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Desimplification of Single Tablet Antiretroviral (ART) Regimens—A Practical Cost-Savings Strategy?

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Abstract

Introduction: The use of lifelong antiretroviral therapy (ART) results in increased costs of care; the ability to finance and control sustained costs of ART needs to be discussed. **Approach:** The Southern Alberta Clinic initiated a practical cost savings approach that switched select patients from a branded ART to a less expensive generic variation. Our approach surveyed physicians and patients on their acceptance of switching and then launched a program asking patients if they would switch to generic variations for cost control purposes. **Results:** Our early findings found >50% of patients approached agreed to switch. We found no evidence of increased risk of viral breakthrough, resistance, side effects, or displeasure with generic drugs. Measured cost savings in the first year were >$1.1 million with annual projected savings of between $4.3 million and $2.6 million (in 2017 Cdn$). **Conclusion:** Our approach can provide an option for controlling costs of HIV care without compromising quality.

Keywords

HIV/AIDS, antiretroviral therapy, health economics, cost savings, desimplification, Canada

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Widespread HIV testing and the initiation of lifelong antiretroviral therapy (ART) soon after an HIV diagnosis has led to many more people living with HIV receiving treatment.[1–3] The costs, however, incurred from this rapid expansion of ART, is of increasing concern even in the developed world.[4–6] Although ART was introduced as a clinical and public health imperative, the ability and the optimal means for supporting the immediate and then lifelong sustained costs of ART need to be discussed. The issue of using newer, more expensive, branded antiretroviral (ARV) drugs has become a potential focus of attention for governmental payers, insurance companies, and individuals, as the overall cost for lifelong ART increases. Some approaches have suggested the use of ART monotherapy, dual therapy, and intermittent therapy to control ART costs, as well as drug toxicities but are not yet widely accepted.[7,8] The recent availability of more modern generic ARV drugs has shifted the discussion toward their strategic and optimal use in HIV treatment as a means to manage increasing costs.[9–11] While generic ARV drugs have through economic necessity been used extensively in low- and middle-income countries, their use in high-income countries has been limited. Until recently, generics were the older more toxic medications that had been replaced by clearly superior agents; in the past few years, more commonly used frontline ARV drugs have been developed, *and in some case been made available* in generic formulation. An issue of contention, however, has been the reported reluctance by both patients and prescribing physicians in accepting generic ARV drugs.[12–14]

While high-income countries may be able to sustain, at least in the short term, the higher costs of the more expensive branded ARV medications, payers of HIV programs may eventually, as more patients are receiving ART for longer and longer periods of time, have to face important financial decisions on optimizing cost containment while maintaining quality. The popularity of brand single tablet formulations (STF) has allowed, due to one or more of the components being patented, ART per patient costs to be maintained at around the same level for many years, and as a result the benefits of reduced generic drug costs have become stalled for most payers.

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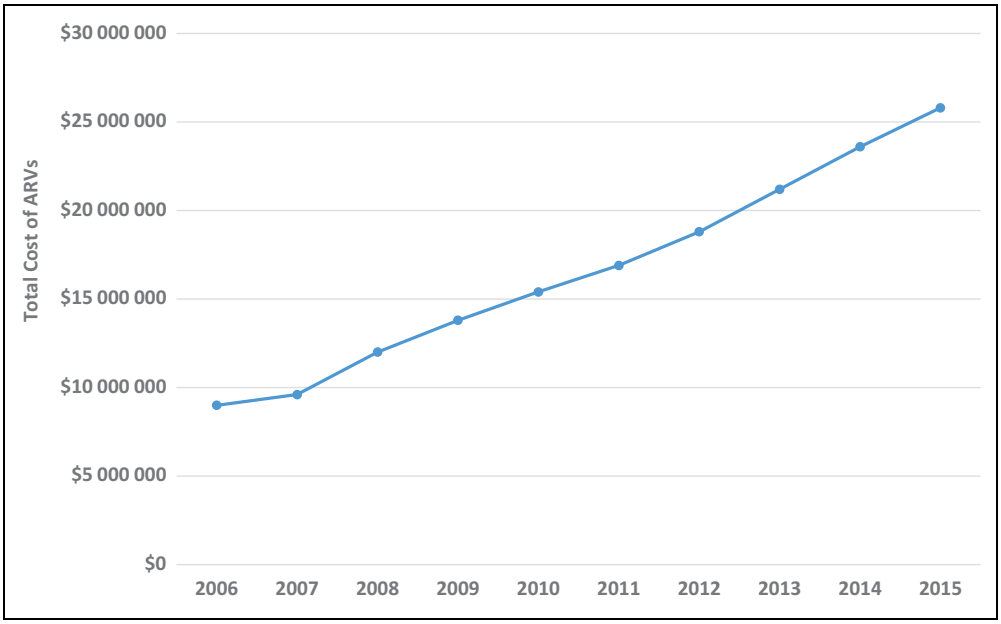

Figure 1. Total ARV cost per year at the Southern Alberta Clinic (2015 Cdn$). ARV indicates antiretroviral medication.

Deconstructing or desimplifying an STF into its individual branded and generic components for cost savings was modeled by Walensky and colleagues[15] in 2013; they found that while desimplification increased daily pill burden, substantial costs could be saved. Although some HIV care centers have initiated some form of that approach,[16–18] it has not been widely implemented for unclear reasons. Few care centers have surveyed patients on their acceptance of this option or then followed patients after switching to generic desimplified ARV drugs to monitor outcomes.

The Southern Alberta Clinic (SAC), located in Calgary, Canada, is the regional provider of HIV care, including all ARV drugs, at no cost for all eligible patients in southern Alberta under universal health care. Between 2006 and 2015, the program ART budget (funded by Government of Alberta) nearly tripled (Figure 1). *Given these increased costs, the directors at SAC* felt that a proactive approach to cost containment of the ART budget was needed within a tight Provincial budget although we were neither prompted nor directed to reduce costs by Alberta Health, the provincial payee. *Although other options were possible*, as part of exploring potential cost savings options, we initially looked at switching select patients from the most widely used branded STF (Triumeq® ViiV Healthcare) to less expensive components of *one generic pill of* Abacavir/Lamivudine and *on branded pill of* Tivicay® ViiV Healthcare (2 pills taken together once a day [QD]).[19]

Our approach had 3 steps. First, we estimated the potential cost savings of switching or initiating 100%, 80%, or 60% of patients onto the less expensive generic coformulated regimens. Second, we wanted to survey prescribing physicians and patients currently on branded STFs for their opinions on offering patients, on a strictly voluntary basis, on this STF the option of taking 2 pills rather than 1 as their ART strictly for cost-saving purposes (ie, no personal monetary gains). Finally, if there was general acceptance, we would initiate a "soft" launch of the use of the generic-based regimens approaching patients and asking them if they would switch.

A literature review before the questionnaire suggested that the main concerns might be: Are the generic drugs equally as effective as branded ARV medications and are they acceptable to our patients and physicians? Which populations on the STF should be approached? Are there risks in switching even formulations of same ART in patients on stable regimens? Would patients accept an increase in their daily pill burden? What are the logistical issues surrounding such a rollout? Can the overall quality of care be maintained while controlling costs?

At the start of our cost containment programme,[19] 94% of patients followed at SAC were receiving ART; of these, 62% were on a branded STF. Some STFs were not eligible for desimplification as a branded component was not available separately, some were imminently about to lose patent coverage, and some were arbitrarily deemed too fragile by SAC staff to take the risk from selective adherence of components. We therefore focused our initial efforts on our most commonly used STF (Triumeq), which accounted for 36% of patients on treatment. In 2016, the total program cost for ART at SAC was approximately CDN$26.2 million; the cost of Triumeq was $8.3 million (32% of all ART costs). We estimated if every patient (ie, 100%) on Triumeq switched to a 2-pill-a-day regimen generic abacavir/lamivudine and Tivicay, the annual savings to the ARV budget would be $4.3 million; if 80% or 60% switched cost savings would be $3.4 million and $2.6 million, respectively.

We, Krentz et al[19] surveyed all prescribing physicians (N = 13) at SAC if they felt comfortable, in principle, discussing and offering desimplification for cost reasons; all did. Physicians

felt that the majority of their patients would be willing to switch; however, they expressed similar views on desimplification to other HIV-treating physicians[14] elsewhere that this must be voluntary and not lead to diminished adherence, and the impact of increasing pill burden on vulnerable individuals must be considered. Patient preference to remain on an STF must be respected. No concerns regarding diminished potency or tolerability was expressed.

Our patient survey found that 85% (n = 187) supported the proposal that, due to cost savings to the public purse, the clinic should routinely offer desimplification for eligible patients. When asked if they personally would consider switching, 48% (n = 105) said *yes*, 27% (n = 59) said *no*, and 26% (n = 57) said *maybe*. Patients answering *yes* most frequently mentioned cost savings, previous experience with previous ART, and comfort with increased pill burden due to past ART or concurrent comorbidity treatments. Conversely, for patients answering *no*, some stated they liked taking only 1 pill, that it's much easier to take, and that they didn't want to take multiple pills again; others were concerned about their adherence to 2 pills taken QD rather than 1 pill.

This "customer feedback" encouraged our HIV care center to initiate a "soft" launch of discussing desimplifying our most popular branded STF to a 2-pill-a-day formulation. To avoid any real or perceived conflict of interest, we neither requested nor received extra funds either to the staff or the clinic, for moving forward with this initiative which was undertaken as part of routine care. The patients themselves did not receive any financial benefits from switching to less expensive regimens.

Our initial experiences on the practicalities of such a soft launch are important. We recognized that even a minor adjustment to the formulation of a patient's stable ART regimen for nonmedical reasons, such as cost savings, needs to be undertaken with caution and consensus. Discussion of desimplification requires extra pharmacy time and resources in terms of asking patients, explaining the concept, the transition of formulations (ie, take the STF one day and the 2 pills same time the next day) and dispensing/labeling/checking a greater amount of bottles. As such, we have only undertaken any discussions when adequate time is available. To date we recognize there may be a selection bias toward asking patients who are assumed to provide a definitive answer or, conversely, deferring asking patients that have communication barriers such as a language barrier.

All parties in the discussion and process (the patient, physician, patient, and pharmacist) due to different perspectives had to be in agreement for desimplification to be undertaken. All parties hold "veto power" in that if the pharmacist or physician or patient does not think desimplification would be a good idea, the patient would be encouraged to remain on their STF. Secondly, we found that having the physician open the discussion but, due to possible power imbalance, not be engaged further worked well followed by discussions facilitated with the pharmacy. Of note, many patients recalled the earlier survey and mentioned they thought about the issue and had come to a decision. A patient decision to remain on their STF was noted in their chart to avoid any subsequent discussion. Pharmacy had a prepared counseling sheet and tablets to be handled to facilitate discussion. The 3 potential decisions after discussion with pharmacy were noted: (1) to remain on the STF; (2) to desimplify; (3) to consider information provided for future discussion, all decisions need to be properly documented. This will allow knowledge of those still to be approached, those who agree to or decline desimplification, and those yet to make a final decision. Records of the numbers and reasons of those who subsequently change back to an STF or decide to switch to the 2-pill regimen also are required. Records will need to be adjusted to reflect not only whether an STF or desimplified version of the same regimen is being dispensed but also then be made available to the prescribing physician. Finally, regular quality assurance reviews need to be scheduled to ensure there is no increase risk in adverse events such as viral breakthrough (ie, >1500 copies/mL) or toxicity or resistance in those electing to desimplify ART for altruistic reasons.

Our early findings suggest a willingness in >55% of patients on Triumeq who were approached to desimplify to the less expensive 2-pill formulation of the same drugs without financial benefits to themselves. We have found no evidence in those volunteering to desimplifying therapy of an increased risk or viral breakthrough or resistance or displeasure with use of generic drugs themselves. A few patients have elected to return to their STF for convenience and some on the STF have elected to desimplify. Measured cost savings in the first year of the launch are >$1.1 million.

It should be noted that this study is from a Canadian perspective under universal health care within a single payer (ie, Alberta Health Services). Desimplification strategies may differ in other contexts and under different health-care systems. The ability to implement generic substitution strategies for costing saving may be limited by national or international agreements. There are instances where generic versions exist but are not available due to patent laws or insurance payer policies. Although important, discussions on the specific impact of national patent laws and on the regulations contained in multinational "trade agreements," which block or restrict generic use are beyond the scope of this commentary.

In summary, as the number of patients on lifelong ART in high-income increases, innovative measures to control costs while maintaining the quality of care need to be explored. We have found that a proactive approach using local input from both physicians and most importantly patients can provide one more option for controlling costs of HIV care without compromising quality. While our work comes from a single center *and desimplifying only one STF,* we highly recommend active discussion with all interested parties including patients, healthcare providers, drug manufacturers, and payers for optimizing care delivery within a sustainable budget *using desimplifying other STF formulations when generic components exist* until definitive curative therapy becomes available.

Authors' Note

Our study did not require an ethical board approval because it did not contain human or animal trials.

Declaration of Conflicting Interests

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