

# A comparison of mechanisms for setting generic drug prices

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*Abstract:*

Canadian drug plan pricing of generic drugs is in a state of flux, with different plans adopting different approaches. The manner in which public plans pay for generic drugs can affect five policy goals: low generic drug prices, security of the drug supply, a reliance on reimbursement rules (thereby avoiding the need for drug plan managers to exercise discretion over reimbursement levels), low administrative burden, and, finally, the provision of adequate incentives for generics to enter the market. We review 5 pricing mechanisms: maximum prices, the descending price schedule, tendering, benchmarking, and pharmacy competition. We examine international evidence on the success of these approaches. We conclude with an assessment of promising procurement approaches.

## 1. Introduction

Canadian drug plan pricing of generic drugs is in a state of flux. It wasn't always this way. For many years, from the inception of the public plans in the early 1970s to the mid 2000s, generic drug procurement attracted little interest among policy makers. By 2006, however, growing attention was focused on the divergence between domestic and international prices for generic drugs. Policy makers were also cognizant of the so-called "patent cliff": the imminent availability of generic versions of Lipitor and other high volume branded drugs. Both of these factors caused public drug plans to reexamine generic pricing.

The public plans have used various approaches to reduce reimbursement. Most plans have reduced generic drug reimbursement prices several times since 2006. Some plans, including those in Ontario and British Columbia, have also experimented with tendering. Others, such as the Quebec public drug plan, have required that manufacturers offer them their lowest prices. Some plans now regulate the payment of cash rebates and other incentives from generic drug manufacturers to pharmacies.

In this paper, we review the structure of the market that complicates generic drug pricing policy. We then describe and evaluate the mechanisms used internationally that Canadian public drug plans can use to procure generic drugs. We conclude with some promising approaches that could be used in Canada.

## 2. Market Structure

Canada has what Danzon and Furukawa (2011) call a "pharmacy-driven" generic market. Pharmacists are legally authorized to substitute generics for brand drugs, unless physicians explicitly indicate otherwise, which is rare, at least among public plans. The choice of generic to dispense is left up to the pharmacy. Generic manufacturers compete primarily by offering pharmacies low product prices.

Pharmacy-driven markets contrast to "physician-driven" generic markets, in which pharmacists have limited power and/or weak incentives to substitute between interchangeable drugs. The choice of which interchangeable drug is dispensed is largely left up to the physician. Generic manufacturers compete primarily by marketing "branded generics" to physicians. The result is a low generic share of the market and high generic prices.

Below, we further describe the Canadian market.

### *Generic drug manufacturer competition for pharmacy sales*

Generic drugs must first receive Health Canada approval before they can be marketed. Approval is contingent on the manufacturer demonstrating, *inter alia*, bioequivalence to the reference branded drug. Manufacturers of generic drugs that have received market approval then normally apply to the provincial government for a designation of interchangeability with the brand drug. Doing so affords the pharmacist legal protections should problems arise with the substitution of the generic for the brand drug. Interchangeable generics are listed on the provincial government drug plan formulary.

Pharmacists are free to dispense their choice of interchangeable generic drug, unless the physician explicitly indicates otherwise. Physicians tend not to do so for beneficiaries of the public drug plans; doing so requires that they fill out a report indicating the adverse reaction or other medical reason that precluded generic substitution.(Ontario Ministry of Health & Long-Term Care 2011b) Public drug plan beneficiaries also have the option of paying extra should they wish to receive the branded drug. In practice, it appears that few do. Physicians are more likely to prescribe brand drugs to beneficiaries of the private plans, many of which have much less stringent controls.(Balaban et al. 2013)

For commercially important drugs, there are usually many generic manufacturers competing for pharmacy sales. For instance, the Ontario government formulary lists 18 different generic versions of the popular antihypertensive drug amlodipine.(Ontario Ministry of Health & Long-Term Care 2011a) Competition between generic manufacturers occurs mainly on the basis of price, but convenient payment terms, prompt service and a large product catalog are also likely important factors.

A generic drug manufacturer can also attempt to gain a competitive advantage by being first to market. Hollis (2002) presents evidence that being first normally confers a durable increase in market share. Being first to market, however, can be costly. Commercially important brand drugs are usually protected by a dozen or more patents that cover, among other things, the active ingredient, special coatings or other physical aspects of the medicine, methods of manufacture, and therapeutic indications.(Kapczynski, Park, and Sampat 2012) Some of these patents effectively bar generic entry until after they expire. Others do not. These include patents that the generic manufacturer can “invent around”, and patents that can be shown to be invalid if challenged. A generic manufacturer that wishes to enter must first demonstrate in the Federal Court that the existing patents on the brand drug are either invalid or not infringed. The rules that govern this litigation are known as the *Patented Medicine (Notice of Compliance) Regulations*. The trial is intended to be summary in nature – decisions are rendered within 24 months – and does not entail a full exploration of the evidence that would be considered in a patent infringement proceeding.(Competition Bureau 2007a) Conservatively, the cost of litigating a proceeding to its conclusion is \$1–2 million per side, assuming that the proceeding runs smoothly.

Because the *Notice of Compliance* proceedings do not resolve issues of patent validity and infringement, a generic firm that enters the market faces the risk of an infringement suit brought forward under the *Patent Act*. As an example, Apotex launched a generic version of the anti-hypertensive drug ramipril in December 2006. Sanofi, the patentee, alleged infringement and damages from lost sales revenues. The Federal Court found Apotex non-infringing. Sanofi appealed first to the Federal Court of Appeal, and then to the Supreme Court, which reached a decision in favor of Apotex in 2012. Thus from 2006 to 2012, Apotex was a risk of damages valued in the hundreds of millions of dollars, much more than the amount it had earned from selling ramipril.

*Pharmacy competition for patients*

Generic drug manufacturers compete for pharmacy sales on the basis of price, as well as being first to market, quality of service, and size of product catalog. Pharmacies, in turn, compete for patients primarily on the basis of location, levels of service and other aspects of quality, not price. The reason is that most patients have drug insurance and are thus price insensitive. Pharmacy regulatory authorities also discourage price competition and advertising. (Competition Bureau 2007b)

### *Drug plan reimbursement of generic drugs*

The amount that the public drug plan pays the pharmacy for generic drugs dispensed to plan beneficiaries is typically based on a maximum price per pill, milliliter or other unit. These prices are listed in the government formulary.

Prior to 2006, private plans tended to pay the prices charged the provincial government plan. Many provincial government plans, in turn, used the price set by the Ontario Drug Benefit (ODB) plan, the largest drug plan in Canada. Since 1993, the ODB generic reimbursement price was set at some percentage of the price of the interchangeable brand drug. Initially this percentage was 75% should there be only one generic on the market, and 67.5% otherwise. In 1998, this percentage was reduced to 70% should there be only one generic on the market, and 63% otherwise. Pharmacies were able to purchase generics for less than these reimbursed amounts. The margins earned constituted a substantial share of pharmacy revenues; revenues from this source totaled approximately \$2 billion in Canada in 2005. (Grootendorst, Rocchi, and Segal 2008) Things changed when the Ontario drug plan reduced generic reimbursement to 50% in late 2006. First, the other provinces did not follow in lock step. They have reduced generic reimbursement by different amounts at different times; presently, prices range from 18% to 35%. Second, pharmacies were unwilling to extend the prices paid by the provincial government plan to private drug plans. In some provinces, governments have mandated that pharmacies lower prices charge private plans and cash paying customers.

### **3. Goals of generic drug pricing policy**

Pricing policy needs to balance five goals: low prices; security of the drug supply; a reliance on rules instead of discretion; low administrative burden; and adequate incentives for generics to enter the market.

A primary goal is that the drug plan pays the lowest feasible price, a price below which manufacturers cannot profitably sell to the pharmacy. (The lowest feasible price is known as the manufacturer's "reservation price".) We assume that pharmacy professional services and operating costs are reimbursed separately so that low generic reimbursement prices are a legitimate goal.

In addition to achieving the lowest feasible price, generic drug pricing should ensure security of supply. Pharmacies need a reliable and timely source of generic drugs. This requires that the drug supply be robust to disruptions in production and that manufacturers be responsive to pharmacy inventory needs.

The pricing policy should be transparent to market participants and avoid the need for drug purchasers to exercise discretion over its daily operations. A

reliance on rules (instead of discretion) enhances investment certainty to drug companies and reduces the extent of stakeholder lobbying. Pricing rules should accommodate the wide range of generic drugs that are dispensed. The pricing policy should also impose a low administrative burden on stakeholders.

The final goal of a procurement mechanism is to provide sufficient incentive for generic manufacturers to incur the costs of entering the market. As noted earlier, in Canada (and in some other jurisdictions), a generic firm that wishes to enter must incur costs to litigate patents that the originator (i.e. brand) drug manufacturer deems to be infringed, and, upon entry, faces the risk of an infringement suit. In the absence of this litigation, generic entry (and thus savings to drug plans) may be delayed by patents that, if tested in court, would be shown to be invalid or not infringed.

#### **4. Generic drug pricing options**

There are five different ways that drug plans can price generic drugs.

##### **4.1 Maximum prices**

Drug plans can choose, somewhat arbitrarily, a maximum reimbursement price for each multi-sourced drug. As noted above, the ODB plan (and other plans that emulated the ODB) has historically used this approach, setting the generic price at some percentage of the price of the brand drug. A drawback of this approach is that the price chosen by the drug plan will typically not coincide with the reservation price. Instead, it will either be above the reservation price, in which case the drug plan overpays, or be below the reservation price, in which case the pharmacy will lose money on the sale of the drug. In the former case, where the reimbursement price exceeds the reservation price, the pharmacy and generic manufacturer will split the proceeds. The pharmacy portion accrues in the form of off-invoice cash rebates, free goods and other incentives.

##### **4.2 Descending price schedule**

With a “descending price schedule”, the generic reimbursement price falls with the number of generic manufacturers supplying the market. This scheme has already been used in a limited way in Canada. For several years, the ODB paid generics 70% of the brand price if there was one manufacturer supplying the market and 63% if there were two or more. Instead of settling on 63% reimbursement, the descending price schedule would further reduce reimbursement upon the entry of the third, fourth and subsequent generic manufacturers. The merit of this approach is that generic firms will enter as long as the price is greater than their expected average production costs (i.e. their reservation price). Entry ceases once price falls near the reservation price. Alberta introduced a descending price schedule in its public plan in February 2014.(Alberta Blue Cross 2014)

##### **4.3 Tendering**

Under competitive tendering, a drug plan buys medicines exclusively, for a set period of time, from the manufacturer that offers the best bid. The prospect of selling a large volume of medicines, without the need to pay rebates to

pharmacies, acts as an incentive for firms to bid aggressively for the contract. Tendering can therefore be very effective in obtaining low prices for payers.

#### **4.4 Benchmarking**

This approach, used by the public drug plans in Australia and the UK (where it is known as “price disclosure”), works as follows: Generic manufacturers submit sales information (net of rebates, free goods and other discounts) to the drug plan. The drug plan then calculates the average actual acquisition cost to pharmacies for each generic drug. This average acquisition cost becomes the reimbursement price in the next period. Pharmacies that procure generic drugs at a price higher than the average lose money on each prescription. Pharmacies that procure their drugs at a price less than the average get to keep the proceeds. Thus, this system gives pharmacies incentives to try to find low prices. The result is that the reported drug acquisition costs should, over time, decline to the lowest possible level.

#### **4.5 Pharmacy competition**

In this approach, drug plan beneficiaries are given financial incentives to patronize pharmacies that offer low drug prices. Pharmacies thus have an incentive to compete on the basis of price. This approach can be operationalized in one of several ways. The Fraser Institute (2008) proposes that drug plan beneficiaries bear a significant share of the prescription cost. Beneficiaries would thus have a strong incentive to search for pharmacies that offer low prices. The problem is that this approach exposes the beneficiary to financial risk, contrary to the aims of drug insurance.

Another approach, advocated by the Competition Bureau (2008), is to have pharmacies compete, by offering discounts to drug plans, to belong to a network from which plan beneficiaries are encouraged to purchase their prescriptions. Beneficiaries, in turn, would be encouraged to obtain their drugs through preferred pharmacy networks to avoid or reduce co-payments.

### **5. Evidence on the success of these approaches**

#### **5.1 Maximum prices**

*Low prices.* Canadian provincial government drug plans for many years set generic reimbursement at about 63% of the brand price. The result was that Canadian retail generic drug prices were relatively high by international standards.(Danzon and Furukawa 2003; Patented Medicine Prices Review Board 2010) While this pricing approach did not obtain low prices, it did fare well on the other performance criteria.

*Incentives for generic entry.* Because generic manufacturers shared in the proceeds (i.e. the difference between reimbursement and reservation prices), generic firms were willing to incur the costs of challenging patents, thereby expediting generic entry. We estimate the savings to Canadian drug plans from litigation over patents on atorvastatin and several other popular drugs in the last few years to exceed \$16 billion;(Hollis and Grootendorst 2012) this compares to annual drug plan expenditures on generics of roughly \$5 billion.(Canadian Generic Pharmaceutical Association 2013)

*Security of supply.* Once patent barriers were breached on medium to high volume drugs, typically several generic firms started producing, and this afforded some production redundancy. A related benefit was that competition for margins resulted in companies producing a wide range of low volume drugs, not because they were particularly profitable, but rather to offer pharmacies a wide range of products and the convenience of “one stop shopping”. Firms that offered this service may have had an advantage in marketing the more profitable high volume drugs to pharmacies. Generic firms were also particularly responsive to pharmacy inventory needs, given the margins earned on pharmacy sales.

*Rules vs discretion.* The procurement mechanism required little discretion on part of drug plans, and imposed little, if any, administrative burden on stakeholders. The maximum price system conferred another benefit to payers: Because pharmacies earned substantial rebate income, drug plans were able to pay relatively low dispensing fees.

Recently, generic reimbursement in Canada has fallen to as low as 18% of the brand price. This has created several risks. Price reductions may result in companies finding it unprofitable to incur the costs of market entry (including litigation costs), or the production and distribution of existing small-volume generic drugs. The rapidly changing reimbursement rules have also made it difficult for drug manufacturers to make investment decisions.

Drug plans, recognizing the potential for disruptions in the supply of generic drugs, have negotiated higher reimbursement rates with manufacturers for many drugs. Drug plans have thus set up systems of cost-based price regulation typically used for regulated utilities. This is administratively cumbersome and unlikely to result in efficient pricing. (Newbery 1998)

## **5.2 Descending price schedule**

The descending price schedule has several attractive properties. As noted earlier, it automatically reduces reimbursement prices towards their lowest feasible level. This system is also universal in the sense that it can be applied to all drugs and can operate in situations with few generic producers (indeed, even if there is only one generic producer) or with many; it operates immediately following generic entry and later too. The system operates automatically: it does not require that the drug plan exercise discretion over its operation. The pricing simply depends on the price established by the entry of the last producer. Finally, the descending price mechanism rewards the generic firm that successfully litigates brand patents. In particular, generic firms that successfully challenge patents are normally the first to market and the mechanism provides (temporarily) higher reimbursement to early entrants.

This pricing mechanism does not dominate the others on every criterion. In particular, it would likely not produce prices as low as those obtained by tendering. The descending price system, after all, allows for multiple firms to supply the market. The firm that is awarded the tender can likely exploit greater economies of scale and would not need to incur costs to compete for pharmacy business. Moreover, the approach may not work if a single firm procures drugs on behalf of all retail pharmacies. In this case, the firm may block entry of additional firms given that such entry may depress margins and thus pharmacy rebates.

The descending price schedule has been used in several EU countries, including Austria and Portugal. The approach has not achieved particularly low prices in these countries. One reason is that the price schedule is too “flat” to deliver significant price reductions. In Austria, the first generic entrant is priced at 52% of the brand, the second entrant reduces prices to 44%, and the third reduces prices to 40%. Additional price reductions are very small for subsequent entrants. Another reason is that in Austria, the generic market is small; physicians tend to prescribe by proprietary brand names and pharmacists are not allowed to substitute. This has limited the number of generic market entrants and hence savings.(Vogler 2012; Leopold and Habl 2008)

There is limited information to be gleaned from the experience of the descending price schedule in Austria and Portugal in creating sufficient incentive for generic entry in Canada. The reason is that generic entry occurs at the level of the EU market: once a generic manufacturer is authorized to enter the EU, it can enter national markets. Moreover, issues of patent validity and infringement are settled prior to entry so that generic manufacturers do not incur the same infringement risks that they do in Canada.

### **5.3 Competitive tendering**

Tendering has long been used to procure vaccines, and drugs for hospital use; it is increasingly being used to procure generic drugs that are dispensed in community pharmacies. In the last decade, healthcare insurers in the Netherlands and sickness funds in Germany have initiated large-scale tenders to supply generic drugs for outpatient use. New Zealand has used tenders for its national public drug plan since 1996.

*Low prices.* The available evidence suggests that tendering has markedly reduced generic drug prices in these countries. Boonen and colleagues (2010) report that tendering in the Netherlands reduced generic medicine prices by 76–93%. New Zealand issued its first tender in 1996 for the product paracetamol, resulting in a 44 percent price reduction. In 1999, tenders were expanded to cover more products. The 2002-03 tender calls for bids for over 1000 items, and produced savings of about \$23 million.(Pharmac 2013)

Canadian drug plans have had much less success with tendering generic drugs. Since the 1970s, the Saskatchewan government has issued tenders to supply medicines for the entire province, but few national generic firms have participated. One reason is that firms that offer a low price in Saskatchewan are required to offer the same low price to the Quebec drug plan. Evidently, generic firms earn more by abandoning the relatively small Saskatchewan market, and selling at a relatively high price in the large Quebec market, than they do by selling at a low price in both markets.(Hollis 2009) As a result, most tenders were filled by just two generic firms – Dominion and Nu-Pharm – which sold drugs exclusively in Saskatchewan.(Competition Bureau 2007a)

*Security of supply.* Tendering achieves low prices by creating a potentially lucrative reward – a sole source contract – to the firm that offers the lowest prices. Sole source contracts, however, can lead to shortages should the contractor face supply disruptions. A related issue is that once the term of the contract comes to an end, other suppliers may have ceased to produce the drug, or indeed may have ceased operations entirely, so that there are fewer firms



bidding on the next tender, and potentially higher prices.

There is yet another supply issue. It might be difficult to tender the entire range of generic drugs in use. A relatively small number of generic drugs are routinely prescribed and typically many generic firms supply these drugs. There are many generic drugs, however, that are not routinely prescribed and that have commensurately fewer suppliers. Many firms focus solely on the high volume drugs, while a few firms will invest in large product catalogs as a means to compete for pharmacy business. Prices for the high volume drugs would be lower if the tender were restricted to these high volume drugs. But tendering for low volume drugs is likely to discourage competitors from entering local markets for those drugs; and even if only high-volume drugs are tendered, the profitability of supplying low-volume drugs is reduced. Then security of supply of the low-volume products is threatened.

A common response to security of supply concerns is that even if there is only one manufacturer supplying a country or jurisdiction, other manufacturers globally could step in to fill the gap if needed. Unfortunately, foreign manufacturers may not be in a position to quickly fill the gap, as they are likely not to have received regulatory approval, and the process of obtaining approval could take months.

There is some domestic evidence that tendering can cause supply disruptions. There is only one supplier of generic parenteral drugs commonly used in hospital settings. One possible reason is that hospitals acquire their drugs through group purchasing organizations, which tend to negotiate aggressively. Given this, and the relatively small size of the market, other firms apparently did not find it profitable to set up productive capacity for these specialized pharmaceuticals.(Born, Petch, and Dhalla 2012) When the sole supplier had production problems, these drugs were rationed in Canada. The same drugs were available in the large US market but the manufacturers supplying the US market did not have regulatory approval to sell in Canada.

There have been no reports of serious supply disruptions of conventional oral solid drugs in the European Union countries that use tendering. One possible reason that supply appears to be stable is that the tenders in Germany and the Netherlands do not encompass the entire EU generics market so that there are likely alternative suppliers able to fill in any gaps. There are generally many alternative suppliers owing to the EU's mutual recognition system: Once the European Medicines Agency approves a generic drug, it grants marketing authorization for all markets within the EU.(Chavan et al. 2011) In New Zealand, there have been some supply disruptions; these have been resolved by procuring the branded product at a higher price.(MacKay 2005)

*Incentives for generic entry.* One challenge created by tendering is that it undermines incentives for generic firms to challenge patents, since the generic firm that wins in the patent litigation may not win the tender. The firm that invests in a successful court challenge may thus find itself excluded from the market that it enabled.(Hollis and Grootendorst 2012) Some brand drugs in New Zealand remain under patent for extended periods of time, protected by patents that were successfully challenged in other jurisdictions. These problems could be addressed by setting a separate reward mechanism for successful generic patent challenges, similar to the 180-day exclusivity period that is used in the United

States, but this mechanism has created substantial problems of its own, and leads to a temporary period of high prices.

*Rules vs discretion.* Another problem with tendering is that it isn't a comprehensive solution. Almost certainly, some drugs, at some times, would not be suitable for tendering. For example, tendering will not work if there is only one generic on the market. With few generics, one might expect relatively weak competition and resulting high prices. Thus the drug plan would need to procure such drugs in some other way. Drug plans also face the administrative costs of setting up tenders for the hundreds of prescription drugs currently in use.

#### **5.4 Benchmarking**

*Low prices.* While benchmarking is used in the national drug plans of both Australia (since 2011)(Department of Health, Australian Government 2013) and the UK, it has not generated low prices in Australia while in the UK it has.(Mansfield 2014; Patented Medicine Prices Review Board 2013) This is partly due to the differences in the implementation of the benchmarking scheme in the two countries, and partly due to differences in the structure of the generics market.

There are three key differences in how the benchmarking system is implemented in the two countries. First, in the UK, regulators audit the financial records of generic manufacturers and a sample of pharmacies. Auditing both parties in the transaction may reduce the likelihood that a manufacturer will use secret rebates to capture pharmacy market share without reducing future prices. Australia audits just manufacturers' financial records. Second, in Australia, there is an 18-month lag between the time that the generic is listed on the formulary and first price adjustment. During this time, generic drugs are reimbursed at 84% of the brand price. In the UK, price adjustments occur shortly after listing. Third, in the UK, the reimbursed price can increase or decrease, based on the reported costs. In the Australian system, price increases are restricted.(Department of Health, Australian Government 2013) This perhaps makes manufacturers less willing to lower prices, given that once the reimbursement price is reduced, it cannot subsequently increase.

There are also differences in the structures of the generic markets of the two countries that might explain the different pricing outcomes. In the UK, generic drugs are much more accepted among prescribers and patients than they are in Australia. Mansfield notes that UK medical students are taught to prescribe drugs by their generic chemical names; practitioners are given financial and other incentives to be cost conscious prescribers.(Mansfield 2014) In Australia, by contrast, many prescribers and patients appear to harbor concerns over the quality of generics and their interchangeability with brand drugs. Moreover, with the exception of low-income residents, Australians are required to pay the first \$36.90 per prescription; the Pharmaceutical Benefits Scheme picks up the remainder. Brand drugs are only modestly more expensive than are generic drugs and many Australians evidently are willing to pay extra. The result is that the generic share of the pharmaceutical market (by volume) in Australia is 30%, less than half the 68% share in the UK.(Mansfield 2014) This result obtains even though Australian pharmacists are allowed to substitute generics while UK pharmacists are not.

Given the differences in market size, UK's generic manufacturing industry is much more competitive than Australia's. The UK has twice the number of generic manufacturers as Australia (22 vs 10),(Mansfield 2014) and even this overstates the degree of competition in Australia as 2 of the 10 firms there supply about 80% of the market.(Lofgren 2009) The UK has about six times the number of wholesalers as Australia. This suggests that price competition between manufacturers for pharmacy business in the UK is much more robust than that in Australia and thus the potential for savings to the UK drug plan is much larger.

*Security of supply.* There have been no reports of supply disruptions with the benchmarking schemes in either country.

*Incentives for generic entry.* We have no evidence on the effects of the benchmarking systems in Australia and the UK on generic entry. This system, however, provides incentives for entry that are at least as strong as any of the systems reviewed in this paper. This is particularly the case for a generic manufacturer that is the sole generic supplier. Such a manufacturer would presumably need to charge less than the price of the brand drug, but would otherwise not be constrained.

*Rules vs discretion.* The pricing rules in the benchmarking system require that the drug plan exercise little if any discretion, which is desirable. Administration costs, however, are not trivial. First, generic manufacturers (and possibly a sample of pharmacies) would need to submit sales information and the drug plan would need to calculate prices for the large number of reimbursed drugs. Second, the drug plan would need to monitor and value the entire array of incentives manufacturers use to compete for pharmacy sales, not just cash rebates and free goods, but also "in kind" payments such as consulting services and particularly generous financing terms.

#### **5.4 Pharmacy competition**

The pharmacy competition approach, in which patients are incentivized to seek out low cost pharmacies, tends not to be used by large-scale public drug plans. The US is a notable exception. The public drug plan for seniors, Medicare Part D, is administered by private insurance companies, many of which rely on preferred pharmacy networks (PPNs). It appears that PPNs are able to obtain lower prices. A recent report commissioned by the Pharmaceutical Care Management Association – the association of firms that help negotiate these networks – suggest that over the next ten years, preferred pharmacy network plans are estimated to reduce federal Medicare spending by \$7.9 to \$9.3 billion.(Kaczmarek, Sheldon, and Liner 2013)

PPNs appear to be gaining traction among private drug plans in Canada.(Strauss 2012) It is unclear, however, if they are a viable option for public drug plans, given that public insurers make up about half of each provincial market. One can imagine the political problems this would entail. Another problem is that plan beneficiaries may not be located in close proximity to a network pharmacy and would need to pay extra out of pocket to access pharmacy services.

## 6. Discussion

This paper discusses the different approaches that Canadian public drug plans can use to procure generic drugs, and assesses their ability to achieve low prices, security of supply, comprehensiveness, all while maintaining incentives for generic entry. We draw the following conclusions from our analysis. First, no approach, as currently implemented, dominates the others on all four criteria. The New Zealand tendering system, for instance, is able to achieve the lowest prices of all systems we reviewed, but there are some concerns over the security of supply and incentives for generic entry. The maximum price system currently in use in Canada, in which the reimbursement price is set at some arbitrarily chosen percentage of the price of the interchangeable brand drug, sometimes obtains low prices, but the system is not comprehensive. Indeed, as the reimbursement prices have dropped, the public drug plans have had to initiate a system of cost-based reimbursement for drugs whose production costs are claimed to be higher than the reimbursement price.

Second, institutional factors can affect the success of the procurement approaches. For instance, tendering works in New Zealand but has not been successful in Saskatchewan owing to the fact that other jurisdictions in Canada referenced their prices to the prices obtained by Saskatchewan.

Third the exact design of the procurement mechanism matters. The UK and Australia both use benchmarking, but obtain completely different outcomes. The Austrian descending price mechanism yields relatively high prices, which is not surprising given that the scheme operates on low volumes and requires rather small price reductions as the number of entrants increases.

Finally, the declining price approach seems to have the best theoretical properties; prices are perhaps not as low as with the tendering approach but it does fare well on the other three criteria. The implementation of this system in the countries we reviewed limit its effectiveness, but it appears that, properly designed, it could achieve a favorable balance of the five policy goals.

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