

Pharmaceutical services in Rio de Janeiro Municipality, Brazil: development regarding selected aspects from 2008 to 2014

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Abstract *This article aims to analyze the development of pharmaceutical services in the context of the primary health care (PHC) in the period 2008- 2014, focusing on selection, procurement and financing of medicines. A retrospective study was undertaken, using as data sources administrative documents of Rio de Janeiro Municipality Health Secretariat (SMS-RJ) as well as secondary database. We found a growth of numbers medicines offered for PHC of 57 items in 2008 to 222 in 2014. Actual spending on drugs paid by the city has grown 38% in the period, with a reversal from 2010, of the proportion of PHC related to tertiary care drugs, reaching 2.4 times in 2014, the year that public spending on medicines per capita of PHC was 9% greater than the value agreed between the three federal levels. It can be concluded that there have been important changes in pharmaceutical services in Rio de Janeiro Municipality in the period following the reform of PHC held in this territory, with increasing the conditions for therapeutic coverage and increased drug funding. The growth of per capita public spending on medicines above the agreed value raises the need to strengthen the rationalization of management measures.*

Keywords *Pharmaceutical services, Drugs, Health expenditures, Healthcare financing, Primary Health Care*

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Introduction

The political and administrative decentralization of the SUS (Single Health System), involving individual management at each area of government, was planned in Brazil, with specific emphasis at municipal level. This was because it became essential to expand municipal management liability and capacity¹. The aim was that this policy, with its newly acquired universality, would increase the access of the population to therapeutic aid, including pharmaceutical aid²⁻⁵.

Brazil's *Política Nacional de Medicamentos* (National Medications Policy, hereinafter referred to as PNM) was enacted in 1998. Its aim was to ensure the safety, effectiveness, and quality of medications, to promote their rational use, and assure the population of access to essential medications⁶.

Among the new PNM guidelines, we highlight, as being of particular interest to this article, the “*reorientation of pharmaceutical aid*”. This is based on delegating management to the municipalities by improving and upgrading the distribution system in the public sector and to develop systems for reducing product prices⁷. The objective here is to provide primary aid agenda guidance to, and exact the responsibility of, local management authorities.

Although the enactment of the PNM was a national primary aid achievement, there remained a significant imbalance in the actual municipal level implementation of this and other healthcare policies. Subsequent regulatory attempts sought to fill this gap by stressing the importance of primary aid in resolving healthcare actions, access to medications as a right under the National Healthcare Policy⁸, balancing primary aid financing via the SUS¹, explaining the mechanisms of integral pharmaceutical aid, and the role of essential medications^{4,5}.

Primary aid has introduced an interconnected and interdependent activity package^{7,8}, where the selection, programming, storage, distribution, expiration, dispensing, and use of medications occurs under the auspices of the healthcare system⁹.

The SUS financing mechanisms, a crucial aspect for enabling action have gradually been improved and have directly impacted primary aid activities and management. Furthermore, as a result of the Federal Government's proposed investment in primary healthcare services as a key service network, the level of importance of *assistência farmacêutica básica* (basic pharmaceutical

aid, hereinafter referred to as AFAB) was significantly raised in management's agenda.

Since 1999, when AFAB commenced, resources rose by 391% — from R\$2,00 to the current R\$9,82 per person *per annum*¹⁰. The *Ministério de Saúde* (Ministry of Health, hereinafter referred to as MS) has created a number of support aids focusing on medication planning, selecting, and purchasing actions, to upgrade technical quality, be this in a management or aid context¹¹.

The aim of medication selection is to define, based on scientific evidence, the range of medications to which the Government can commit and on which it should offer guidance from production planning through to assuring the availability of the respective products. This is an integral part of technical and aid actions, since it is the basis for classifying the correct use of such medications.¹²

These technical and aid actions involve the creation of logistical and administrative management stages¹².

Purchasing includes procedures whereby the acquisition process of the medications, duly defined during the selection stage, occurs in the volumes and within the deadlines established by the program. This also covers quality and a regular supply system. In public administration, purchasing is also subject to specific criteria defined by the law, aimed at ensuring financial justification; fair competition for suppliers, and procedural integrity and transparency¹³.

There are still a number of challenges to be met before the AFAB is implemented at local level¹⁴⁻¹⁶. These relate to the various policies in place and also to the considerable progress made by Brazilian municipalities in providing access to medication¹⁴. Also, primary aid related management actions have caused considerable concern for the administrators, managers, and professionals in this area due, not only to the total financial resources involved, but also to the scope of the actions and services required. The implementation of a number of measures has not always led to successful results due to the possible flaws in the methods and tools, administrative and financial problems, and limited management and operating capacity^{9,15}.

In 2009, the SMS-RJ began a technical and management primary health care reform. An example of this new policy is the expanded coverage offered by the *Estratégia de Saúde da Família* (Family Health Strategy, hereinafter referred to as ESF) at 3.5% in 2008, the lowest rate among Brazilian capital cities which had increased to close

to 40% by 2013¹⁷. The proposed model is based on a multi-professional team, where healthcare is viewed in its widest context. Pharmaceutical services play a vital role in healthcare service results, since the guarantee access to, and appropriate use of, quality medicine as in the case of management sustainability, thanks to its potential for contributing to cost rationalization.

The aim of this article is to analyze how pharmaceutical aid has developed in the Rio de Janeiro municipality's healthcare performance, from 2008 through 2014, with particular attention to the financing, selection, and purchase of medications.

Method

This is a longitudinal and retrospective study, based on secondary data, sourced via both free and internal access to the Rio de Janeiro municipal administration authorities. It seeks to define the technical and administrative organization of local pharmaceutical aid, from 2008 through 2014. In other words, we included the year prior to the municipal primary aid reform. Besides being based on access availability and feasibility, the choice of aspects and data analyzed was also guided by sensitivity, within the scope of the AFAB, to the changes that occurred during this research period.

The SMS-RJ is responsible for formulating and carrying out municipal healthcare policies. It is composed of five sub-secretariats, two of which specifically involved with the aid network. Among other duties, the *Subsecretaria de Atenção Hospitalar, Urgência e Emergência* (Hospital, Urgencies, and Emergencies Sub-Secretariat, hereinafter referred to as SUBHUE) is responsible for a wide range of own hospitals of varying levels of treatment complexities. The *Subsecretaria de Atenção Primária, Vigilância e Promoção de Saúde* (Primary Aid, Vigilance, and Healthcare Promotion Sub-Secretariat, hereinafter referred to as SUBPAV) organizes the primary aid, with its basic healthcare units (family clinics, polyclinics, healthcare centers). It is currently undergoing a major expansion process aimed at increasing ESF-coverage, via contracting the *Organizações Sociais* (Social Organizations, hereinafter referred to as OS). Healthcare organization is decentralized and distributed over ten health districts known as Planning Areas. These areas have an organizational structure known as *Coordenação de Áreas de Planejamento* (Coordination of Planning Areas,

hereinafter referred to as CAP), which manages promotion and healthcare aid actions at primary aid level, in areas of coverage formed into groupings of zones, created on a territorial basis¹⁸.

Despite not yet being formally listed in the municipal organization chart, SMS-RJ has a technical advisory area which provides *assessoria no nível central* (central level advisory services, hereinafter referred to as NAF-RJ), responsible for pharmaceutical aid policy, organization, and distribution of actions at the various healthcare attention levels. Primary aid management for the Municipality of Rio de Janeiro is hierarchical and decentralized within the CAP, which has regional units dedicated to Pharmaceutical Aid (NAF-regional) activities, and share specific central and local management responsibilities¹⁹.

Medication selection data was obtained via the versions of the Rio de Janeiro *Relação Municipal de Medicamentos* (Municipal Medications List, hereinafter referred to as REMUME_RIO) freely available in copies of the *Diário Oficial do Município* (Official Municipal Daily Paper), available in the SUBPAV website²⁰.

The range of medications specifically available for SMS-RJ primary aid from 2008 through 2014 was based on electronic spreadsheet medication requests. These were used as a parameter for supplying the basic units, with January as the reference month, and involve the possibility of inclusion or exclusion of given items throughout each year. The medications were classified under pharmacological groups, as per the anatomical therapeutic chemical (ATC) system, according to the most recent issue of REMUME_RIO, in 2013²⁰.

Pharmaceutical aid financing data on medication purchase expenses were obtained from the *Sistema de Informação sobre Orçamentos Públicos em Saúde* (Public Healthcare Budget Information System, hereinafter referred to as SIOPS), using the methodology applied by Vieira & Zucchi²¹.

The method applied for searching in SIOPS²² was as follows: Data advised >Municipalities>- Consultation of one or more accounting codes, by economic classification, for a municipality, per year or by historic series. The parameters applied to obtain the data for all the years assessed were: "Municipality: Rio de Janeiro"; "Type: Expense"; "File: Direct administrative expense - Healthcare"; "Stage: Concluded"; "Stage: Ongoing"; "Classification: all codes whose title included the phrase "os códigos cujo título continha a palavra medicamentos" ("all codes whose title included the word 'medications'"). In this last case, it should be noted that the decision was taken to only uti-

lize code “3.3.3.90.30.09.00 - medications” since this covered the expenses incurred in all the years examined. The rare exceptions where expenses in more than one code for the same year were identified, the amounts had been duplicated.

Not only does the public sector purchase cycle involve a bid procedure, but so also do other stages of these expenses; these are the budgeting, settlement, and payment stages²³. The first of these requires a prior budget to be drawn up to settle the undertaking, which is processed when management receives the object of the budget, followed by the issue of the formal instruction for payment of the materials supplied²⁴.

Different strategies were required to estimate the amounts involved in the purchases of medication for primary aid use, since the *SIOPS* reports do not specify the location where the medications expenditures occurred (whether this relates to a basic network or a hospital). Incoming medications expenditures purchased by the SMS-RJ hospital network were analyzed, using the *Sistema de Gestão de Materiais* (Materials Management System, hereinafter referred to as SIGMA), which controls all goods purchased and stored in the Rio de Janeiro municipal units²⁵. Subsequently, the settled amounts from *SIOPS* were deducted from hospital purchase expenses, thereby enabling a proxy primary aid medication expense account.

These two medication purchase expense components were fed into an Excel© software database, which is also utilized for analysis purposes, involving the calculation of simple, median, and percentage distribution frequencies.

Average municipal expense estimates per inhabitant and per primary aid visits were calculated. The per capita expense calculations were based on the division of SMS-RJ expenses by the primary aid purchases of the inhabitants estimated by the Instituto Brasileiro de Geografia e Estatística (Brazilian Institute of Geography and Statistics, hereinafter referred to as the IBGE). The average expense per visit was also calculated based on the ratio between the expenses incurred on medication purchases at the primary aid to the group of medication visits recorded by the municipal *Sistema de Informação Ambulatorial* (Outpatient Attendance Information System, hereinafter referred to as *SIASUS*) which has the potential for generating medication expiration dates.

The scope of the period assessed required price level restatements of the respective amounts via the *Índice de Preços ao Consumidor Amplo* (Consumer Price Index – Amplified, hereinafter

referred to as IPCA), obtained directly from the Instituto de Pesquisa Econômica Aplicada (Institute of Applied Economic Research, hereinafter referred to as *IPEA*)²⁶ thereby enabling their comparison with December 2014.

The study complied with the requirements of CNS (National Health Council) Resolution No. 466/2012, from which it obtained authorization to access administrative data not available in free access databases.

Results

The third edition of the REMUME-Rio listing, preceded by the 2004 and 2008 versions²⁰ has been issued and, as in the case of the previous versions, was formalized by an SMS-RJ Resolution. It contains 386 active principles (except for medical, immunobiological, and sanitation products), totaling 676 specialized pharmaceutical items, distributed over 14 anatomical groups (Anatomical Therapeutic Chemical Code, hereinafter referred to as ATC). The covering document does not specify the formal multidisciplinary commission responsible for defining the range, but was the result of the work of NAF-RJ performed jointly with the managements of care lines of the *Superintendência da Atenção Primária à Saúde* (Primary Healthcare Superintendency) which is part of SUBPAV, and by an analysis of SUBHUE technical assessments. It explains the joint work with *Relação Nacional de Medicamentos Essenciais* (National Listing of Essential Medicines, hereinafter referred to as *RENAME*) achieved for 90% of the items²⁰.

The updated version of the REMUME-Rio 2013 is not accessible on the SMS-RJ website²⁷ (searches attempted on a number of different occasions in August 2015), for municipal access, although it is available on the SUBPAV website, although proof of registration is required, which complicates general user access. This website includes a form to be filled out for professionals to request REMUME updates. An electronic mechanism was also introduced, via the web, for consulting REMUME_RIO medication monographs that coincide with the 2010 National Therapeutic Form²⁸.

Based on the REMUME and, in accordance with current ministerial Basic Pharmaceutical Aid Component²⁹ financing regulations, the lists available for the various levels of aid, are coordinated by NAF-RJ jointly with the management departments of the healthcare lines.

The range of specialized pharmaceutical items available for primary aid purposes increased from 57 in 2008 to 222 in 2014. The greatest increments occurred in 2011, 2012, and 2009, when 75, 46, and 45 specialized pharmaceutical items, respectively, were added. 2011 saw a major review in the range of mental health medications and antibiotics available to the primary aid sector. In 2012, among a number of other medications (Chart 1), the range of *phytotherapies* and of anti-Parkinson's medications available was increased. 2009 was a reorganization year for municipal primary aid in the municipality, which explains the first major increase in medication availability.

This venture included the decision to fill the pharmaceutical requirements of all primary aid branches. Based on the decision to decentralize the treatments of certain treatable diseases with Strategic Primary Aid Component Medications (tuberculosis and Hansen's disease) for the entire primary aid network, as in the case of non-contagious diseases, such as asthma, these medications also became available at all branches. This range includes products that, as in the case of mental health treatment medication, that, under federal law, require special controls³⁰. This process is likely to lead to conflict, since, frequently, pharmacists decline to accept technical liability before the Regional Pharmaceutical Council, an essential prerequisite for storing and selling prescription-only medications.

The products list is sent to the pharmacists responsible for primary aid who handle different aid points as structured in the electronic medications order spreadsheet, made available via the Regional CAP Pharmaceutical Aid Nucleus (NAF-regional), which regularly communicates any update to the range where upon a new spreadsheet becomes available. This spreadsheet contains only the medications purchased by the SMS-RJ, whereas, the Strategic Primary Aid Component Medications are requested in controlled forms required by the MS, in compliance with the specific requirements of each program.

Throughout the entire assessment period, all programming responsibilities were in the hands of NAF-RJ and were issued annually, based on the budget for the subsequent year. Whenever a new item is added, the corresponding programming process is carried out by NAF jointly with epidemiological healthcare professionals, based on the total estimated cases to be treated over a given period of time, in accordance with standard dosage of the most commonly used dosage in line with technical references.

Financial resources are covered by the amount agreed within the Basic Primary Aid Component, which can increase via municipal treasury coverage to more than the minimal installment established in ministry-issued regulations.

After this programming has received SUBPAV approval, the purchasing by price registration, operated on an electronic bidding process, is ordered. The specifications are pre-established in the Municipal Administration Secretariat products catalogue, the medications group where of is coordinated by NAF-RJ. The latter is also responsible for issuing the technical appraisal, with due regard for compliance with specifications, the validity of the respective medication registration, and certification of good manufacturing practices by production line of the *Agência Nacional de Vigilância Sanitária* (National Sanitation Authorities).

A real increase in financing was noted in the amounts allocated to municipal medication purchases. This applied to both the amount budgeted (24%) and the amount spent (38%) from 2008 through 2014 (Graphic 1), where the greatest increase, of 37% was recorded for 2011 against 2010. Average settlement of the amounts budgeted within the same year was 82% (SV = 5%) with no clear trend over the years.

Primary aid medication expenses increased by 128% over the period under assessment, against a 29% reduction in hospital medication expenses. This represented 76% in relation to expenses incurred on pharmaceutical products used in hospitals in 2008, and increased to 244% in 2014 (Table 1).

Medication purchases are carried out by Direct SMS-RJ Administration under a price registration system that dating back to the nineteen-nineties. In 2007, face bidding on the price registration system began. In 2010, this was replaced by an electronic bidding system. For nearly ten years, different purchasing systems have been in place; one for stocking basic units and another for the hospital network. The first, operated and centralized in the SMS-RJ, handles deliveries to the central inventories warehouse to simplify controls and the investment of funds at the AFAB, and has a specific budget title (Work Program). The other system also operates under the auspices of the central SMS-RJ, and controls decentralized deliveries by outsourced suppliers to hospitals that manage and calculate their own budgets³¹.

A check of the increase in per capita medication costs, both of total medical visits and in res-

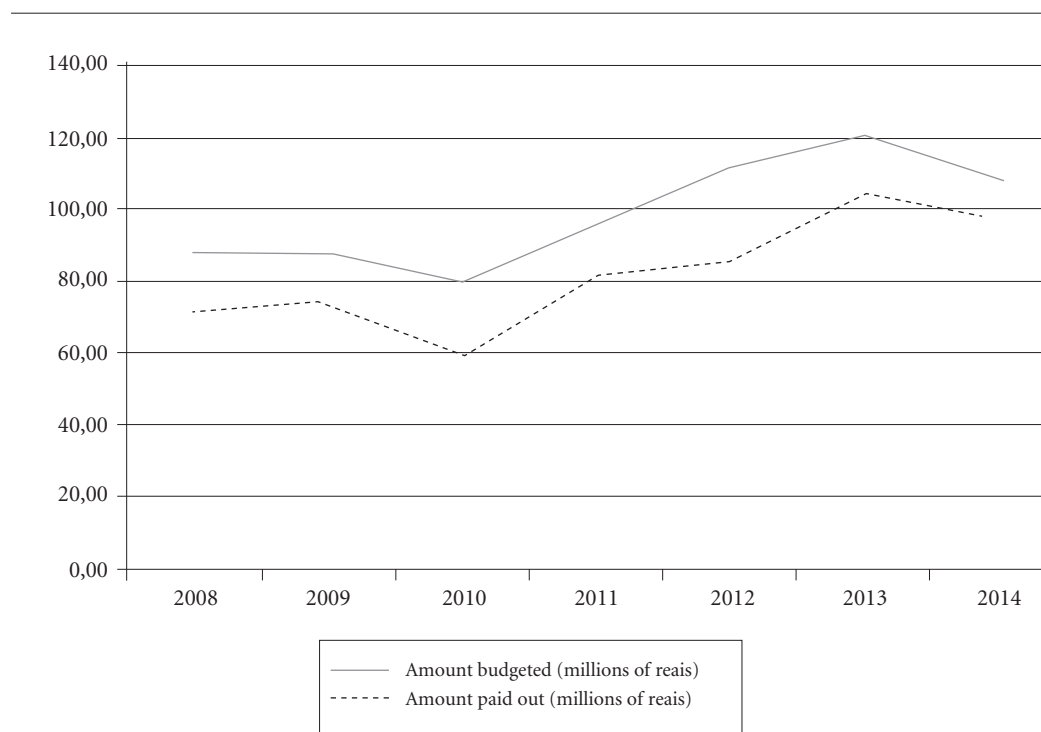
Chart 1. Improvements in the volumes of medications available to the primary aid department of the Rio de Janeiro Municipal Health Secretariat, Brazil, from 2008 through 2014.

Year	Specialized pharmaceutical items supplied to primary aid	Member pharmaceutical groups (numbers of items)*
2008	57	-
2009	102	anti-acids, peptic ulcer and flatulence treatment preparations, agents to treat functional gastrointestinal and anti-diarrhea disorders, pharmaceutical products used to treat diabetes (3), anti-anemic preparations (4), calcium channel blockers, sexual hormones, and genital system modulators(4), thyroid therapy (3), systemic use antibacterial treatment(4), systemic use antimycotics. anti-gout preparations, nervous system, pain-relief, anti-epilepsy preparations (4), anti-Parkinson's, psycholeptic drugs (4), psychoanalitics (3), anti-parasites, anthelmintics, ectoparasiticides, systemic use anti-histamines (2), ophthalmological and other therapeutic products
2010	116	agents for treatment of functional gastrointestinal disorders, serum lipid reducing agents (lipid lowering), antiseptics and disinfectants, gynecological anti-infection products, sex hormones, and genital system modulators, systemic use antibacterial treatment(2),systemic use antiviral treatment, anti-inflammatory products, analgesics, anti-epilepsy preparations (6), psycholeptic drugs , psychoanalitics, anti-asthmatics, systemic use anti-histamines, phytotherapy preparations (2)
2011	183	agents for treatment of functional gastrointestinal disorders (3), antiseptics and disinfectants, sex hormones e genital system modulators (2), systemic use antibacterial treatment(9),systemic use antiviral treatment, anti-inflammatory products,analgesics, anti-epilepsy products (4), psycholeptic drugs (13), psychoanalitics (3), anti-asthma preparations(4), systemic use anti-histamines (2)
2012	213	anti-acids, peptic ulcer and flatulence treatment preparations, anti-diarrhea, anti-inflammatory & anti gastrointestinal infection preparations, pharmaceutical products used for diabetes, vitamins, anti-thrombosis preparations, cardiac therapy, diuretics, peripheral vasodilators, preparations treating the kidney-angiotensin disorders, dermatological anti-fungus treatment (3), emollients and protection creams, anti-acne preparations for topical use, systemic use corticoids, systemic use antibacterial treatment(2),systemic use antiviral treatment, anti-epilepsy products, anti-Parkinson's drugs (4), psycholeptic drugs (4), otherpharmaceutical nervous system products,anthelmintics (2), ectoparasiticides, nasal preparation, anti-asthma preparations(2), systemic use anti-histamines (3), ophthalmological medications (4), phytotherapy preparations (5)
2013	222	Beta-blocker agents, systemic use anti-bacteria agents, anti-viral treatment (3), immunosuppressive agents, nervous system (2), anti-asthma preparations
2014	222	No inclusions

* When no number is indicated, this means that only one item was included under the therapeutic classification.

pect of the total population, shows a significant increase in the latter and a slightly lower increase in the former. This suggests that the effort to increase the financing of medications was propor-

tional to the extended cover of primary aid. This becomes even more marked when we consider the amount agreed for primary aid medications. Up until 2012, municipal medications expenses



Graphic 1. Performance of the amounts budgeted and paid out for medication purchases by the Rio de Janeiro Municipal Health Secretariat, 2008 through 2014.

NB: Amounts restated based on the IPCA (Consumer Price Index) as at December 31, 2014.

Source: Prepared by the authors based on *Sistema de Informação sobre Orçamentos Públicos em Saúde (SIOPS)*. (Public Healthcare Budget Information System)

per doctor's visit exceeded the agreed amount and the per capita expense was lower. Since then, with the increase in doctors' visits, both categories of expenses exceed the agreed amount (Graphic 2).

Discussion

This article examined certain technical and administrative aspects of pharmaceutical aid in primary aid in Rio de Janeiro. It must be re-emphasized that this was a cross-sectional option utilized for the purposes of this study. In no way does it diminish recognition of the technical and clinical importance of the technical and clinical aspects of primary aid, nor that may these have failed to receive important assistance or to show advances in the municipality.

After an analysis of the selection of medication, financing, and storage of such medications in a time-bound cross-section that covered the year before the primary aid reform through to

2014, some major changes occurred. Despite the fact that this analysis did not allow for causality, and even less for directionsism, it was clearly evident that observable alterations in the aspects of analysis of primary aid appear to have accompanied the changes in overall primary aid organization.

As recommended on a national level⁴, REMUME_RIO has considered medications for all levels of care since its earliest days. Similarly, it has sought to clearly define each level for which the respective medication is available.

A positive factor is the municipality's effort to formulate its range of essential medications, particularly, its commitment to supply each item under the auspices of SUS. A nation-wide representativity study showed that few Brazilian municipalities prepare their essential medication listings and few managers clearly comprehend their usefulness³².

The REMUME in force at the time this article was submitted did not include a multidisciplinary committee for its preparation. However, it

Table 1. Expenses incurred on medications purchased by the *Secretaria Municipal de Saúde* (Municipal Healthcare Secretariat). Rio de Janeiro 2008 through 2014.

Year	Budgeted (millions of reais)	Percentage of amount budgeted from year to year	Amount paid out (millions of reais)	Percentage of amount paid out from year to year	Paid/budgeted
2008	86,76	-	70,33	-	81%
2009	86,97	0%	73,33	4%	84%
2010	78,58	-10%	58,09	-21%	74%
2011	94,70	21%	79,76	37%	84%
2012	111,00	17%	84,47	6%	76%
2013	119,46	8%	103,17	22%	86%
2014	107,55	-10%	97,41	-6%	91%
Average (SV)	97,56 (13,92)	4,00% (12,00%)	80,94 (14,50)	7,00% (19%)	82,00% (5%)

Year	Expenses incurred on hospital use medications (millions of reais)	Primary aid expenses (millions of reais)	Primary aid/Hospital medications
2008	40,06	30,27	0,8
2009	36,36	36,96	1,0
2010	27,71	30,38	1,1
2011	27,18	52,58	1,9
2012	25,45	59,02	2,3
2013	27,34	75,82	2,8
2014	28,32	69,08	2,4
Average (SV)	30,35 (5,14)	50,59 (17,16)	1,8 (0,74)

NB.: Monetary amounts restated to December 2014 based on the IPCA
 Subtitles: SV = standard variation; IPCA = Consumer Price Index.

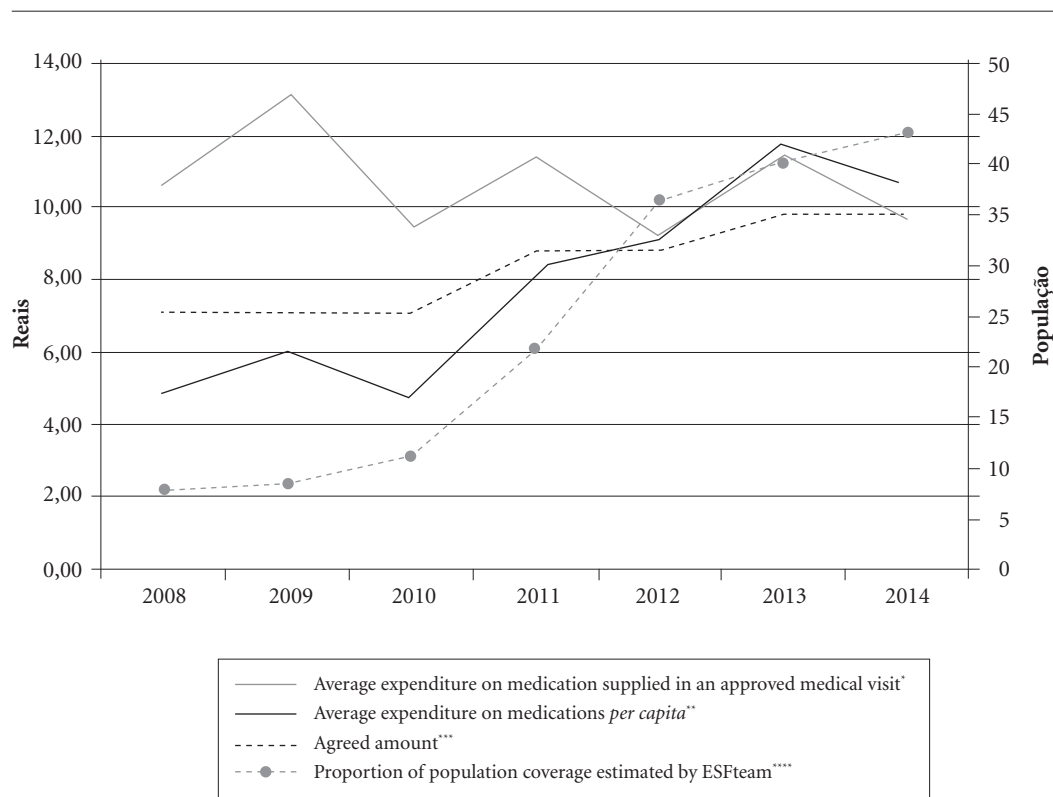
describes primary aid team discussions with the professionals responsible for care giving management. Despite the fact that this process suggests the involvement of multi-professional knowledge mobilization to define the range, the absence of any explanation from the group of individuals involved in the process erodes its commitment and transparency, given the potential risk of a conflict of interests.

A study of the perception of Brazilian state and municipal leaders shows that, of the minority who define and formalize their essential medications listing, very few clearly disclose their essential medications listings in their websites³³. In Brazil, if on the one hand, the process is being continuously structured at national level, as a rule, this does not occur at other levels^{34,35}. States and municipalities do not, necessarily, need to establish their local lists and can simply use the national list for their guidance. However, given Brazil's wide diversity, it seems reasonable that this be done, particularly, in the country's larger municipalities, which harbor a huge diversity of problems, ranging from the services available to

the structuring of a healthcare network. On deciding to draw up their own listings, they should strive to ensure the quality and transparency of their methodologies. The success of listing lies in the shared nature of the selection process, a multi-professional team, and representatives with various degrees of familiarity with fields such as clinical pharmacology, pharmacokinetics, and epidemiology. Its success is closely linked to its legitimacy with healthcare professionals, particularly those who can write out prescriptions, and intergroup disclosure³⁴.

Here, in no way, do we dismiss attempts to disclose this listing to primary aid professionals nor the facilitated possibility of electronic consultation of the therapeutic form. But, the more systematic disclosure of the REMUME_RIO, including access by the community, as well as by non-primary aid professionals would seem to represent improvement opportunities that should be introduced.

The increase in quality availability of primary aid items, with the inclusion, not only of new presentations of existing medications, but also



Graphic 2. Average expenditure per approved medical visit and *per capita* involving medications acquired by the *Secretaria Municipal de Saúde* (Municipal Healthcare Secretariat) in amounts restated through December 2014 based on the IPCA, Municipality of Rio de Janeiro, 2008 through 2014.

Source: * Considering the medical visits approved at Rio de Janeiro municipal level, where the following classifications are computed: Procedure: 0301010013 (visit of cured tuberculosis patient (supervised treatment)), 0301010021 (medical visit w/ identification of new tuberculosis cases), 0301010030 (medical visit with high level professionals at basic aid level (except for the doctor)), 0301010056 (worker healthcare medical visit), 0301010064 (medical visit at basic aid level), 0301010080 (medical visit to monitor growth and development (pediatric)), 0301010099 (medical visit for clinical assessment of a smoker), 0301010110 (pre-natal medical visit), 0301010129 (puerperal medical visit), 0301010137 (medical visit/house call), 0301010145 (newborn's first pediatric visit); ** IBGE population estimate for the *Tribunal de Contas da União* (Federal Accounts Court) obtained from SIOPS; *** minimum financing amounts as per Ordinances GM/MS 176/99, 2.084/05, 3.237/07, 4.217/10, and 1.555/13; **** amounts obtained from the Basic Aid Department of MS obtained from the *Departamento de Atenção Básica* do MS portal³⁷.

coverage of new setbacks has converged with the decision to expand the services portfolio³⁵ and the primary aid assumption of care previously in the hands of reference units or, even, at secondary aid level attention. It also introduced the need to increase the inclusion of pharmaceutical professionals in these units' teams, thereby enabling the services offered by such professionals. This is an important change, given the evidence that efficient technical management of medication logistics procedures, allied to the involvement of these healthcare professionals, contributes to promoting the appropriate utilization of medications thereby assuring improvements in primary aid services³⁶.

The SMS-RJ has a successful purchasing record; so much so that its experience was related in 1999, in the final report issued by the Parliamentary Medication Enquiry Commission, highlighting its success in obtaining substantial price discounts by applying its purchasing power³⁷. A more recent comparative study of purchasing expenses, from 2000 through 2012, involving thirteen medications for treating hypertension, diabetes, asthma, and rhinitis, showed that SMS-RJ tem has obtained lower prices than the Rio de Janeiro State Secretariat and, in a number of cases, similar or lower prices than those researched in the *Banco de Preços em Saúde* (Healthcare Price Bank)³⁸.

Among other reasons, the problems encountered by the public sector in settling supply expenses, among other reasons, are usually linked to deliveries by suppliers close to the end of the financial year, or to circumstances where deliveries are not fully performed in accordance with contractually agreed specifications and agreements. This occasionally results in delivery failures within that financial year³⁹.

Specialized literature describes an expansion of medications financing throughout Brazilian national territory. Vieira and Zucchi²¹ reported a 314% increase in federal transfers to municipalities for medication purchases from 2005 through 2009, at an average of 53% *per annum*. Using as their source, registered transfers of funds from the MS to the Fundo Nacional de Saúde (National Healthcare Fund), Silva and Caetano⁴⁰ noted an increase of only 27% from 2008 through 2014 in federal transfers to municipalities for financing the Basic Primary Aid Component.

Also, in their study for this same period, Vieira and Zucchi²¹ identified a significantly lower average increase in the allocation of municipal treasuries' own funds, of approximately 22.7%.

The 38% increase in expenses incurred on medication financing from 2008 through 2014, noted in the municipality of Rio de Janeiro, an average annual increase of 7%, is impressive, especially when compared with the drop of 21% between 2009 and 2010, but which recovered with a 37% increase from 2010 through 2011. If we use *SIOPS* as a reference, the amount paid out on the purchase of medications as a proportion of total municipal healthcare expenses incurred, in restated amounts, was 2.4%, on average, with fluctuations and an average reduction of 11.5% over the period examined. Another study¹⁰ for the same municipality, covering 2002 through 2011, showed a slightly higher average proportion (2.8%), where the expenses incurred on medications remained lower than the increase in total public municipal healthcare expenditures.

We noted an increase in AFAB financing over hospital medication increases, where the inversion of the trend occurred after the year in which the primary aid reform occurred. This ration of primary aid medication in relation to hospital medication was 0.8 in 2008 and increased to 2.4 in 2014. Our findings coincided with those of Silva and Caetano¹⁰, confirming the sustainability of the trend identified. This is important, since the allocation decision clearly reflects management priorities.

We identified an increase in average primary aid medication expenses *per capita*, in a growth

curve behaving in a similar manner to that of the coverage by the ESF team (Graphic 2), where these amounts exceeded, respectively, by R\$3,88 and 7.9% in 2008 to R\$10,70 and 43.1% in 2014. The result was that the Rio de Janeiro municipality's expense exceeded the *per capita* amount agreed as from 2013.

Obviously, the increased ESF coverage was very positive. However, it is equally important to ensure the proportional growth of the support funds in addition to the rationalization achieved in its management. The increase in medication expenses over the primary aid ministerial regulations suggests a financial sustainability risk for the growing ESF coverage scenario, which was still below the 48% target for 2014⁴¹.

Measures for improving medication consumption and use do exist⁴². The municipality of Rio de Janeiro has already started implementing many of these, as stated by Pereira et al.⁹. We highlight the initiative of implementing indicators, among them average expense per prescription filled. However, virtual systems are independently implemented for each OS contracted and units that fully supply information have been included, and this continues in many different ways. As a result, this data cannot be used in the present study for the total period in question.

These measures must be reinforced to enable ESF advances in this territory.

With regard to limitations, this study was based on secondary data, gathered for management purposes that differed from the aims of the present study. Moreover, the accuracy of this data is beyond the control of the authors. The choice of aspects and of the data utilized was also based on availability. Although a wide range of indicators exists for municipal primary aid, these only relate to the period beginning in 2009. Their implementation tends to be incremental and does not allow for a full view of primary aid at municipal level during the period covered in this article.

This study covered one very large municipality, which restricts any generalization of findings. However, it is reasonable to believe that many of these findings are reflected in other Brazilian scenarios.

The increase in public *per capita* medication costs reveals the need to reinforce management rationalization measures. This involves requiring authorized access and the appropriate use of these medications by the population, in addition to consideration of the potential insufficiency of the investments in financing the Basic Pharmaceutical Aid Component. We emphasize the need for further in-depth studies on the aspects covered

herein. But, these should also include the appropriate group of pharmaceutical technical and support aid. Above all, it is vital to upgrade the development of monitoring indicators enabling familiarity with primary aid results in the context of the end objectives, quality access, and correct use of medications.

In conclusion, there have been major changes in pharmaceutical aid in the municipality of Rio de Janeiro over the period subsequent to primary aid reform carried out in this territory in all the actions assessed. A quality increase occurred in the availability of medications, thereby widening the scope of conditions with coverage and the in-

crease in financing, with an inversion of the ratio of primary care medicine expenses to those incurred by hospitals.

Collaborations

RM Silva, NC Pereira, and VL Luiza were involved in the concept and outline, database assembly and analysis, and review of the article. LVP Mendes contributed to the text, database assembly and analysis, and review of the article.

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