-3.3

FMTU—family medicine teaching unit, PBRN—practice-based research network.

Table 4. Number of drug sample doses available in the 30 sample cabinets, by drug sample type

DRUG SAMPLE TYPE	NO. OF DOSES AVAILABLE
Topical preparations	76 038
Analgesic drugs	64 130
Inhaled drugs	60 263
Oral contraceptives	40 513
Vitamins and supplements	35 900
Intranasal corticosteroids	16 610
Antihypertensive drugs	12 639
Antacids	3772
Antidepressant drugs	3257
Antihistamines	997
Erectile dysfunction drugs	631
Migraine drugs	360
Other	67 253
Total	382 363

Discussion

Our study provides a representative estimate of drug sample use and inventory in all FMTUs in Quebec. We found that 67% of respondents distributed drug samples to patients. Similar findings have been reported that support the distribution of drug samples as a common and widespread practice.[16,21,22] It is of interest that 21% of our FMTUs do not maintain sample cabinets. This finding indicates that the clinical teams of these FMTUs decided to limit the pharmaceutical industry's influence on their prescribing behaviour and that of family medicine residents under their supervision.

In our results, the reasons for distributing drug samples appeared to be clinically relevant. However, documentation in the medical records of drug sample distribution and the referral of patients to a community pharmacist was suboptimal. These observations represent a potential health risk to patients. Furthermore, more than one-third of drug dispensers met pharmaceutical sales representatives monthly, a practice that has been shown to influence prescribing behaviour.[3-7] Most dispensers indicated using drug samples for their personal needs or those of family members. This practice raises both ethical issues and safety concerns. Physician self-prescribing and prescribing for relatives and friends without appropriate or formal evaluation of the situation both present health risks. The recent Collège des médecins du Québec guideline on individual prescriptions by physicians states that physicians should abstain from self-prescribing and prescribing for relatives.[23]

We found considerable quantities of drug samples (382 363 doses worth $201 871) in Quebec's FMTU sample cabinets. The number of samples in the inventory varied by FMTU size (number of HCPs), geographic location, and local policies framing visits from pharmaceutical representatives (data not shown). Despite local policies regarding the relationship between the pharmaceutical industry and HCPs, sample cabinets seem to represent a breach, potentially allowing indirect influence on the prescribing practices of family medicine residents. Sample cabinets can be likened to a blind spot in the long-standing HCP-industry tandem. This observation is of particular concern in the context of FMTU training centres, where future prescribers are exposed to potentially suboptimal prescribing practices.

Table 5. Market value of the drug samples in the cabinets of the FMTUs, by university PBRN: *Total market value across all PBRNs was $201 872, the average market value of samples in each FMTU was $7544, and the overall range was $72 to $23 713.*

	MARKET VALUE, $		
UNIVERSITY PBRN	TOTAL AMOUNT PER PBRN	AVERAGE AMOUNT PER FMTU	RANGE WITHIN THE PBRN
Laval University	61 718	5143	72-10 237
McGill University	38 612	7722	1433-23 713
University of Montreal	70 880	7088	236-15 653
University of Sherbrooke	30 662	10 221	2659-16 421

FMTU—family medicine teaching unit, PBRN—practice-based research network.

We observed that the products most commonly found in the sample cabinets were not necessarily those the dispensers wished they had access to. The most frequent reasons for consultation[20] do not correlate well with the samples available in the cabinets. Moreover, dispensers clearly distribute the drugs that are available in higher quantities in the cabinet such as analgesic drugs, oral contraceptives, topical preparations, and inhaled drugs. Further, 88% of dispensers reported having been unable to find the specific drug they sought.

This leads us to conclude that the pharmaceutical industry does not provide free medication according to the needs of patients and HCPs. Our results support that the primary driving force for drug sample distribution is not patient care but new product marketing. Moreover, our findings have shown that 51% of dispensers will provide their patients with a drug sample that is not their first choice for treatment. This reveals how the pharmaceutical industry can influence physician prescribing behaviour, as demonstrated in numerous studies of drug sampling and its use as a promotional tool.[25-28]

Limitations

This study might have limitations regarding data validation. We were not able to verify that HCP statements were consistent with information in the patient medical records. Our findings might also be subject to social desirability bias on the part of the respondents. However, our self-administered questionnaire was anonymous, which might limit this bias.

Conclusion

Drug sample dispensing is a widespread practice in the FMTUs in Quebec. The reported reasons for issuing drug samples are for the most part clinically relevant, but ethical and safety problems are encountered with regard to sample distribution. We found a substantial amount of drug samples in the cabinet inventory and those offered by the pharmaceutical industry do not match well with patients' reasons for consultations in primary care or the medication preferences of physicians.

Our findings will help to develop policy and best practice guidelines for use and management of drug samples in primary care. We argue that the decision to maintain a sample cabinet must be accompanied by a plan for its management similar to that of a community pharmacy. Sample dispensing should be managed in such a way that it reduces risks for patients. If this is not feasible, we believe HCPs and patients would be better off without drug samples.

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Contributors

Drs Lussier and **Diallo** conceptualized and designed the study, prepared the data set for analysis, provided input for statistical analyses, wrote the first draft of the manuscript, provided critical review and revision of the manuscript, and wrote the final manuscript. **Drs Pluye, Grad, Lessard, Rhéaume,** and **Labrecque** contributed to conceptualizing the study and provided critical review and revision of the manuscript. All authors approved the final manuscript as submitted and agreed to be accountable for all aspects of the work.

Competing interests

None declared

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