New funding for a new Brazilian Primary Health Care

Erno Harzheim (https://orcid.org/0000-0002-8919-7916) [1]
Otávio Pereira D'Avila (https://orcid.org/0000-0003-1852-7858) [1]
Daniela de Carvalho Ribeiro (https://orcid.org/0000-0002-3055-0041) [1]
Larissa Gabrielle Ramos (https://orcid.org/0000-0002-3441-0951) [1]
Lariça Emiliano da Silva (https://orcid.org/0000-0001-7501-1095) [1]
Caroline Martins José dos Santos (http://orcid.org/0000-0003-3384-2637) [1]
Luis Gustavo Mello Costa (https://orcid.org/0000-0002-9678-0173) [1]
Carlo Roberto Hackmann da Cunha (https://orcid.org/0000-0002-3545-5801) [1]
Lucas Alexandre Pedebos (https://orcid.org/0000-0001-6663-352X) [1]

Abstract *This paper aims to present a debate on the new Brazilian Primary Health Care (PHC) funding policy. We consulted the national and international literature, and we involved municipal, state, and federal PHC managers to develop the payment method. The proposed final model is based on weighted capitation, payment-for-performance, and incentive for strategic actions. Capitation is weighted by the socioeconomic vulnerability, demographic aspects, and municipal adjustment, the payment-for-performance consists of an entire set of 21 indicators, and incentives for strategic actions were facilitated from the maintenance of some specific programs. The results of the simulations pointed to low registration (90 million Brazilians) for the currently estimated coverage (148,674,300 Brazilians). Moreover, they showed an immediate increase in financial resources for 4,200 Brazilian municipalities. We observed that the funding proposal brings Brazilian PHC into the 21st century, points to the strengthening of PHC attributes, and materializes the principles of universality and equity of the Unified Health System.*

Key words *Health System Financing, Primary Health Care, Capitation Fee, Efficiency, Health Equity*

[1] Secretaria de Atenção Primária à Saúde, Ministério da Saúde. Esplanada dos Ministérios, Bloco G, Térreo. 70058-900 Brasília DF Brasil. eharzheim@hcpa.edu.br.

Introduction

The Unified Health System (SUS) was regulated by Law 8,080 of September 19, 1990[1]. Besides its principles and guidelines, this law also presented the competencies of each federative entity concerning SUS management. Specifically, regarding SUS financing, Art. 35 established that the combination of the following criteria would be used for the transfer of amounts to States, Federal District and Municipalities: the demographic profile of the region; the epidemiological profile of the covered population; quantitative and qualitative characteristics of the health network in the area; technical, economic and financial performance in the previous period; levels of participation of the health sector in state and municipal budgets; provision for the network's five-year investment plan; reimbursement of services provided to other spheres of government. Later, with the enactment of Law 8,142 of December 28, 1990[2] defined the mechanisms for intergovernmental transfers of financial resources in the area of health, establishing a legislative framework for financing the SUS. In 1993, the Basic Operational Standard (NOB) 01/1993[3] proposed small advances in autonomy and flexibility for municipal administrations.

In the meantime, marked by advances in the consolidation of the SUS, NOB 01/96[4], pointed to a reorganization of the health care model, presenting roles of each federated entity, management instruments, financing mechanisms, and flows, progressively reducing the remuneration for service production, and expanding overall transfers, fund-to-fund. This NOB established the Primary Care Baseline (PAB), which defined the transfer of regular financial resources to PHC from a per capita amount, following criteria established in Law 8,080[1]. Moreover, NOB had a variation for the transfer of funds via PAB. Those municipalities that adhered to the Family Health Program (PSF) or the Community Health Workers Program (PACS) received an additional volume of resources integrated into the PAB. With the establishment of the fixed and variable PAB, where the fixed was based on per capita value and the variable was related to adherence to specific programs[5], a set of services and clear attributions for PHC in Brazil was established. In 1998, the Manual for the Organization of Primary Care[6] established guidelines, responsibilities, monitoring indicators, and criteria for the use of these resources.

The early 2000s continued to be marked by changes in the financing of the SUS and, mainly,

of PHC, but lesser importance. The Health Care Operational Norm (NOAS-SUS 01/2000[7]), established the full management of expanded PHC by increasing the PHC care responsibilities in the country and setting the Extended PAB for the joining municipalities. The Extended PAB ended up being incorporated into the fixed PAB over the years.

During this period, the fragmentation of onlending models was reinforced by the establishment of financing blocs[8]. This fragmentation hijacked the autonomy of municipal managers who were stuck with inflexible and inefficient transfers to municipal realities. Ordinance No. 3,992, of December 28, 2017[9], changed this scenario by establishing only two blocs: costing and investment. Thus, municipal managers resumed part of their autonomy by recovering this financial unlinking and, thus, the possibility of qualifying management from the perceived needs. These changes were in line with Complementary Law No. 141, of January 13, 2012[10], which seeks transparency for the criteria of apportionment among federated entities by including socioeconomic, epidemiological, demographic, spatial criteria, and capacity to provide services.

The significant advances that PHC, represented mainly by the Family Health Strategy, has shown in the last 25 years is undeniable. A significant reduction was achieved in infant mortality, preventable mortality, hospitalizations for sensitive conditions, among other advances[11-13]. On the other hand, a significant decline in the speed of health gains against public investment was observed. Vaccination coverage fell, child mortality reduction slowed down, a large proportion of preventable hospitalizations was noted, as well as the enormous difficulty in managing chronic diseases, aging, and coping with syphilis and HIV. Besides the challenge of increasing PHC effectiveness and efficiency in the SUS is also a concern. A World Bank study revealed that the level of efficiency of PHC was around 60%, with an annual waste of approximately R$ 9.3 billion, considering the total funds from the three levels of management[14].

In parallel with evaluations of health indicators, several investigations have measured the strength of the Brazilian PHC attributes in recent years[15-19]. There is much progress to make the PHC achieve a more significant presence and extension of the essential indicators – first contact access, longitudinality, comprehensiveness, coordination – and derivative indicators – community and family orientation and cultural com-

petence. The search for the strengthening of attributes should guide the National PHC Policy and the political decisions in this regard, including changes in federal funding. Furthermore, besides the guarantee of financing compatible with PHC attributions and potential, the mechanisms for allocating federal funds to the PHC and respective onlendings to Municipal entities should be carefully structured so that they also are a means of inducing better health outcomes. To this end, it is essential to establish a mixed financing model that takes into account a capitation method weighted by equity criteria, payment-for-performance of the Family Health teams and incentives for strategic and priority actions, similar to a fee-for-service, taking as an example, but not as a recipe, the best PHC-based health systems in the world[20]. Given this context, this paper presents the new Brazilian PHC financing model approved in a Tripartite Interagency Committee Ordinance on October 31, 2019, enacted in the Ministerial Ordinance No. 2,979 of November 12, 2019[21].

Methods

A team of more than 60 people linked to the Primary Health Care Secretariat of the Ministry of Health was assembled, with technical support from professionals from the World Bank, Harvard University, Federal University of Rio de Janeiro and the Federal University of Rio Grande do Sul to build a new Brazilian PHC financing model. At first, all types of federal PHC-related onlendings were critically reviewed. In parallel, a review of national and international literature pointed out the best design of a mixed PHC financing model. From the definition that the new financing would be based on weighted capitation with equity bias, payment-for-performance, and incentives for strategic and priority actions, several simulations started to ensure the highest possible financial gain to Brazilian municipalities. To this end, an increase of R$ 2 billion in the PHC federal budget in 2020 compared to 2019 was guaranteed by Minister of Health Luis Henrique Mandetta, representing an 11% real increase in the budget, amid an economic crisis.

New Financing: composition

The simulations of the impact of the New Federal Financing for Primary Health Care (PHC) computed the effect of weighted capitation; Payment-for-Performance (P4P); Incentive for Strategic Actions; and Provision of health professionals.

Transfers to the municipalities were calculated as per the following formula:

$$Transf_{i,t} = Cap_{i,t} + Des_{i,t} + \sum_{j=1}^{15} Inc_{i,t,j} + \sum_{k=1}^{2} Prov_{i,t,k}$$

Where: $Transf_{i,t}$ = total federal transfer to the municipality for the period; $Cap_{i,t}$ = transfer per capitation to the municipality for the period; $Des_{i,t}$ = total performance-based transfer to the municipality in the "t" period; $Inc_{i,t,j}$ = incentive to "j" programs/strategies for the municipality in the period; $Prov_{i,t,k}$ = provision of Community Health Workers (ACS) of the "k'" program for the municipality in the period.

The simulations were calculated from information on the municipalities benefited by the PHC programs, registered population, and their characteristics (beneficiary of social programs and age). The projected budget values for each component are shown in Table 1.

For analysis purposes, the values of transfers to municipalities in the new financing model were compared with the values of 2019 for each municipality, to estimate the impact (losses or gains) of the New Financing on federal onlendings to PHC.

Weighted capitation – compared to the sum of the following financial resources:

- Fixed PAB for 2019;

- Twelve installments of financial resources referring to financial month 08/2019 corresponding to Family Health Teams (eSF) and Extended Family Health and Primary Care Team (NASF-AB), without considering suspensions for any reason (the value referring to the month with the most significant number of teams in 2019 was considered for municipalities that did not report any eSF or NASF in the financial month 08/2019);

- Six installments of the financial resource referring to the financial month 08/2019 for the Managers.

Payment-for-performance – compared to 12 installments of financial resources that municipalities are entitled to as per the second certification list of the 3rd cycle of the PMAQ, without considering suspensions of any kind.

Incentive for Strategic Actions:

- Twelve installments of financial resources referring to financial month 08/2019 corresponding to Oral Health Teams (ESB), Regional Dental Prosthesis Laboratory (LRPD), Mobile Dental

Table 1. PHC Budget (Summary), 2019/20.

New allocation criteria	2019 (43,000 eSF)	2020 (46,600 eSF)
Weighed capitation	R$ 10,077,779,352	R$ 10,684,562,796
Incentive for Strategic Actions	R$ 2,217,854,876	R$ 3,011,339,009
Performance	R$ 1,970,672,081	R$ 1,865,888,397
Provision (Community Health Worker)	R$ 4,121,410,000	R$ 4,845,859,200
Total	R$ 18,387,716,309	R$ 20,407,649,402

Unit (UOM), Dental Specialty Center (CEO), River Family Health Team (ESFR), Basic Fluvial Health Unit (UBSF), Street Clinic, Health Gym, Microscopists, Prison Primary Care Teams and Adolescent Health, without considering suspensions for any reason (the month with the highest value in 2019 was considered as a reference for municipalities that would not receive anything in the financial month 08/2019);

- 2019 single installment of the School Health Program (PSE);

- Six installments of the financial resources referring to the financial month 08/2019 corresponding to the *Saúde na Hora* ("Instant Health") Program considering only the cost of the Family Health Unit adhered to and the budgetary impact on the cost of the eSF and eSB when they participate in the program (R$ 3,565.00 and R$ 2,240.00 respectively);

- It is noteworthy that only the values referring to extra professionals, support units, and vessels were considered in this component for the Riverside Family Health teams since the values referring to the teams were included for comparison with the weighted capitation.

Provision of health professionals: only the values referring to the ACS were considered for the simulation, for which 13 installments of the financial resources were calculated referring to the financial month 08/2019 without considering suspensions for any reason (the value referring to the month with the highest number of agents in 2019 was considered for the municipalities that did not inform any ACS in the financial month 08/2019).

Simulations of the New Primary Care Financing Model

Weighted Capitation

Registration Parameter

The transfer of financial resources from the weighted capitation component considers the number of people registered in Family Health teams (eSF) or Primary Care teams (eAP), weighted by equity criteria. The parameter of people registered by team varies per type of team and the typology of the municipality considering the classification and characterization of rural and urban spaces proposed by IBGE[22] (Box 1).

Weighted Registration (weight calculation)

Three equity criteria were taken into account for the weighting of the weighted capitation: socioeconomic vulnerability, demographic adjustment, and distance adjustment. The criteria of socioeconomic vulnerability and demographic adjustment gave different weights to registered people who are beneficiaries of social programs and within the age groups that are considered to be in the greatest need of health services. These criteria are defined as follows:

- *Socioeconomic Vulnerability*: population in the municipality that receives a *Bolsa Família* (Family Grant) benefit (BF), a Continuous Cash Benefit (BPC), or INSS social security benefits of up to two minimum wages (INSS);

- *Demographic adjustment*: population in the municipality up to 5 years of age and over 65 years and over;

- *Distance adjustment*: the distance adjustment considers that the costs of providing PHC in the municipalities vary per their distance from urban centers. The classification and characterization of rural and urban spaces were taken into account for this adjustment as per the methodology proposed by IBGE for municipalities[22].

Box 1. Parameter of registration by team - by the type of municipality.

IBGE rural-urban typology	Registration parameter for ESF	Registration parameter for EAP -20h	Registration parameter for EAP -30h
1 - Urban	4,000 people	2,000 people	3,000 people
2 - Adjacent Intermediate	2,750 people	1,375 people	2,063 people
3 - Adjacent Rural			
4 - Remote Intermediate	2,000 people	1,000 people	1,500 people
5 - Rural Remoto			

A weight of 1.3 per person was assigned for the criteria of *socioeconomic vulnerability* and *demographic adjustment*. This means that for each person considered to be in socioeconomic vulnerability or within these age groups, the municipality will be calculated 30% more than the capitation value. The increase of 30% is applied only once if someone fits both the socioeconomic vulnerability and the age group. The weight calculation took into account the odds ratio of someone in economic vulnerability to being dependent on the Unified Health System (SUS), that is, not having a health plan.

The weights for each municipality, as per the IBGE typology, considered the ratio between the parameter of registration by team of urban municipalities compared to the other typologies. The weight values, per registered person, indicate the weighting of the individual in the municipality. Thus, the registered person weighs 2 if in a remote or remote intermediate rural municipality, and will receive twice as much per registered person as an urban municipality. In the adjacent intermediate municipalities and adjacent rural areas, the registered person weighs 1.45 times greater than the one registered in the urban municipality (Box 2).

Calculating points

The municipal registration target was first stipulated to calculate the points for each municipality. It considers the number of teams (eSF and eAP) deployed multiplied by the registration parameter per team per type of team and the rural-urban typology of the municipality, and the municipal registration target is limited to the IBGE 2019 population.

The eSFs informed by the municipality in the CNES 07/2019 financial month were considered to calculate the number of teams in each municipality, limited to the amount of eSFs accredited by the Ministry of Health, plus the potential eAPs of each municipality considering the profession-

Box 2. Weight per registered person – by socioeconomic vulnerability, demographic adjustment and distance adjustment criteria.

Criteria	Weight per registered person
Socioeconomic vulnerability or demographic adjustment	Does not fit the criteria: 1 Fits the criteria: 1.3
Distance adjustment	Urban: 1 Adjacent intermediate: 1.45 Adjacent rural: 1.45 Remote intermediate: 2 Remote rural: 2

als registered in health establishments of Primary Care and informed in the National Health Establishment Registration System (SCNES) under CNES financial month 07/2019. Each eAP was considered as ½ eSF to calculate the total number of teams.

The pairs of doctors in nurses with a weekly workload of at least 20 or 30 hours in the same Primary Care establishment registered with SCNES with the following Brazilian Occupation Codes (CBO) were considered to estimate the potential EAP teams in each municipality: Doctor: 2251-42 or 2251-70 or 2251-30; Nurse: 2235-65 or 2235-05.

Three criteria identical to those applied in the PHC coverage calculation method were also used:

- *Workload review*: the workload of professionals who have registered with the SCNES number of weekly hours more significant than 44 hours of other hours or 60 outpatient hours, 96 hospital hours, or 120 hours resulting from the sum of these weekly work hours' categories is not counted;

- *Allocation*: professionals unlinked to teams and assigned to the following types of establishments at SCNES - 01 health post; 02 health center / PHC unit; 32 mobile river unit; 40 mobile land unit.

- *Legal nature*: 1000 – public administration; 1015 – public agency of the federal executive branch; 1023 – public agency of the state or federal district executive power; 1031 – public agency of the municipal executive power; 1040 – public agency of the federal legislative power; 1058 – public agency of the state or the federal district legislature; 1066 – public agency of the municipal legislative power; 1074 – public agency of the federal judiciary; 1082 – public agency of the state judiciary; 1104 – federal authority; 1112 – state or federal district authority; 1120 – municipal authority; 1139 – federal foundation; 1147 – state or federal district foundation; 1155 – municipal foundation; 1163 – federal autonomous public agency; 1171 – state or the federal district autonomous public agency; 1180 – municipal autonomous public agency; 1198 – multinational commission; 1201 – public fund; 1210 – public association; 1228 – public consortium under private law; 1236 – state or federal district; 1244 – municipality; 1252 – public foundation under federal private law; 1260 – state or federal district public foundation under private law; and 1279 – public foundation under municipal private law.

All pairs of professionals identified were classified under eAP modality I (with a weekly workload of 20 hours) and counted as ½ an eSF so that their distribution among the municipalities was limited to the eSF baseline, already considering the parameter of people per team proposed by the New Financing Model. In total, 2,809 eAPs were identified in 445 municipalities.

The municipal registration goal was weighted as defined earlier, calculating the number of points per municipality. The adjustment considered the number of people in socioeconomic vulnerability and the priority age groups (weight of economic vulnerability or demographic adjustment = 1.3) and the category of the municipality as per the IBGE classification (distance adjustment).

The following steps were taken to define people in socioeconomic vulnerability and the priority age groups:

- The socioeconomically vulnerable population was estimated from the number of people benefiting from the *Bolsa Família*, the continued cash benefit, and with INSS retirement lower than two minimum wages in the municipality, removing an estimated overlap of 3% among these beneficiaries, identifying the proportion of socioeconomically vulnerable people in the municipality among the total IBGE 2019 population. The following sources were used;

- Concerning the demographic adjustment, the population in the priority age groups (≤ 5 years and > 65 years) of each municipality was obtained from the IBGE 2018 population, applying the proportions of each age group of IBGE 2010 and National System of Live Births provided by the National Health Surveillance Secretariat (SVS/MS).

- The overlap between the socioeconomically vulnerable population and the population in the priority age groups was removed using the percentage of overlap between the same categories identified for each municipality in the register of the Primary Health Care Information System (SISAB)[23];

- The final proportion of people who met the criteria of socioeconomic vulnerability or demographic adjustment among the total municipal population was applied to the municipal registration target for later application of the weights of these same criteria and the weight of the distance adjustment.

The total number of points per municipality corresponds to the points referring to registered people who meet the criteria of socioeconomic vulnerability or demographic adjustment plus the points referring to registered people who do not meet the criteria of socioeconomic vulnerability or demographic adjustment, and this sum was multiplied by the weight referring to the distance adjustment. The total of Brazil points corresponds to the sum of the points of all Brazilian municipalities as follows:

$$\sum (Ptos_{i,t}) = \left[\sum (Ptos_{pv}) + \sum (Ptos_{pnv}) \right] * \pi_i$$

Where: $PTOS_{i,t}$ = total points of municipality "i" in period "t" considering 100% of the municipal registration goal; $PTOS_{p,v}$ = points per registered person who fit in the criteria of economic vulnerability or in the priority age groups (1.3 times the number of people registered within the criteria); $PTOS_{p,n,v}$ = points per person registered outside the criteria of economic vulnerability and in the priority age groups; π_i = distance weights according to the IBGE typology (Box 1).

Calculating the value of each point

The budget planned for 2020 for weighted capitation, excluding the budget reserved for the fixed per capita payment of transition for 2020, was divided by the total points of all Brazilian municipalities to calculate the value of each point, as per the following formula:

$$\Theta = \frac{\$Capita\zeta\tilde{a}o_{2020}}{\sum (Ptos_{i,t})}$$

Where: Θ = value in Reals of each point; $\$Capita\zeta\tilde{a}o_{2020}$ = estimated capitation budget for 2020 is R$ 9.434 billion; $PTOS_{i,t}$ = total points of municipality "i" in period "t" considering 100% of the municipal registration goal.

The point value, that is, the per capita value based on this simulation, corresponds to R$ 51.35 per year.

Calculating the value of transfers of capitation for each municipality

Only the eSF implanted in the municipality (eSF informed in the SCNES by the municipality under the CNES 07/2019 financial month, limited to the number of eSF accredited by the Ministry of Health) were considered to calculate the weighted capitation of each municipality. The possible eAPs identified in the SCNES were not considered since they are only estimated teams and not implemented in that financial month.

From the implanted eSFs, the real municipal registration goal was calculated, multiplying these teams by the registration parameter by eSF by municipal typology. Next, the proportion of people who met the criteria of socioeconomic vulnerability or demographic adjustment within the real target of municipal registration was again calculated and the weights referring to these criteria, and the distance adjustment were applied, establishing the total points per municipality.

The capitation value per municipality was calculated from the total number of points in the municipality multiplied by the value of each point (Θ), as shown below:

$$Cap_{i,t} = \Theta * \left[\sum (Ptos_{i,t}) \right]$$

Where: Θ = value in Reals of each point; $PTOS_{i,t}$ = total points of municipality "i" in period "t" considering 100% of the municipal registration goal.

Calculating the population-based fixed per capita values – transition period

For the transition from the current model to the new financing model, we stipulated that, during the 12 months of 2020, part of the weighted capitation budget would be allocated to a fixed per capita payment based on population, which corresponds to R$ 1.250 billion.

The estimated budget of R$ 1.250 billion was divided among the population of Brazil as per the IBGE 2019 to calculate this population-based fixed per capita amount, obtaining a yearly value of R$ 5.95 per person, and then multiplied by the population IBGE 2019 of each municipality.

Calculating Incentives for Strategic Actions

The budget provided for Incentives for Strategic Actions in 2020 is R$ 3.011 billion. The complete list of these programs: *Saúde na Hora*, Oral Health Team (eSB), Mobile Dental Unit (UOM), Dental Specialties Center (CEO), Regional Dental Prosthesis Laboratory (LRPD), *Consultório na Rua* (eCR), Primary River Health Unit (UBSF), River Family Health Team (eSFR), Microscopists, Prison Primary Care Team (EABP), Family Health Teams (eSF) and Primary Care Team (eAP) that assist adolescents in conflict with the Law, School Health Program (PSE), Health Gym Center, Staff Computerization, Funding municipalities with Medical and Multiprofessional Residency.

The calculation of the value of federal transfers to municipalities for each program is explained below.

Saúde na Hora Program: the calculations are based on the list of Family Health Units (USF) whose adherence was approved by ordinance (from the 1st to the 8th adherence ordinances). The transfer amount considered 12 installments of the USF monthly cost amounts, and the budgetary impact of adherence of the participating eSFs and eSBs (for the eSFs the monthly amount used was R$ 3,565.00, and for the eSB, R$ 2,240.00);

Computerization: the calculations considered the eSFs with electronic medical records already implemented. The calculation of transfers for this program used the list of eSFs currently computerized (24,581 teams) and the amount of the incentive for each eSF as per the IBGE typology: Remote Rural R$ 2,300.00; Remote Intermediate and Adjacent Rural R$ 2,000.00; Adjacent Intermediate and Urban R$ 1,700.00.

Cost incentive to municipalities with Medical and Multiprofessional Residency: the calculations used the estimate of residents per municipality

that could underlie eSF considering the Medical Residency programs in Family and Community Medicine, or Multiprofessional or Uniprofessional Residency in Dentistry or Nursing with emphasis on Family Health already financed by the Ministry of Health, and applying the monthly cost amounts of R$ 4,500.00 per medical resident and R$ 1,500.00 per resident nurse or dentist.

Other Programs: for these, the 2019 amount was replicated for 2020 as there was no change in the transfer criteria.

Calculating the Payment-for-Performance

The budget for 2020 for the payment-for-performance component is R$ 1.865 billion. However, part of this budget will be allocated to a transition period between financing models, and part will be allocated to the effective implementation of the new payment-for-performance payment component.

Transition period amounts: The payment-for-performance transition period will last 8 months, in which the municipalities will receive the equivalent value of the certification of the National Program for the Improvement of Access and Quality (PMAQ) for the municipalities participating in the referred program in the 3rd cycle. This period corresponds to a budget of R$ 1.365 billion.

Post-transition period amounts: After the transition period, the payment-for-performance of the New Financing starts in the last 4 financial months 2020, equivalent to a budget of R$ 500 million.

The calculation of the payment-for-performance amount per team was performed. The eSF informed by each municipality under CNES 07/2019 financial month were considered, limited to the amount of eSFs accredited by the Ministry of Health, plus the potential eAPs of each municipality considering the professionals registered in primary care health establishments and informed in the National Health Establishment Registration System (SCNES) in the CNES 07/2019 financial month. Each eAP was considered as ½ an eSF to calculate the total number of teams. Then the estimated budget was divided among all the teams to be evaluated by the program, as follows:

$$\tau = \frac{\$ \, Desempenho_{2020(s)}}{nEQ}$$

Where: $\$ \, Desempenho$ = estimated budget for the last 4 financial months of 2020 for the performance component (500 million); τ = maximum performance value per team; nEQ = total number of teams.

Only the eSFs implanted in the municipality (eSF informed by the municipality under CNES 07/2019 financial month, limited to the number of eSFs accredited by the Ministry of Health) were considered in the calculation of the post-transition payment-for-performance for each municipality. The possible eAPs identified in the SCNES were not considered since they are only estimated teams and not implemented in that financial month. Thus, the maximum performance value per team was multiplied by the eSFs implemented in each municipality.

Calculating the total amount of transfers of performance for each municipality: The amounts calculated for the transition period and the post-transition period were added to calculate the total amount of the performance transfers for each municipality.

Calculating the Provision of Health Professionals

The budget planned for the *provision of health professionals* in 2020 is R$ 4.845 billion, considering only Community Health Workers (ACS). For the simulation, federal resources corresponding to medical recruitment programs were not considered, since these are not direct transfers to the Municipal Health Funds.

The values referring to the ACS calculated for each municipality in 2020 considered keeping the 2019 values adjusted with the correction of the baseline of these professionals planned for 2020 (from R$ 1,250.00 to R$ 1,400.00 monthly).

Comparing values planned for 2019 and 2020

After calculating the values planned for each municipality in 2019 and 2020, these values were compared to evaluate possible losses and gains. The municipalities with a variation ranging from +3% to -3% between 2020 and 2019 were considered as keeping the same resources and classified as tier 0. Those with gains ranging from 3% to 20% were classified as tier 1. The municipalities with gains over 20% were classified as tier 2, while those with losses ranging from -3% to -20% were classified as tier 3. Finally, those with losses above -20% or more were classified as tier 4.

Results

The simulation of the results (Table 2) showed that 1,354 out of a total of 5,570 municipalities (24%) might experience loss of revenue in 2020. To balance this scenario, the Ministry of Health decided to ensure for the 12 financial months of 2020 the value of the best PAB (Fixed+Variable) for 2019. The defined transition period was one year, and, thus, 2020 will be considered. On the other hand, there is a potential gain of R$ 2.3 billion for more than 4,200 municipalities.

Municipalities must increase the number of people registered in the Family Health teams to ensure this potential gain. A preliminary analysis of valid registrations pointed to 93 million people registered compared to an estimated number of coverage of 148 million people. The data in Graph 1 shows that 26 of the 27 federative units have a lower number of registrants than the estimated coverage, allowing to observe the size of the registration effort of each Federation Unit

and its municipalities must make to achieve the potential gain of financial resources for 2020.

Discussion

The new PHC financing model implemented by the Ministry of Health is proposed in three dimensions: weighted capitation with individual and contextual bias, an incentive to strategic actions and programs, and payment-for-performance. This change breaks with the previous model based on the municipal population – Fixed PAB (the only non-conditioned transfer, not frequently updated). Moreover, it reduces the components of payment for incentives to specific programs transferred from the existence of the services – verified through information systems). This reform aims to induce the teams to work with greater accountability for the registered population from the registration of people to the teams, increasing their responsibility to their patients, and improving the quality of care.

Ninety million people are currently registered in Family Health teams. The potential coverage is 148,674,300 people[24]. These data show the difficulty of the population excluded from primary health care in accessing health services. The weighting of registration brings PHC closer to the principle of equity insofar as it positively weighs the most socially vulnerable, the elderly, and children up to five years of age. More serious than the low number of registered people is the fact that about 30 million people who live with

Table 2. Simulation of the impact of the new PHC financing in Brazilian municipalities for the year 2020.

	Variables	Simulation
	Municipalities Lose	1,354
Total	Municipalities Gain	4,216
	Loss Amount	R$ 293,552,435.29
	Gain Amount	R$ 2,323,460,870.74
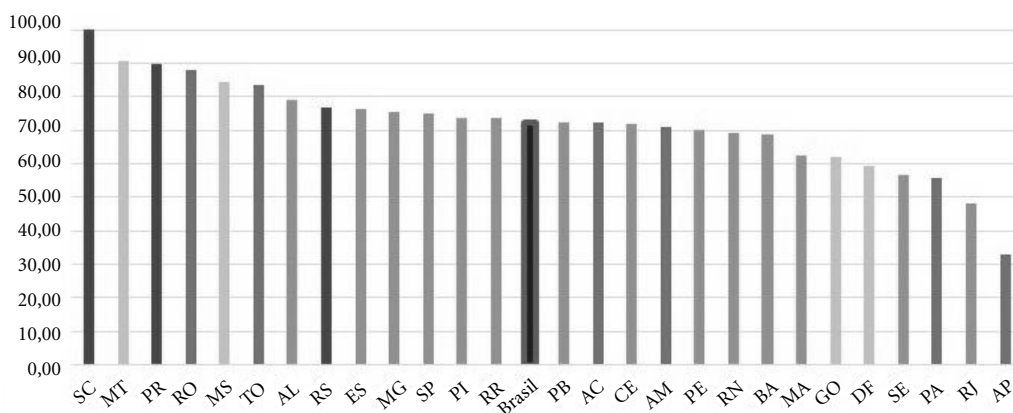
Graph 1. Proportion of ESF Population Coverage (%) (3,450 per team) by the Number of Registered People (SISAB) by UF and Brazil.

the support of the Family Grant, the Continuous Cash Benefit and social security benefits up to 2 minimum wages are among the non-registered, a true affront to the principle of universality and equity present in Law 8.080[1] of the Federal Constitution.

Smith and Rice[25] believe that there are two main reasons for following a capitation model, which are related to equity and efficiency. Equity arguments tend to reflect a requirement to ensure equal access to health care (for equal health needs), prioritizing access to those with the most significant health needs. Efficiency objectives are implicit in most capitation schemes, in the sense that they are incorporated into a budget system that seeks to make providers more responsive to the issues of costs and benefits of their actions. The authors also point out the existence of several criteria that have been historically used to weigh capitation: demographic, ethnic, work incapacity, geographic location, morbidity, and mortality, as well as other social factors[24]. Capitation financing models are found in several countries such as the United Kingdom, Australia, Canada, Spain, Sweden, Norway, Holland, New Zealand, among others.

The United Kingdom has been financing its health services by weighted capitation since the 1970s, when it used the Crossman's form based on age, gender, use of services and health needs, which was improved by the Resource Allocation Working Party (RAWP), making the principle of equity even more explicit in the model, which was extended to PHC in the 1980s[20]. In the last 40 years, the weighted capitation formula used in the United Kingdom has been changed as per the improved quality of the registered data. A higher possibility of granularity of evaluations and use of thousands of patient data were also crucial for the continuous improvement of the way of calculating weighted capitation, focusing on equitable access.

Payment-for-performance (P4P) models in PHC are adopted in countries such as Australia, Portugal, Turkey, United Kingdom, New Zealand, among others. Australia adopted P4P in the 1990s, as an alternative to a PHC model based on payment for services/programs that induced fragmentation. The new program is based on indicators aimed at maternal and child health, management of chronic health conditions, prescription quality, use of e-health, reinforcement of nursing practices, access to services at different times, the health of older adults, rural health, among others[25]. New Zealand adopted

payment-for-performance to address a health condition agenda elected as a health priority in 2000, which involved reducing obesity, tobacco use, depression, cardiovascular risk, and diabetes. To this end, it chose 21 indicators for its program, improving all of them[26].

In the United Kingdom, the Quality Outcome Framework (QOF) for payment-for-performance was implemented to increase productivity, redesigning services for patients, improving the services provided in PHC, creating the culture and governance for improving PHC. In 2012, the QOF had 142 indicators divided into 4 major areas: clinical (most of the indicators, and focused on the quality of the PHC clinic), organizational (patient information and registration, professional clinical training), patient experience with the service, and additional services to PHC. An initial improvement in the indicators has been observed since the beginning of the QOF in 2004, with stabilization at satisfactory levels within the established parameter[27-34]. While the international experience is heterogeneous concerning payment-for-performance, it is decisive when we observe the improved indicators, especially immunization, maternal and child health, and chronic diseases[28-30].

In 2020, Brazil will focus on seven payment-for-performance, with a gradual increase in indicators until reaching 21 in 2021. All 21 indicators will cover actions related to maternal and child health, chronic conditions, sexually transmitted infections, mental health, PHC-sensitive hospitalizations, people's loyalty to Health Units through the Net Promoter Score, the doctor-patient relationship quality through PDRQ9, and the strength of the PHC attributes through PCATool-Brasil.

The similarity between the models above and the ongoing Brazilian PHC financing reform is no accident. International models were deeply studied and adapted to the Brazilian reality to design the current reform. Search for equity, technique, scientific basis, and political sensitivity were the hallmarks of the development of the new financing model. An extensive debate was engaged with society, both in the National Congress and in 23 Federative Units, with the democratic participation of over 10,000 managers and members of the management teams of the municipal health departments to define the final model. Through the participation of COSEMS, its technical team, and management, CONASEMS has broad participation in defining the final model, with considerations of greater relevance, and that certainly

made the final model much more appropriate to the reality of SUS. Moreover, this action movement represents an essential strategy for participation, credibility, and increased governance capacity, fundamental strategies for the consolidation of public policies in PHC[27].

Brazil opted for the mixed PHC financing model. Like the United Kingdom, the model involves weighted capitation, payment-for-performance, and payment for the provision of specific services. In the Saxon model, weighted capitation represents 52% of the financing volume, and payment-for-performance 14%. In the Brazilian model, for the 2020 budget[31], weighted capitation is 52%, and payment-for performance 9%. This option occurs because the need to induce the existence of some specific services such as *Saúde na Hora* (which keeps UBS working at extended hours), oral health teams, InformatizaAPS (which establishes federal funding as a counterpart to sending information from Family Health teams through electronic medical records), the incentive for Family and Community Medicine and Multiprofessional residencies[35-37] is recognized in Brazil. These incentives represent 15% of the financing. The remainder are resources intended to provide professionals and actions to promote health and care for specific vulnerable populations, such as riverine populations.

Starfield[38] believes that the main goals of health systems are optimizing the health of the population through the use of the most advanced knowledge on the cause of illnesses, disease management, and health maximization, and minimizing disparities between population subgroups in a way that certain groups are not at a systematic disadvantage concerning their access to health services and attainment of an excellent level of health. PHC is the most efficient way to achieve these goals, as it is the preferred entry into health systems and is based on clearly defined attributes such as access, longitudinality, comprehensiveness, care coordination, family and community orientation, and cultural competence[37]. When organized in the light of its attributes, it provides improved access to necessary services, quality service, a greater focus on prevention, and reduction of unnecessary and potentially harmful specialized care[39].

The new financing model proposed by Ministerial Ordinance N° 2,979 of November 12, 2019[21], together with other actions developed by the Primary Health Care Secretariat (*Saúde na Hora*, InformatizaAPS, Doctors in Brazil, Incentive to Family and Community Medicine and Multiprofessional Residency), seeks to include 50 million people who are not registered at the ESF, implements weighted capitation, thus correcting distortions of access by the most vulnerable, enables a reorganization of care as it induces a more adequate identification of people linked to each family health team, imposes the improvement of indicators seeking better results in care, motivates the use of electronic patient records, qualifying patient information and allowing a more appropriate longitudinal and coordinated care. All these actions ultimately aim to strengthen PHC attributes.

Final considerations

By bringing the financing of Brazilian PHC into the 21st century, the Ministry of Health and the team of the Primary Health Care Secretariat aim to strengthen PHC's attributes to realize the principles of Universality and Equity of the SUS. More substantial federal financial transfers to municipalities and teams that work more and better for the health of people strengthen the reform of the Brazilian State towards a provision of public services that truly meets the needs of the population.

Collaborations

E Harzheim, OP D'Avila, LG Ramos and CMJ Santos participated in designing the proposal, analyzing the data, discussing the observed data, and reviewing the paper. D Carvalho, LE Silva, LGM Costa, CRH Cunha and L Pedebos participated in the development of the method and analyzed data and results.

Acknowledgments

We are grateful to Dirceu Ditamar Klitzke and Olívia Lucena Medeiros, staff of the Primary Health Care Secretariat, for their contribution to the development and improvement of the proposal.

References

1. Brasil. Lei nº 8.080, de 19 de setembro de 1990. Dispõe sobre as condições para a promoção, proteção e recuperação da saúde, a organização e o funcionamento dos serviços correspondentes e dá outras providências. *Diário Oficial da União* 1990; 20 set.

2. Brasil. Lei nº 8.142, de 28 de dezembro de 1990. Dispõe sobre a participação da comunidade na gestão do Sistema Único de Saúde (SUS) e sobre as transferências intergovernamentais de recursos financeiros na área da saúde e dá outras providências. *Diário Oficial da União* 1990; 31 dez.

3. Brasil. Portaria nº 545, de 20 de maio de 1993. Estabelece normas e procedimentos reguladores do processo de descentralização da gestão das ações e serviços de saúde, através da Norma Operacional Básica - SUS 01/93. *Diário Oficial da União* 1993; 20 maio.

4. Brasil. Portaria nº 2.203, de 5 de novembro de 1996. Aprova a NOB 1/96, a qual redefine o modelo de gestão do Sistema Único de Saúde. *Diário Oficial da União* 1996; 5 nov.

5. Brasil. Portaria GM/MS nº 1.882, de 18 de dezembro de 1997. Estabelece o Piso da Atenção Básica - PAB e sua composição. *Diário Oficial da União* 1997; 18 dez.

6. Brasil. Portaria nº 3.925, de 13 de novembro de 1998. Aprova o Manual para Organização da Atenção Básica no Sistema Único de Saúde. *Diário Oficial da União* 1998; 17 nov (republicado).

7. Brasil. Portaria nº 95, de 26 de janeiro de 2001. Aprova a Norma Operacional da Assistência à Saúde – NOAS-SUS 01/2001. *Diário Oficial da União* 2001; 26 jan.

8. Brasil. Portaria nº 204, de 29 de janeiro de 2007. Regulamenta o financiamento e a transferência dos recursos federais para as ações e os serviços de saúde, na forma de blocos de financiamento, com o respectivo monitoramento e controle. *Diário Oficial da União* 2007; 29 jan.

9. Brasil. Portaria nº 3.992, de 28 de dezembro de 2017. Altera a Portaria de Consolidação nº 6/GM/MS, de 28 de setembro de 2017, para dispor sobre o financiamento e a transferência dos recursos federais para as ações e os serviços públicos de saúde do Sistema Único de Saúde. *Diário Oficial da União* 2017; 28 dez.

10. Brasil. Lei complementar nº 141, de 13 de janeiro de 2012. Regulamenta o § 3º do art. 198 da Constituição Federal para dispor sobre os valores mínimos a serem aplicados anualmente pela União, Estados, Distrito Federal e Municípios em ações e serviços públicos de saúde; estabelece os critérios de rateio dos recursos de transferências para a saúde e as normas de fiscalização, avaliação e controle das despesas com saúde nas 3 (três) esferas de governo; revoga dispositivos das Leis nos 8.080, de 19 de setembro de 1990, e 8.689, de 27 de julho de 1993; e dá outras providências. *Diário Oficial da União* 2012; 16 jan.

11. Kringos DS, Boerma W, van der Zee J, Groenewegen P. Europe's Strong Primary Care Systems Are Linked To Better Population Health But Also To Higher Health Spending. *Health Affairs* 2013; 32(4):686-694.

12. Rocha R, Soares R. Evaluating the impact of community-based health interventions: evidence from Brazil's Family Health Program. *Health Econnomics* 2010; 129(51):126-158.

13. Bastos ML, Menzies D, Hone T, Dehghani K, Trajman A. Correction: The impact of the Brazilian family health on selected primary care sensitive conditions: A systematic review. *PLoS One* 2017; 12(12):e0189557.

14. Banco Mundial. *Um ajuste justo: Análise da eficiência e equidade do gasto público no Brasil* [página na Internet]. 2017 [acessado 2019 Nov 28]. Disponível em: https://www.worldbankorg/pt/country/brazil/publication/brazil-expenditure-review-report

15. Mesquita Filho M, Luz BSR, Araújo CS. A Atenção Primária à Saúde e seus atributos: a situação das crianças menores de dois anos segundo suas cuidadoras. *Cien Saude Colet* 2014; 19(7):2033-2046.

16. Carvalho VCHS, Rossato SL, Fuchs FD, Harzheim E, Fuchs SC. Assessment of primary health care received by the elderly and health related quality of life: a cross-sectional study. *BMC Public Health* 2013; 13:605.

17. Ibañez N, Rocha JSY, Castro PC, Ribeiro MCSA, Forster AC, Novaes MHD, Viana ALA. Avaliação do desempenho da atenção básica no Estado de São Paulo. *Cien Saude Colet* 2006; 11(3):683-703.

18. Harzheim E, Hauser L, Pinto LF. *Avaliação do grau de orientação para Atenção Primária em Saúde: a experiência dos usuários das Clínicas da Família e Centros Municipais de Saúde na cidade do Rio de Janeiro* (relatório final da pesquisa PCATool - Rio-2014). Porto Alegre: UFRGS; 2015.

19. Pinto LF, Harzheim E, Hauser L, D'Avila OP, Gonçalves MR, Travassos P, Pessanha R. A qualidade da Atenção Primária à Saúde na Rocinha – Rio de Janeiro, Brasil, na perspectiva dos cuidadores de crianças e dos usuários adultos. *Cien Saude Colet* 2017; 22(3):771-781.

20. Buck D, Dixon A. *Improving the allocation of health resources in England - How to decide who gets what. Ideas that change Health Care*. Londres: The Kings Fund; 2013.

21. Brasil. Portaria nº 2.979, de 12 de novembro de 2019. Institui o Programa Previne Brasil, que estabelece novo modelo de financiamento de custeio da Atenção Primária à Saúde no âmbito do Sistema Único de Saúde, por meio da alteração da Portaria de Consolidação nº 6/GM/MS, de 28 de setembro de 2017. *Diário Oficial da União* 2019; 13 nov.

22. Instituto Brasileiro de Geografia e Estatística (IBGE). *Classificação e caracterização dos espaços rurais e urbanos do Brasil: uma primeira aproximação*. Rio de Janeiro: IBGE; 2017.

23. Brasil. *Sistema de Informação em Saúde para Atenção Básica (SISAB)* [página na Internet]. [acessado 2019 dez 01]. Disponível em: https://sisab.saude.gov.br/

24. Brasil. Ministério da Saúde (MS). Secretaria de Atenção à Saúde. Departamento de Atenção Básica. *Qualificação dos Indicadores do Manual Instrutivo para as equipes de Atenção Básica (Saúde da Família, Saúde Bucal e Equipes Parametrizadas) e NASF*. Brasília: MS; 2015.

25. Rice P, Smith P. *Approaches to Capitation and Risk Adjustment in Health Care: An International Survey*. York: Centre for Health Economics, The University of York; 1999.

26. Chasing C, Chi Y-L, Smith P, Borowitz M, Thomson S. *Paying for Performance in Health Care - Implications for health system performance and accountability*. Genebra: European Observatory on Health Systems and Policies; 2014.

27. Saltman R, Rico A, Boerma W. *Primary Care in the Driver's Seat? Organizations Reform in European Primary Care*. Genebra: European Observatory on Health Systems and Policies; 2006.

28. Martin J, Associates Limited. *Evaluation of the PHO performance programme: final report*. Auckland: Martin J and Associates Limited; 2008.

29. Ministry of Health New Zealand. *New Zealand health strategy*. Wellington: Ministry of Health; 2000.

30. Campbell SM, Roland MO, Middleton E, Reeves D. Improvements in the quality of clinical care in English general practice: longitudinal observational study. *BMJ* 2005; 331(7525):1121.

31. Campbell S, Reeves D, Kontopantelis E, Middleton E, Sibbald B, Roland M. Quality of primary care in England with the introduction of pay for performance. *N Engl J Med* 2007; 357(2):181-190.

32. Campbell S, MacDonald R, Lester H. The experience of pay for performance in English family practice: a qualitative study. *Ann Fam Med* 2008; 6(3):228-234.

33. Doran T, Fullwood C, Gravelle H, Reeves D, Kontopantelis E, Hiroeh U, Roland M. Pay-for-performance programs in family practices in the United Kingdom. *N Engl J Med* 2006; 355(4):375-384.

34. Pike C. *An Empirical Analysis of the Effects of GP Competition*. Co-operation and Competition Panel Working Paper Series; 2010.

35. Brasil. Portaria nº 930, de 15 de maio de 2019. Institui o Programa "Saúde na Hora", que dispõe sobre o horário estendido de funcionamento das Unidades de Saúde da Família, altera a Portaria nº 2.436/GM/MS, de 2017, a Portaria de Consolidação nº 2/GM/MS, de 2017, a Portaria de Consolidação nº 6/GM/MS, de 2017, e dá outras providências. *Diário Oficial da União* 2019; 15 maio.

36. Brasil. Portaria nº 2.983 de 11 de Novembro de 2019. Institui o Programa de Apoio à Informatização e Qualificação dos Dados da Atenção Primária à Saúde - Informatiza APS, por meio da alteração das Portarias de Consolidação nº 5/GM/MS e nº 6/GM/MS, de 28 de setembro de 2017. *Diário Oficial da União* 2019; 11 nov.

37. Brasil. Portaria nº 3.510 de 18 de dezembro de 2019. Altera a portaria de Consolidação nº 6/GM/MS, de 28 de setembro de 2017, para instituir incentivo financeiro de custeio adicional mensal para municípios com equipes de saúde integradas a programas de formação profissional no âmbito da Atenção Primária à Saúde. *Diário Oficial da União* 2019; 18 dez.

38. Starfield B. *Atenção primária: equilíbrio entre necessidades de saúde, serviços e tecnologia*. Brasília: UNESCO, MS, 2002.

39. Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. *Milbank Q* 2005; 83(3):457-502.