

STATUS OF DISINVESTMENT INITIATIVES IN LATIN AMERICA: RESULTS FROM A SYSTEMATIC LITERATURE REVIEW AND A QUESTIONNAIRE

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Objectives: Disinvestment of existing healthcare technologies that deliver low or no health benefit for their cost can be used as a tool to improve access to effective technologies, while ensuring the long-term sustainability of healthcare systems. The objective of this research was to identify disinvestment initiatives in Latin American countries (LAC).

Methods: First, a systematic literature review (SLR) was conducted. In February 2015, MEDLINE, MEDLINE In-Process, EMBASE, The Cochrane Library, and LILACS were searched for relevant journal articles, including terms related to “disinvestment,” “reallocation,” “obsolete technologies,” and “Latin America.” Additionally, a manual search of documents from Latin American health technology assessment agencies was performed. Second, an online questionnaire was sent to experts in LAC to assess whether unpublished real-life disinvestment initiatives exist. Questionnaire results were collected in September 2015.

Results: From the SLR, 350 records were selected for screening following de-duplication and eleven articles fulfilled inclusion criteria. Only two of these reported information on initiatives potentially identifiable as disinvestment-investment activities in Brazil and Peru. Nine respondents completed the questionnaire, and four reported that disinvestment initiatives had been conducted in their respective organizations in Argentina, Brazil, and Mexico. This lack of agreement between the SLR and the questionnaire responses shows that disinvestment initiatives are ongoing, despite being under reported.

Conclusions: Many challenges need to be overcome for a disinvestment initiative to be successful, and sharing particular experiences with the international community would increase the chances of positive outcomes. The present study highlights the need for publication of such experiences in LAC.

Keywords: Disinvestment, Health technology assessment, Reassessment, Review, Latin America

Disinvestment in healthcare refers to the process of withdrawing funds from health technologies that deliver low or no health benefit for their cost (i.e., low- or no-added value), with the aim of freeing these resources to allow reallocation to health technologies that better meet certain criteria (e.g., effectiveness, cost-effectiveness, or safety), or reinvesting in health technologies better adapted to the health system or context in which they are delivered (1–3).

Because appropriate resource allocation policies are essential in healthcare, disinvestment initiatives are important across the globe, but are particularly important in countries with rapidly changing healthcare needs. One of these key regions is Latin America, where demands on the healthcare system are swiftly changing from those related to acute, communicable diseases, to noncommunicable chronic diseases associated with significantly higher healthcare costs (4;5). Many healthcare experts are raising their voice to ask decision makers

to review and revise healthcare systems to implement policies that stress prevention (6;7). In this context, it is also particularly important that disinvestment of obsolete healthcare technologies is implemented to allow reinvestment of resources to combat the rising prevalence of chronic diseases.

Currently, there is a sparsity of published evidence regarding available mechanisms and their practical application, to support disinvestment programs, as well as examples of either successful or unsuccessful initiatives around the world from which healthcare managers can learn (8). Several frameworks have been proposed for the implementation of a disinvestment initiative, including health technology assessment (HTA), systematic literature reviews (SLRs), Programme Budgeting and Marginal Analysis (PBMA) or a guided process such as the Guideline for Not Funding Health Technologies (GuNFT) (3). Also, several instances are known where disinvestment initiatives have yielded fruitful results, such as the experience in British Columbia (Canada) where forty-four disinvestment initiatives were implemented; however, examples like this one are not abundant (9).

No SLRs investigating disinvestment experiences in Latin American countries (LAC) have been published to the authors’

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Table 1. Questions Included in the Online Questionnaire for Health Systems Experts in Latin America

- Q1. Have you ever heard of the term “obsolete health technologies”?
- Q2. Has your organisation ever conducted a health technology disinvestment project and, as a result, stopped financing a health technology? If yes, please give more information.
- Q3. Do you think more analyses should be conducted in order to understand whether the health technologies currently in use fulfil effectiveness, safety, or cost-effectiveness criteria?

knowledge. The objective of this research was to identify published and unpublished disinvestment practices, proposals, or frameworks in LAC to contribute to the understanding and the spread of such initiatives at the international level.

METHODS

First, an SLR was conducted, and the results from the SLR were later supplemented by an online questionnaire completed by experts in Latin American healthcare systems.

Search Strategy

On February 16, 2015, MEDLINE, MEDLINE In-Process, EMBASE, The Cochrane Library, and LILACS were searched for relevant journal articles. The search strategy included terms related to “decommissioning”; “delisting”; “disinvestment”; “redeployment”; “reallocation”; “obsolete, outdated, superseded, ineffective, or no longer effective technologies”; “program budgeting”; “multi-criteria decision making”; “accountability for reasonableness”; and “Latin America”, including each particular country (see Supplementary Table 1 for a complete list of search terms used in the Cochrane Library search). Search terms were translated to Spanish, and searches performed in both English and Spanish. No language or date limits were established. Additionally, a manual search of documents from Latin American HTA agencies (Instituto de Efectividad Clínica y Sanitaria [IECS] in Argentina, Instituto de Evaluación Tecnológica en Salud [IETS] in Colombia, and Centro Nacional de Excelencia Tecnológica en Salud [CENETEC] in Mexico) was performed using the keywords described above.

Review Methodology

The eligibility criteria for the SLR included: being published in English, Portuguese, or Spanish; reporting a comparison of the efficacy, effectiveness, cost-effectiveness, or safety of two or more health technologies; reporting a disinvestment-related activity in at least one LAC. Two independent reviewers evaluated the search results, and any disagreements were resolved through consensus or third-reviewer arbitration. The following information was extracted from the resulting documents: author and year, location (country, region, or similar), objective of the study, and the results and conclusions from the study.

Additionally, an assessment of how the studies relate to disinvestment initiatives was conducted.

Expert Questionnaire

A short questionnaire was prepared to supplement the results of the SLR by capturing the experiences and viewpoints of health-care experts in Latin America to understand whether the results from the SLR were representative of real-life practice in Latin America. The questionnaire was sent to the Health Technology Assessment Network of the Americas (REDE TSA) members through the secretariat of the network, which is included under Pan American Health Organization (PAHO) premises. Also, the secretariat and the Health Technology Assessment international (HTAi) Interest Group of Disinvestment provided names of Latin American researchers who demonstrated interests in the area of disinvestment or who had reported activities in previous REDE TSA or HTAi meetings. Apart from expert demographic data (i.e., position held, organization, and country of residence), the questionnaire comprised the questions shown in Table 1. The questionnaire was sent out in June 2015, and results were collected and analyzed in September 2015.

RESULTS

Systematic Literature Review

A total of 354 search results were identified, of which 350 abstracts and titles were selected for screening after deduplication. Following the initial screening of titles and abstracts, full texts of thirty-seven articles were assessed, and eleven articles fulfilled the inclusion criteria for analysis (Figure 1).

Included Articles

Of the eleven included articles, two reported incomplete information on two separate initiatives that could potentially be identified as disinvestment-investment activities in Peru and Brazil, but there was not sufficient information that would allow a definite classification of these articles as real-world examples of disinvestment initiatives (Table 2) (10;11). One of these articles reported the introduction of a personal digital assistant (PDA)-based system for laboratory data collection in 126 public health centers and laboratories in Peru, although it was not clear if the alternative, the paper-based system, was completely

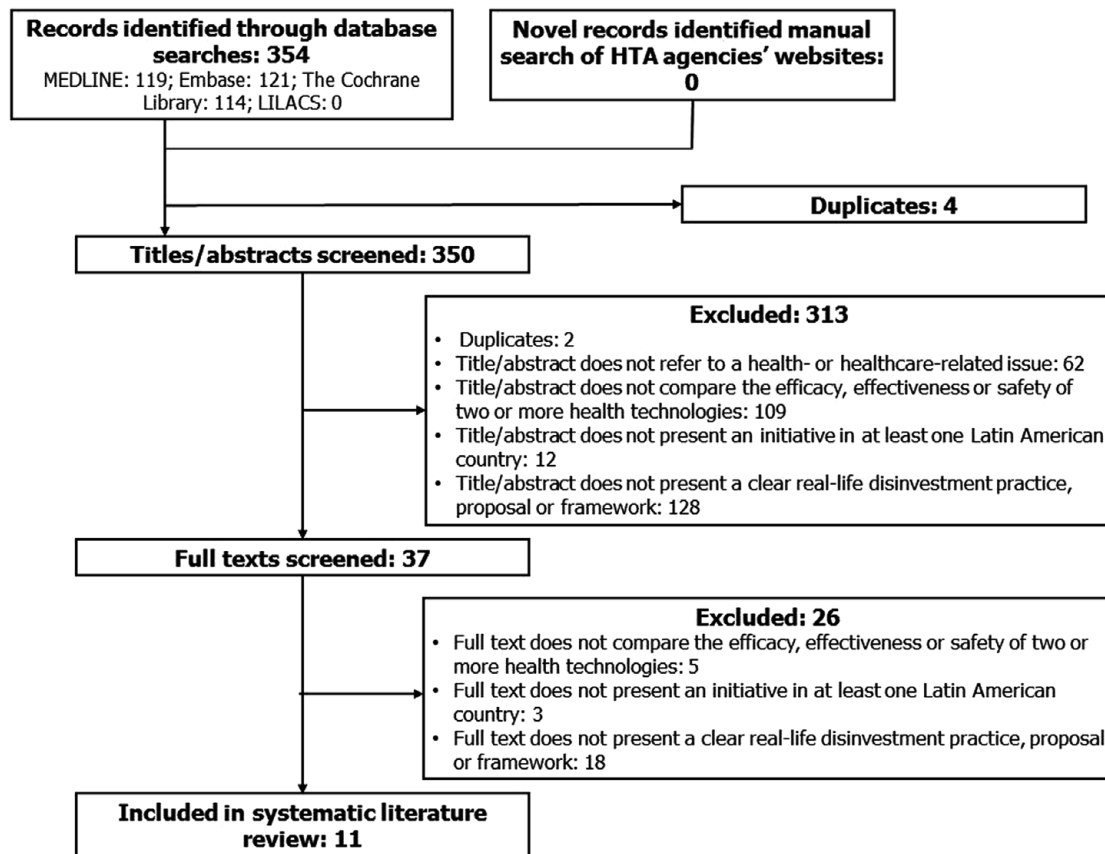


Figure 1. PRISMA flow diagram.

removed (10). The other article presented the Psychiatric Reform in Brazil and emphasized the need for “deactivation,” or removal, of 15,000 psychiatric hospital beds for mental health patients. The authors, however, explained that the uptake of the Psychiatric Reform had been slow, but did not provide details of how this process was executed or what the outcomes were (11).

Six articles reported four instances of non-evidence-based use of health technologies in Brazil, Colombia, and Uruguay, meaning that funding the health technologies under consideration might not represent the most appropriate allocation of resources in those particular settings (Table 2) (12–17). However, only in one of these programs, reported in three articles, was active disinvestment suggested (12;16;17). These three articles referred to an SLR conducted to assess the effectiveness of insulin glargine in patients with type 1 diabetes mellitus; the original study showed no added benefit for insulin glargine, and the authors explicitly recommended the State Government of Minas Gerais, Brazil, delisting of insulin glargine or negotiating a price reduction (12). The additional two articles were published commentaries on the original article (16;17). The other three cases identified reported the use of ineffective or harmful medicines and medical practices in Brazil, Uruguay, and Colombia (Table 2) (13–15). A further three identified articles presented theoretical work regarding resource reallocation and

evidence-based health management, but did not provide any practical examples of disinvestment in Latin America (Table 2) (18–20).

In summary, of the eleven articles identified, none provided a comprehensive description of a disinvestment initiative, such as explaining the approach taken for identification, evaluation, and prioritization, the actual challenges faced during its implementation, the results, and current situation.

Expert Questionnaire

Despite the lack of published evidence of disinvestment programs in Latin America, the questionnaire showed a very different picture. From the whole universe of HTA bodies and Ministries that received the questionnaire through PAHO and/or REDETSA (reader should bear in mind that fourteen LACs are members of REDETSA), nine experts from six LACs completed the questionnaire: one from Argentina (IECS), four from Brazil (two from the Ministry of Health, one from the National Institute of Cardiology and one did not specify), one from Colombia (IETS); one from Ecuador (Ministry of Public Health), one from Mexico (CENETEC), and one from Uruguay (Ministry of Public Health).

All nine respondents had previously come across the technical term “obsolete technology.” Four respondents from

Table 2. Details of the Eleven Articles Identified and Evaluated by the Systematic Literature Review

Author and year	Title	Location	Objective	Design	Results and conclusions	How it relates to disinvestment
Blaya et al., 2008 (10)	Cost and implementation analysis of a personal assistant system for laboratory data collection	Lima, Peru	To compare the data collection efficiency of the personal digital assistant (PDA) system with the paper system, as well as evaluating the resources needed to implement the PDA system in a resource-poor setting	A time-motion study was conducted, followed by a cost analysis	The PDA-based system reduced the amount of hours required to collect and process laboratory data by 60%, and the costs for its implementation were estimated	It is unclear whether the rollout of the PDA system would be linked to the removal of the paper-based system. If the latter were to be removed, this would be an example of an investment–disinvestment initiative
Kilsztajn et al., 2008 (11)	Hospital beds and mental health reform in Brazil	Brazil	To estimate the number of psychiatric beds occupied per State in Brazil and the amount paid by the Unified National Health System (SUS) for hospitalizations, professional services, tests and medicines in Brazil in 2004	Cost analysis	A total of 45,000 psychiatric beds were occupied by the SUS in 2004, which cost around 270 million United States dollars (USD). The Ministry of Health estimated that 15,000 psychiatric beds could be removed, and the deactivation of all these beds could generate up to 90 million USD	The authors suggest that funds generated from removing hospital beds could be reallocated to non-hospital psychiatric and social care services. However, the authors did not present any details regarding the situation in 2004
Caires de Souza et al., 2014 (12); Malerbi 2014 (17); de Souza et al., 2014 (16)	Insulin glargine in a Brazilian state: should the government disinvest? An assessment based on a systematic review	Minas Gerais, Brazil	Due to the growing costs of insulin glargine and the budget burden on the State Government of Minas Gerais, the authors undertook a systematic literature review (SLR) to assess the efficacy and safety of insulin glargine compared with other insulin formulations	SLR	The study showed no therapeutic benefit of insulin glargine over other insulin formulations, and therefore the authors recommended either delisting insulin glargine from the State formulary or renegotiating a price reduction with the manufacturer	Caires de Souza et al. suggested that the State Government of Minas Gerais should disinvest in insulin glargine or, at least, should renegotiate its price. Two additional articles were identified commenting on the original publication from Caires de Souza et al., 2014
Capucho et al., 2008 (13)	Pharmacovigilance in Brazil: the relationship between drug polymorphism and the effectiveness and safety of medicines	Brazil	To identify the medicines that have been notified on suspicion of therapeutic ineffectiveness, and to investigate whether any of these drugs had polymorphs	Retrospective study of adverse event notifications	Five of the drugs identified could contain polymorphs, although authors did not rule out the existence of polymorphs in other drugs. Regulations for identifying and monitoring of polymorphs were suggested	The authors stressed that ineffective treatments should not reach patients. Although the authors did not suggest disinvestment of any drugs, the proposed regulations could potentially bring about the removal of certain drugs

Table 2. Continued

Author and year	Title	Location	Objective	Design	Results and conclusions	How it relates to disinvestment
Colomar et al., 2004 (14)	Practices of maternal and perinatal care performed in public hospitals of Uruguay	Uruguay	To understand the use of maternal and perinatal care practices in Uruguay, and to gather the opinions of the users	Cross-sectional descriptive study	Some evidence-based beneficial practices are not implemented in public hospitals, and some ineffective or even harmful practices are still used	The authors suggest the implementation of programs to foster the use of evidence-based practices and clinical guidelines. This would therefore be an example of disinvestment following clinical guidelines
Conde-Agudelo et al., 2008 (15)	Evidence-based intrapartum care in Cali, Colombia: a quantitative and qualitative study	Cali, Colombia	To measure the use of selected intrapartum practices and to explore the factors associated with their use	Prospective quantitative analysis, followed by semi-structured interviews	Intrapartum care was not guided by best available evidence	The authors recommend the implementation of strategies to encourage the adoption of effective practices and discard ineffective practices. Participants suggested the use of clinical guidelines for that purpose
Calderon et al., 2005 (18)	Sustainable and tenable renal health model: a Latin American proposal of classification, programming, and evaluation	Latin American and Caribbean countries	To develop a sustainable renal health model establishing a guideline for the reallocation of financial resources to meet the needs of patients with end-stage renal disease	Development of a framework	The implementation of the renal health program would substantially improve renal health prevention and management, as a result of better distribution of financial and human resources	Calderon et al. assert that the implementation of this model would result in a reallocation of resources that are currently used for the treatment of comorbidities with kidney disease
Nobre et al., 1999 (19)	Multi-criteria decision making (MCDM), an approach to setting priorities in health care	Brazil	To develop a MCDM approach using fuzzy logic to support public health decision making, and to analyze its application in a hospital setting	Development of a framework	These models should be part of the set of tools used for public health decision making, particularly when there are conflicting opinions between different decision makers	The authors explain that the framework developed is a suitable method for selecting alternative actions; therefore, it could be used as a framework to assess and support disinvestment decisions
Vargas-Lagos et al., 1991 (20)	How should resources be reallocated between physicians and nurses in Africa and Latin America?	Latin America (and Africa)	To develop framework to evaluate the possibilities of reallocation of healthcare resources between physician, nurses, and other medical inputs, and to assess the possibilities of resource reallocation in low- and middle-income countries	Development of a framework and cost-effectiveness analysis	Different possibilities for resource reallocation between physicians and nurses exist, depending on the countries' characteristics and preferences	Vargas-Lagos et al. suggest that resource reallocation between nurses and physicians would improve health outcomes and increase the overall financial efficiency of some healthcare systems

Argentina, Brazil, and Mexico reported that disinvestment initiatives had been conducted within their organizations. The respondent from Argentina reported an initiative in which the Superintendence of Health Services of the Ministry of Health asked a group of HTA experts to perform an evaluation of 500 “controversial services” (21). The evaluation resulted in the exclusion of 10 percent of these technologies from the positive list, and access to two-thirds of technologies restricted to specific clinical conditions or patient subgroups (21).

The responses from the Brazilian experts were aligned and complementary, and reported several specific disinvestment initiatives that had been conducted by the Brazilian Ministry of Health, which include: boceprevir and telaprevir in genotype 1 hepatitis C; anti-tumor necrosis factor and interleukin-2 treatments in pulmonary rheumatoid disease and rheumatoid vasculitis; and mesalazine suppositories for Crohn’s disease, all associated with the high cost of these technologies in relation to their value. Finally, the respondent from Mexico mentioned that the General Health Committee had agreed eight instances of drug exclusions, but no further information was provided.

From the questionnaire and the contact with experts, we identified a methodological guideline from the Collaborating Centre of SUS (Unified Health System) for Technology Assessment in Health and Excellence (CCATES) in development and under public consultation in 2015 and presented by Brazilian National Committee for Technology Incorporation (CONITEC). This guideline frames the methodological basis for establishing disinvestment initiatives in Brazil. However, no experiences have been reported by using this framework (22).

Finally, all nine experts supported an increased effort for evaluating the disinvestment potential of health technologies that are currently being used and have never been assessed.

DISCUSSION

Our aim when conducting this study was to analyze the degree of development of “disinvestment” initiatives in LACs. The type of methodology used, “systematic review” and its complementation with hand searching on well-known Latin American HTA institutions, seemed to be a robust methodological way to address the problem. Nevertheless, it must be highlighted that the degree of development of HTA initiatives in Latin America is scattered all over the continent, and local initiatives are surviving and coexisting with country-based HTA agencies. This was the reason why REDETSA and the PAHO were contacted to complement our search in search for input from key opinion leaders in the field. This aspect, and the fact that most of the delisting initiatives show a lack of methodologies that could categorize them as disinvestment according to its definition (1), reinforces the idea that the results of this study are accurate and reflect the plethora of activities developed around disinvestment and “obsolete health technologies.”

The present study demonstrates the lack of published records of disinvestment initiatives in Latin America, although it also reveals that many have already been conducted. The SLR only identified two potential disinvestment–investment projects in Peru and Brazil (10;11). However, the results from the questionnaire completed by health system experts show that several initiatives in Argentina, Brazil, and Mexico have been performed. Apart from database searches, the SLR included a hand search of disinvestment initiatives on Latin American HTA agencies’ Web sites, but no results were obtained. A potential reason for this is that HTA agencies may release publications of activities of interest without referring to them by terms such as “disinvestment” or “obsolete technologies”; therefore, making these reports difficult to identify using an SLR.

Regarding the questionnaire, responses were received from stakeholders in Argentina, Brazil, Colombia, Ecuador, Mexico, and Uruguay. However, this leaves a gap in the available knowledge from other Latin American and Caribbean countries, such as Chile, Cuba, and Venezuela, meaning that disinvestment projects from these countries may have been missed. In addition, only one response was received for each of the countries represented in our sample, except for Brazil, where four experts participated. However, the objective of the questionnaire was not to provide a full and detailed picture of disinvestment initiatives in Latin America, but to demonstrate that these are being conducted despite the absence of publications.

Studies have estimated that 30–40 percent of patients worldwide do not receive treatments of proven effectiveness, and that 20–25 percent receive unnecessary or even harmful treatments (23). The potential for efficiency gains and provision of higher value to patients from well-designed resource reallocation activities is, therefore, ample (2). LACs are by no means an exception for the requirement of efficient resource allocation, especially considering the significant economic slowdown in LACs over the past few years and the future projections of economic growth in LAC (24).

The World Bank explains that refocusing public spending will be one of the region’s options to deal with the growth decline in the years to come (25). Intelligent disinvestment is indeed an appropriate approach to tackle these health system inefficiencies, and should be considered by health system experts as a way to make informed decisions regarding which health technologies/services do not add value, and where these resources could be better used. Nevertheless, many challenges must be overcome for a disinvestment initiative to be successful, such as moving away from the public’s understanding of “across the board cuts,” for which public—and patient—engagement is absolutely necessary.

This research has identified methodological initiatives to structure the process of disinvestment in LACs, and it is, therefore, considered that a boost in the implementation of existing local frameworks may be the key to unlock the potential of disinvestment in LACs (22). For this reason, sharing

particular experiences with the international community, no matter if the final result was positive or negative, would facilitate the adoption of good practices and avoid duplication, therefore, increasing the chances of positive outcomes. The results from this study point out to the need for publication of such experiences in Latin America as a way of knowledge sharing and collaborative improvement.

SUPPLEMENTARY MATERIAL

Supplementary Table 1: <https://doi.org/10.1017/S0266462317000812>

CONFLICTS OF INTEREST

The authors have nothing to disclose.

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