

Implementation of the Integrated System Full Capacity Plan by the Municipality of Belo Horizonte, Brazil

Implementação do Plano de Capacidade Plena Integrada do Sistema Pelo Município de Belo Horizonte, Brasil
Implementación del Plan de Capacidad Plena Integrada del Sistema por el Municipio de Belo Horizonte, Brasil

RESUMO:

Objetivo: Descrever o processo de implementação do Plano de Capacidade Plena Integrado do Sistema pelo município de Belo Horizonte como estratégia para gestão da capacidade hospitalar em rede. **Método:** Estudo descritivo, de natureza metodológica, baseado na adaptação da metodologia de Capacidade Plena para uma central municipal de regulação. Foram analisados dados de solicitações de internação de urgência, perfil da rede hospitalar e distribuição de leitos por especialidade entre 2023 e 2025. **Resultados:** As análises subsidiaram a definição de cinco níveis graduais de contingência e a elaboração de um modelo progressivo de resposta para monitorar a pressão assistencial e orientar ações conforme a gravidade do cenário. A implementação aprimorou a previsibilidade dos fluxos de internação, fortaleceu a articulação entre hospitais e favoreceu o uso mais eficiente da capacidade instalada. **Conclusão:** A adaptação da metodologia para a gestão municipal contribuiu para fortalecer a governança da rede hospitalar e apoiar a resposta em situações de sobrecarga assistencial.

DESCRIPTORES: Gestão hospitalar; Planejamento em saúde; Rede de atenção à saúde.

ABSTRACT:

Objective: To describe the implementation of the Integrated System Full Capacity Plan by the municipality of Belo Horizonte as a strategy for network-based hospital capacity management. **Method:** Descriptive methodological study based on adapting the Full Capacity methodology to a municipal regulation center. Data on emergency admission requests, hospital network characteristics, and bed distribution by specialty from 2023 to 2025 were analyzed. **Results:** The analyses supported the definition of five graduated contingency levels and the development of a progressive response model to monitor healthcare demand and guide actions according to system pressure. Implementation improved the predictability of admission flows, strengthened coordination among hospitals, and promoted more efficient use of available capacity. **Conclusion:** Adapting the Full Capacity methodology to municipal management strengthened hospital network governance and supported decision-making in healthcare overload scenarios.

DESCRIPTORS: Hospital Management; Health Planning; Healthcare Network.

RESUMEN:

Objetivo: Describir el proceso de implementación del Plan Integrado de Capacidad Plena del Sistema por el municipio de Belo Horizonte como estrategia para la gestión de la capacidad hospitalaria en red. **Método:** Estudio descriptivo de naturaleza metodológica basado en la adaptación de la metodología de Capacidad Plena a una central municipal de regulación. Se analizaron datos sobre solicitudes de internación de urgencia, características de la red hospitalaria y distribución de camas por especialidad entre 2023 y 2025. **Resultados:** Los análisis permitieron definir cinco niveles graduales de contingencia y desarrollar un modelo progresivo de respuesta para monitorear la presión asistencial y orientar las acciones según la gravedad del escenario. La implementación mejoró la previsibilidad de los flujos de internación, fortaleció la articulación entre los hospitales y favoreció un uso más eficiente de la capacidad instalada. **Conclusión:** La adaptación de la metodología a la gestión municipal fortaleció la gobernanza de la red hospitalaria y apoyó la respuesta frente a situaciones de sobrecarga asistencial.

DESCRIPTORES: Gestión Hospitalaria; Planificación en Salud; Red de Atención de Salud.

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INTRODUCTION

Overcrowding in urgent and emergency care services constitutes a global public health problem, characterized by an insufficient number of available beds to meet the growing demand for hospital care¹. This situation directly impacts the quality of care, prolongs patient wait times, and compromises the performance of the entire healthcare network^{1,2}.

work^{1,2}.

In several countries, hospital capacity management strategies have been used to mitigate the problem, notably the Full Capacity Plan (FCP), which is based on the premise that overcrowding is not a problem exclusive to the emergency department but affects the entire institution and therefore requires an integrated response³.

In the Brazilian context, the adaptation of the PCP has been explored

by hospitals of various sizes, with a focus on improving patient flow and optimizing resources⁴. However, its application in healthcare coordination structures is still in its early stages. In Belo Horizonte, the Unified Health System (SUS-BH) organizes hospital care through Healthcare Coordination Centers, notably the Admission Coordination Center (CINT), which is responsible for allocating medium- and high-complexity beds. The CINT

acts as an intermediary between emergency care units (UPAs), open-door hospitals, and referral hospitals, with the aim of ensuring timely and equitable access to hospital admissions⁴.

The integrated management of hospital capacity is an ongoing challenge, especially in situations where supply and demand are out of balance. While some hospitals operate above capacity, others have idle beds, even within similar specialties. This imbalance underscores the need for systemic coordination mechanisms capable of redistributing the use of hospital resources in real time. In this context, the Belo Horizonte Municipal Health Secretariat (SMSA-BH) proposed the implementation of the Integrated Full-Capacity System Plan (PCP-IS) in the SUS-BH Network, with the goal of adapting the principles of full-capacity management to the municipal level, acting in a coordinated manner across the entire SUS-BH network and serving all the municipalities referenced here.

The literature on this topic focuses on the hospital-based application of the protocol, with few reports on municipal experiences⁵. The development of the PCP-IS therefore represents an innovation in hospital network management and public health by establishing a model for continuous monitoring of inpatient capacity and offering structured, phased responses to overcrowding. Thus, this study aims to describe the process of implementing the PCP-IS in the SUS-BH network, highlighting the stages of development, the monitoring tools, and the potential identified for hospital capacity management.

METHODOLOGY

The creation and implementation of the PCP-IS were structured into seven stages, focused on hospital capacity management methodologies and adapted to the context of munic-

ipal healthcare regulation. The stages involved a situational assessment of the existing hospital network, the collection and analysis of data on admission requests, the development of monitoring indicators, the modeling of contingency levels and activation criteria, the development of management and monitoring tools, and, finally, the implementation phase and operational adjustments.

Situational Assessment of the Existing Network

The first stage consisted of a situational assessment of the hospital network that makes up the SUS-BH. This survey was conducted in June 2025 and included the identification of the total number of hospitals affiliated with the system, the administrative status of each facility, the total number of available beds by medical specialty, and the types of beds (general, surgical, ICU, and intermediate).

The information was obtained from administrative databases of the SMSA-BH, internal spreadsheets from the Directorate for the Regulation of Medium- and High-Complexity Healthcare (DMAC), and supplementary data provided by the hospitals' Internal Regulation Units (NIR). This survey made it possible to identify bed availability, particularly in the areas of internal medicine, pediatrics, and intensive care, and supported the formulation of strategies for redistribution and full-capacity management.

Collection and Processing of Data on Hospital Admission Requests

Data collection regarding admission requests covered the period from March 2023 to April 2025, totaling 26 months of observation. The data were provided by DMAC and obtained in an anonymized form, without including any personal or sensitive patient information; thus, submission to a Research Ethics Committee was not required, in accordance with Resolution

No. 466/2012 of the National Health Council. The information was extracted from the SA04R System, a proprietary system of SMSA-BH, which records daily admission requests originating from the UPAs and hospitals in the network. Each record included the date of the request, the requested medical specialty, the referring facility, the destination facility, the status of the request (reserved, pending, or canceled), and the time elapsed until the reservation was confirmed.

To construct the PCP-IS, only those requests that required transfers via the Admission Center were used, excluding requests for hospital admissions at the health facilities themselves, which are also regulated by the SMSA-BH Admission Center.

After collection, the data were organized into time series, allowing for the calculation of daily averages and the mean, minimum, and maximum values of daily requests awaiting transfer (pending) over the 26-month period, as well as the proportion of pending requests by specialty, which informed decisions regarding the network's capacity and contingency levels. It was determined that medical specialties would be selected that, collectively, accounted for at least 85% of the hospitalizations requested and recorded during the analyzed period, as well as those from hospitals with 100% regulated admission, philanthropic hospitals, and hospitals providing 100% SUS care.

Definition of Contingency Levels by Specialty

A five-level structure was adopted based on the Likert scale, allowing for the progressive scaling of operational responses and the integrated coordination of management actions, in order to avoid isolated or belated measures in the face of increased demand for care.

The definition of the thresholds for each level by specialty was based on an

analysis of the historical series of daily admission backlogs, using two main statistical measures as a reference: the average and the maximum value observed during the period.

The average number of daily pending cases per specialty was calculated as the ratio of the total number of daily pending cases to the number of observations, according to Equation (1):

$$\bar{x}_{mean,e} = \sum X_{i,e} / n_e \quad \text{Eq. (1)}$$

where:

$\bar{x}_{mean,e}$: represents the mean number of patients awaiting admission daily by specialty e ;

$X_{i,e}$: represents the number of patients awaiting admission observed on day i by specialty e ;

n_e : represents the total number of days analyzed for specialty e over the entire time series.

The maximum number of daily outstanding cases per specialty was defined as the highest number of outstanding cases observed throughout the entire time series, as shown in Equation (2):

$$X_{maximum,e} = \max(X_{i,e}) \quad \text{Eq. (2)}$$

where:

$X_{maximum,e}$: represents the maximum number of daily pending cases for specialty e .

Based on an analysis of historical time series data on requests and pending cases, five contingency levels were defined for the PCP-IS, designated as routine, alert, full capacity, critical saturation, and public health emergency. Each level corresponds to a percentage range of demand relative to the historical time series and determines the set of actions to be taken by managers.

Level 1 (Routine) corresponds to the historical average of pending transfers plus 10%. This increase was adopted to absorb minor daily fluctuations, maintaining the system's operational stability even in the face of occasional variations in demand. Level 1, by specialty, can be calculated using the following Equation (3):

$$N_{1,e} = \bar{x}_{mean,e} \times 1.1 \quad \text{Eq. (3)}$$

Level 2 (Alert) corresponds to 80% of the maximum value observed in the historical series for each specialty. This threshold was chosen because it represents a situation requiring moderate attention, in which the network begins to approach its historical operating limit, necessitating intensified monitoring and response planning. Level 2 for each specialty can be calculated using Equation (4):

$$N_{2,e} = X_{maximum,e} \times 0.8 \quad \text{Eq. (4)}$$

Level 3 (Full Capacity) is defined as 90% of the maximum number of pending cases per specialty observed in the historical data series. This threshold marks the upper limit of the health-care network's regular operation, when there is an imminent risk of saturation and a need for immediate reorganization of patient flows and the availability of inpatient beds for transfers. Level 3, by specialty, can be calculated using Equation (5):

$$N_{3,e} = X_{maximum,e} \times 0.9 \quad \text{Eq. (5)}$$

Level 4 (Critical Saturation) corresponds to the maximum number of pending cases per specialty observed in the historical data series, indicating a state of partial collapse of hospital capacity, in which measures to expand capacity and redistribute patients become mandatory to maintain access. Level 4, by specialty, can be calculated using Equation (6):

$$N_{4,e} = X_{maximum,e} \quad \text{Eq. (6)}$$

Level 5 (Public Health Emergency) is defined as equal to or greater than the maximum number of pending cases per specialty observed in the historical data series, plus 10%. This level represents a total collapse of hospital capacity, exceeding all previous records and requiring immediate, intersectoral, and policy-level intervention. Level 5, by specialty, can be calculated using Equation (7):

$$N_{5,e} = X_{maximum,e} \times 1.1 \quad \text{Eq. (7)}$$

Definition of contingency levels by hospital and specialty

The distribution of the required service volume by specialty and by hospital was calculated by taking into account the number of participating hospitals involved in the PCP-IS activation, proportional to each hospital's average service volume during the analyzed period.

Therefore, the percentage contribution of each hospital during the PCP-IS activation, by level and by specialty, can be obtained according to the following equation:

$$PCH_{h,e} = (\sum S_{h,e} / \sum S_{T,e}) \quad \text{Eq. (8)}$$

where:

$PCH_{h,e}$: is the proportion of transfers made during the period by each hospital h in specialty e ;

$\sum S_{h,e}$: is the total number of transfers made by hospital h during the period for specialty e ;

$\sum S_{T,e}$: is the total number of transfers made by all hospitals during the period for specialty e .

During the activation of the PCP-IS at levels 2, 3, 4, and 5, it is necessary to estimate the additional number of inpatient beds that each hospital must

provide, by specialty, in order to restore operating conditions equivalent to level 1. This estimate allows for measuring the effort required to temporarily expand care capacity to return to a state of normalcy, in proportion to each hospital's usual contribution to the network.

The need for additional inpatient beds to return the hospital to Level 1 of the PCP-IS, for each specialty, is estimated using Equation (7):

$$NVA_{i,h,e} = \Delta L_{i,e} \times PCH_{h,e} \quad (i = 2, 3, 4, 5) \quad \text{Eq. (9)}$$

where:

$$\Delta L_{i,e} = N_{i,e} - N_{1,e} \quad \text{Eq. (10)}$$

where:

$NVA_{i,h,e}$: represents the number of additional positions needed for hospital h , in specialty e , to return from level i to level 1;

$N_{i,e}$: is level i of PCP-IS activation for specialty e ; $N_{1,e}$: is level 1, considered the reference (constant);

$PCH_{h,e}$: corresponds to the proportional capacity of hospital h in specialty e .

Construction of the Backlog Indicator and the Operational Formula

Based on information consolidated from the Hospital Admissions Center's databases, a three-part analytical framework was developed to measure the gap between recorded demand and the hospital network's actual response capacity. This framework was designed to support the continuous monitoring of healthcare overload and to guide the activation of PCP-IS response levels.

The model was structured around three main dimensions, which reflect different aspects of hospital regulatory dynamics. The first dimension corresponds to the absolute number of patients awaiting admission in each specialty,

representing the accumulated demand for hospitalizations.

The second dimension refers to the time elapsed since the activation of the respective PCP-IS level, an indicator of the duration of the contingency situation at that level by specialty. This is the activation time of the PCP-IS level and represents the interval, in hours, between the onset and the maintenance of a given contingency level. This parameter was calculated according to Equation (11):

$$TTAi,h,e = t_{final,i,h,e} - t_{initial,i,h,e} \quad \text{Eq. (11)}$$

where:

$TTAi,h,e$: represents the total activation time for level i of the PCP-IS at hospital h for specialty e (in hours);

$t_{final,i,h,e}$: represents the start time of level i activation;

$t_{initial,i,h,e}$: represents the end time of level i for the same event.

This factor was used to assign greater weight to situations in which the contingency time remained prolonged, indicating a lower response capacity of the hospital network.

Dimension 3 is the turnover coefficient by specialty and reflects the dynamics of bed occupancy and release; it is calculated as the ratio of the number of requests to the number of confirmed reservations in the last 24 hours. The metric was defined by Equation (12):

$$CG_e = SR_{e,24h} / RR_{e,24h} \quad \text{Eq. (12)}$$

where:

CG_e : represents the turnover coefficient for specialty e ;

$SR_{e,24h}$: represents the number of requests recorded in the last 24 hours for specialty e ;

$RR_{e,24h}$: the number of reservations made in the last 24 hours for specialty e .

Higher values of CG_e reflect the behavior of the healthcare network, demonstrating a trend toward either a concentration or a reduction in pending admission requests for a given specialty.

Development of Support and Monitoring Tools

The operation and consolidation of the PCP-IS depended on the development of support tools and monitoring mechanisms capable of ensuring the Continuous updating of information and agile decision-making by managers. To this end, teams from DMAC and the Hospital Access Regulation Management (GERAH) developed a real-time electronic dashboard that integrates data on the volume of requests, reservations, and pending hospital admissions—organized by specialty—and consolidates, in real time, the volume of requests, reservations, and pending admissions by hospital and specialty.

At the same time, a table of levels and actions was developed, detailing the measures corresponding to each contingency level, as well as the institutional actors responsible for their implementation. A standardized form for activating the PCP-IS was also created to record the reason, date, time, and person responsible for activating each contingency level, as well as the number of beds required per hospital.

Implementation and Monitoring

The implementation of the PCP-IS was conducted gradually, beginning on an experimental basis in hospitals participating in the plan, with a pilot activation for a single specialty. This initial phase took place in October

2025 and aimed to test the activation rules and operational response mechanisms, allowing for the adjustment of the model's parameters based on the short-term results observed.

The set of tools also included the creation of an indicator monitoring spreadsheet, used for weekly tracking of the agreed-upon targets, and the publication of the administrative order that institutionalized the PCP-IS, defined operational responsibilities, and linked compliance to the contractual indicators set forth in the Health Care Operational Plan (POA) (6).

RESULTS

The initial assessment conducted within the SUS-BH network identified a total of 23 hospitals affiliated with the system, including municipal, nonprofit, and contracted facilities. Among these, six hospitals serve as the municipality's regulated entry points and are 100% SUS providers, making them strategic for organizing health-care delivery and implementing policies such as the PCP-IS.

Among the 29 medical specialties mapped, 11 priority specialties were

selected for the implementation of the PCP-IS. The selection was based on the representativeness of these specialties in relation to the total demand for hospital admissions, which together accounted for 85.89% of the requests recorded during the period.

Table 1 presents the required supply of inpatient beds by specialty, distributed according to the five PCP-IS activation levels, as well as the historical averages and maximums of the waiting list by specialty.

Table 1 – Additional Inpatient Bed Capacity Required, by Specialty, According to the PCP-IS Activation Level

Specialty	Demand	$X_{mean,e}$	$X_{maximum,e}$	$Level_{1,e}$	$Level_{1,e}$	$Level_{1,e}$	$Level_{1,e}$	$Level_{1,e}$
General Practice	22,55%	131	251	144	201	226	251	276
Orthopedics	15,35%	89	212	98	170	191	212	233
ICU	14,63%	85	187	94	150	168	187	206
Cardiology	9,29%	54	115	59	92	104	115	127
Vascular Surgery	5,34%	31	83	34	66	75	83	91
Neurosurgery	4,13%	24	62	26	50	56	62	68
Oncology	3,44%	20	113	22	90	102	113	124
Neurology	3,44%	20	48	22	38	43	48	53
TOE – WU Orthopedics	3,27%	19	28	21	22	25	28	31
Pediatrics	2,24%	13	65	14	52	59	65	72
General Surgery	2,24%	13	46	14	37	41	46	51
Total	85,89%	-	-	-	-	-	-	-

Source: SMSA/PBH, between March 2023 and April 2025

During activations, the redistribution of additional inpatient capacity followed a structured process that prioritized the six regulated hospitals—100% SUS—while respecting their specialty profiles.

The six priority hospitals exhibited heterogeneous response profiles, with substantial variation related to their

historical contribution to regulated transfers and the average and maximum additional capacity mobilized during the activations. This variability reflects differences in service portfolios, installed capacity, and operational limits among institutions and specialties.

Table 2 details the allocation of

additional hospital beds during Level 2–4 activations, broken down by specialty and hospital, illustrating how proportional contributions translated into concrete responsibilities for expanding capacity across the entire network.

Tabela 2 – Oferta adicional de leitos de internação necessária, por especialidade, conforme Nível de Ativação do PCP-IS, por hospital

Specialty	Hospital A			Hospital B			Hospital C		
	L2,e	L3,e	L4,e	L2,e	L3,e	L4,e	L2,e	L3,e	L4,e
General Practice	19	28	36	5	7	9	7	10	13
Orthopedics	0	0	0	23	33	40	10	13	19
Intensive Care Unit	20	27	34	8	10	12	6	9	14
Cardiology	11	14	18	8	11	14	8	11	14
Vascular Surgery	10	15	18	0	0	0	9	10	11
Neurosurgery	11	14	17	3	4	5	0	0	0
Oncology	29	34	39	6	7	8	3	4	5
Neurology	4	5	7	0	0	0	0	0	0
TOE – WU Orthopedics	0	0	0	1	2	4	0	0	0
Pediatrics	18	19	21	0	0	0	13	17	20
General Surgery	6	7	8	0	0	0	4	5	6
	Hospital D			Hospital e			Hospital F		
	L2,e	L3,e	L4,e	L2,e	L3,e	L4,e	L2,e	L3,e	L4,e
General Practice	4	6	8	4	6	8	18	26	33
Orthopedics	0	0	0	33	40	44	6	7	11
Intensive Care Unit	1	3	9	2	6	6	15	17	19
Cardiology	2	2	4	0	0	0	4	5	6
Vascular Surgery	1	2	4	0	0	0	11	13	16
Neurosurgery	1	3	5	1	2	3	4	5	6
Oncology	2	22	28	1	10	11	0	0	0
Neurology	1	0	0	1	0	0	12	16	19
TOE – WU Orthopedics	0	0	0	1	2	3	0	0	0
Pediatrics	0	0	0	4	8	10	0	0	0
General Surgery	2	0	0	2	4	5	10	10	12

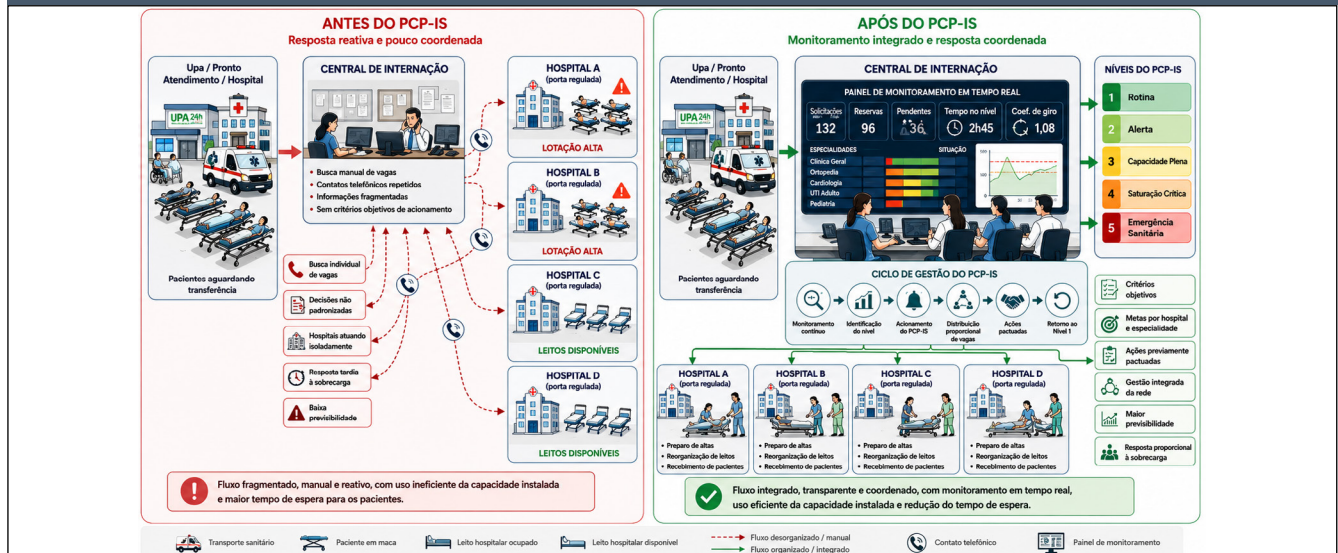
Source: SMSA/PBH, between March 2023 and April 2025

The definition of contingency levels, the proportional distribution of additional bed capacity among hospitals, and the criteria for activating the PCP-IS made it possible to consolidate the plan's operational model, integrating the various components developed throughout the methodological stages described above. This

model systematically organized the flow of monitoring, communication, and response between the Admission Center and the hospitals in the SUS-BH Network, replacing a predominantly reactive and decentralized process with a strategy based on continuous monitoring, objective decision-making criteria, and responses

previously agreed upon among the various stakeholders involved.

Figure 1 presents a summary of this operational model, comparing the regulation process before and after the implementation of the PCP-IS and highlighting the main organizational changes introduced in hospital capacity management.

Figure 1 – Comparison of the operational workflow for hospital regulation before and after the implementation of the Integrated Full Capacity Plan (PCP-IS) in the SUS-BH network

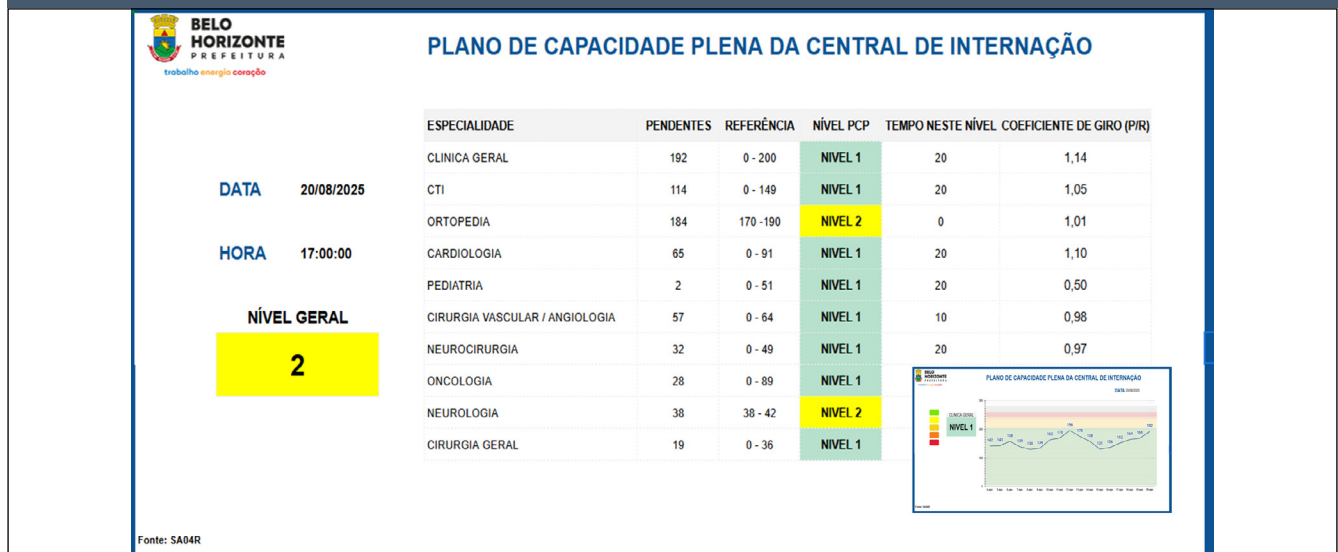
Source: Prepared by the authors (2026)

As described in the section on the development of support and monitoring tools, the consolidation of the PCP-IS operational model required the creation of a tool capable of continuously monitoring the behavior of the hospital network and supporting the decision-making process of the

Admission Center. To this end, an electronic dashboard was developed that integrates, in real time, the key operational indicators related to admission requests, reservations, and pending admissions; PCP-IS activation levels; the duration of stay at each contingency level; and the turn-

over rate by specialty.

Figure 2 shows a simulation of this dashboard during a PCP-IS activation, illustrating its use as a tool for monitoring care capacity and supporting decision-making by network managers.

Figure 2 - Dashboard of the Integrated Full Capacity Plan for the Hospital Admission System, August 20, 2025, 5:00 p.m. – Simulation

Source: GERAH/SMSA/PBH, August 20, 2025

Once the development phase of the monitoring tools was completed, the operational implementation of the PCP-IS began, as described in the methodology. To ensure that the activation of the different contingency levels would produce standardized, proportionate responses that had been

previously agreed upon among the various stakeholders in the healthcare network, an operational matrix was developed containing the specific responsibilities and actions for each institutional leader.

Table 1 presents this operational protocol, organized according to the

five activation levels of the PCP-IS, covering the responsibilities of GER-AH, DMAC, medical dispatchers, nursing dispatchers, call center operators, emergency care units, and Internal Dispatch Centers (NIR), constituting the primary tool for coordinating actions during contingency situations.

Table 1 – Recommended measures and actions by responsible party and PCP-IS activation level

Level	1 – Routine	2 – Alert	3 – Full Capacity	4 – Critical Saturation	5 – Health Emergency
GERAH DMAC	Monitor the following indicators: number of pending cases, hospital occupancy rate, bed supply and reserve, average length of stay.	Activate PCP-IS Level 2. Trigger actions by telephonic operators, nurses, and regulatory physicians according to the activation degree. Evaluate the center's turnover for 12 hours. If there is no movement from providers, trigger crisis auditors.	Activate PCP-IS Level 3. Trigger actions by telephonic operators, nurses, and regulatory physicians according to the activation degree. Monitor compliance with level actions alongside hospitals. Communicate with other management levels and implement preventive and mitigating actions. Evaluate the center's turnover for 12 hours. If there is no movement from providers, trigger crisis auditors.	Activate PCP-IS Level 4. Suggest actions to the Municipal Manager for telephonic operators, nurses, and regulatory physicians according to the activation degree. Monitor compliance with level actions alongside hospitals. Evaluate the center's turnover for 6 hours. If there is no movement from providers, trigger crisis auditors.	Activate PCP-IS Level 5. Trigger actions by telephonic operators, nurses, and regulatory physicians according to the activation degree. Monitor compliance with level actions alongside hospitals. Coordinate intermunicipal and state contingency plans. Evaluate the center's turnover for 6 hours. If there is no movement from providers, trigger crisis auditors.
Telephonic Operators	BED SEARCH - Check pending items from the previous shift by contacting the origin to answer potential questions and the destination regarding case evaluations. Check bed availability in the Bed Census and begin searching for cases already regulated by the regulatory physician. Initiate active bed search alongside the hospitals' NIR team. Make reservations with the hospitals' NIR/Inpatient team. RECEPTION - Answer calls from patients awaiting elective procedures, the unit of origin, and providers. Copy internal GERAH reservation notes to SUSFácil. Return beds to units of origin. Make inpatient reservations at the facility itself and register transfer requests from private hospitals. Support the bed search team.	Increase call frequency requesting key hospitals to support with increased bed supply, and follow up on pending cases under analysis. Communicate difficulties faced with origins and providers to the shift supervisor. Increase the number of calls to conduct searches, requesting bed offers from the hospitals' NIR. Request origins to update patients' clinical progression. Perform duties pertinent to the shift's routine.	Increase call frequency requesting key hospitals to support with increased bed supply, and follow up on pending cases under analysis. Communicate difficulties faced with origins and providers to the shift supervisor.	Increase call frequency requesting key hospitals to support with increased bed supply, and follow up on pending cases under analysis. Communicate difficulties faced with origins and providers to the shift supervisor. Increase the number of calls to conduct searches, requesting bed offers from the hospitals' NIR. Request origins to update patients' clinical progression. Perform duties pertinent to the shift's routine.	Increase call frequency requesting key hospitals to support with increased bed supply, and follow up on pending cases under analysis. Communicate difficulties faced with origins and providers to the shift supervisor. Increase the number of calls to conduct searches, requesting bed offers from the hospitals' NIR. Request origins to update patients' clinical progression. Perform duties pertinent to the shift's routine with greater agility since PCP-IS is activated.

Regulatory Nurse	Evaluate requests registered in the inpatient field at the unit itself and perform their regulation. Evaluate plasmapheresis and oncology spreadsheets.	Request that origins update the clinical progression of cases registered for more than 24 hours. Make telephone contact with oncological hospitals to request a higher bed supply or the acceptance of specific cases.	Increase the number of calls to conduct searches, requesting bed offers from the hospitals' NIR. Request origins to update patients' clinical progression. Perform duties pertinent to the shift's routine.	Monitor critical oncological, hematological, and plasmapheresis cases, in addition to requesting acceptance for these patients and evaluating analysis time. Support the regulatory physician by reviewing and classifying requests, as well as verifying the existence of a link with hospitals.	Monitor critical oncological, hematological, and plasmapheresis cases, in addition to requesting acceptance for these patients and evaluating analysis time. Support the regulatory physician by reviewing and classifying requests, as well as verifying the existence of a link with hospitals.
Regulatory Physician	Regulation of cases registered in SUS Fácil; evaluate priority requests; separate cases to insert into offered beds; request updates on clinical progression; return cases outside BH PPI to the macro; evaluate cases from private hospitals being registered via telephone, in addition to supporting nurses with unit-level hospitalizations.	Re-evaluate clinical cases and request pending information for report updates. Re-evaluate Health Macro-region cases with the possibility of counter-referral to another municipality. Make medical contact to request acceptance of priority requests. Trigger management in difficult-to-resolve situations. Inform the Macro of the PCP-IS activation and request evaluation regarding the referral of new cases within the specialty.	Monitor critical oncological, hematological, and plasmapheresis cases, in addition to requesting acceptance for these patients and evaluating analysis time. Support the regulatory physician by reviewing and classifying requests, as well as verifying the existence of a link with hospitals.	Authorize direct transfers to hospitals with requests pending analysis for more than two hours, if previously agreed upon. Review and prioritize cases within the specialty with activated PCP-IS for rapid allocation to upcoming bed offers. Request contact with the NIRs of back-up hospitals to request a larger bed supply. Contingency and re-evaluate patient admissions into the specialty with activated PCP-IS, informing the State Health Macro-region.	Re-evaluate requests and prioritize cases according to the described severity. Trigger management in difficult-to-resolve situations.
Emergency Care Unit	Optimize internal flow to maintain discharge dynamics and register relevant inpatient requests.	Intensify preparation for faster and safer discharges. Address pending items with greater agility. Update the clinical progression of all patients awaiting hospitalization.	Authorize direct transfers to hospitals with requests pending analysis for more than two hours, if previously agreed upon. Review and prioritize cases within the specialty with activated PCP-IS for rapid allocation to upcoming bed offers. Inform the Macro of the contingency and PCP-IS. Request emergency support from other municipalities. Counter-refer requests to other State Health Macro-regions.	Update pending reports and clinical progression of all cases awaiting hospitalization. Expand the scope and redirect all eligible cases for follow-up via Home Care Service (SAD).	Update all pending reports with greater agility. Update clinical progression of all cases awaiting hospitalization.
Care / Service	Keep occupancy data updated. Update bed status in real time within the bed system. Evaluate requests under analysis in the shortest time possible, maximum of two hours. Maintain a full NIR team with operational reference phones.	Anticipate projected discharges.	Update all pending reports with greater agility. Update clinical progression of all cases awaiting hospitalization.	Convert clinical and surgical beds according to the specialty for which PCP-IS is activated. Evaluate bed supply in observation rooms and/or surgical suites.	Suspend elective surgeries for the specialty with active PCP-IS. Convert clinical and surgical beds according to the activated specialty. Offer beds in observation rooms and/or surgical suites.
Internal Regulation Center of Back-up Hospitals	Optimize internal flow to maintain discharge dynamics and register relevant inpatient requests.	Expand bed supply in the triggered specialty by 20%. Reduce case analysis time. Evaluate the possibility of accepting direct transfers.	Suspend elective surgeries that overlap with bed supply within the specialty where PCP-IS is activated. Convert clinical and surgical beds according to the specialty where PCP-IS is activated.	Update pending reports and clinical progression of all cases awaiting hospitalization. Expand the scope and redirect all eligible cases for follow-up via Home Care Service (SAD).	Update all pending reports with greater agility. Update clinical progression of all cases awaiting hospitalization.

Source: SMSA/PBH – Administrative Order No. 0885, dated October 31, 2025 ⁶.

DISCUSSION

The development and implementation of the PCP-IS by the municipal Regulation Center reinforced the need for a dynamic capacity management model capable of indicating when the network is approaching its operational limits and of triggering preventive redistribution measures—previously agreed upon between the system's regulators and the hospitals—as recommended by classic strategies for managing healthcare overload (3).

The implementation of the five contingency levels constituted the central pillar of the PCP-IS and represented an innovation in the form of communication between the Admissions Center and the contracted hospitals. The objective definition of demand ranges and activation criteria follows principles described in international models of overcrowding and maximum capacity protocols ^{3,7}, enabling the automatic adoption of agreed-upon measures—such as patient redistribution, prioritization of discharges, and staff reinforcement—and marking an expansion of the use of the PCP in public health as a regulatory tool, which had previously been restricted to the hospital setting in the literature.

Another significant outcome was the creation of the PCP-IS electronic dashboard. This tool began to assess data on admission requests, reservations, cancellations, and pending cases on a daily basis, broken down by specialty and hospital, in line with recommendations for continuous monitoring and the use of operational *dashboards* in health care systems ^{8,9}. With a simple interface and automatic updates, the dashboard has become the primary tool for tracking demand trends, enabling decisions based on evidence rather than solely on qualitative reports—a practice emphasized by the World Health Organization (WHO)

in its hospital response tools ⁹.

The adoption of the dashboard substantially changed the workflow of the Admissions Center, which previously, during periods of overload, lacked a well-defined action plan, hindering coordinated action by the teams involved in the emergency regulation process. The literature shows that the absence of predefined processes increases variability and reduces efficiency during critical moments ¹⁰. Furthermore, the dashboard fostered the engagement of hospital administrators, who began to directly monitor the network's status and internally adjust their discharge and occupancy flows according to the current contingency level, in line with collaborative governance guidelines ⁷.

The implementation of the PCP-IS required adjustments to the organizational structure of municipal regulation. New communication channels were established between the CINT, GERAH, and DMAC teams, in addition to the creation of weekly routines for analyzing capacity indicators. This approach resulted in a more agile and evidence-based decision-making process, similar to the continuous improvement models described in the international literature ¹¹.

Weighing the total backlog of admissions requiring observation via the dashboard will improve the model's sensitivity, making it possible to identify variations in hospital response capacity and adjust the activation of the PCP-IS more precisely and promptly, an approach consistent with methods for predicting overload recommended in hospital emergency departments ⁸.

This incremental approach has fostered institutional maturation, the incorporation of continuous technical adjustments, and the strengthening of a management culture guided by metrics, data, and evidence—principles widely recognized in the literature

on public health and hospital administration ¹². This measure, combined with the documentation and publication of the actions formalized in the PCP-IS and in the Administrative Order establishing it, strengthens the governance of hospital regulation and ensures the plan's sustainability, guaranteeing its continuity even in the face of management changes, as discussed in national analyses on access regulation in the SUS ^{6,7}.

When setting goals and defining actions for future plans to be implemented, it is important to emphasize the need to analyze and consider the scope of services available in the network, taking into account two limitations: operational capacities and specific characteristics (such as legal status, funding, and care contracts)—elements also highlighted in regulatory references ⁷.

CONCLUSION

The implementation of the PCP-IS at the SUS-BH Network Admissions Center represents a milestone in public hospital management by introducing a systemic and integrated approach to monitoring care capacity. The process revealed that it is possible to reconcile operational efficiency, transparency, and institutional co-responsibility within a public model of hospital regulation, provided that technical foundations, inter-institutional agreements, and continuous monitoring are ensured.

Thus, the PCP-IS, once implemented, establishes itself as both an operational tool and a governance strategy for the hospital network, capable of reducing inequalities, optimizing resources, and strengthening public health management. This experience offers valuable insights for managers, researchers, and policymakers seeking more intelligent, collaborative, and sustainable regulatory models.

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