

## Health regionalization in Amazonas: progress and challenges

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**Abstract** *This paper analyses the health services regionalization process in the State of Amazonas through a case study covering the health sub-region Manaus Surroundings. This is a qualitative, descriptive and analytical research, which data were collected using interviews, documents and Internet reviews, oriented by the guiding concept of health regionalization. Study findings revealed a social setting dominated by asymmetry, verticality, competitiveness and fragile multilateral relations among municipalities, associated to a bureaucratic profile of local institutions operating in the region under study. The political agents have limited acknowledgement of the sociopolitical and institutional conditions in which they operate. They usually impute healthcare networks' management and operational issues to the natural and geographical characteristics of the Amazon region, but their financing, governance and technical capacity are insufficient to overcome them.*

**Key words** *Regionalization, Health policies, Unified Health System, Amazon*

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## Introduction

Among the main impediments to achieving SUS universality are socioeconomic and health inequalities prevailing in the country, exacerbated by the limited governance of health authorities in the less favored municipalities and regions, particularly in the North<sup>1</sup>.

Health inequalities are exemplified in the North<sup>2</sup> by the restricted number of physicians working in the SUS (1/1,000 inhabitants) and high capital/inland ratio in the availability of these professionals (2.5 doctors/1,000 inhabitants in capitals, against 0.4/1,000 inhabitants in inland). In the comparison between geographical regions, the availability of doctors in the capitals of the North was almost three times lower than that in the capitals of the South of the country (7.1/1,000) and more than four times lower than the distribution of doctors in the Southeast (1.7/1,000). Among the northern states, Amazonas had the lowest rate of physicians registered activity in the state's inland (6.9%).

Health regionalization is seen as one of the alternatives to reduce inequalities in access to the SUS<sup>3</sup> and is characterized as an integration between the different levels of health care, conformed to economic and social policies geared towards social inclusion and to a development model committed to curbing regional inequalities<sup>4</sup>.

Literature<sup>1,5,6,7,8</sup> has pointed out important inequalities between health regions in the country, particularly in the North, where 46% of health regions have low HDI. There, the health services network is insufficient and it is hard to establish human resources, especially in small municipalities. Medium and high complexity services are concentrated in capitals, to the detriment of the population living in remote areas. The transfer of federal funds is much lower than the national per capita average, and healthcare infrastructure is inadequate and unresolved in the face of needs. There is low institutionality and discontinuity in federal government policies with little sensitivity to regional specificities, alongside limited management capacity at the municipal level. Regionalization has been slow, with a marked lack of projects that implement the integration within and between health regions<sup>9</sup>.

Among the instruments to support the implementation of the health regions are the health map; the agreed contracts (Organizational Contracts for Public Action – COAP) between the federated entities operating in the same region,

and the Interagency Commissions, which include the Regional Interagency Commissions (CIR), bodies of regional governance of health care networks<sup>10,11</sup>, whose work is relevant to understand how the dynamics of regionalization are implemented.

This paper analyzes the advances and hardships of the regionalization process of the Surroundings of Manaus (ENMAO) health region in the state of Amazonas, aiming at understanding, through the analysis of structural and institutional realms<sup>8</sup>, aspects of its governance and implementation within the Regional Interagency Commission Manager and the Regional Administration Office as a whole.

## Methodology

This is a qualitative research that analyzes the process of regionalization in the Surroundings of Manaus (ENMAO) health region. The selection of this health region followed the criteria defined in the Policy, Planning and Management of Health Care Regions and Networks in Brazil (Regions and Networks), which proposed a typology to classify, at the national level, the health regions formalized in the SUS<sup>6</sup>. This typology was based on the socioeconomic situation and the supply profile and complexity of health services of the regional health centers formally established as of January 2014. The procedures adopted selected 17 health regions, classified into five groups: Group 1 (low socioeconomic development and low service supply); Group 2 (medium/high socioeconomic development and low service supply); Group 3 (medium socioeconomic development and middle service supply); Group 4 (high socioeconomic development and medium service supply); and Group 5 (high socioeconomic development and high service supply).

The ENMAO region classified in Group 4 was selected for the survey, with data collection in three (Manaus, São Gabriel da Cachoeira and Careiro da Várzea) of the twelve municipalities of that region. Data analyzed here are based on nine open interviews applied to municipal and state managers (undersecretaries of the capital and the inland of Amazonas), PHC coordinators and CIR-ENMAO's coordinator on the regionalization process in the state of Amazonas. Amazonas and, in particular, the health region of Manaus. In the documentary component, we reviewed minutes and resolutions from the CIR-ENMAO from 2012 to 2015, period of reg-

ular operation of this CIR, and institutional documents of the health secretariats participating in the ENMAO. The review also included web pages where the topic of regionalization in Amazonas was addressed.

Data analysis varied according to the type of source. We developed a conformity assessment with regard to minutes, taking Decree 7.508/11 as the baseline reference to analyze the performance of this collegiate. Three chapters of this decree guided the compliance analysis: Chapter III: Health Planning; Chapter IV: Health Care Organization; and Chapter V: Federative Articulation. The reading of the 32 existing minutes, covering the period from 2012 to 2015, generated an analytical framework (Chart 1) that sorted the relevant contents according to the categories previously chosen to guide the evaluation.

The detailed reading of interviews led to the emergence of five argumentation categories<sup>12</sup>. These categories were analyzed both as discursive units<sup>13</sup> that expressed the immediate content of the discourse and as ways of comparing the interpretations of speakers, providing access to the web of relationships that permeates the process of regionalization. The procedure generated a set of meanings that express the interpretation of the set of political stakeholders involved in the subject investigated, without neglecting potential conflicts and differences of interpretation between them<sup>13</sup>.

The Ethics Committee, Faculty of Medicine, University of São Paulo (FMUSP) approved the research on June 15, 2015. All the respondents accepted to participate in the research and signed the informed consent form (ICF).

## Results and discussion

The process of regionalization in the state of Amazonas is difficult to understand. There is a shortage of consistent and updated publications and institutional information. Figure 1 made available by CIR-Manaus Surroundings (CIR-ENMAO) shows the spatial distribution of the nine health regions in Amazonas. The map dated 2011 brings information different from that found in the PDR-SUSAM dated 2003, which was the only document related to the topic, found on the page of the State Health Secretariat of Amazonas – SUSAM<sup>14</sup>.

Manaus Surroundings (ENMAO) health region was established in 2010, with nine municipalities, receiving a subsequent increase of three

municipalities that do not maintain spatial continuity with the rest of the regional administration. The geographical and demographic profile of the regional administration is summarized in Table 1.

For the region as a whole, with only Manaus as an exception, the demographic density is low and distributed in large territorial spaces, in which the most remote municipalities are located at more than 800 km from the capital.

The information on the distances and means of access shown in Table 1 indicate only the stretches that connect Manaus to each municipality of the region, since in the state of Amazonas, the inter-municipal movement of people and cargoes is infrequent; the preferential means of transportation is by river and air, in stretches that connect Manaus to specific municipalities. That is, the interaction model between the municipalities of Amazonas and Manaus, its main power center, is binary and not networked. These characteristics are valid both for the inter-municipal interaction in the health region of the ENMAO and other geopolitical spaces in the state<sup>16,17</sup>.

Table 1 also expresses inequalities, with emphasis on the demographic disproportion between Manaus and other municipalities in the regional administration and the marked poverty situations and unsatisfactory social indicators, expressed in the low HDI, with the exception of Manaus.

Santa Isabel do Rio Negro has the lowest GDP per capita of the group (R\$ 3,077.14), followed by Barcelos (R\$ 4,399.71). Careiro, Manauquiri and Nova Olinda form a group with GDP per capita in the range of R\$ 5,000.00 each, followed by Autazes and Careiro, with GDP of just over R\$ 6,000.00, per capita. Rio Preto da Eva (R\$ 13,836.99) and Presidente Figueredo (R\$ 18,637.63) are the municipalities whose GDPs are closer to those of Manaus, with R\$ 32,300.56 per capita GDP<sup>15,17</sup>.

Such conditions have implications for the organization and supply of health services, the dynamics of regionalization in Amazonas and in this regional administration in particular. Not only does Manaus have the largest population and better living conditions in the region, but also congregates almost 60% of the state's population; contributes with 77.7% of the GDP of Amazonas and has, in the set of more than 300 public health establishments in the city, all public services of high complexity and about 89% of the medium complexity available in the state, which forces users of all the municipalities to go to the

Chart 1. CIR-ENMAO Conformity Assessment.

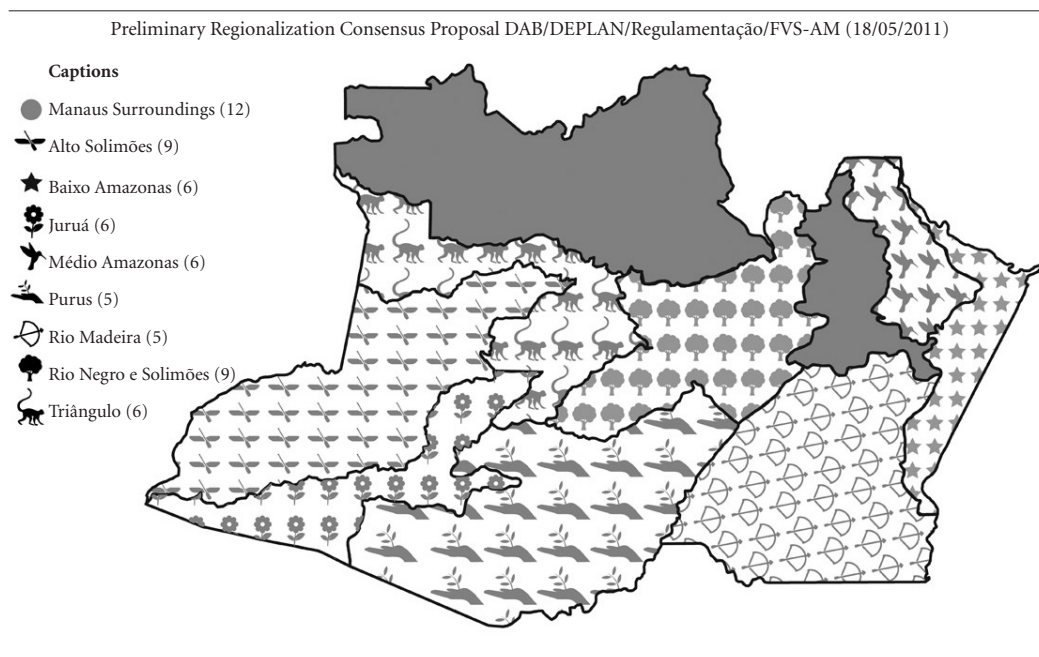
Topics	Recommendations of Decree 7.508/2011	Minutes of CIR – ENMAO
<b>Health Planning</b>	The planning will be bottom-up and integrated from local to federal level, after hearing the respective health councils and making compatible the needs of health policies with the availability of financial resources.	<ul style="list-style-type: none"> <li>- Discussions about planning focused mainly on the difficulties in realizing it;</li> <li>- Reporting specific difficulties in the planning of actions by participating municipalities who sought, in the CIR, technical support to solve them.</li> <li>- There are records of regional goals approved in the CIR, but no records of planning and agreement involving all the municipalities of the regional body were found.</li> </ul>
<b>Healthcare Organization</b>	Comprehensive healthcare begins and is completed in the Health Care Network by referring the regional and interstate network user, as agreed in the Interagency Committees. The Federal Government, the States, the Federal District and the Municipalities will agree in their respective Interagency Committees their own responsibilities regarding the list of actions and services included in the National Health Actions and Services List (RENASES).	<ul style="list-style-type: none"> <li>- There were no records of discussions that defined a list of actions by municipalities, according to their installed capacity, nor any flows that guided referrals of users to other municipalities and other points of care.</li> <li>- Discussions of this nature addressed only specific situations of municipalities that sought to ensure individual access of patients to tests or hospitalization.</li> <li>- The performance of the regulation system was not discussed in the CIR for the period studied.</li> </ul>
<b>Interfederative Coordination</b>	The Interagency Committees will agree on general guidelines on Health Regions, integration of geographical limits, referral and counter-referral and other aspects related to the integration of health actions and services among federative entities; The object of the Public Health Action Organizational Contract is the organization and integration of health actions and services, under the responsibility of the federal entities in a Health Region, aiming at ensuring comprehensive care to users.	<ul style="list-style-type: none"> <li>- There was no systematic discussion to draw up guidelines regarding the organization and performance of the ENMAO Health region. A few minutes mentioned only difficulties in the operationalization of the proposal. Referral and counter-referral strategies for the region as a whole were not discussed during the study period.</li> <li>- There was no elaboration, discussion or agreement of COAP in the CIR-ENMAO during the studied period.</li> </ul>

capital of the state to receive specialized care<sup>14,17</sup>. These are structural inequities, associated not only with geographical and political isolation, but also with the low capacity of management and collection by the administration of lower municipalities, which also makes it impossible to incorporate technology into their services, perpetuates low resolutability and poor health levels<sup>5,6</sup>.

Pavão *et al.*<sup>18</sup> showed socioeconomic and demographic indicators for 17 health regions selected in the Regions and Networks project. In the comparison between them, the Manaus Surroundings (ENMAO) region was the one with the highest income ratio (23.7%) in the study group. This large concentration of income coexists with

a per capita income that is comparatively lower than that of the other three health regions in Brazil that have more than 2 million inhabitants, as is the case in ENMAO<sup>18</sup>.

According to the typology adopted in the Regions and Networks Project, ENMAO was classified in Group 4, which corresponds to high economic development and middle supply of health services. The comparison with the other health regions of the same group (which are Baixada Cuiabana and Sul Barretos) shows that the ENMAO has a lower HDI and lower per capita income (R\$ 663.20 for ENMAO, against R\$ 881.10 and R\$ 4,797.40 for Baixada Cuiabana and Sul Barretos, respectively). That is, although



**Figure 1.** Health regions in State of Amazonas.

Source: Preliminary Regionalization Consensus Proposal<sup>19</sup>.

**Table 1.** Demography, Geography and HDI in the Manaus Surroundings Region.

Municipality	HDI	By Land area (km <sup>2</sup> )	Population Density (inhabitants/km <sup>2</sup> )	Population	Distance from Manaus (in Km)	Means of transportation to Manaus
Autazes	0.661	7,632.10	4.19	32,135	110 (straight line) 218 (waterway)	Waterway and by Land
Barcelos	0.500	122,476	0.22	27,433	405 (straight line)	Waterway
Careiro da Várzea	0.658	2,643	9.11	24,937	29 (straight line)	Waterway
Careiro	0.630	6,124.30	5.36	33,517	102 (straight line)	Waterway and by Land
Iranduba	0.694	2,214.25	18.42	40,781	27.7 (straight line)	Waterway and by Land
Manaquiri	0.663	3,985.10	5.74	24,325	60 (straight line) 67 (waterway)	Waterway
Nova Olinda do Norte	0.629	5,633.00	5.48	31,749	138 (straight line) 144 (waterway)	Waterway
Presidente Figueredo	0.647	25,422.25	1.07	28,652	107 (straight line)	by Land
Rio Preto da Eva	0.611	5,813.21	4.42	26,948	57.5 straight line	by Land
Sta. Isabel do Rio Negro	0.479	62,846	3.25	19,292	631 (straight line) 781 (waterway)	Waterway
São Gabriel da Cachoeira	0.609	109,185	2.53	43,094	852 (straight line)	Waterway and by Air
Manaus	0.774	11,401.07	158.06	1,802,525	--	--

Source: IBGE, 2010; SEPLAN, 2014, IDH-M, 2000; SEGOV, 2011, SEMSA MANAUS, 2013.

at the local level, the per capita GDP of Manaus is much higher than that of other municipalities that make up this region, its average per capita income is comparatively lower than that found in other health regions with characteristics similar to those of ENMAO.

Based on the data of Pavão et al.<sup>18</sup>, it can be verified that the dependency ratio of the ENMAO Region is 51.4, compared to 41.1 and 41.6 for Baixada Cuiabana and Sul Barretos, respectively. Also noteworthy is a transfer of SUS federal funds very unfavorable to the ENMAO, which receives R\$ 78.7 per capita/year, in contrast to Sul Barretos, which receives R\$ 171.6, 2.2 times higher than ENMAO. Comparison with Baixada Cuiabana is even more unfavorable, since R\$ 339.3 per capita/year received by the Cuiabana region is more than fourfold the amount transferred to the ENMAO region. The amount of the transfer of SUS funds per inhabitant to the ENMAO is the lowest among the 17 health regions studied in the Regions and Networks project. In short, health underfunding recurrently mentioned in the literature persists and exacerbates the weaknesses of the municipal systems of the ENMAO regional administration.

### Characteristics of the Management Process in ENMAO regional administration

The conformity analysis, which used Decree 7.508/2011 as a guide for the analysis of the regionalization process, showed that the design of ENMAO does not meet the concept of Health Region, in particular because it consists of non-border municipalities. In the revised documentation, there was no justification for the current regional administration composition, which differs from that proposed in the 2003 SUSAM's PDR.

Mendes<sup>20</sup> says that regionalization includes the development of strategies and tools for planning, administering, coordinating, regulating and financing a network of health actions and services in a given territory. Municipal managers and PHC administrators interviewed only provided information about their municipalities and could not make judgments about the whole regional administration. Similarly, the CIR minutes do not bring discussions, initiatives or plans of action aimed at joint action in the territory, suggesting poor interweaving in the management process of the ENMAO.

The analysis of compliance of the CIR activity, carried out through the reading of its minutes

was guided by content of Chapters III: Health Planning; IV: Health Care Organization; V: Federative Articulation, of Decree 7.508/2011, as shown in Table 2.

The transcript of a section of the CIR-ENMAO report exemplifies some actions aimed at accessing SUS planning systems:

*...Mr. "X", secretary of health of the municipality "Y", thanks the CIR's secretariat for their support in the recovery of passwords to access information and enter data. This was an important demand that we could not understand how to solve, even more so with these managerial changes, we got lost with regard to passwords. (CIR Minute, 2015)*

The demand described above was very relevant by the participants, since the loss of the passwords made it impossible for the secretary to carry out the registration of the actions developed in his municipality in the management systems of the Ministry of Health. Such action – mechanical, timely and individualized – is little related to the purposes proposed for the CIR, but clearly expresses the discontinuity in the management processes, exacerbated by the high turnover of managers, which emerged as a recurring theme in the respondents' documents and statements, as well as in the literature<sup>5,6,9,16</sup>. In the lack of qualified technical staff and management continuity, CIR becomes a solidary space of mutual support, not to plan but to resolve concerns in the management of the recording tools of activities prescribed by the federal manager.

In the daily life of the CIR, distancing from its own attributions is sometimes perceived by its participants, as can be observed in the speech transcribed below:

*Mr. "X" indicated that there is a future intention to promote a regional agreement with established goals to gradually qualify the agreement process to hold those involved accountable so that we can plan ahead over time. This is already done in the bureaucratic form. People make the agreement and shelve it away, and when it comes to submitting the plan and a there is request to feed the system again, then everyone rushes. We need to make this a tool that really helps us better qualify the management and I believe this is possible (CIR Minute, 2015)*

The speech shows an objective image to be pursued, but at the same time, it clearly diagnoses the current shortcomings of CIR's operation. Such findings are not specific to CIR-ENMAO, or even the state of Amazonas. A nationwide study<sup>21</sup> has shown that in most regions, the CIR has operated as a bureaucratic space, fueled by

disputes and priorities of party, national or state policies, showing the incipience of an action capable of collectively discussing solutions to local problems.

The pattern is repeated in the thematic of the organization of care networks. The limited installed capacity and resoluteness of inland municipalities, in parallel to the concentration of services in the capital, lead to the need to refer a large number of cases to medium and high complexity. In the absence of defined reference flows, the management of this task is problematic and has not involved the formulation of collective solutions. One of the minutes illustrates with detail the orientation given by the coordinator of the CIR at the time so that the health secretariat of one of the municipalities of the regional administration would attend the directorate of a state hospital to negotiate a referral flow that would ensure the acceptance of their residents referred for hospital treatment. (CIR Minute, 2012)

The persistent lack of a care design to ensure the referral of users in the ENMAO health region perpetuates an informal flow in which situations are resolved on a case-by-case basis, without prioritization and cost-effectiveness analysis to guide the transportation. The lack of discussions and agreements aimed at establishing the care networks and implementing the COAPs explain, to a certain extent, the persistent bureaucratic management model, with little adherence to the concrete needs of users and municipal health systems that revolve around the city of Manaus.

The analysis of the content of the CIR-ENMAO resolutions reaffirms the idea of the bureaucratic profile of action of this managing committee. In the period between 2012 and 2015, CIR-ENMAO issued 87 resolutions. Of these, 65 (82.2%) addressed the Ratification / Approval / Implementation of regulations originating from the Ministry of Health and addressed to municipalities, or responses from municipalities, enabling or disabling actions recommended by the federal level for implementation at the municipal level; 15 resolutions (18.9%) contained guidelines on the Transfer/Application of funds from the Ministry of Health and 5 were errata of previous resolutions. In the period, only one resolution focused on the integration of planning in the health region and two addressed increased health care actions.

The implementation of collegiate and regionalized management mechanisms in the Amazon has been slow<sup>8,10</sup> and the Amazon is no exception. The state was one of the last to join the Health

Pact, and, in 2010, only 50% of the Amazonas municipalities had made such a commitment. In an analysis of the scope of the decentralization process in the SUS, Lima et al.<sup>22</sup> attributed diversity to inter-sectoral determinants and constraints that transcend the health field.

The conclusions are similar to those of Oliveira<sup>5</sup> and Viana et al.<sup>6-9</sup> for the Amazon. It is valid to infer that the slow and fragmentary rhythm of regionalization process studied here is linked to unfavorable structural conditions at the local level, given the political, economic and administrative constraints of the municipalities that make up the ENMAO Region. Also important are the institutional political limits, either by the federal manager – more inclined to prioritize major health problems and/or population groups and large municipalities, to the detriment of specific territories and populations – or by managers and technical bodies of the municipal health systems, pointed out by Viana et al.<sup>7,9</sup>, as unfamiliar with central government policies. Hardships faced by the ENMAO regional administration to overcome fragmentation established by the federative legal framework of the public administration may be much greater for other health regions in the state lacking technical staff and resources.

It should not be forgotten that such problems cannot be solved by administrative rationalization measures alone. The high concentration of health facilities in Manaus, the poor physical structure and low resolution of services within the state<sup>16,23</sup> require investment in personnel and infrastructure to reverse the centripetal tendency of the service flow.

Financing emerged as an important issue, both in CIR documents and in interviews with health managers. As identified in other realities<sup>24</sup>, there were current strategies that sought to maximize the transfer of funds from the Ministry of Health, optimizing the implementation of “rewarded” actions with financing or seeking empty healthcare spaces that would allow increased billing-per-procedure (CIR Minutes, 2012). Noteworthy in CIR minutes is the lack of debate on the optimization of access and collective budget use under the terms established in the regionalization policy, even when municipalities shared common needs and demands in the search for funds.

Another recurring theme in managers’ speeches concerns the great spaces and obstacles of Amazonian geography. They emphasize transportation difficulties, great floods, high ravines and other images that emphasize the power of

nature, seen as main figure in a hostile setting, where the leader stands powerless before an unavoidable enemy. In these statements, the Amazonian space characteristics are shown to provide the manager with a prior exemption for possible inadequacies and failures of the care system.

However, the recurrent narratives about natural obstacles is not accompanied by any evident strategies to address them. This is a non-existent thematic in management documents – including CIR's – where there is no reference as to how the health system should deal with the geographic characteristics of the region. Given the prominence of the logistical challenge in managers' statements, one could expect the management process to include in its action plans strategies for addressing isolation, dealing with the annual rivers' flood and ebb periods, with difficult communication and the high transportation costs of staff and patients.

Such strategies were not identified in the data collected so far. When questioned, managers interviewed deny having participated or led initiatives aimed at circumventing the logistical problems inherent in the supply of care in the Amazon. A future review of the municipal health plans of the municipalities included in the study is required in order to corroborate or deny such statements.

Another element missing in the narratives – except for a single respondent – is the reflection on the adequacy / inadequacy of the management models and processes of the institutions involved in the regionalization process. In addition to representing a novelty in the setting of decentralization in the SUS historically directed to municipalization, regionalization proposes the establishment of inter-municipal networks of health actions and services, whose operationalization would require important changes in the legal-administrative framework of the institutions involved<sup>21</sup>.

A satisfactory response to this challenge would require investment of time, requalification of management processes and of the professionals and the formalization of agreements that would enable the sharing of healthcare costing and responsibilities, which are not part of the current routine of the municipal manager. However, neither the CIR documents nor the managers' speeches contained proposals aimed at addressing or equating the aforementioned management challenges and strengthening – or establishing – the inter-municipal links required for regionalization. The inadequacies of this institutionality are not prerogatives of the regional

study; they have been identified as a current relevant characteristic of the ongoing national regionalization<sup>24-26</sup> process, although it seems more pronounced in the North region.

The characteristics described in the previous paragraphs have relevant implications for the delimitation of the regional administrations in the state, providing a better understanding of the design – at first glance, barely logical, or at least incongruent with regulations of Decree 7.508/11 – of the ENMAO Region. The respondents' speeches point to the difficulty in producing an adequate design in the formation of the regional administrations in Amazonas, which is also expressed by the variety of regional maps that alternate in time and in the few official documents that deal with the theme.

The process of including and removing municipalities in/from the design of health regions remains in progress and is already in its third version. It generated the current composition of the regional ENMAO administration, with the inclusion, as of 2010, of Barcelos, Santa Isabel do Rio Negro and São Gabriel da Cachoeira. These municipalities, located in the channel of the Negro River upstream of the capital, with the municipality of Novo Airão interposed between them and Manaus. This decision resulted in the aforementioned spatial discontinuity between municipalities that make up the regional ENMAO administration, since Novo Airão is geographically close to Manaus but is linked to another health region.

A more adequate understanding of this dynamics can be obtained in the speech of a former coordinator of CIR-ENMAO, who performed this function at the time of data collection. It is an exemplary testimony, as it contains a systematic reflection on the implementation process of CIR-ENMAO. The respondent points very clearly to the need to establish strategies that qualify inter-municipal management, preparing them to overcome the limitations of the political-legal framework that supports and regulates intra-municipal management, but does not support inter-municipal management. In addition, the former coordinator points out the superficial, or even artificial nature of the networking articulated by Decree 7.508/11 and earlier documents, by inducing the congregation of municipalities without prior history of social, economic and health interaction, which seems to be the profile of the regionalization underway in Amazonas.

They are preconditions that maintain or increase inter-municipal competitiveness and dis-



articulation, with managers lacking the technical means and resources to overcome the structural and institutional hurdles and provide governance to the regionalization process<sup>21,26</sup>.

### Final considerations

The mishaps and slow pace of health networks and regions policy are not limited to intrasectoral difficulties and the management process, but also need to be understood in light of the characteristics of organizing life in Amazonas, marked by the atomization and dispersion of social spaces, in counterpoint to the absolute centrality of Manaus. The capital monopolizes the systems of supply, transportation, provision of services and the conduct of political life, in a setting of weak leading roles of other municipalities and rarefied interaction between them. In the case of health, the binary system of relations between Manaus and other municipalities establishes a type of healthcare organization in which inland residents of the state are obliged to resort to the metropolis regularly in search of care, without a network of health interactions that resembles what is advocated for a health region.

Among the main characteristics of the regionalization policy is focusing on the polyarchic and cooperative interaction between institutional subjects, whose scope of action must be complementary to each other. The data obtained so far suggest that the choice of multiple cooperation networks as a central element of a public policy may have reduced chances of success in a reality where the asymmetry, verticality and fragility of multilateral relations between municipalities predominate. While the scarce financial and administrative policy autonomy of the small Amazonian municipalities are problems that have long been identified by researchers and managers, there is still a lack of integrative initiatives that facilitate collegial management, the integrated sharing of technology among municipal health systems and reduce asymmetry between them.

The attachment to geographic determinism in the horizon of concern of managers makes it difficult to recognize the lack of socio-political

and institutional means to improve the quality and effectiveness of health care and to overcome the challenges imposed by the natural space. The conditions imposed by the nature and social organization of Amazonian life can and should be taken into account in the health planning process, but they should be considered as contexts on which the action of the managers is inscribed. In the setting investigated, they appear as recognized obstacles, but which do not become the object of coordinated initiatives, with a view to neutralizing, overcoming or circumventing them.

There is a long way to go in the search of institutionalizing and implementing health regions in the state of Amazonas. We hope that the results analyzed here enable the understanding of the ongoing regionalization process and the obstacles faced by municipal and regional health systems, contributing to question their conceptions and management practices and to discuss guidelines induced by the federal level, when these are inadequate to the needs of the Amazon populations.

### Collaborations

L Garnelo and AB Lima Sousa participated in the conception of the study, data collection, analysis and interpretation, paper design and writing, critical review and approval of the version to be published. CO Silva participated in data collection and writing of the article.

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