

Annual Publication – Edition 11

OBSERVATÓRIO 2019



anahp
associação nacional
de hospitais privados



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Anahp Facts and Figures

REPRESENTATIVITY

R\$ **38.6**
billion



gross revenue of 109 member hospitals in December 2018



118
members
in April
2019



25.2%

of the total clinical expenditures in private health care in 2018

25,118 beds
in December 2018



10% of the total private (for profit and not-for-profit) beds available in Brazil

5,972 ICU beds
in December 2018



10.5
million

visits to the emergency department in 2018

ACCREDITATIONS 2018

Anahp hospitals are distributed as follows:

22.5%

of them hold national accreditations

77.5%

hold international accreditations in Brazil

| Accreditation | Anahp* | Brazil | % Anahp |
|---------------|--------|--------|---------|
| ONA III | 48 | 159 | 30.2% |
| JCI | 29 | 36 | 80.6% |
| ACI | 30 | 39 | 76.9% |
| ONA II | 11 | 93 | 11.8% |
| ONA I | 4 | 78 | 5.1% |
| NIAHO | 3 | 5 | 60.0% |
| TOTAL | 125 | 410 | 30.5% |
| International | 62 | 80 | 77.5% |

* Anahp hospitals may hold more than one accreditation

ANAHP HOSPITALS ARE HIGH-COMPLEXITY ORGANIZATIONS:

63%
LARGE-SIZED
AND SPECIAL ORGANIZATIONS

37%
SMALL AND
MIDDLE-SIZED



IN 2018:

84,197,649

performed tests



1,674,181

hospitalizations



1,505,507

surgeries

50%

of them performed transplants



Over

173,000

employees in member hospitals



14%

 of the formal employees in hospital activities

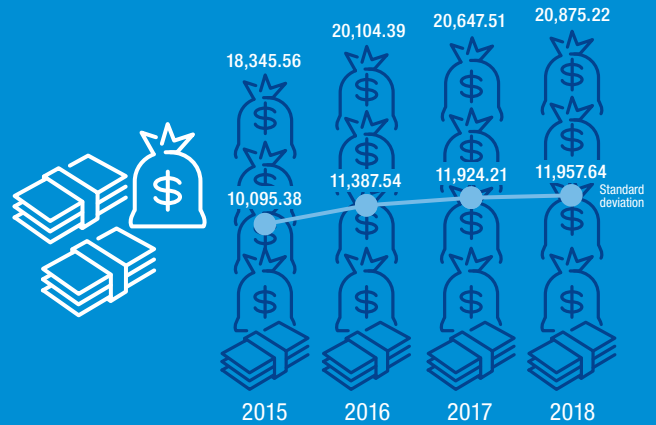
140,503 2016

162,980 2017

173,644 2018

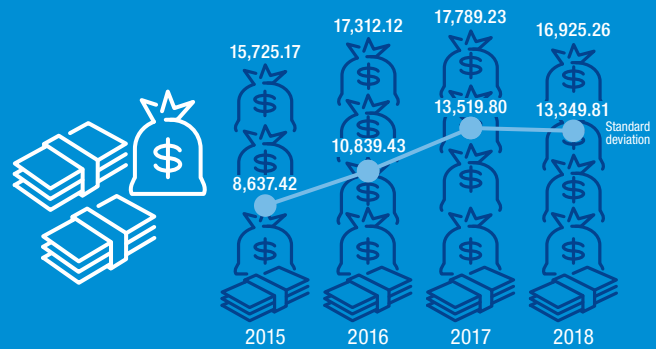
NET REVENUE PER HOSPITAL DISCHARGE (R\$)

Average Anahp hospitals



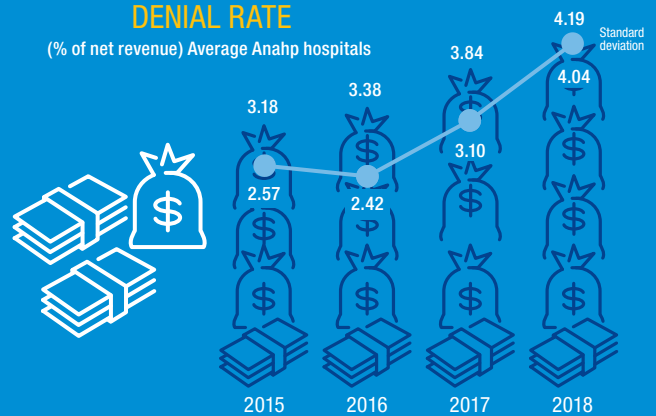
TOTAL EXPENSES PER HOSPITAL DISCHARGE (R\$)

Average Anahp hospitals



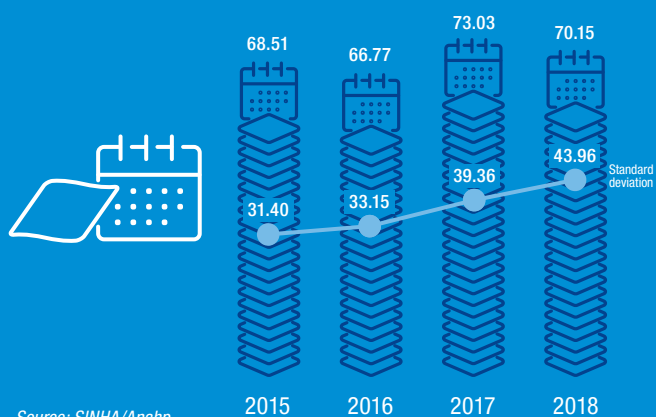
DENIAL RATE

(% of net revenue) Average Anahp hospitals



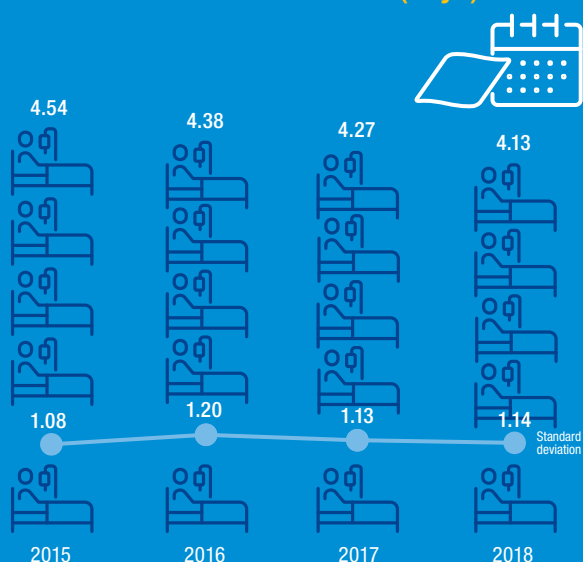
AVERAGE DAYS OF SALES OUTSTANDING

(days) Average Anahp hospitals

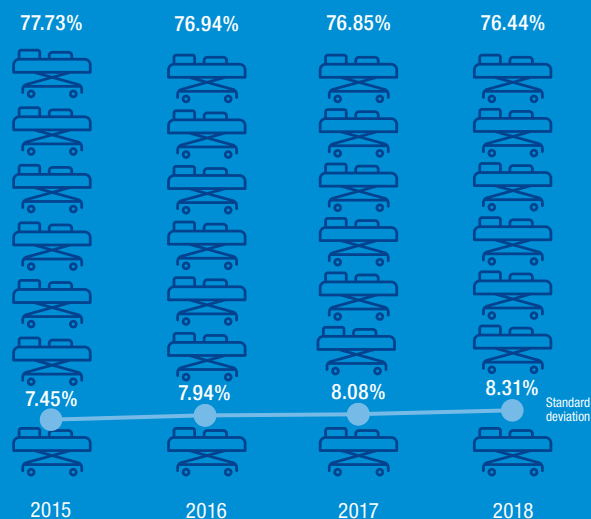


Source: SINHA/Anahp

MEAN LENGTH OF STAY (days)



RATE OF GENERAL OPERATIONAL OCCUPANCY



Source: SINHA/Anahp

COMPLIANCE

88%
have a code of conduct

81%
have an ethics and compliance committee

55%
have a compliance officer or department/area

86%
have a report channel dedicated to ethical issues

90%
know their main critical ethical and compliance topics

83%
educate and communicate their staff about ethical and compliance topics

89%
have policies and rules that include administrative consequences and/or disciplinary measures in case of violation of laws or rules of conduct

85%
have independent internal audit that reviews and recommends improvement actions for internal controls

Source: Current Questionnaire SINHA/Anahp

DISTRIBUTION OF REVENUE ACCORDING TO TYPE OF REVENUE

| TYPE OF REVENUE | 2017 | 2018 | Standard deviation 2018 |
|--------------------------------|--------|--------|-------------------------|
| Medication | 25.13% | 24.66% | 10.22% |
| Materials | 22.16% | 20.36% | 7.41% |
| Daily fees and rates | 20.92% | 21.65% | 8.33% |
| Other operational revenues | 18.10% | 19.01% | 11.49% |
| Implants and special materials | 8.66% | 8.30% | 4.82% |
| Medical gases | 2.49% | 2.30% | 1.45% |
| Other revenues from services | 2.11% | 3.39% | 4.72% |
| Donations | 0.43% | 0.34% | 0.87% |



DISTRIBUTION OF TOTAL EXPENSES ACCORDING TO TYPE OF EXPENSES

| TYPE OF EXPENSES | 2017 | 2018 | Standard deviation 2018 |
|-------------------------------------|--------|--------|-------------------------|
| Cost with personnel | 37.44% | 37.32% | 12.03% |
| Technical and operational contracts | 14.01% | 13.72% | 8.73% |
| Medication | 10.73% | 10.79% | 4.35% |
| Implants and special materials | 7.83% | 7.18% | 5.36% |
| Other expenses | 6.61% | 8.18% | 8.52% |
| Materials | 6.57% | 6.37% | 2.77% |
| Support and logistic contracts | 3.98% | 4.27% | 3.30% |
| Other supplies | 3.24% | 2.77% | 2.02% |
| Depreciation | 2.83% | 2.87% | 1.22% |
| Financial expenses | 2.44% | 2.06% | 2.35% |
| Utilities | 2.04% | 2.24% | 1.32% |
| Maintenance and services | 1.96% | 1.91% | 1.21% |
| Medical gases | 0.31% | 0.32% | 0.31% |

Source: SINHA/Anahp

Masthead

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Letter to the reader

Observatório Anahp 2019 brings about improved data adapted to the needs of the market and member hospitals. It has been one of the assumptions of Anahp – constant focus on continuous improvement of its initiatives. In 2018, Anahp experienced over 10% increase in number of member hospitals, which shows the increasing engagement of Brazilian hospital organizations in quality and clinical safety topics, which is the main developing pillar of Anahp. Thus, SINHA database of indicators has also expanded, increasing representativeness and serving as a reference for the health industry.

Before we dive into the main highlights of this edition, we would like to briefly address the current political and economic situation in Brazil. After one of the worst crisis in our recent history, Brazilian economy has been presenting gradual recovery. Inflation maintained low levels and better results in employment opportunities favored economic activities in 2018. Conversely, the truck drivers' strike and uncertainties about the political scene in the year slowed down the expansion.

Employment rate dropped again in the second half of the year, reaching average rate of 12.26% in the year, below the 12.77% reported for 2017. The best results in the year led to formal job generation, as the country created 528,000 new jobs in 2018. In the three previous years there had been no new jobs.

The fact that there are new formal jobs seems to explain the increase in medical-hospital plan beneficiaries in 2018. Based on ANS data (Brazilian Agency of Private Health), the number of beneficiaries in December 2018 was 47.38 million,

increasing by about 200,000 the number of beneficiaries over the previous year.

The price of health and personal care (3.95%) increased somewhat above the general inflation rate (3.75%) in 2018.



Observatório is a tool that reflects the increasing concerns of the Association about key topics in the industry, hoping that stakeholders can together find solutions to provide system sustainability.

This result seemed to have influenced significantly the healthcare plans, as they reached 11.17% increase in the same year.

Data analysis of SINHA members hospitals has shown that even though the hospitals' average sales outstanding days decreased 3 days in 2018, the denial rate (healthcare plans fail to pay what hospitals claim to have provided in services), measured in relation to net revenue, increased in the same period. It has had a negative cash flow impact for hospitals, leading to increase in financial costs of operations.

SINHA operational indicators show the continuous efforts of member hospitals to increase efficiency, such as by reducing mean length of stay or improving bed turnover.

Some highlighted indicators:

- Net revenue per hospital discharge increased 1.10% in 2018, whereas total expenses per hospital discharge decreased 4.86% in the same period.
- Labor expenses, which include full-time employees and technical contractors, amounted to over 50% of Anahp hospital expenses in 2018.
- In 2018, 90.97% of the revenues of Anahp hospitals resulted from resources administered by healthcare carriers.
- The occupancy rate went up from 76.85% in 2017 to 76.44% in 2018.
- The mean length of stay, in turn, dropped from 4.27 days in 2017 to 4.13 days in 2018.

Regardless of the unfavorable progression of some economic-financial indicators, Anahp member organizations have maintained the investments in quality and patient safety. This edition of *Observatório Anahp* also shares some unique

and important topics for the industry, such as: Results of Anahp Outcomes Program for Heart Failure standard set; an article by Mark Britnell, author of the book *In Search of the Perfect Health System*, approaching the role of hospitals as integrators and developers of the new system, the core topic of Congresso Nacional de Hospitais Privados (Conahp) this year; we will also address the challenge of productivity and how to deal with human capital in companies; and last but not least, we will pick up the discussion kicked off last edition about how to integrate companies (payers) into the system, as there has been an important progression in the market towards that. Having in mind the true objective of contributing with the market and quality of services, we have presented, with no restrictions, the performance of Anahp member hospitals. *Observatório* is a tool that reflects the increasing concerns of the Association about key topics in the industry, hoping that stakeholders can together find solutions to provide system sustainability. The initiative adopted by Anahp also emphasizes our commitment with transparency. We would like to thank the valuable participation of the Editorial Board and our special thanks to the technical team that has worked nonstop for months so that *Observatório* could be ready on time to contribute once again with the Brazilian healthcare industry.

Enjoy your reading.

Eduardo Amaro
Chairman of the Board

Ary Ribeiro
Editor



ARTICLES

This section of Observatório Anahp brings analyses of key topics for the industry that are constantly discussed in forums, work groups and publications of the organization. It also highlights the results of some Anahp initiatives.





How to integrate companies into the private healthcare system?

Companies have a key role in promoting the transformation of the system, facilitating the engagement in its rational use.

It is such an urgent topic that the title takes it for granted that companies have to be integrated into the private healthcare market – the only question is how. Nevertheless, to set the scene, let us talk first about why.

First of all, because companies are very important to the private healthcare market (even though most of them do not realize or behave as such), considering that two thirds of healthcare plans are corporate-based. Secondly, companies are impacted the most due to lack of confidence and absence of value-based solutions proposed by the other players, such as operators, brokers, physicians, hospitals, medical

devices companies, distributors, among others. That is, in practice, time has shown that companies effectively take over the risks imbedded in healthcare costs, paying the bill that adds up inefficiencies (including their own) and waste, leading to annual two-digit price increases. Thirdly, because companies also incur the indirect costs of lack of value-based solutions, such as the increase in presenteeism and absenteeism. Data from INSS (Brazilian Pension Fund Agency) show that work-related accident pensions were reduced by 81,458 cases between 2012 and 2016, whereas leaves not related to work grew by 32,462 cases.

Seen from a different perspective, it is worth highlighting that companies are also responsible for historically acting very passively and not engaged with the topic. Up to some time ago, many companies believed that their single role in the equation was to pay the monthly bills related to the healthcare plans of the staff and their families. To make an analogy, let us say companies used to take a seat on the back of the plane, quite far from the cockpit. They paid the ticket and passively watched (or dozed off) while the trip called population health management

was unfolding. Contracts were limited (and still do so today in many companies) to administrative aspects focused on providing fast access to employees into the plane. They never concerned about the final destination (appropriate treatment, correct timing, appropriate cost). As a consequence, many passengers have spent years flying different flights and never getting to their destination. Healthcare beneficiaries take six years or more to have the right diagnosis and treatment. Some find out about the disease when it is too late and there are already irreversible sequelae.

Fortunately, the economic crisis in Brazil has awakened the payers of healthcare plans. Companies no longer have the resources to keep on covering this high proportion of healthcare costs. Thus, going back to the plane analogy, some companies have decided to take the co-pilot seat, taking over a more proactive, strategic and technical role in this flight named sustainability of healthcare benefits. By doing this, the companies take part in actions that contribute to the necessary reduction of costs and waste levels, making more efficient use of fuel (or resources spent by companies).





Definition of access to network will be based on value proposition and not on the current compensation model, which is separated from predictability, risk and outcomes.”



It is important to realize that companies have a key role in promoting the transformation of the system. Value-based paying (improving and sustainably maintaining the health of workers and their families) is a strategic factor in competitiveness, as it may provide direct relationship with workers/ system beneficiaries, facilitating the engagement in rational use of the system. Many companies have already understood their new role as key players in changing policies, incentives and behaviors in healthcare. As the main drivers of the value-generation wave in the private sector, they have already adopted this relation with healthcare management organizations and brokers. Questions, more demands and compensation model review have been constantly practiced. Naturally, following the healthcare chain flow, this value-based wave has hit the hospitals and other medical services. In the Industry Work Group about Private Health – GTSS, coordinated by SESI and formed by 70 large

healthcare plan buyers, 52% of the companies have post-paid contracts with HMO. Realizing that they would foot the bill eventually, companies started negotiating directly with providers towards affecting the main vectors of cost increase related to surgeries and elective treatments. Following this line, companies have been questioning which are the best healthcare organizations in Brazil and why. It should go beyond that, including clinical outcomes as well. It is clear that decision-making process of the accredited network will not be based solely on historical reputation of one or the other service provider. Likewise, access to hospitals should not be defined only based on average ticket of products under contract by the healthcare management organizations. Definition of access to network will be based on value proposition and not on the current compensation model, which is separated from predictability, risk and outcomes. The example of this new model being envisioned in the market is the pilot project of value-based healthcare among three contracting companies and eight hospitals in São Paulo, Rio de Janeiro, Bahia and Minas Gerais. Collaboratively, companies and hospitals will assess 15 indicators including structure (electronic medical record, nursing/patient staffing), efficiency (compliance with clean surgery, admission rate through ED), effectiveness (readmission rate, reoperation rate), and patient experience (do you know the name of the doctor that treated you?, rate of problems solved). In the end, companies want to know who will deliver strictly what they want, when and how they asked for it and with better results, involving outcomes, patients' experience and costs.



Fortunately, some representative agencies of medical-hospital service providers have already contributed as drivers of best practices. For 15 years, Anahp has measured the performance indicators of member hospitals considering different aspects (clinical, operational and economic-financial). More recently, Anahp has kicked off a project focused on clinical outcomes (from the patients' perspective) that will show hospitals their epidemiological profile, improve their performance and help them get adapted to possible value-based payment models (new compensation models). Anahp has approached contracting companies through technical cooperation with SESI, including surveys, events and projects. Companies have changed their positions and so have hospitals, where there are clear opportunities for seeking value. Individually, hospitals have strengthened their relations with companies, mapping their clients to design customized proposals to meet their health needs, and not only treating employees' diseases. Some hospitals have repositioned

strategically and started to offer corporate health management solutions. As such, hospitals are expanding their spectrum of services, including primary care initiatives, very much aligned with what the companies really need. Provide health rather than treat diseases is an irreversible path towards sustainability

of healthcare benefits. Before we move on, let me clearly state that we have no intention of excluding the HMOs, but rather to have them contribute to the challenges of managing employees' health – our mutual client. There are already many HMOs moving in this direction, meeting the needs and demands of contracting companies and playing their role of finally providing healthcare plans and not disease-treating solutions. Contracting companies have realized there is no new money in the market and they understood that their best chance is by rationally applying existing resources. There is no other way. Reducing inefficiency and waste has become their most desired goal. Cost reduction will be the consequence of a new light shed on managing the health of employees. Hospitals, as well as HMOs, have a key role to play in this mission. Strengthening the relations between all players, agreeing again on contract terms and compensation, focused on the health of employees: this is the best no-return path ahead of us.



Reducing inefficiency and waste has become the most desired goal."

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HR productivity and technology – How to deal with human capital in companies

“You are not machines! You are men!”

C.Chaplin

In the final speech of the movie “The Great Dictator”, Charles Chaplin already presented the dilemma of humanity of the last few decades. The machines that bring us closer together and push us ahead are the same that destroy and inflict suffering. If this was already a concern back in the 1940’s, it has become even more relevant to contemporary society. We live surrounded by more and more robots, whether they are algorithms or humanoids, and having our lives affected by all this technology is no longer an option but a matter of adaptation.

4.0 management is the big star of the moment. Consumers, clients or patients, as you wish,

are increasingly connected to companies, with increasingly unique needs, and they want to actively participate in the building of the new products or services that are being delivered to them. Likewise, the links of the production chain of organizations, with the aim of meeting the demand specificities, can no longer work in isolation as separate departments. They need to interact faster and more effectively, within organizations that promote autonomy and experimentation in a safe way. For this new *modus operandi*, decision-making structures and traditional communication strategies no longer suffice, and the right technology has become a major trump.

Some researchers and futurologists have presented to us the concept of Creative Destruction. According to it, many of the jobs and positions of today's labor market will cease to exist and will be replaced by machines and automation in the next few years. Similarly, new jobs will emerge, which will be increasingly related to creativity and the power of disruptive thinking. Positions will be more strongly associated to our humanity, sensitivity and empathy. Several industries will be affected by this new world, and healthcare will certainly be among those that will have great impacts and opportunities. In face of this context, our experience has proven that it is possible to bring together processes, people and technologies. All these actions are developed with

a single aim: assure healthcare with safety and quality. Our patients are, and must always be, the focus of our efforts. The integration of the triad of Processes, People and Technology is key in that sense. Processes should be safely defined, with opportunities for constant reflection through feedback by the reporting of minor failures. If being perfect is utopic, failures should have a shorter reach and be more promptly identified, analyzed and addressed. Technologies built in processes and used by people permit that analysis capacity be intensely expanded, thus favoring decisions based on reliable and current information. In this environment, people feel more strongly empowered and capable, aware that they have the support of

the metrics that best translate reality, and by barriers that will help them prevent blind spots. Technology, at the end of the day, frees people to think better about how to meet their needs, expanding their capacity of being creative and innovative. Furthermore, it allows us to be increasingly focused on our patients, either creating a safer and more effective environment, or by having more time and conditions to be centered on their needs, their wishes, their diseases, and their treatments. For decades, we have been seeking to customize the care we provide to our patients. Process standardization has enhanced safety, but for the final delivery, it is necessary to customize to the needs of those who come to us. In that sense, professional training is fundamental, and corporations have




invested a lot in these processes in recent years. However, training alone is not enough, especially in a world where scalability is a mantra. And then, once again, technology comes to support processes and people. Having quick access to customer needs and having the tools to take effective action, has become increasingly more possible. Understanding the components of the famous patient experience is essential, and pasteurizing these journeys is no longer an option. Each patient is a unique being, and should be treated as such. Without technology, the power to have access to these unique features and to customize is almost an impossible task when we talk about large volumes of patients. Tools that collect patient impressions online, that

share information and records among patients and physicians, telemedicine and remote communication, are some of the tools that have emerged and provided an exponential contribution to our system.

The opportunities for productivity gains in a company may come from different actions: innovation and flexibility, from the increase of the technical and intellectual capacity of the human capital and from continuing improvement, with process revision and redesign.

In hospitals, these possibilities must be continuously explored with the aim of attaining better care and economic results aligned with the constant challenge of assuring the best development of human capital with the support of technology.



Understanding the components of the famous patient experience is essential.”



Understanding and analyzing the oscillations in demand and occupancy, market unpredictability and fast competition are constant challenges. The understanding of the behavior of historical production versus current production, of the impacts of the external scenario (crisis, market and competition, epidemics, etc.) on the structure and their reflex on production, productivity and resource allocation makes evident the challenge of managing fixed labor costs. Improving the performance of work groups in companies may reduce risks and create flexibility. The balance between stability and dynamism permits rapidly reorienting actions toward valuable opportunities. Agile companies have been adopting the SQUAD methodology to tackle challenges (improve processes, create new products or businesses). Squads are work teams built and oriented to break the traditional concept of project-based management, migrating to the idea of continuing flow of business value.

The team is guided to feel like a *mini-startup* that solves problems aligned with the organization's strategy. This work team, made up of generalists and specialists with decision autonomy is formatted as an autonomous structure with capacity to create and support decisions for quick changes and tests that assure continuing value creation with low risk.

The SQUAD methodology in hospitals provides amazing results and innovative results. There are some interesting experiences in the segment. According to the Institute for Healthcare Improvement (IHI), patient flow management is way of improving health services. Adapting the relationship between capacity and demand increases patient safety and is essential to make sure that patients receive the right care, at the right place, at the right time, all the time. This is the synthesis of value generation for patients and clinical staff. On-time care monitoring has been a challenge to be overcome. Generating information about risks and precautions that provide the necessary balance between quality and cost, generating productivity, is the bridge that connects care and economic results. A SQUAD created to enhance the engagement of the clinical staff through care rounds, supported by a dashboard with bed management information and care indicators that permit optimizing average length of stay, increasing bed turnover and care safety, will certainly be valuable.

The solution will generate information, available on a mobile device for the medical team, providing, in addition to mobility, multidisciplinary integration, complexity management, risk alerts, and suggestions of practice in real time. In this way, it will be possible to make individualized predictions for each patient, that is, the right resource, at the right time for the right patient, which materializes our



Generating information about risks and precautions that provide the necessary balance between quality and cost, generating productivity, is the bridge that connects care and economic results.”

belief that the direction to follow is value delivery, and that investments in information technology solutions that support decisions are the tools to pave this way.

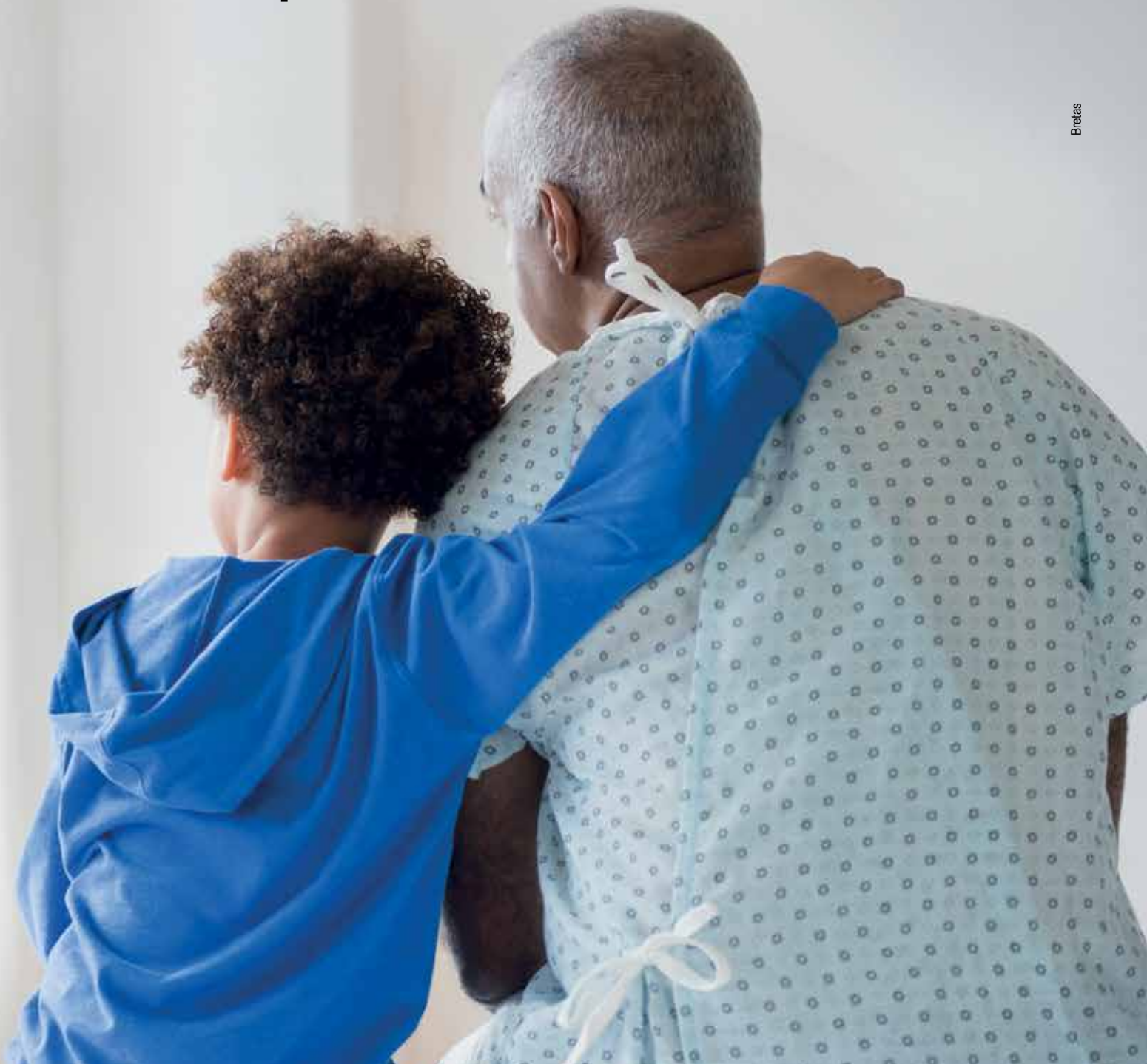
“Change is the only constant in life”. This sentence by Heraclitus (550 BC) illustrates very well the moment we are living. The challenge of preparing ourselves for constant changes. This is a certainty! There are several tools and methodologies available, many of which are fashionable, but organizations need more than that, they need culture—innovation culture, culture of integration between people, processes and technologies, with the challenge of improving the experience of employees with technology. Assuring process improvement and technology increase will also strengthen the relationships between people, creating a positive work environment that will boost the engagement and productivity of teams. In that sense, medication administration is a frequent nursing activity which requires knowledge

and skill, not just on care itself, but on patient safety. Bedside checking is used as a mobile technology that assures the correct administration of medications, enhancing care safety and optimizing the activities of this process. The high rates of adverse events related to this critical process, justify the adoption of technologies and changes in processes and culture. There should be intense utilization of technology (carts, Wi-Fi), notebooks, optical scanners, but essentially based on the change of processes and culture.

Therefore, technology makes it possible for us to be more human, so our challenge will be that of assuring productivity with a better employee experience. The more positive work relationships are between employees and between them with technology, the better the engagement of teams, and the better the results, including those that are the most important, care improvement and the satisfaction of our patients.

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a vida dos pacientes.**



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3M





Value Based Care and the role of hospital as integrator

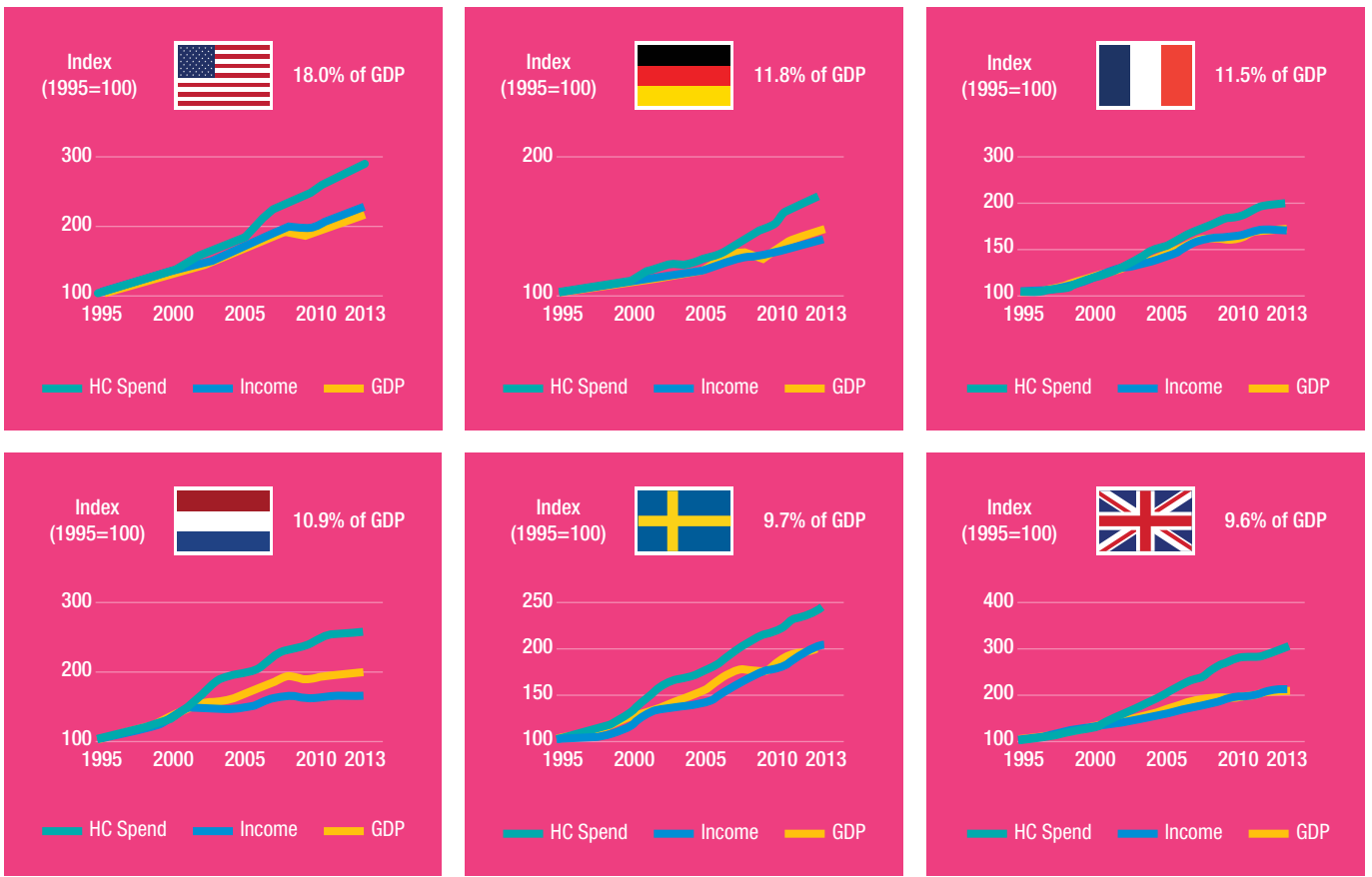
Mark Britnell, author of In Search of the Perfect Health System, has specially shared with Anahp his vision on the role of hospitals as integrators of value-based healthcare systems, the key topic of Conahp 2019.

What is Value Based Care (VBC)?

Health systems across the globe face the same universal problem. Aging, ailing societies with increasingly expensive treatment options, leading to escalating healthcare costs. In some countries, healthcare costs are now growing faster than GDP – an unsustainable situation

for those seeking to attain or maintain universal health coverage. Cost containment can often seem at odds with the drive to continuously improve quality, and this is as much a problem for private providers as it is for publically funded health systems.

The healthcare problem is a global issue
Healthcare spending vs. GDP and income



Notes: Indexes based on local currencies. Income = Personal disposable income; HC = expenditures as % of GDP are OECD estimates.
Source: Economist Intelligence Unit May 2014, BCG analysis

Value Based Care (VBC) aims to reduce costs and improve quality by ensuring the delivery of services are better aligned with patient need than with revenue generation. At present, most health systems pay for care on a process basis, per activity. This incentivizes high volumes of care – typically high cost, emergency

and acute care – rather than routine primary and preventative care. VBC uses payment reform to secure delivery system changes by incentivizing both quality and efficiency in its contracts. Together, those incentives reward providers for high value rather than high volume care, where value is defined as:

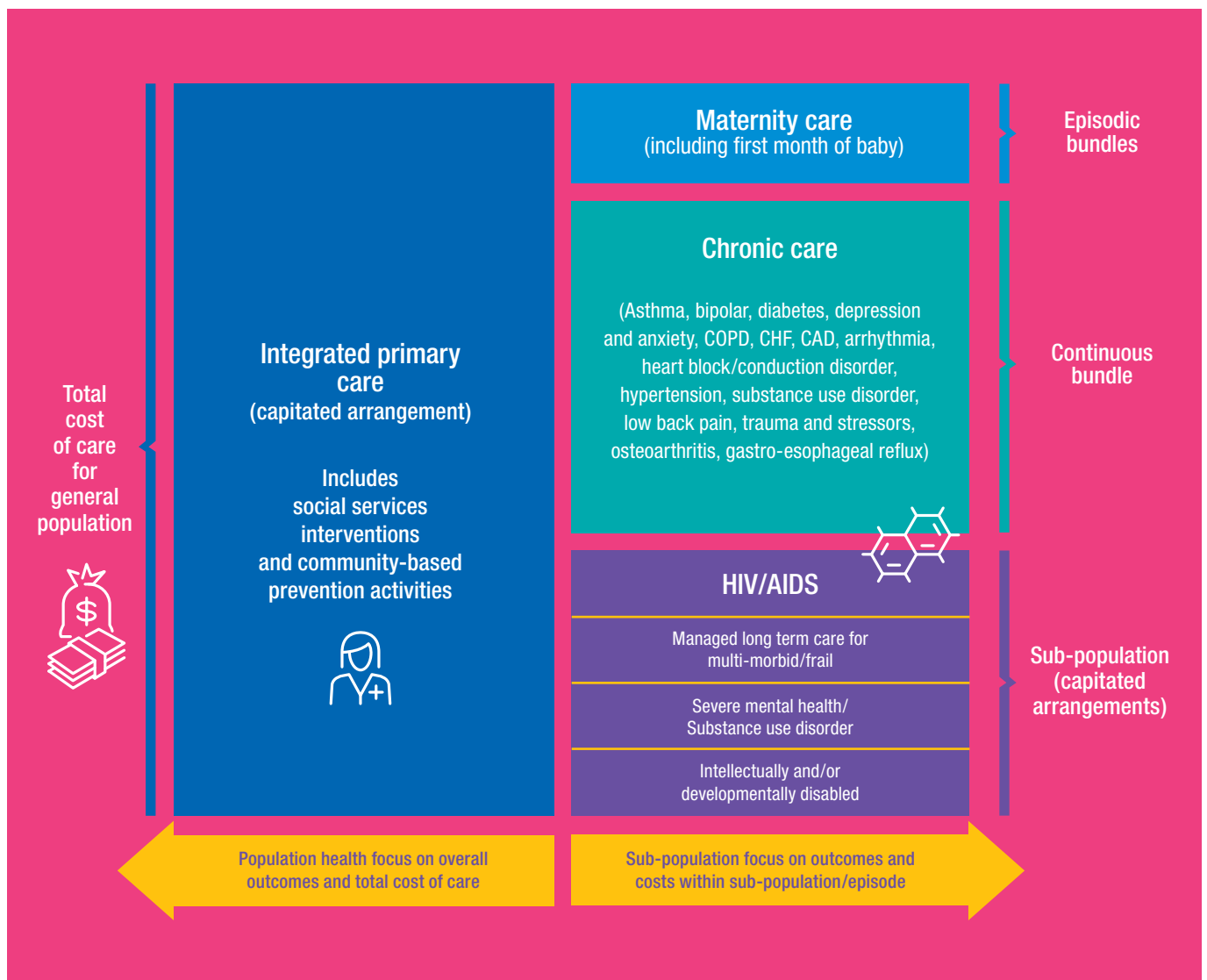
$$\text{Value} = \text{appropriateness} \times \left[\frac{\text{quality (outcomes)}}{\text{costs (over the full cycle of care)}} \right]$$

VBC incentivizes both quality and efficiency in its contracts.”

There is no “one size fits all” approach to VBC, though there are a number of key parameters that all value based contracts include – the so called “7 pillars of VBC”. These are: 1) a clearly defined patient population; 2) a clearly defined scope of service on offer; 3) an agreed payment model to reimburse care; 4) outcome measures that are used to grade quality; 5) a standardised measurement approach to calculate the cost and quality outcomes; 6) an agreement on risk sharing between payers and providers; and

7) structures in place to mitigate risk, such as guardrails, risk corridors, risk caps or re-insurance. Payment models, of which there are four basic types, are a good example of why “one size does not fit all” in VBC. Each of the four methods (FFS, bundled, capitated and block) are suited to different situations. For example, FFS might be appropriate reimbursement for a single doctor visit, whereas bundled payments are more suited to paying for discrete episodes of care – like the birth of a baby, a heart attack or a knee replacement. Capitation,

which pays a fixed sum for care of a clearly defined population over time, is most commonly used for the provision of population health services, whereas block payments are more commonly used for hospital budgets. Both cap costs and encourage efficiency but they differ in the amount of risk providers are exposed to and how much coordination is incentivized. Indeed, a combination of payment types may be used for different purposes in one system, as illustrated in this example from DSRIP Medicaid reforms in New York State.



What are the implications of VBC for hospital providers?

The immediate implication of value based payment mechanisms is that it necessitates integrated working between care providers. When those providers are rewarded for whole episodes of care – from surgery to rehabilitation for example – it very quickly becomes the interest of all parties to make that episode of care as seamless as possible. This kind of working has the potential to improve cost and quality, but can introduce risk too, which can make stakeholders nervous about entering into such arrangements.

Hospitals can feel particularly exposed. Moving from FFS to VBC changes the flow of funding. No longer reimbursed for every unit cost incurred, hospitals instead agree to be reimbursed a portion of the new joint funding, based on assumptions about their future contribution to patient care. But what if individual patients use the service more frequently than anticipated? What if assumptions about future cost

efficiencies can't be realised? Then there is the issue of transformation costs. New digital infrastructure will be required to track costs and outcomes across providers. Some degree of workforce remodelling will be required to build capacity in the community as care moves out of acute and specialist units. It may be time before the promised cost efficiencies are realised at a provider level, and patients and staff may not always be supportive through that process.

Fundamentally, VBC payment changes the business model for hospitals from maximising revenue to maximising margins, and this is understandably daunting, but lessons learnt from the many value based contracting projects KPMG has assisted with, are that these challenges are predictable and manageable and that value based contracting can work well for payer, patient and provider alike.



Making VBC work for everyone

Agree the flow of funds and mitigate risk

Apportioning funding to providers based on their expected future contribution to patient care is complex. It requires role play and detailed actuarial modelling to predict the impact of VBC

incentives. To mitigate the risk in the short and medium term, structures like gain and loss share agreements can be used, or it may be agreed that risk is transferred incrementally over time. Either way,

very good quality data is required to establish when practice is deviating from what was expected and should inform iterative changes to the reimbursement formula to address that.



Invest in a good technology platform

Good data requires a good technology platform – both to collect that data and then to analyse it. One issue with collecting data is that it must be collected from a number of sources. Previously, large and expensive new platforms

might be required for this but now, data can often be captured and aggregated from existing systems, leaving the old repositories of data intact. It is also unnecessary to integrate whole systems in the first instance. Early steps might

involve the creation of a master index of patients and improving the “liquidity” of data – the ability to see data in the same format across organisations in real time. Transparency of data across the network is also vital to engender trust.

Prioritise target groups for integrated care

Neither is it necessary to integrate the care of an entire patient population from day one. It may be preferable to define a subpopulation to start with – defined either by their geography, their condition or the complexity of their care. It may be tempting to focus on the most frequent users of

care – the numbers are small and the resources are often significant – but such people are typically very ill and the likelihood of being able to reduce the costs of their care is low. In the medium to long term, it may be more productive to identify those patients most at risk of entering that

group and focusing integrated and preventive care on them. Patients with chronic long term conditions like COPD and CHD are a good place to start. Hospitals are often in a good place to lead this work as typically they have the most complete datasets for patients with chronic illness.

Establish robust governance

Establishing good clinical and organizational governance is vital to coordinated care because the same legal and clinical issues that apply within a single organization now apply across a range of organizations and a unified approach to those issues is required. Patient pathways are a good example of this and are another example of an area where hospitals can take the lead with integrated working.

A patient pathway is an agreed protocol, across organisations, for the management of patients with a specific condition. They set out the care expected of each provider at every stage of illness and make clear, the referral criteria that must be met before escalating care. Protocols allow organizations to work collaboratively because they standardise the care process, giving professionals the confidence to

share the care of patients between providers. In addition to this, when protocols span the breadth of a health system, from primary and community care, up to secondary, tertiary and quaternary care, they set needs-based thresholds on the time of specialist providers. Not only are these professionals more expensive, but they are often more scarce, so by reimagining the care process, by allowing each professional “to only do what only they can do”, protocols can improve the productivity of specialist staff by drawing routine care out of busy acute hospitals into a competent and convenient community setting. Hospitals are well positioned to lead on this work. Working together with primary care colleagues, they can devise new protocols, form stronger working relationships and devise new ways of integrated working. That might mean telecare giving primary care clinicians access to specialist advice remotely, or holding regular specialist clinics in the community setting. Sometimes specialists run joint clinics with primary care clinicians to build capacity in primary care by transferring their specialist skills and experience.



Hospitals are often in a good place to lead this work as typically they have the most complete datasets for patients with chronic illness.”



A more tailored approach for complex patients

For those whose care is not straightforward – for those with multiple conditions, where protocols overlap and contradict each other – a more tailored approach is required. For these patients, optimising the health of the individual is paramount, rather than trying to optimise the

management of multiple separate conditions. This leads to divergent aims, fragmentation of care and more frequent hospital admissions. This is an important consideration for hospitals participating in value based care, as reducing Potentially Avoidable Complications (PACs) and

admissions are often an explicit target of payment reforms. Having a single nominated care coordinator can be an effective way of dealing with this. Care coordinators are able to work with the patient to devise a more holistic approach to care, with anticipatory care planning built in.

Ensure the transition to VBC is both physical and mental

When redesigning incentive structures across or within organizations, it's easy to become fixated on the money, when in fact, shifting the flow of funds is likely to be the easy bit. Far harder is the movement of assets and staff to fit new integrated models of care – not just because

of the practical considerations but because of the change in culture and mindset that are needed to accompany it – incentives are not the same as motivation. Involving stakeholders early and often, and incorporating their input, is the key to engagement. Creating a shared

narrative can also be a powerful tool. Shared narratives frequently focus on a patient story but they don't have to. Where staff scepticism is a bigger problem, a narrative drawn around reducing pressure on acute services and drawing care into community services, may be preferable.

Case Studies

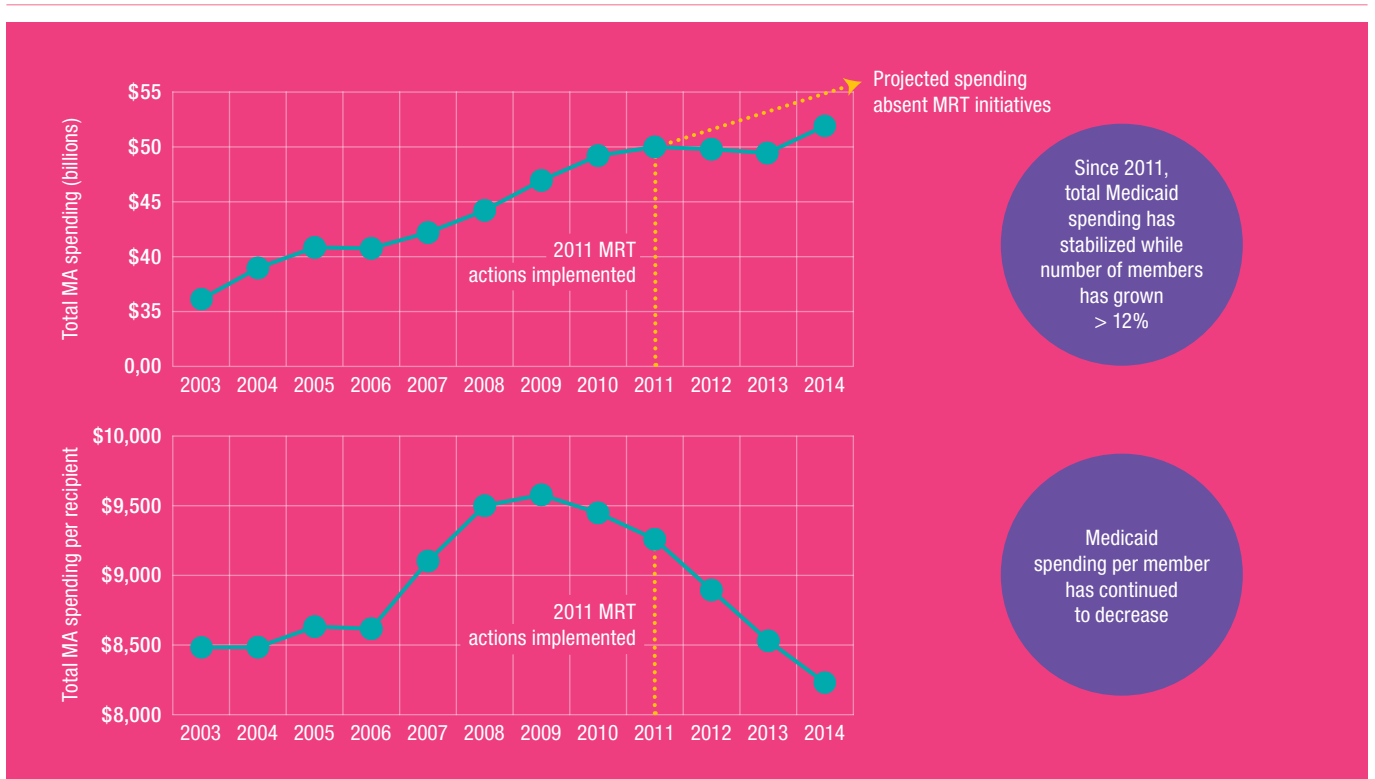
DSRIP

Medicaid is the single largest healthcare payer in the US. Primarily aimed at those who can't afford private health insurance, Medicaid is jointly funded by the State and Federal governments. In New York State, around 6 million people rely on it to contribute to their health costs and the program spends around \$60 billion annually.

Prior to 2011, Medicaid in NY had a bad reputation for cost and quality. Cost per recipient was around double the national average and the state ranked 50th in the country for avoidable hospital use. However, in 2011, the Medicaid Redesign Team (MRT) started to introduce changes that stalled overall Medicaid spending and reversed growth in Medicaid spending per member.



MRT successfully brought down cost growth





DSRIP
program has
involved,
right from its
beginning, all
stakeholders.”

These results provided strong justification for further reform and in April 2014, a \$6.4 billion agreement was reached between NY State and the Federal government – using projected future savings to transform current payment and delivery models. The agreement is known as the Delivery System Reform Incentive Payment (DSRIP) Program and its objectives include reducing avoidable hospitalisations by 25% within 5 years, and for 80-90% of payments to be value-based by 2020. Within a year, FFS had fallen from just under two thirds, to just under half of all Medicaid payments but a full evaluation of the overall impact won't be

available until next year. There are many things to learn from the DSRIP experience but two things stand out for hospitals in particular. Firstly, DSRIP was flexible, offering providers a menu of VBC options that allowed hospitals to opt into arrangements they felt they could excel at. Secondly, the program was rigorously involved in stakeholder engagement from the outset. Payers, providers and patients were consulted as part of a DSRIP steering group to contribute on issues ranging from clinical management pathways through to technical design. Both have been significant contributing factors to success of the project.

India

India may seem like an unusual case study in value based care as payer and provider markets are highly fragmented, with very little regulation, and a negligible role for government – at least until Modicare gets going. As such, it is difficult for payers to exert power and elicit delivery system change through payment reform but despite this, a surprisingly high alignment exists in places, between what hospitals actually provide and what patients actually value – because it is the population themselves that are directly paying for care in those instances.

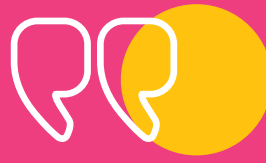
A number of urban hospitals for example, have responded to rural demand for care by developing mobile health clinics that extend specialist care to those communities. There are no value based contracting agreements with third party payers, but since the mobile health clinics compete on both price and perceived quality, a form of value based care has emerged.

Similarly, a number of private hospital

chains in India now offer services and procedures direct to consumers, at a single fixed price – a bundle. Apollo Hospitals offers cardiac and orthopaedic procedures at pre-published prices, and this is good quality care. Apollo Hospitals are a leading Center of Excellence and surgical procedures come with a warranty. Apollo have even started to offer comprehensive care for patients with acute and chronic conditions on

a similar one-off payment basis.

The two points to make here, are that it is not simply payers that are pushing for a move towards value based care, it is patients; and that hospitals do not have to accept passive remoulding by third party payers – they are innovators and integrators – and are more commonly seen leading the way in the pursuit of the ultimate Triple Aim: Better Health, Better Care and Lower Cost.



There is surprisingly high alignment between what hospitals provide and what patients actually value."





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Anahp Outcomes Program: Building benchmarks for Congestive Heart Failure

Measuring clinical outcomes and benchmarking results positively impact clinical practice. This is one of the visions of Anahp Outcomes Program.

In 2018, Anahp published in the 10th issue of the Observatório an article describing the implementation of Anahp Outcomes Program, which adopted the clinical standards for outcomes measurement developed by the International Consortium for Health Outcomes Measurements (ICHOM).

In 2017, eight member-hospitals led a pioneering initiative in Brazil and in the world: the collective implementation of standardized outcome measurement. The first standard set implemented was Congestive Heart Failure (CHF). In addition to the eight hospitals that started this journey in 2017, other four hospitals joined the group in 2018 and another standard set was implemented that year, Stroke.

In May 2019, the program had 14 member-organizations, maturely implementing the CHF standard set. The Stroke standard set is in the phase of assessing the data that will be used for benchmarking and, in June 2019, a third line of care will be incorporated based on the definition of the group.

The goal of this paper is to share the process of developing and implementing the benchmarking platform related to the CHF standard set of Anahp Outcomes Program. The first phase for building this benchmark was standardizing the technical data forms recommended by ICHOM and defining which indicators the group of member-hospitals would monitor – about 13 variables and 8 indicators.

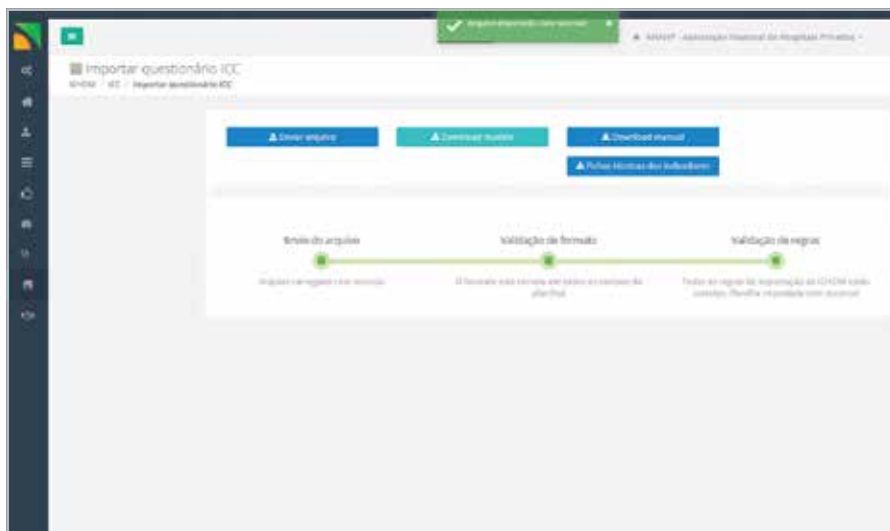
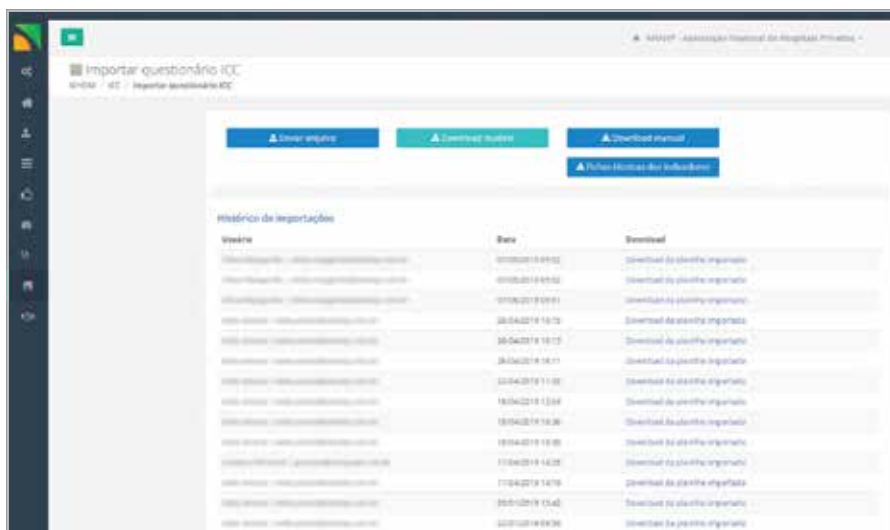
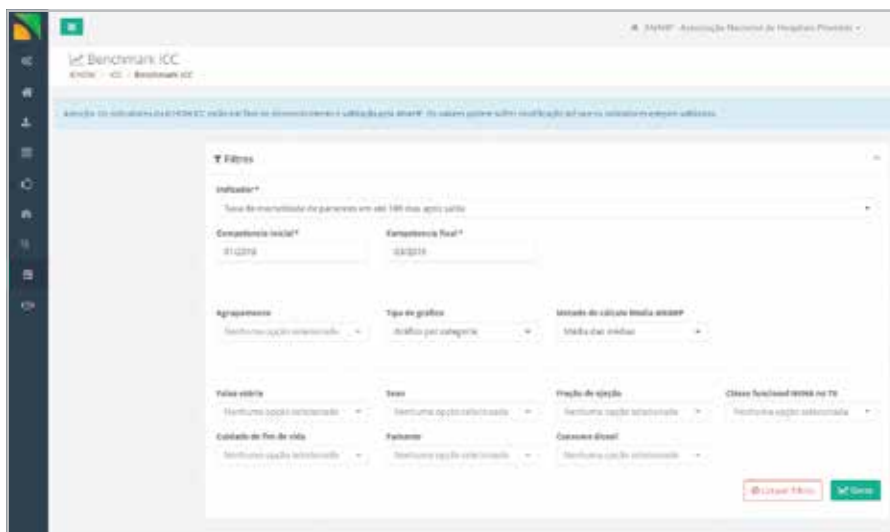


ICHOM promotes the concept of Value Based Healthcare (VBHC), using the standardized measurement of information clusters that comprise standard sets (SS), which have patient demographic, baseline, treatment, complications, and quality of life data, from the standpoint of patients, through scoring scales.”



At the same time, Anahp worked to structure an intelligent platform that could receive and validate information and provide benchmarking among members, with the possibility of making different comparisons (filters).

The second phase is when member hospitals uploaded data into the system to validate the instrument built. There were many assessments and adaptations to the needs of the project, based on the perspective of member-hospitals, until we got to the final proposal for benchmarking.



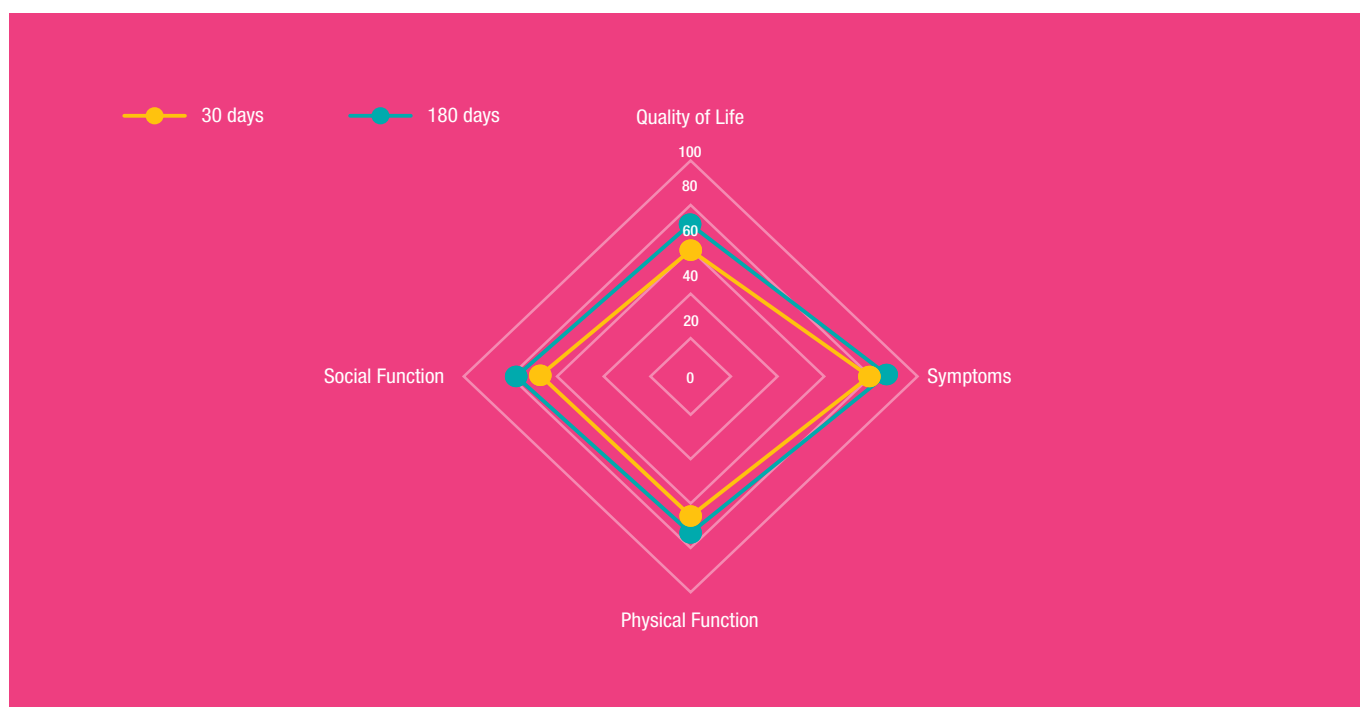
For each standard set, ICHOM recommends comparison scales that were created to identify how certain conditions may affect the every-day-life of patients, like the *Kansas City Cardiomyopathy Questionnaire (KCCQ)*¹, which measures quality of life indicators, assessing physical function, symptoms, social function, and self-awareness.

However, based on the group’s understanding that patient severity may differ between member-organizations, and that the variables collected for ICHOM’s CHF standard set would not be enough to appropriately discriminate the different risk profiles in the CHF population, the program’s executive committee, after many meeting with technical discussions, proposed the risk assessment method Acute Decompensated Heart Failure National Registry (ADHERE), which was approved by the program’s management committee. ADHERE is an internationally validated registry that assesses the probability of in-hospital mortality among CHF patients, taking into account patients’ blood urea nitrogen, systolic blood pressure and creatinine upon hospital admission.

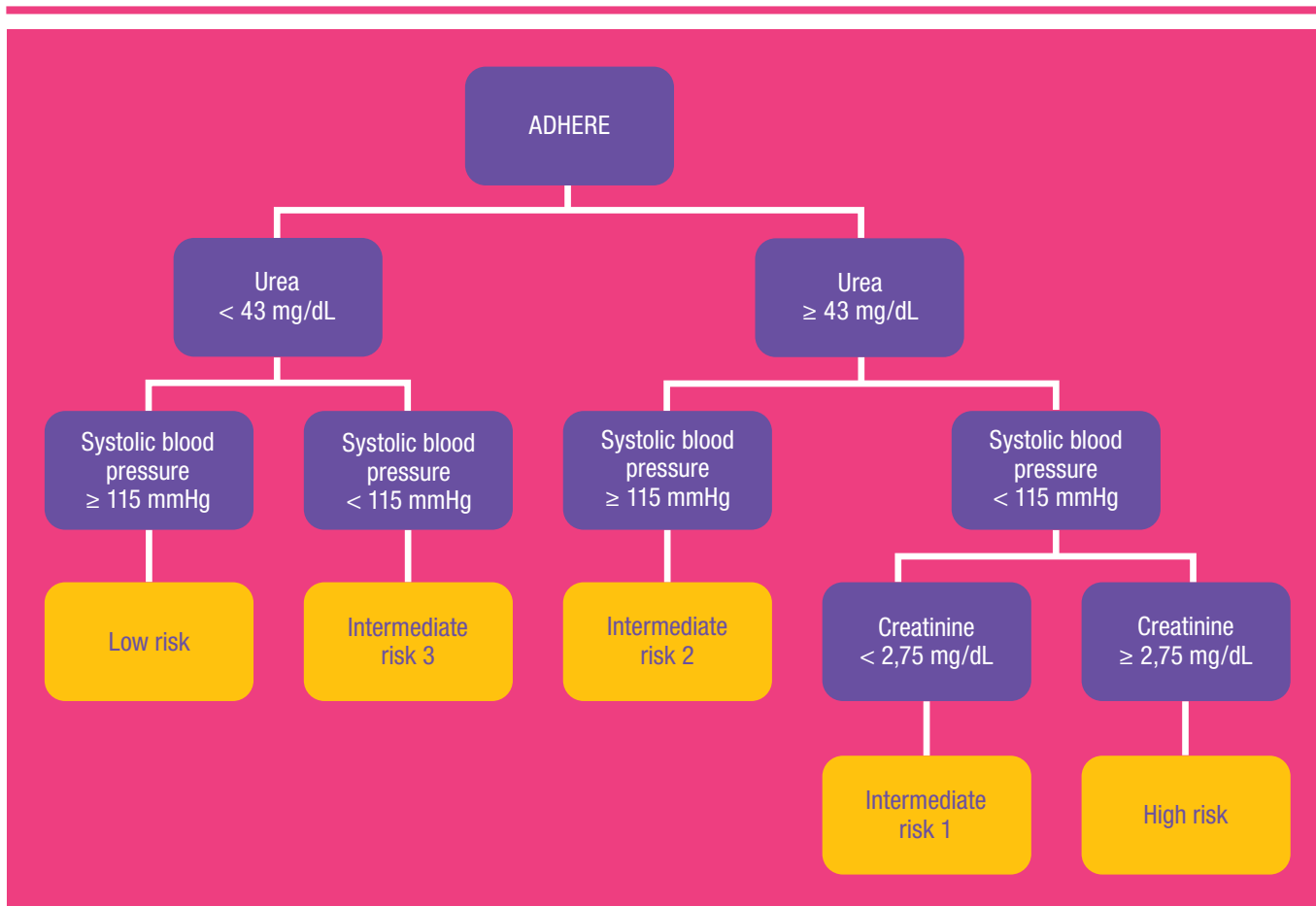


ADHERE is an internationally validated registry that assesses the probability of inhospital mortality among CHF patients.”

KCCQ Questionnaire



1. KCCQ is a self-administered questionnaire that quantifies physical function, symptoms, social function, self-awareness, and quality of life of patients. The objective is to determine how Heart Failure can affect the daily-lives of patients. Scores range from 0 to 100, and the higher the better.



Source: Adapted from FONAROW, Gregg C. et al. Risk stratification for in-hospital mortality in acutely decompensated heart failure: classification and regression tree analysis. *Jama*, v. 293, n. 5, p. 572-580, 2005.

Today, all member-organizations of Anahp Outcomes Program are using the platform for benchmarking, including all functionalities mentioned in this paper. Each organization may also create its own dashboard with the most relevant information for the hospital. It is worth mentioning that Anahp

Outcomes Program's benchmarking goes way beyond measuring and comparing outcome indicators. Member-hospitals have the opportunity of seeing *in loco* how other organizations are structuring themselves to measure outcomes and how these results have had an impact and/or favored changes in

processes, focusing on improving patient experience. The learning and engagement of hospitals in this joint building process is one of the main assets of this program. It is a living solution that improves day after day and provides a more comprehensive and patient-centered vision.

Safety barriers

Anahp's basic assumption to develop initiatives dealing with information that is sensitive to its members are the safety barriers in the use of this information, data reliability and careful benchmarking among member-organizations and the healthcare market.

In Anahp Hospital Indicator System (SINHA), these principles have been observed since the platform concept design and have stretched to the outcomes program. Each user's access and type of access to the platform is defined by senior leadership of members. All

information entered, in addition to automatic checks, is approved at different levels in the organization. The platform's technical safety criteria, which involve from system hosting to information upload, have also been carefully developed by Anahp.

Next steps

In December 2018, ICHOM visited Brazil to know the Project developed by Anahp, and then recognized the Association as a leader in Latin America in the implementation

of international outcomes and benchmarking – the only organization that implemented standard sets for a large group of hospitals. Anahp expects to expand more

and more the number of member hospitals, the lines of care, and the scope of the program. See below the plan to expand Anahp Outcomes Program.

TIMELINE

2019

- No less than 15 and no more than 20 member-organizations
- More standard sets monitored (one or two)
- Launch risk profile classification for CHF patients
- Launch stroke benchmarking and development of risk stratification methodology
- Launch international benchmarking (invite organizations that implemented ICHOM CHF SS to join Anahp's platform)
- Launch Anahp's SS for Sepsis
- Develop projects: Anahp's community platform for data collection, storage, and result monitoring
- Compare CHF clinical outcomes among member-organizations
- Publish a scientific paper and/or Anahp's case

2020

- No less than 25 and no more than 30 member-organizations
- More lines of care monitored by ICHOM's standards (two)
- Implement Anahp's community platform
- Launch Anahp's SS for Patient Experience
- Report results of CHF and Stroke programs (only among Anahp organizations)
- Partner with ICHOM to promote the VBHC community in Latin America
- Extend Anahp's platform for international benchmarking

2021

- No less than 35 and no more than 40 member-organizations
- More ICHOM Standard Sets (Three. Reach total number of eight or nine standard sets simultaneously)
- Expand partnerships to payers and employees
- Expand VBHC community in Latin America

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*Em comparação a 2018

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Note on methodology

To form the data presented by Observatório Anahp two primary information sources have been used.

1. Sistema Integrado de Indicadores Hospitalares Anahp (SINHA – Integrated System of Hospital Indicators) – Data submitted monthly

SINHA was created in 2003 to provide periodic and organized information to the member hospitals about financial, operational, human resources and clinical performance data of Anahp members, supporting managers in strategic planning and decision-making. Eventually, the system has gained more importance in the industry, becoming one of the main market references in hospital indicators after the annual publication of Observatório Anahp, as of 2008. In 2016, SINHA went through an important process of redesigning the indicators, promoted by Anahp Work Groups. The standardization is necessary to monitor the indicators required from our members in the market.

Anahp indicators have standardized technical forms available for consultation in the system and submitted to members for better understanding and data input into the system. Inputted data are validated by technical directors and/or responsible people of each area in the hospitals. In 2018, there were 346 variables and 268 indicators from 89 hospitals that contributed with data to SINHA – 80% of member hospitals in December 2018. Hospitals submit their data voluntarily and they can choose which indicators will be shared, resulting in oscillations in number of participating organizations in each indicator. In addition, new members start to gradually submit data to the database.

Each hospital has access to individual reports, which provides benchmark against the group of Anahp hospitals. There is the possibility of segmenting indicators by size, state and region and number of beds, among others. It provides a comprehensive analysis of the industry trends, and each hospital can compare itself against the average

indicators of the groups of hospitals with similar structures. Epidemiological profile of the organization, also submitted through SINHA platform, provides the identification of trends of diseases and regional characteristics of demand. After the unification with SINHA report, in 2017, hospital compliance

with the system increased in 2018: about 68% of member hospitals, that is, 75 hospitals out of 111 members in December 2018 reported data for the epidemiological profile. Information requested to member hospitals includes hospital discharges and the variables for each hospital encounter.

| | |
|---------------------------------------------------------------------------------------------------------------|----------------------------|
| Number of patient record | |
| Number of encounter | Taxpayer's registry number |
| Date of birth | Gender |
| Zip Code | District |
| City | State |
| Description of payer | |
| ANS code of payer | |
| Treatment site – inpatient unit | |
| CRM of physician responsible for admission | |
| Admission date (dd/mm/year) | |
| Date of hospital discharge (dd/mm/year) | |
| Main diagnosis ICD 10 th edition – four digits (only one diagnosis) at hospital discharge | |
| Secondary diagnosis 1 – ICD 10 th edition – four digits (only one diagnosis) at hospital discharge | |
| Secondary diagnosis 2 – ICD 10 th edition – four digits (only one diagnosis) at hospital discharge | |
| Performed procedure 1 (SUS code or AMB code) | |
| Date of surgical procedure 1 (if procedure is surgical) | |
| Performed procedure 2 (SUS code or AMB code) | |
| Date of surgical procedure 2 (if applicable) | |
| Weight of newborn at birth | |
| Type of discharge (discharge home, death or external transfer) | |
| Date of ICU admission (if there is ICU stay) | |
| Date of ICU discharge (internal transfer, discharge home or death) | |
| Number of ICU encounters | |
| Origin of patient (Emergency department, Home, Medical Office, other) | |
| Amount billed | |

The systematic collection provides a detailed analysis of the production,

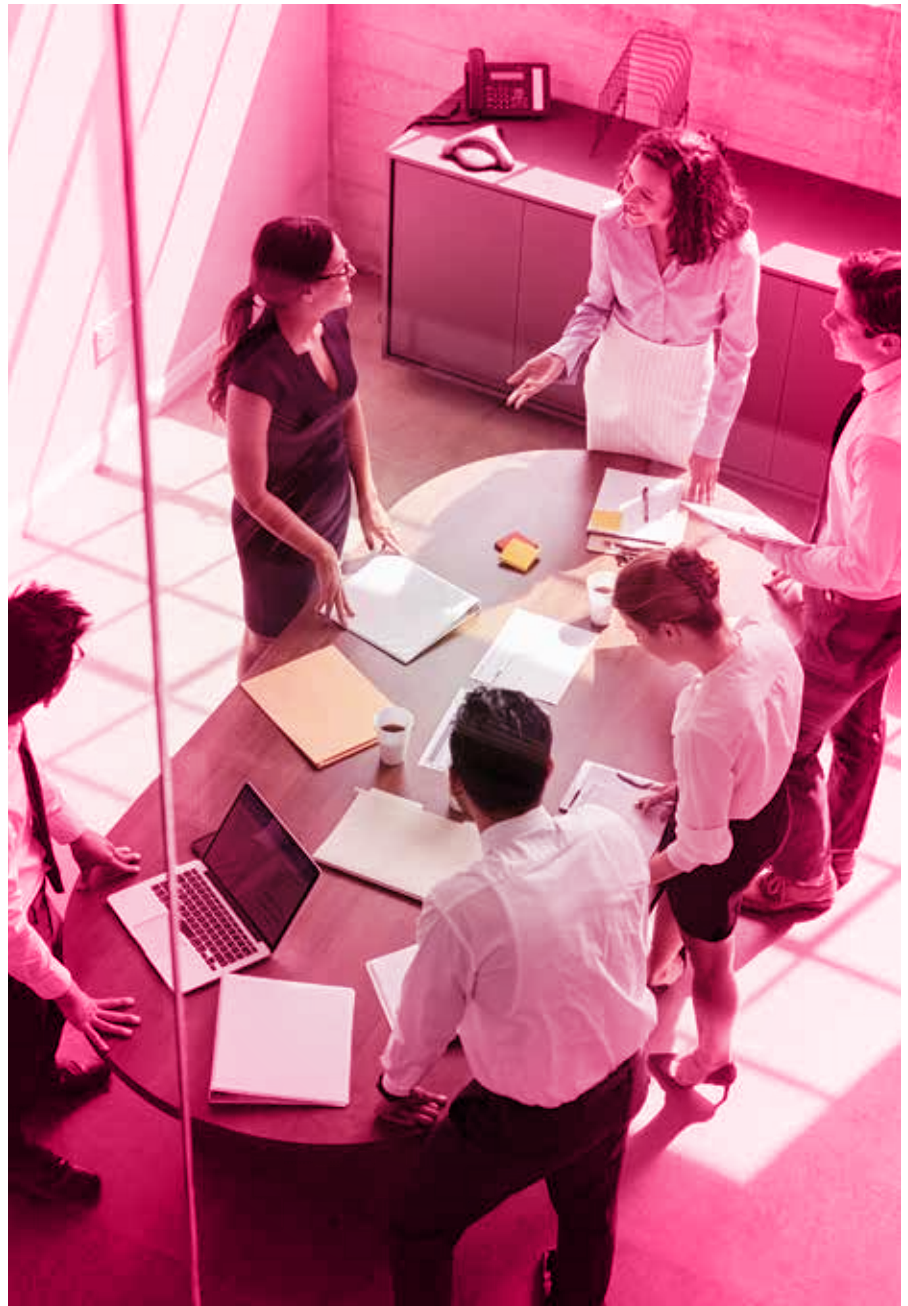
performance results, and consumption patterns of provided services.

2. Annual registration of hospitals

Information concerning structure, production of selected areas, clinical information, characteristics of quality and safety programs in the hospitals, management of clinical staff, teaching and research and philanthropy activities. This survey is made annually with all member hospitals.



The inclusion of new members has contributed to growing representativeness of Anahp.”



Participating hospitals: relevant modifications in recent years

In December 2018, Anahp had 111 associated hospitals, 11 of which had joined the organization in that year. The inclusion of new members in recent years has contributed to greater representativeness of private hospitals in Brazil. Since 2016, the information of the 23 hospitals that formed the Control Group is no longer presented. Anahp has had the data of a broad sample of hospitals since 2014 and we want to provide representative and comprehensive information that portrays the reality

of all member hospitals. For data validation purposes and consistent analysis, in some situations we use comparisons based on the same hospitals that completed the data in a given period of time. It is important to bear in mind that the analysis of indicators is made by Nucleo de Estudos e Analises (NEA – Center of Studies and Analyses), maintaining the confidentiality of hospital information. This edition shows data of 89 hospitals that submitted

information to SINHA (clinical, people management, economic-financial and sustainability data) and not all hospitals have necessarily submitted data to all variables. Despite hospitals' variability, it was possible to reach consistency by analyzing the tendency of indicators in the group of members. Data availability has also provided to hospitals more detailed monitoring of the indicators, a process that tends to improve with the use of the new SINHA platform.

Contributions from the Academia (COPPEAD-UFRJ)

The Study Center on Healthcare Management, with COPPEAD – CESS/COPPEAD, Business School, *Universidade Federal do Rio de Janeiro*, was created to encourage research and knowledge generation in healthcare management. CESS develops research studies, training and consulting about current and challenging management topics for companies in the area. In 2018, Anahp closed a partnership with COPPEAD to bring analyses compared against the existing literature, which would strengthen the decision-making of member organizations.

The analysis was performed using SINHA database from January to December 2018, taking into account all variables.

Using scattered charts of each variable, data inconsistencies were investigated. If present,

inconsistencies were excluded from the data set.

Using software R, the investigators made correlations of all possible variable pairs. To address missing value, parameter “pairwise.complete.obs” was used, considering only the calculation of pairs with values in both tested variables. Spearman correlation was selected to be used, as this method does not depend on assumptions, such as normal distribution of data series. Results were analyzed and correlations between 0.47 and – 0.47 were selected, including only those that had moderate to strong correlation.

The selected variable pairs, according to correlation values, were analyzed based on scientific data to generate useful recommendations to healthcare center managers.



Anahp closed a partnership with COPPEAD to bring analyses compared against the existing literature, which would strengthen the decision-making of member organizations.”



Analyses and indicators are presented as follows:

- > Clinical and epidemiological profile of patients;
- > Structure and annual production – hospital characterization according to the complexity criteria, enabling the comparison of similar structures;
- > Clinical Performance
 - Operational management;
 - Quality and Safety;
 - Institutional Protocols;
 - Home Care;
- > Institutional Performance
 - People Management;
 - Economic-Financial Management;
 - Sustainability.

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MARKET AND CLINICAL PROFILE

This section brings the analyses of the private healthcare market and the clinical and epidemiological profile of Anahp member hospitals

Executive Summary

HEALTH CARE ECONOMIC OVERVIEW

Brazilian economy has presented gradual recovery thanks to lower inflation rates



More job offers

Increase in number of health plan beneficiaries



| | |
|------|---------------|
| 2015 | 49.20 million |
| 2016 | 47.61 million |
| 2017 | 47.17 million |
| 2018 | 47.38 million |

Generation of formal jobs between 2017 and 2018 – Groups CNAE 2.0

Hospitals reached **second** among the main job generating industries

1st Non-specialized retail

43,315



2nd Hospital care activities

36,858



3rd Cargo road-based transportation

35,216



4th Administrative and clerical services

27,731



Source: Caged | Ministry of Labor



Gradual pickup of economic growth (positive GDP)



Stabilization of interest rate



Perspectives of growth in 2019 and 2020



CLINICAL AND EPIDEMIOLOGICAL PROFILE

Define the characteristics of patient population is essential to improve hospital care. To enable profiling, most Anahp member hospitals already have electronic medical records

Implemented electronic medical prescription **99%**

Implemented electronic medical record **86%**

Picture Archiving and Communication System (PACS) in the record **91%**

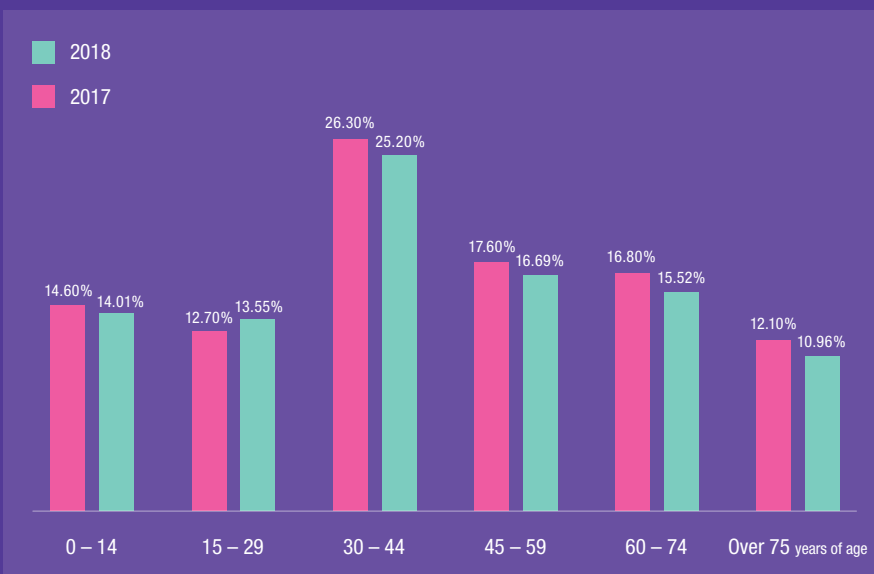
Bar code or RFID **81%**
Business Intelligence (BI) **74%**

MEAN LENGTH OF STAY BY AGE GROUP (days)



Source: SINHA/Anahp

HOSPITAL DISCHARGES BY AGE GROUP (%) – 2017 and 2018



Source: SINHA/Anahp

TENDENCY OF CHANGE OF CLINICAL PROFILE

Annual distribution of hospital discharges according to main diagnosis grouped by ICD chapter

Genitourinary **11.87%** 2016 → **10.57%** 2018

Digestive **10.57%** 2016 → **9.84%** 2018

Pregnancy **10.30%** 2016 → **9.30%** 2018

Respiratory **7.26%** 2016 → **8.96%** 2018

Neoplasm **13.34%** 2016 → **8.80%** 2018

There were **1,674,181** hospital admissions in 2018







Market profile

Brazilian economy presents gradual recovery.

The creation of formal vacancies in the country has once again driven up the number of health plan beneficiaries.

Economic scenario

The economic activity indicators have shown a gradual recovery of the Brazilian economy. On the one hand, inflation at lower levels and the better results observed in the labor market favored economic performance in 2018. On the other hand, the strike of the truck drivers in the second quarter of 2018 and the lack of definition of the electoral scenario at the end of the year seem to

explain why results were not better.

In 2018, the Gross Domestic Product (GDP) recorded an increase of 1.10% in relation to 2017, according to data from the Brazilian Institute of Geography and Statistics (IBGE). In 2019 and 2020, GDP should grow at rates of 2.30% and 2.70%, respectively, according to market expectations determined by the Focus survey (Graph 1).

GRAPH 1

Actual GDP growth rate (%)
2000 – 2020



Source: IBGE, Bacen (Focus – Market Report 01/Mar/2019).



The National Extended Consumer Price Index (IPCA – the country’s official inflation measure) rose by 3.75% in 2018. The index was within the target range established by the Central Bank, which is 4.50%, with a tolerance interval of 1.50% upwards or downwards.

In 2019 and 2020, the IPCA should grow at rates of 3.85% and 4.00%, respectively, according to market estimates by the Focus survey (Graph 2).

The fall in inflation allowed the stabilization of the interest rate at the level of 6.50% per year in 2018. According to market expectations calculated by the Focus survey, the interest rate should remain at that level in 2019 and rise to 8.00% in 2020 (Graph 3).

GRAPH 2

Annual variation in the IPCA (in%)
2000 – 2020



Source: IBGE, Bacen (Focus – Market Report 01/Mar/2019).

GRAPH 3

Interest rate – Selic target defined by Copom (% p.a.)
2000 – 2020



Source: IBGE, Bacen (Focus – Market Report 01/Mar/2019).

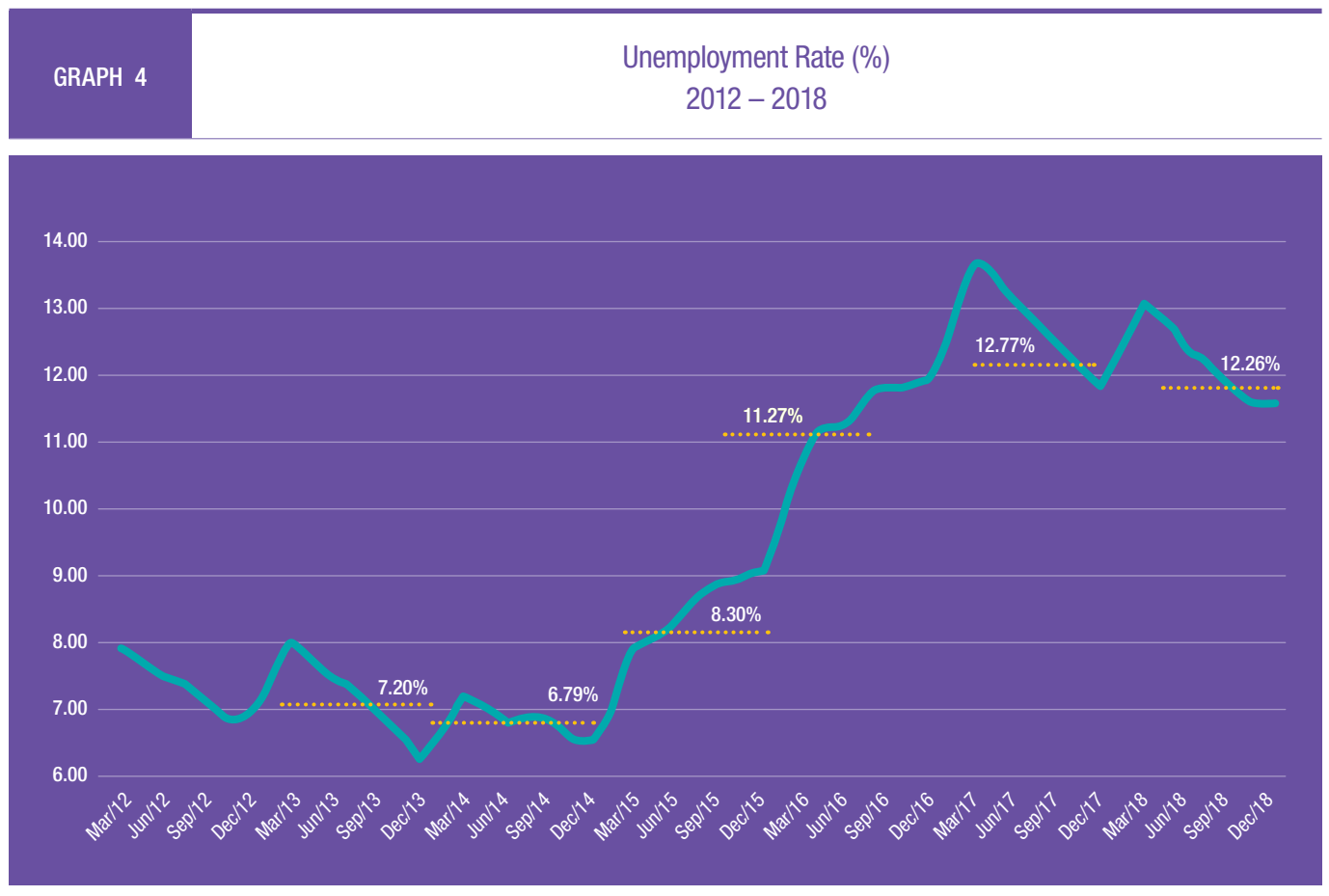


In the job market, IBGE's unemployment rate, according to the Continuing National Home Sampling Survey, fell again in the second half of 2018, with an average rate of 12.26% in the year, lower than the one recorded in 2017 (12.77%) (Graph 4).

Data from the General Registry of Employed and Unemployed Workers (Caged) of the Ministry of Labor confirm this scenario. In 2018,

the country generated 528,000 new vacancies in formal jobs, considering the adjusted series, which incorporates information reports late. In the three years before, the country had recorded a negative balance in job creation (Graph 5).

The creation of formal vacancies in 2018 seems to explain the increase in the number of beneficiaries of health plans last year.



Source: Continuous PNAD | IBGE.



GRAPH 5

Balance of formal job gains and losses and net balance of beneficiaries of health plans (in thousands) | 2008 – 2018



Source: Caged and ANS (on 06/Feb/2019).



57% of healthcare expenditures are made by private entities (healthcare insurance companies and providers and out-of-pocket).

The Health Industry

Estimates prepared by Anahp based on data from the WHO, the National Treasury Secretariat and the National Private Health Agency (ANS) indicate that health expenditures were 9.3% of the Brazilian GDP in 2018, or R\$ 637 billion. Of this total, R\$ 273.30 billion were public funds (43% of the total) and R\$ 363.70 billion were private funds (57% of the total).

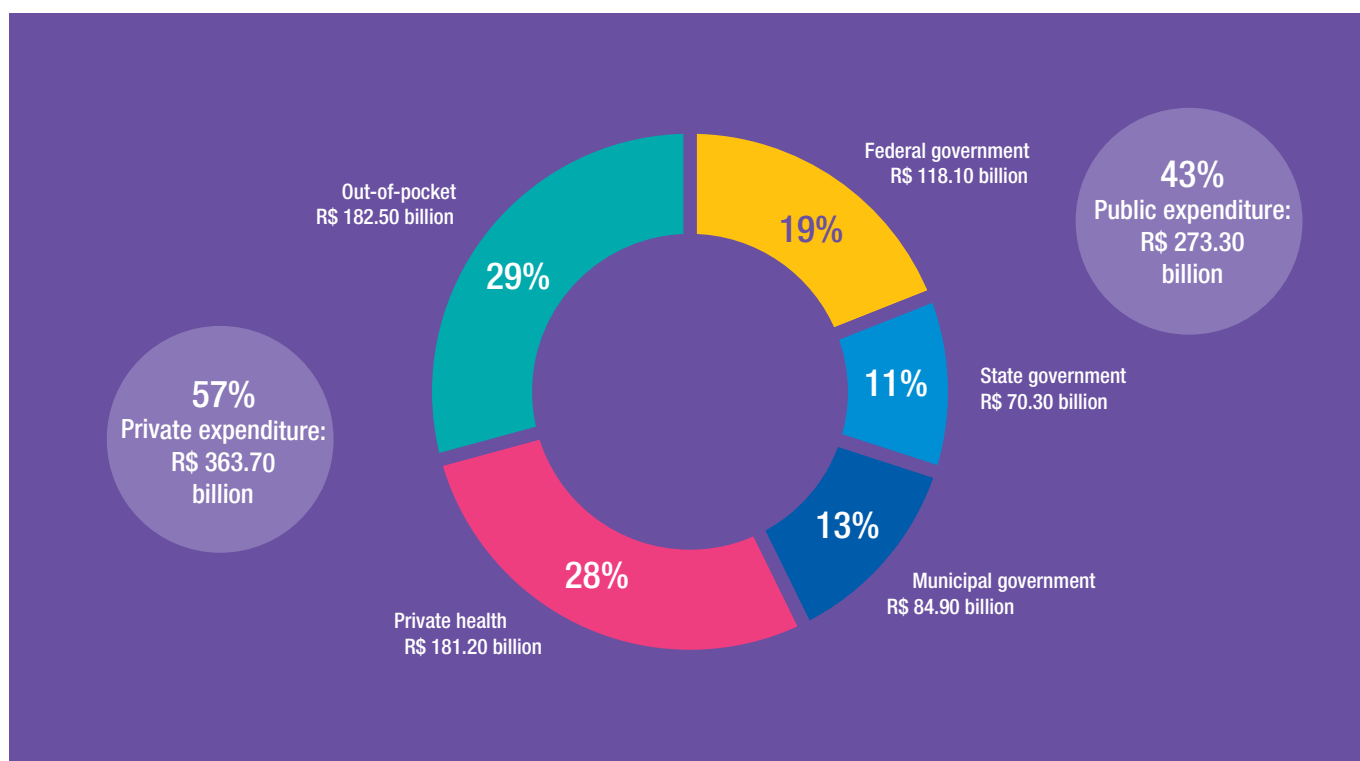
In the public sector, R\$ 118.10 billion came from the federal government, R\$ 70.30 billion from state governments, and R\$ 84.90 billion from municipal governments in 2018.

In the private sector, an estimated R\$ 181.20 billion were paid by families and companies to cover health plans in 2018 (supplemental health) and R\$ 182.50 billion were

out-of-pocket expenses (Graph 6). The population aging process, which increases the demand for health products and services, along with the scenario and behavioral factors explains the percentage of health spending. International comparisons suggest a positive relationship between the number of elderly people in the population and health expenditures as a proportion of GDP (the older a country's population is, the higher the average health expenditure as a proportion of the GDP) (Graph 7). Considering that IBGE's population projections indicate an increase in the percentage of elderly people (over 65) in the Brazilian population – 13% in 2025, 20% in 2045, and 27% in 2060 (Graph 8), health spending in Brazil should continue to increase.

GRAPH 6

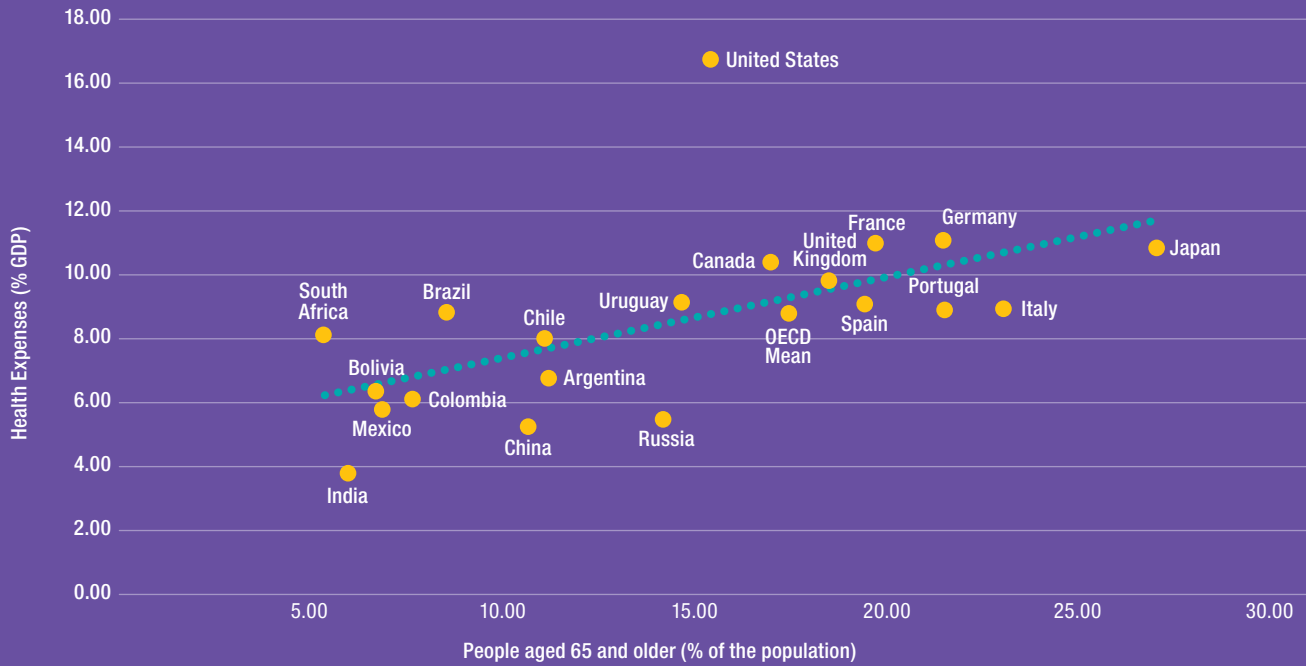
Health expenditure in Brazil (R\$ 637.00 billion)
9.3% of GDP | 2018



Source: Anahp estimate based on data from the National Treasury Secretariat, WHO and ANS.

GRAPH 7

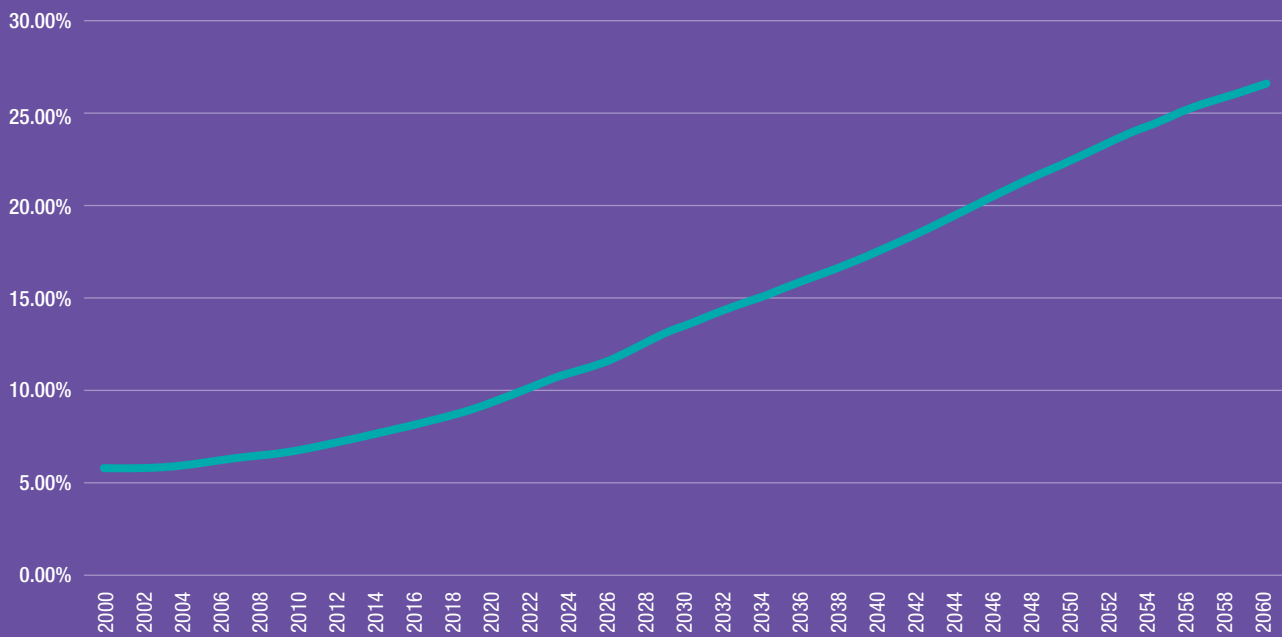
Health expenditure (% of GDP) vs. Elderly Ratio (% of population)
Selected countries | 2015



Source: WHO and the World Bank.

GRAPH 8

People aged 65 and older (% of the population) – Brazil
2000 – 2060



Source: IBGE.

A study commissioned by Anahp indicates that the private health system increased its spending by R\$ 49.00 billion between 2012 and 2017. The main reason for this growth, accounting for 70% of this value, was the use frequency of the services available. Some factors that may have influenced the increase in frequency include: the current compensation model, fee-for-service; technology enhancement, which provides to patients more diagnosis alternatives; physician education; patients seek specialists of different areas for the same problem, which can lead duplicate tests; the lack of a single registry system, including all patient information and tests performed; demographic and epidemiological changes in the profile of health plan users; and the economic crisis, which may lead to an increase in the search for health services, due to job instability, as well as the downgrading of health insurance plans.

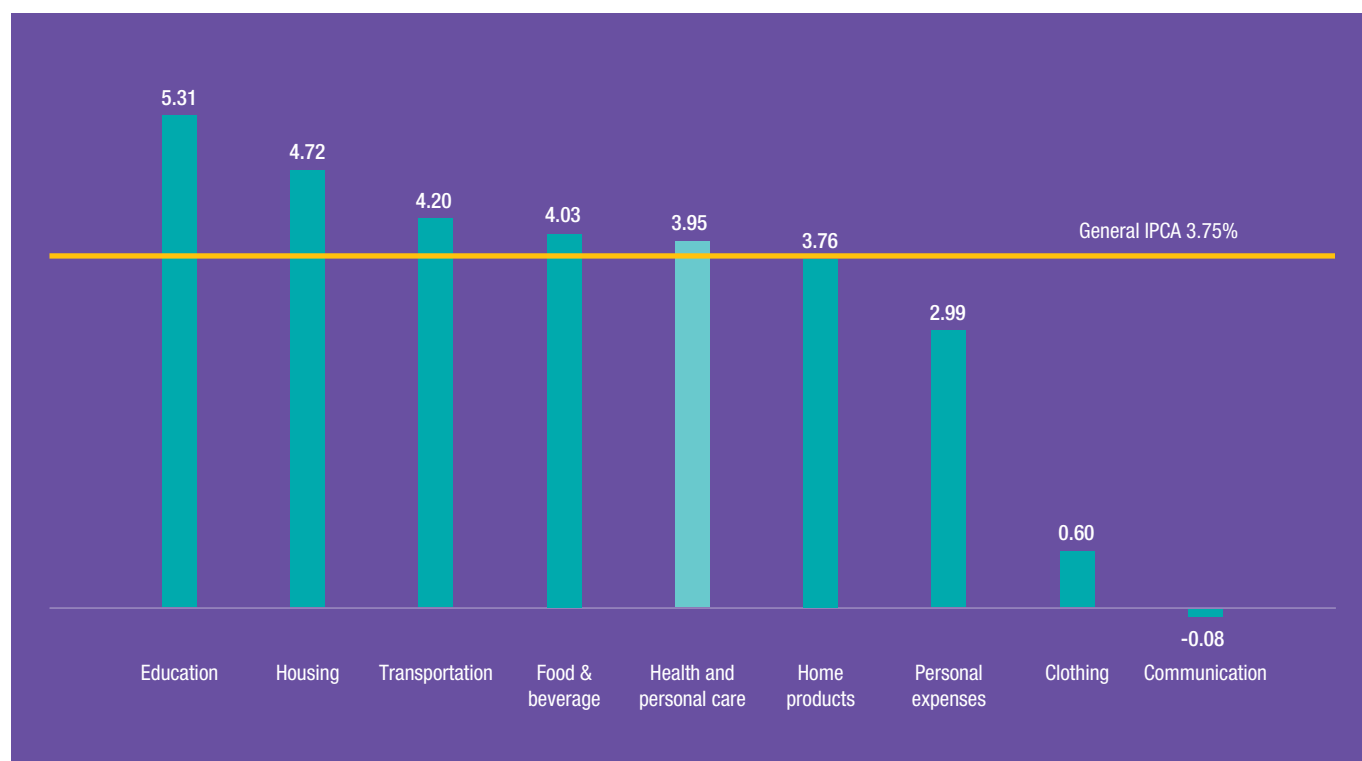
As to inflation, among the items that make up the IPCA, health and personal care prices grew slightly above general inflation, accumulating a rise of 3.95% in 2018 (Graph 9). This result seems to have been greatly influenced by health plans, which went up by 11.17% in 2018. In turn, laboratory and hospital services increased 4.00%, while medical and dental services increased 3.97% in the same period (Table 1).



The main reason for increase in health costs was the use frequency of the services.

GRAPH 9

Annual variation in the IPCA (in %) Groups | 2018



Source: IPCA | IBGE

TABLE 1

Annual change in the health and personal care IPCA and subgroups
2012 – 2018

| | HEALTH AND PERSONAL CARE IPCA | PHARMACEUTICAL PRODUCTS | OPTICAL PRODUCTS | MEDICAL AND DENTAL SERVICES | LABORATORY AND HOSPITAL SERVICES | HEALTH PLANS | PERSONAL HYGIENE |
|------|-------------------------------|-------------------------|------------------|-----------------------------|----------------------------------|--------------|------------------|
| 2012 | 5.95% | 4.11% | 4.24% | 10.03% | 6.57% | 7.79% | 4.71% |
| 2013 | 6.95% | 4.70% | 4.38% | 10.65% | 6.77% | 8.73% | 6.58% |
| 2014 | 6.97% | 4.93% | 3.91% | 8.88% | 6.44% | 9.44% | 6.25% |
| 2015 | 9.23% | 6.89% | 6.35% | 9.04% | 8.43% | 12.15% | 9.13% |
| 2016 | 11.04% | 12.50% | 2.78% | 7.21% | 6.96% | 13.55% | 9.49% |
| 2017 | 6.52% | 4.44% | -1.05% | 5.34% | 3.80% | 13.53% | 1.77% |
| 2018 | 3.95% | 1.63% | 0.82% | 3.97% | 4.00% | 11.17% | -3.22% |

Source: IPCA | IBGE.





In the labor market, although in the last three years job creation slowed down as a whole, the health market does not seem to have been affected. In 2018, 96,000 formal jobs were created in the health industry, 81% increase compared to 2017. In hospital care alone, 37,000 jobs were created, that is, about 40% of the health industry (Graph 10). With the generation of 37,000 vacancies, and considering data of the 2017 Annual List of Social Information (RAIS), the hospital industry must have reached the mark of 1,223,535 formal employees in 2018 (Graph 11).

GRAPH 10

Balance of formal job gains and losses in healthcare and hospital activities (in thousands) | 2008 – 2018

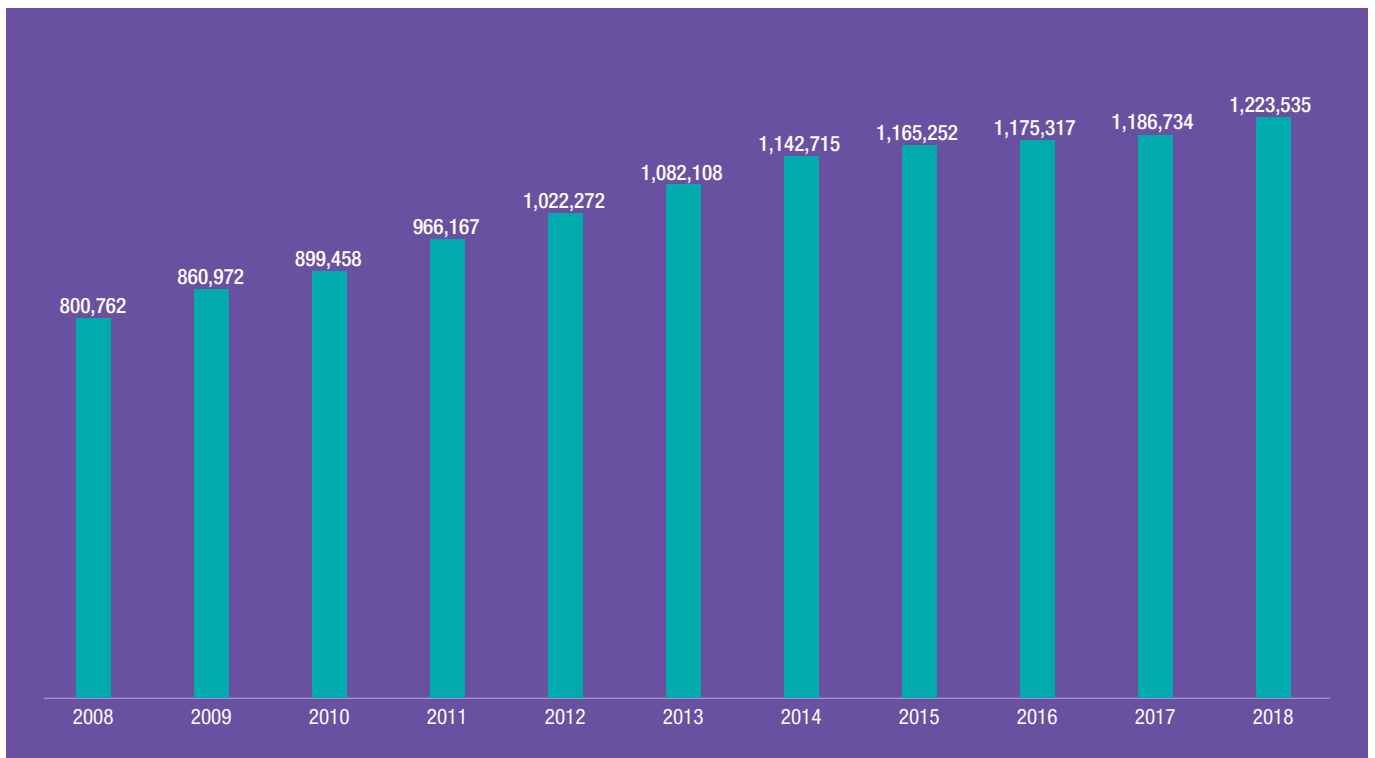


Source: Caged | Ministry of Work.



GRAPH 11

Number of formal employees in hospital care activities
2008 – 2018



Source: RAIS and Caged | Ministry of Work.

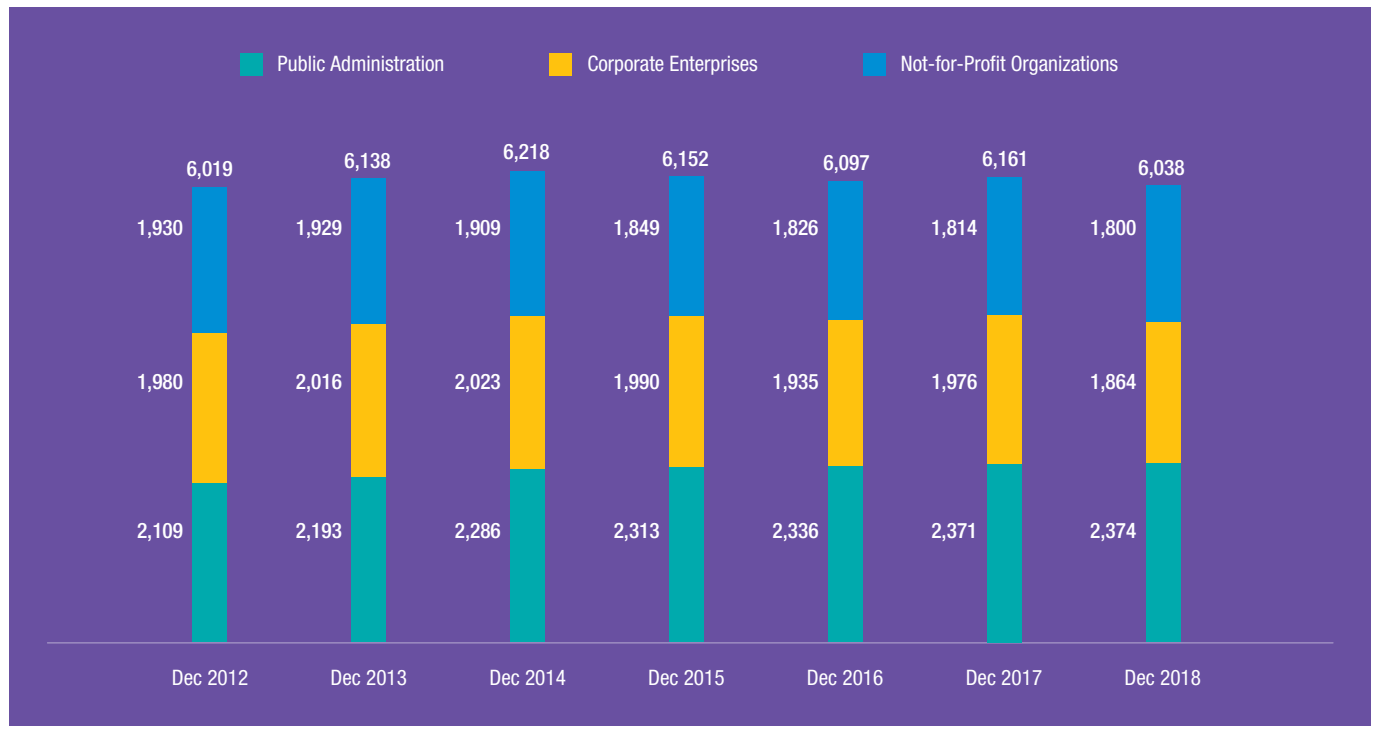
The economic scenario and characteristics of the Brazilian health system also influence the care network. The number of hospitals fell in 2018, closing the year with 6,038

organizations. Of these, 2,374 were public, 1,864 were private for-profit, and 1,800 were private not-for-profit. This fall occurred mainly in the private sector (Graph 12).

The number of hospital beds also continues to fall (404,006), driven by the reduction in the number of SUS beds offered by the private sector (Graph 13).

GRAPH 12

Number of hospitals per legal nature – general and specialized hospitals
2012 – 2018

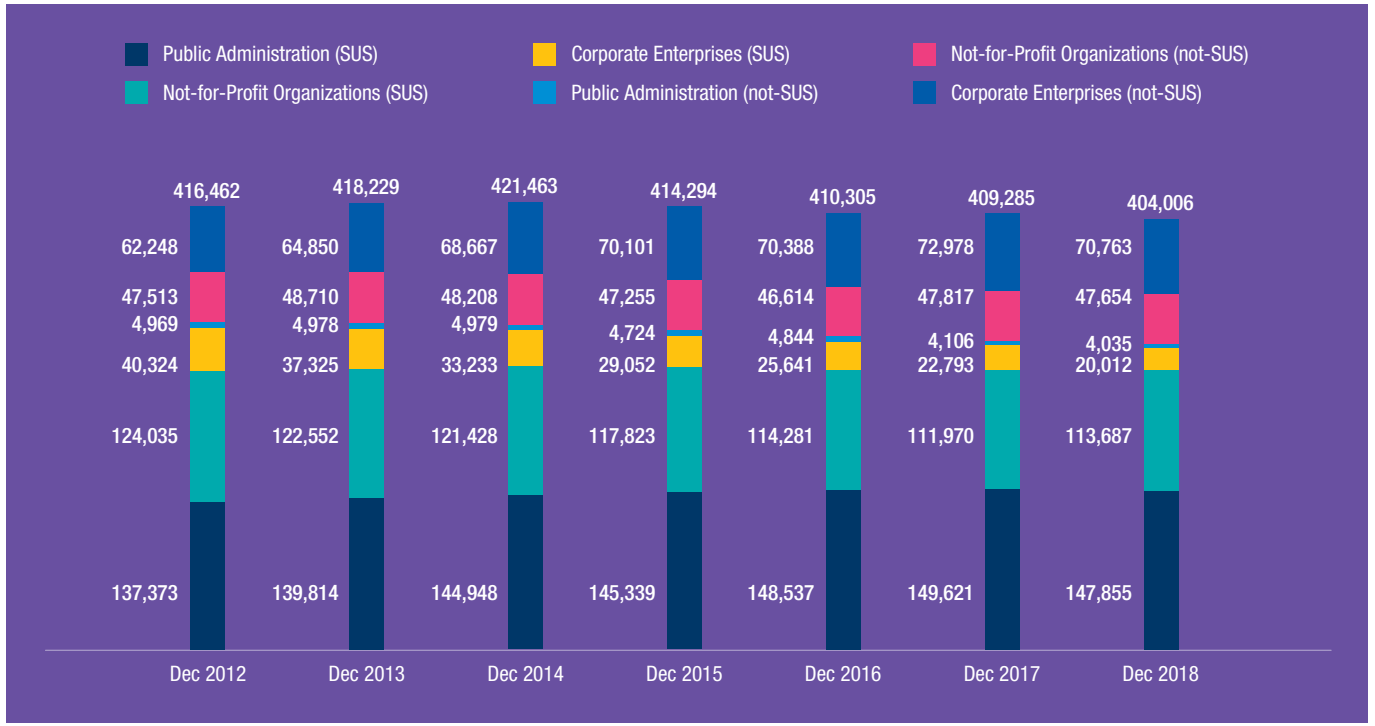


Source: CNES | Ministry of Health (on 26/Feb/2019).



GRAPH 13

Number of hospital beds per legal nature –
general and specialized hospitals | 2012 – 2018



Source: CNES | Ministry of Health (on 26/Feb/2019).



Healthcare market
has maintained
positive balance in
job creation.

The healthcare plan market

The number of beneficiaries of private healthcare plans, which had been declining since the end of 2014 – when it reached its highest level since the beginning of the historical series (50.43 million), grew again possibly driven by the improvement in the job market.

According to ANS data, the number of beneficiaries in December 2018

was 47.38 million, an increase of about 200,000 beneficiaries in comparison with the previous year (Graph 14).

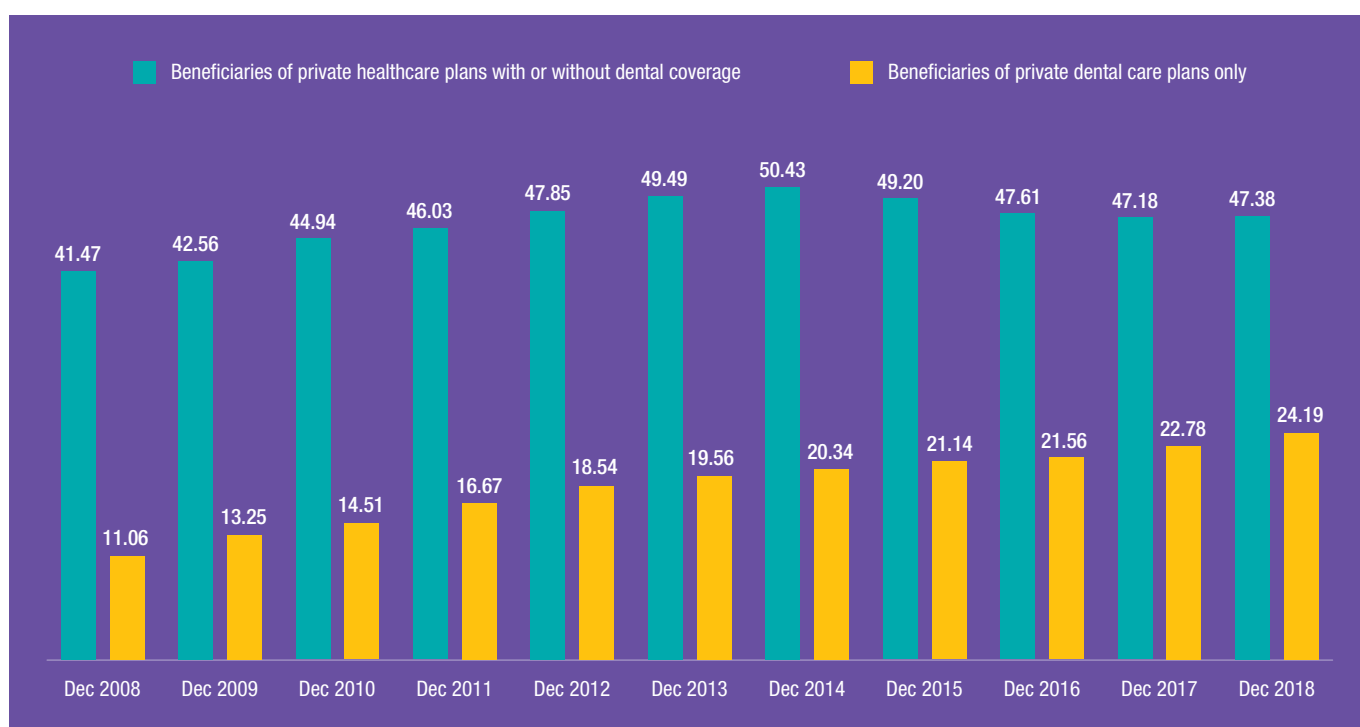
The improvement in the job market may also be associated with concentration on corporate collective plans. Between December 2014 and December 2018, the share of beneficiaries in this modality

increased from 66.27% to 67.00%.

Affinity plans, on the other hand, remained stable. In this manner, about 80% of the beneficiaries had collective plans at the end of 2018. In contrast, individual plans fell from 19.62% to 19.19% in the same period (Graph 15), and in 2018, the maximal adjustment authorized by ANS for this type of contract was 10% (Graph 16).

GRAPH 14

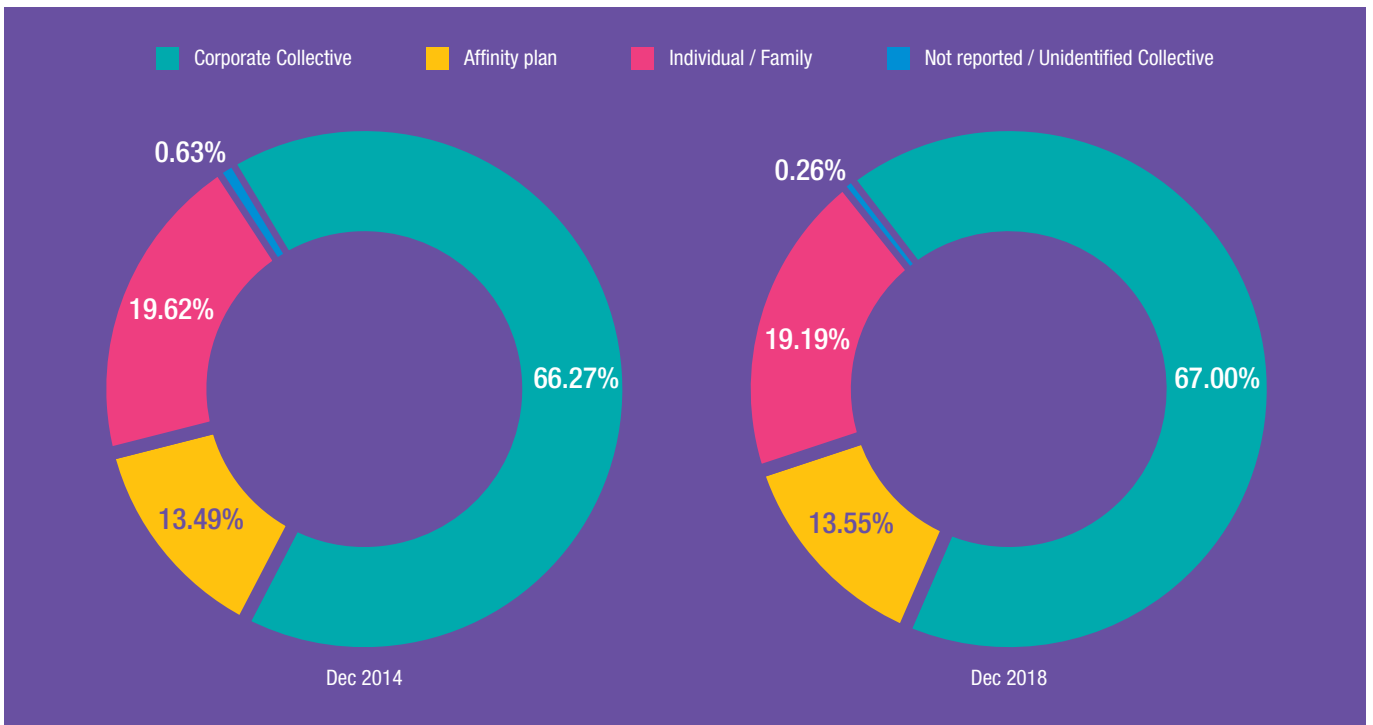
Beneficiaries of private health plans per type of coverage (in millions)
2008 – 2018



Source: ANS (on 06/Feb/2019).

GRAPH 15

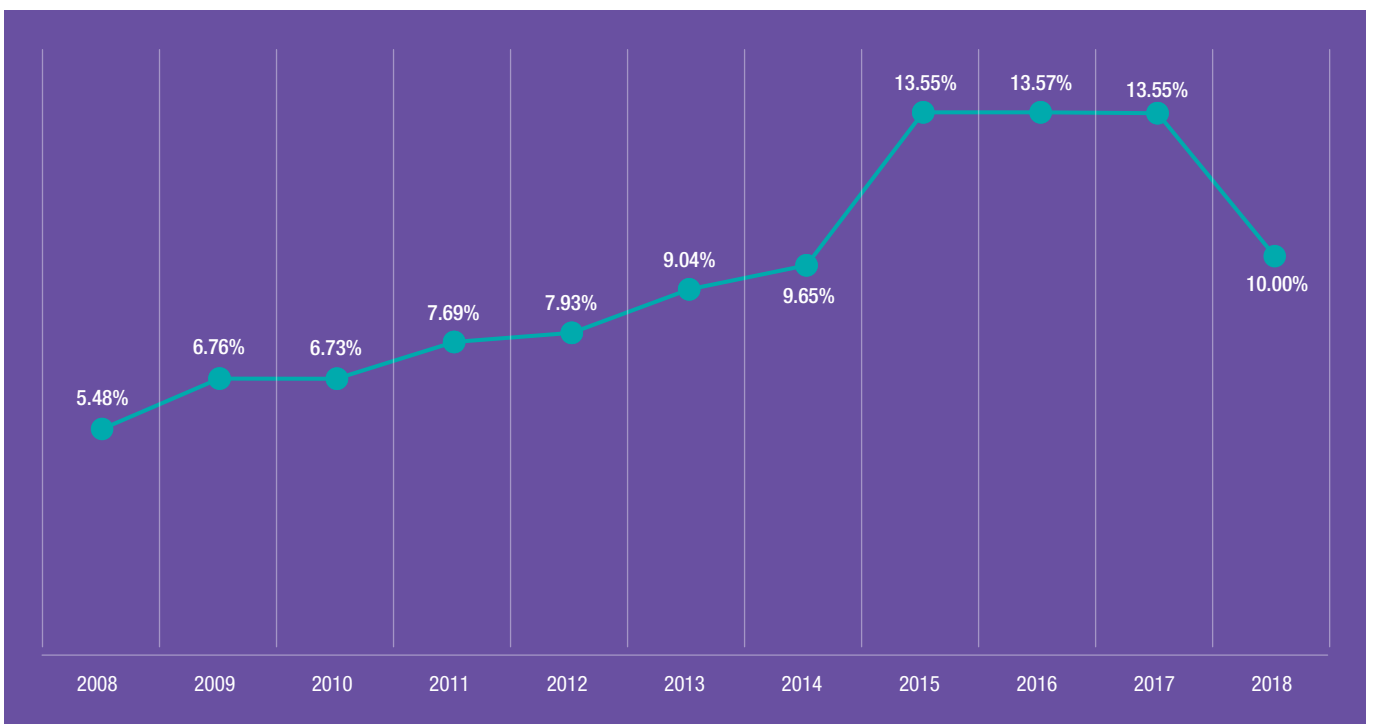
Distribution of beneficiaries by type of contract
2014 and 2018



Source: ANS (on 06/Feb/2019). Does not include dental-only plans.

GRAPH 16

Maximal adjustments authorized by ANS for individual plans
2008 – 2018



Source: ANS.



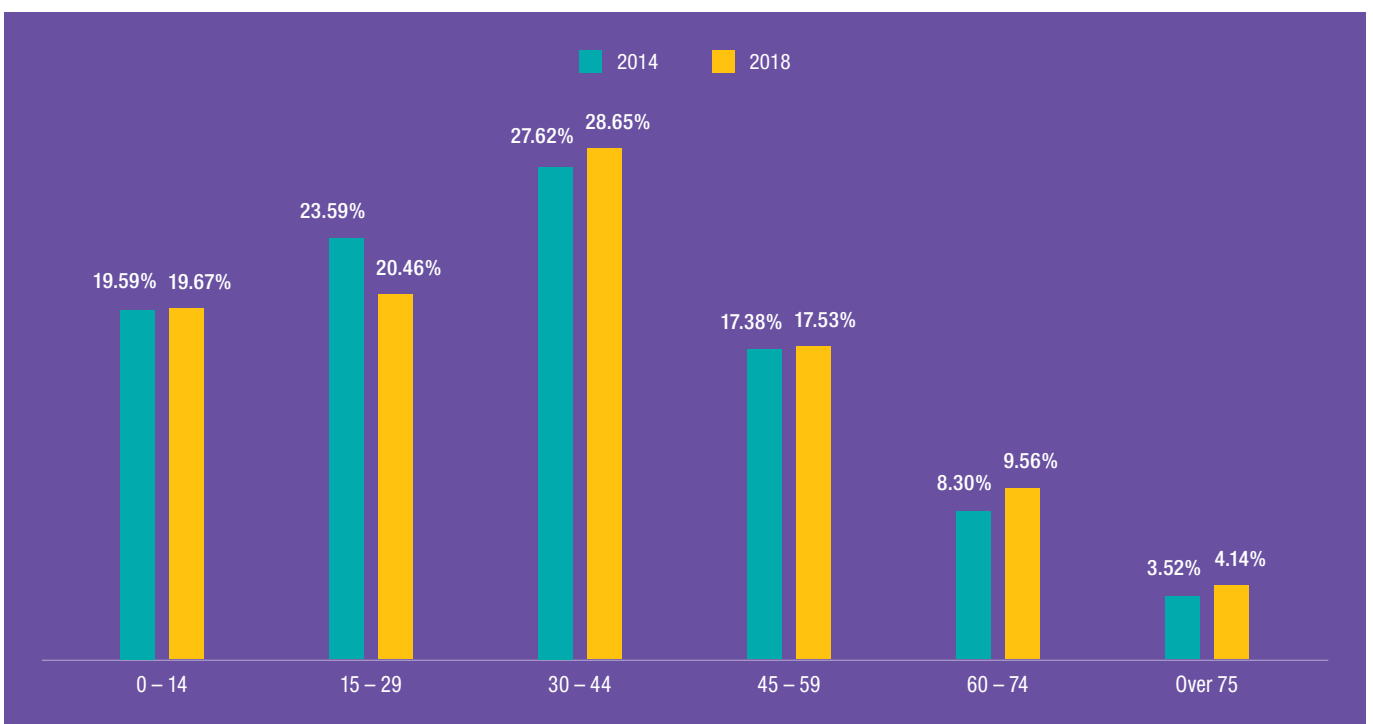
There was concentration of beneficiaries within active age range 30 to 44 years.

When considering the number of beneficiaries by age group, the population between 30 and 44 years of age accounts for most of the private health market, increasing its share from 27.62% in December 2014 to 28.65% in the same period of 2018. There was also an increase in the share of the age groups between 45 and 59 years, 60 to 74 years, and 80 years or more (Graph 17).

It is precisely in older age groups that the coverage rate of health plan beneficiaries (percentage of the population covered by private plans) is higher, reaching 38.60% among those aged 80 years or more. There is also a high percentage in the age group from 30 to 39 years (33.60% in 2018), driven mainly by the improvement in the job market and by the growth of corporate collective plans. Overall, the coverage rate is 24.40% (Graph 18).

GRAPH 17

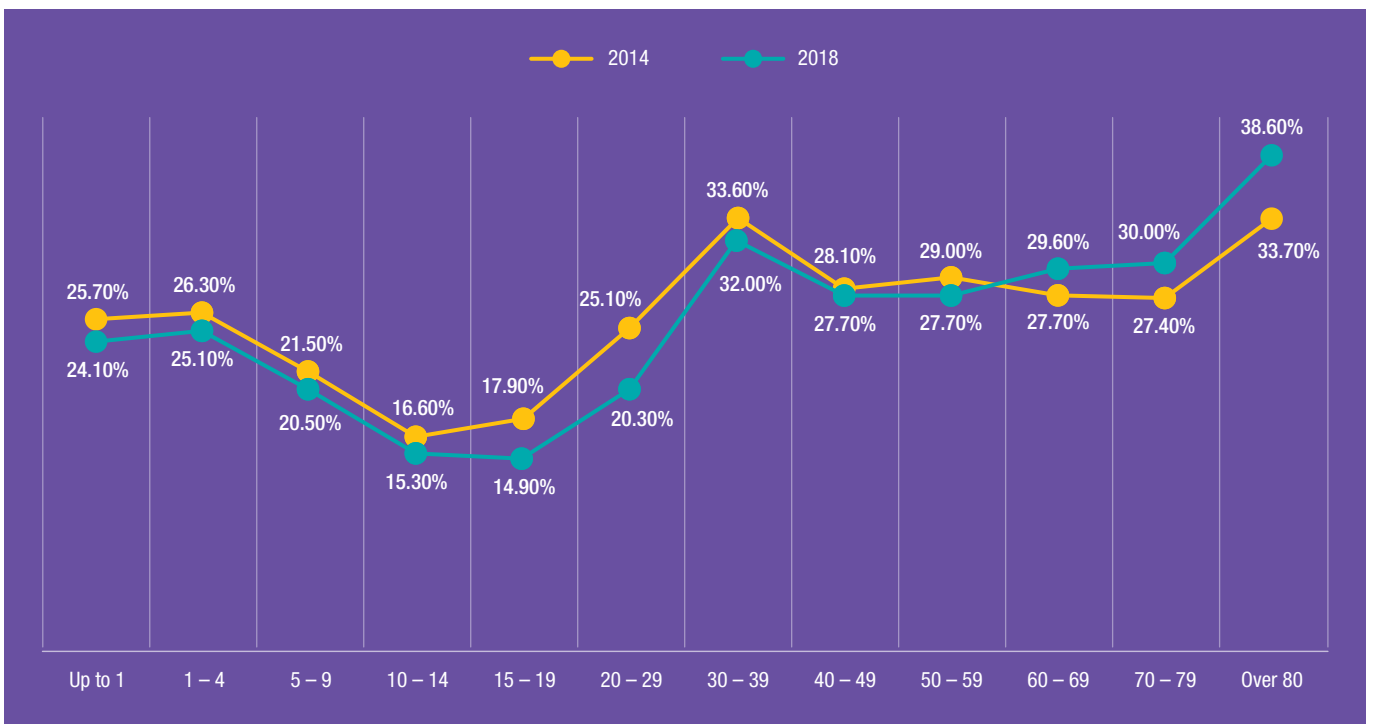
Distribution of beneficiaries by age group
2014 and 2018



Source: ANS (on 06/Feb/2019). Does not include dental care-only plans.

GRAPH 18

Coverage rate of medical-hospital plan beneficiaries by age group
2014 and 2018



Source: ANS (on 06/Feb/2019). Does not include dental-only plans.

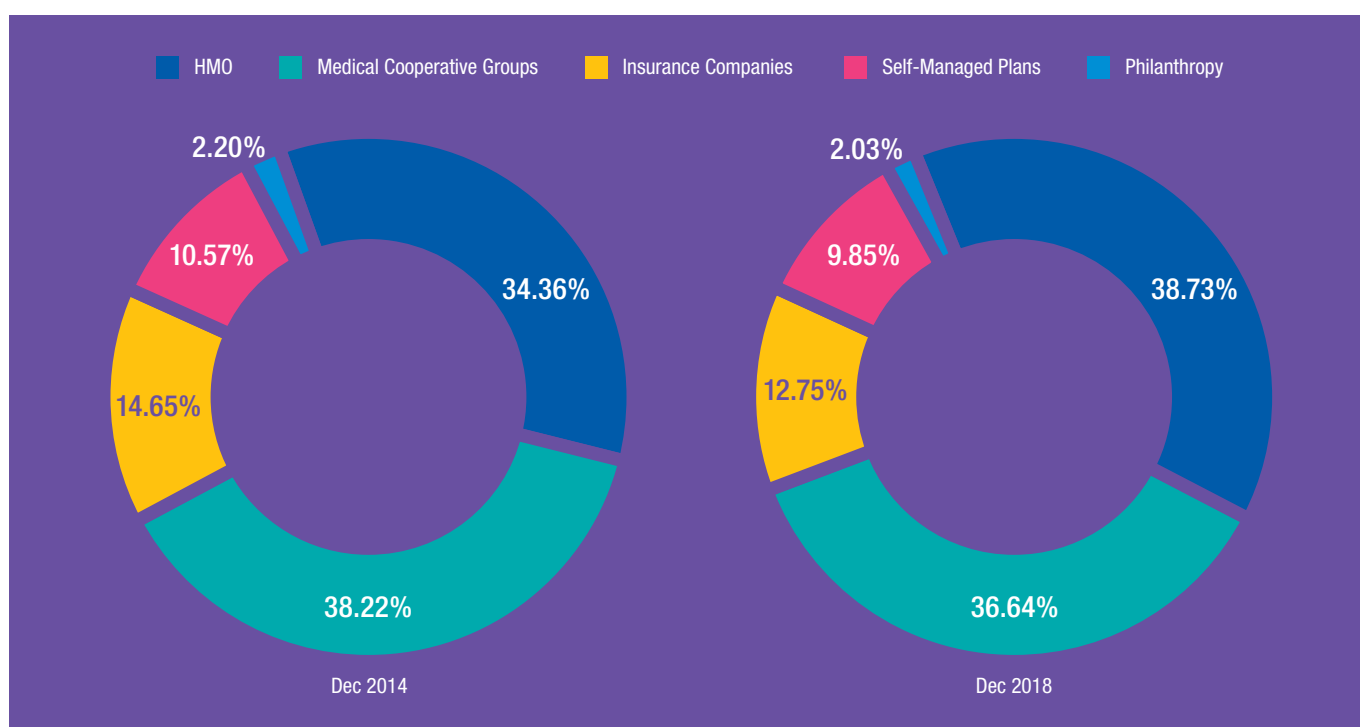


Regarding the distribution of health plans according to modality, there have been changes in recent years. Physician network groups are the only modality that gained market share, going from 34.36% in December 2014 to 38.73% in December 2018. The other modalities (medical cooperative groups, insurance companies, self-managed plans, and philanthropy) showed a market share decrease in the period (Graph 19). Moreover, it is possible to note a trend for consolidation in the health plan industry. The number of medical-hospital carriers with beneficiaries, which was 1,135 in 2008, went down to 749 in 2018 (Graph 20).



GRAPH 19

Distribution of beneficiaries by type of medical-hospital carrier
2014 and 2018

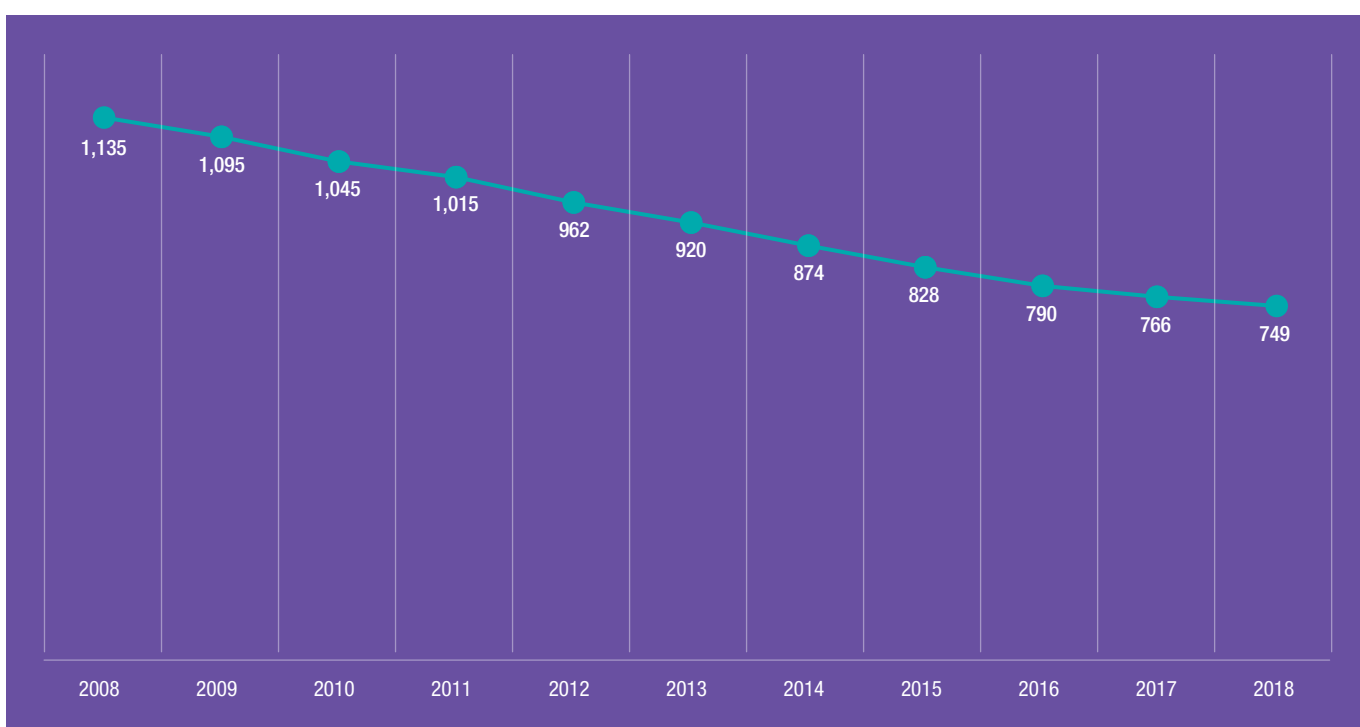


Source: ANS (on 06/Feb/2019). Does not include of dental-only plans.



GRAPH 20

Number of medical-hospital carriers with beneficiaries
2008 – 2018



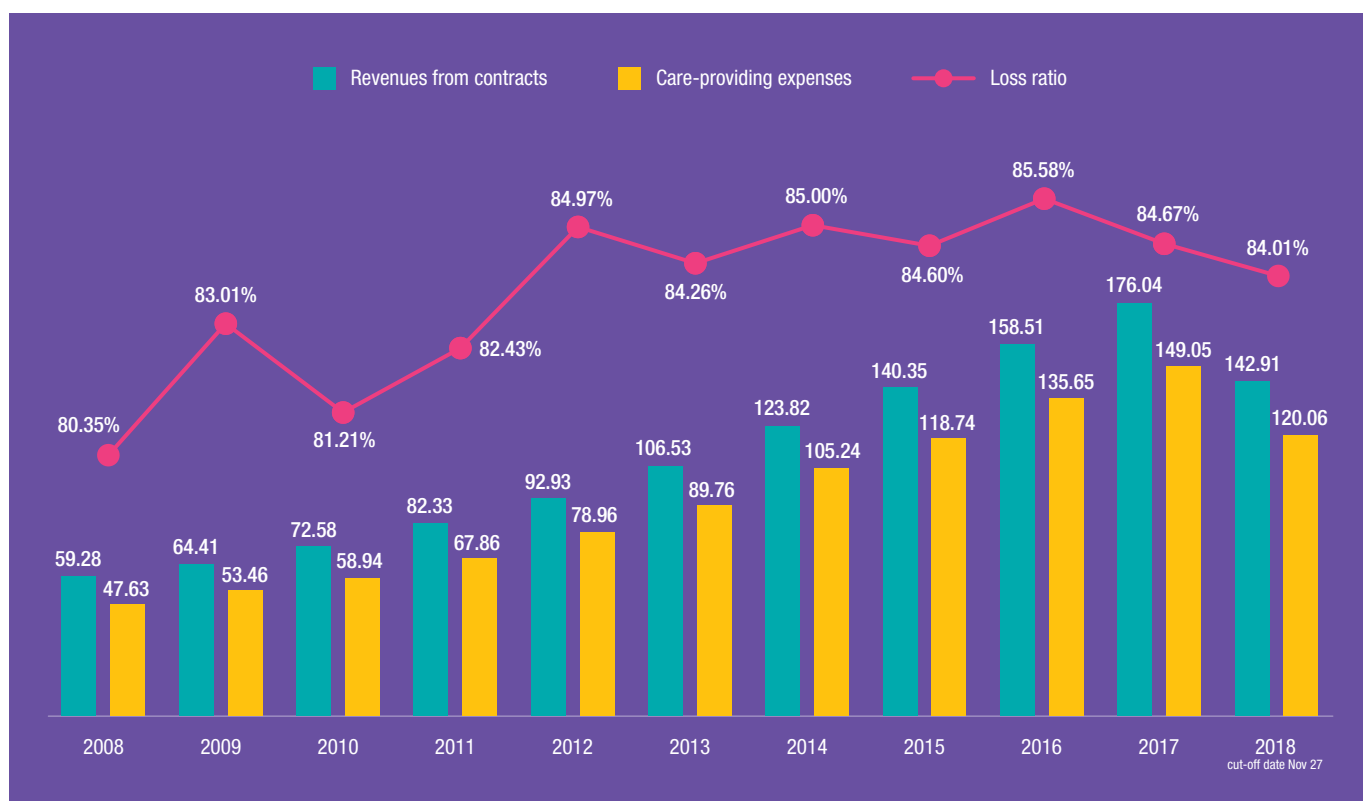
Source: ANS (on 06/Feb/2019).

Contract revenues, which closed 2017 at R\$ 176.04 billion (11.06% up compared to 2016), reached R\$ 142.91 billion in the third quarter of 2018. Care-providing expenses, on the other hand, reached R\$ 149.05 billion in 2017 (9.88% increase) and reached R\$ 120.06 billion in the third quarter of 2018. As a result, the loss ratio, which was 84.67% in 2017, went to 84.01% in the third quarter of 2018 (Graph 21). In 2017, in addition to care-providing expenses, carriers recorded administrative costs of R\$ 18.78 billion (4.70% up over 2016), sales expenses of R\$ 5.37 billion (up 1.40%), and other operating expenses of R\$ 17.58 billion (0.75% increase) (Graph 22). Other operating revenues, in turn, fell by 1.40% to R\$ 16.80 billion in 2017.



GRAPH 21

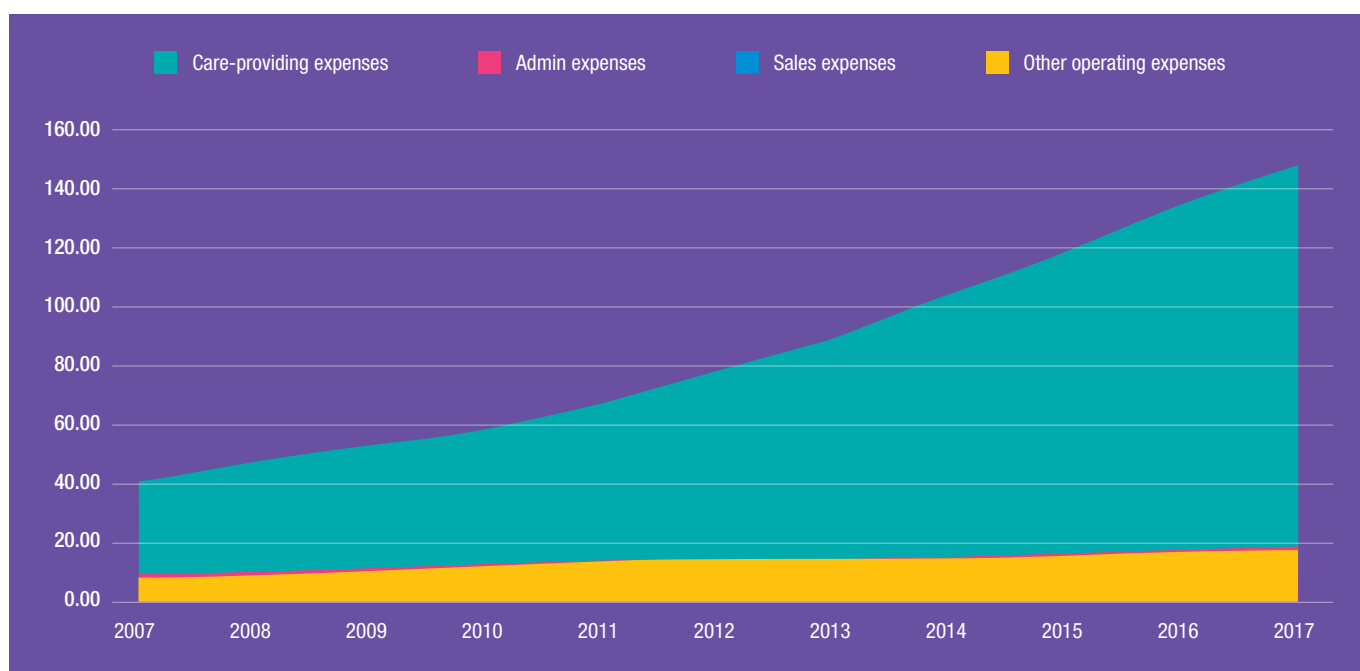
Carriers' revenues from contracts and care-providing expenses (billion R\$)
2008 – 2018



Source: ANS (on 06/Feb/2019). Does not include dental-only plans.

GRAPH 22

Carriers' expenses by type (billion R\$)
2007 – 2017



Source: ANS (on 06/Feb/2019). Does not include dental-only carries.

Regional characteristics of the health plan market

The Southeast region, with 28.82 million beneficiaries, accounts for 60.84% of Brazil's medical-hospital plan market, followed by the South region, with 14.67% (6.95 million). Although these regions still hold most of the beneficiaries, the inclusion of

new beneficiaries in regions outside the South-Southeast axis, especially in the Northeast and Center-West regions, showed a growth of 1.26% and 3.62%, respectively, as compared to 2017.

In the comparison between December

2014 and December 2018, in turn, all regions, except the Center-West, recorded a drop in the number of beneficiaries. The largest decrease was recorded in the North region (-9.07%), followed by the Southeast region (-8.31%) (Table 2).

TABLE 2

Beneficiaries of private healthcare plans, with or without dental care, by region
2014 – 2018

| | DEC/14 | DEC/15 | DEC/16 | DEC/17 | DEC/18 | 18 x 17 | 18 x 14 |
|----------------|------------|------------|------------|------------|------------|---------|---------|
| SOUTHEAST | 31,437,069 | 30,382,395 | 29,140,188 | 28,780,762 | 28,823,844 | 0.15% | -8.31% |
| SOUTH | 7,097,200 | 7,051,039 | 6,956,555 | 6,976,704 | 6,949,219 | -0.39% | -2.09% |
| NORTHEAST | 6,848,500 | 6,748,847 | 6,565,381 | 6,552,748 | 6,635,566 | 1.26% | -3.11% |
| CENTER-WEST | 3,119,007 | 3,174,734 | 3,149,183 | 3,086,103 | 3,197,881 | 3.62% | 2.53% |
| NORTH | 1,909,443 | 1,820,370 | 1,767,613 | 1,746,985 | 1,736,212 | -0.62% | -9.07% |
| NOT IDENTIFIED | 20,346 | 26,715 | 33,206 | 34,401 | 35,198 | 2.32% | 73.00% |
| BRAZIL | 50,431,565 | 49,204,100 | 47,612,126 | 47,177,703 | 47,377,920 | 0.42% | -6.06% |

Source: ANS (on 06/Feb/2019). Does not include dental-only plans.



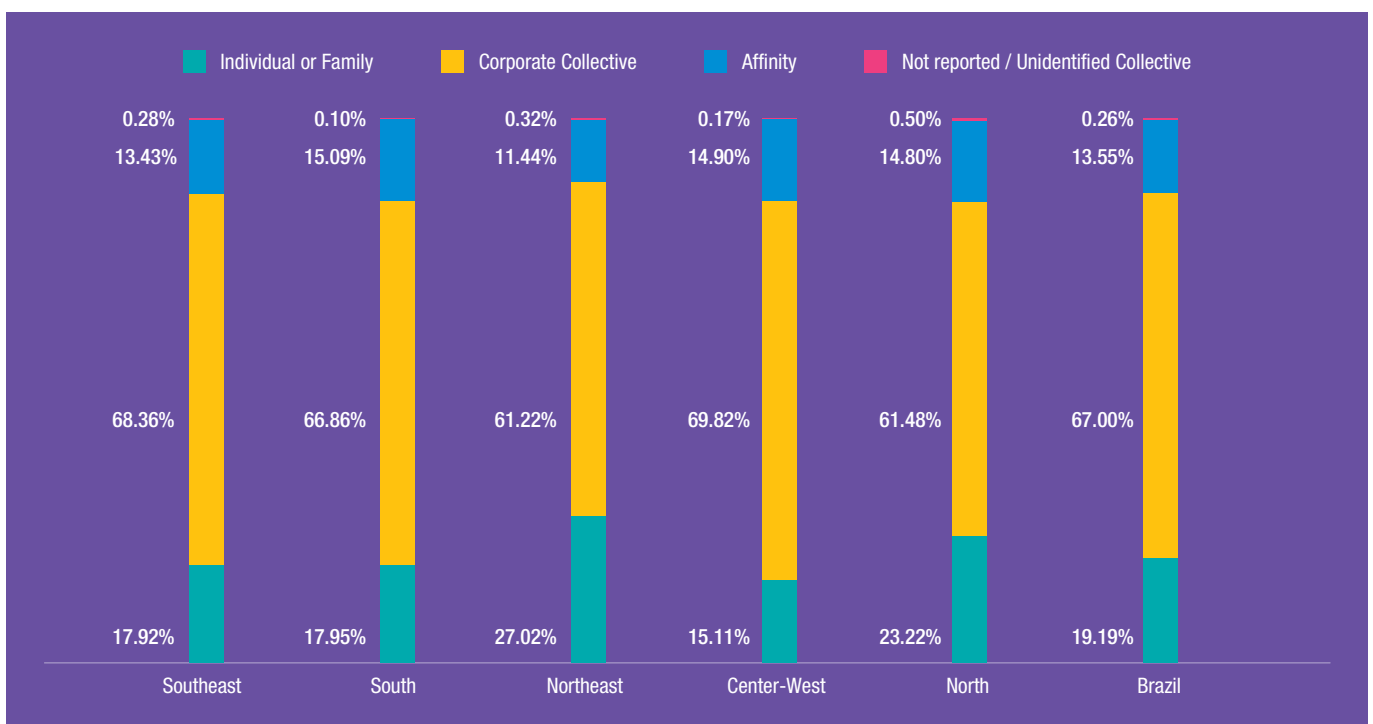
The North region has been the most affected one in reduction of number of beneficiaries since 2014 (-9.07%).

The Center-West region has the largest share of collective plans (84.72%), of which 69.82% are corporate collective and 14.90% are affinity plans. The Northeast region, in turn, has the highest share of beneficiaries with individual or family plans (27.02% of the total), driving up the country's average. (Graph 23).

The Southeast region has the highest proportion of elderly people (60 years old and over) in its beneficiary population, with 14.77% in December 2018. At the other end is the North region, where 23.79% of beneficiaries are up to 14 years old (Graph 24). The coverage rate (percentage of the population covered by private health plans) is highest in the Southeast region (35.30%) and lowest in the North region (10.60%), in December 2018 (Table 3).

GRAPH 23

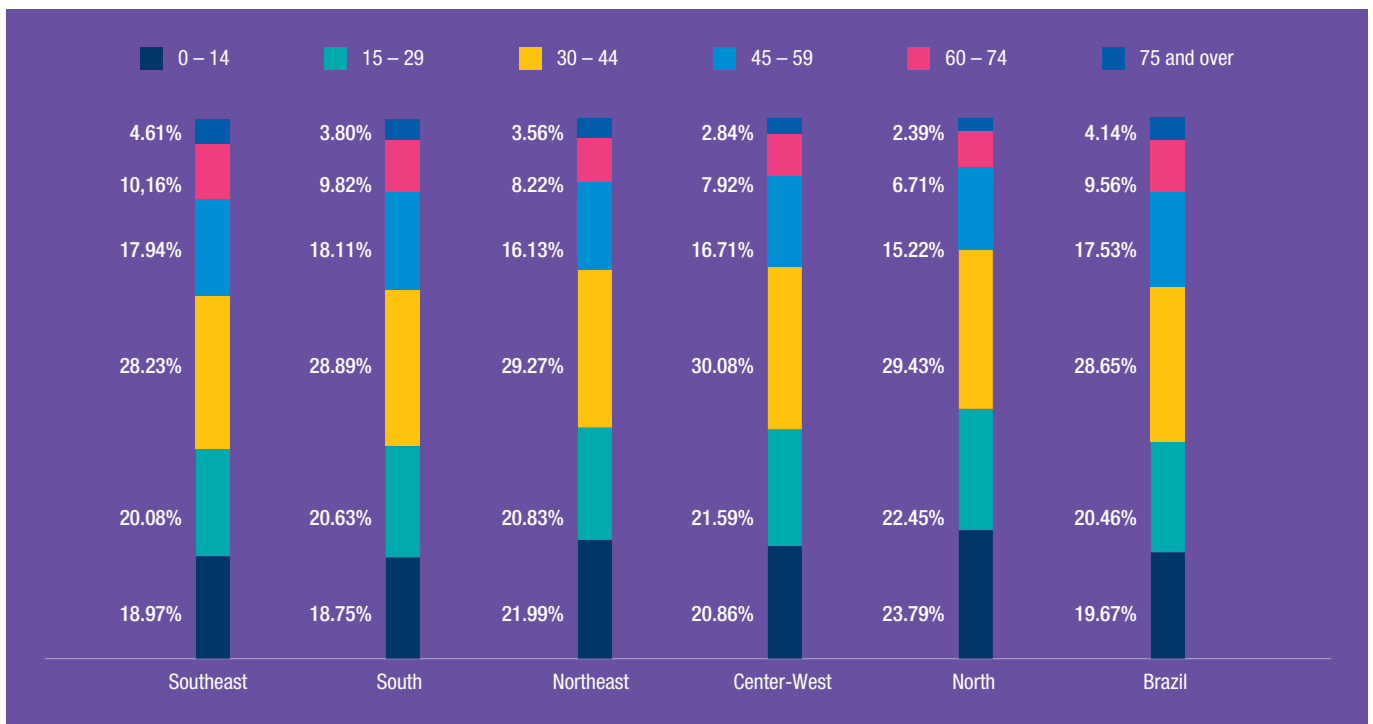
Distribution of beneficiaries by type of contract per region
December 2018



Source: ANS (on 06/02/2019). Does not include dental-only plans.

GRAPH 24

Distribution of beneficiaries by age group per region
December 2018



Source: ANS (on 06/Feb/2019). Does not include dental care-only plans.

TABLE 3

Coverage rate of medical-hospital plan beneficiaries by region
2014 – 2018

| | DEC/14 | DEC/15 | DEC/16 | DEC/17 | DEC/18 |
|-------------|--------|--------|--------|--------|--------|
| SOUTHEAST | 38.50% | 37.20% | 35.70% | 35.30% | 35.30% |
| SOUTH | 25.50% | 25.30% | 25.00% | 25.10% | 25.00% |
| NORTHEAST | 12.70% | 12.50% | 12.20% | 12.20% | 12.30% |
| CENTER-WEST | 21.20% | 21.60% | 21.30% | 20.90% | 21.50% |
| NORTH | 11.70% | 11.10% | 10.80% | 10.70% | 10.60% |
| BRAZIL | 25.90% | 25.30% | 24.50% | 24.30% | 24.40% |

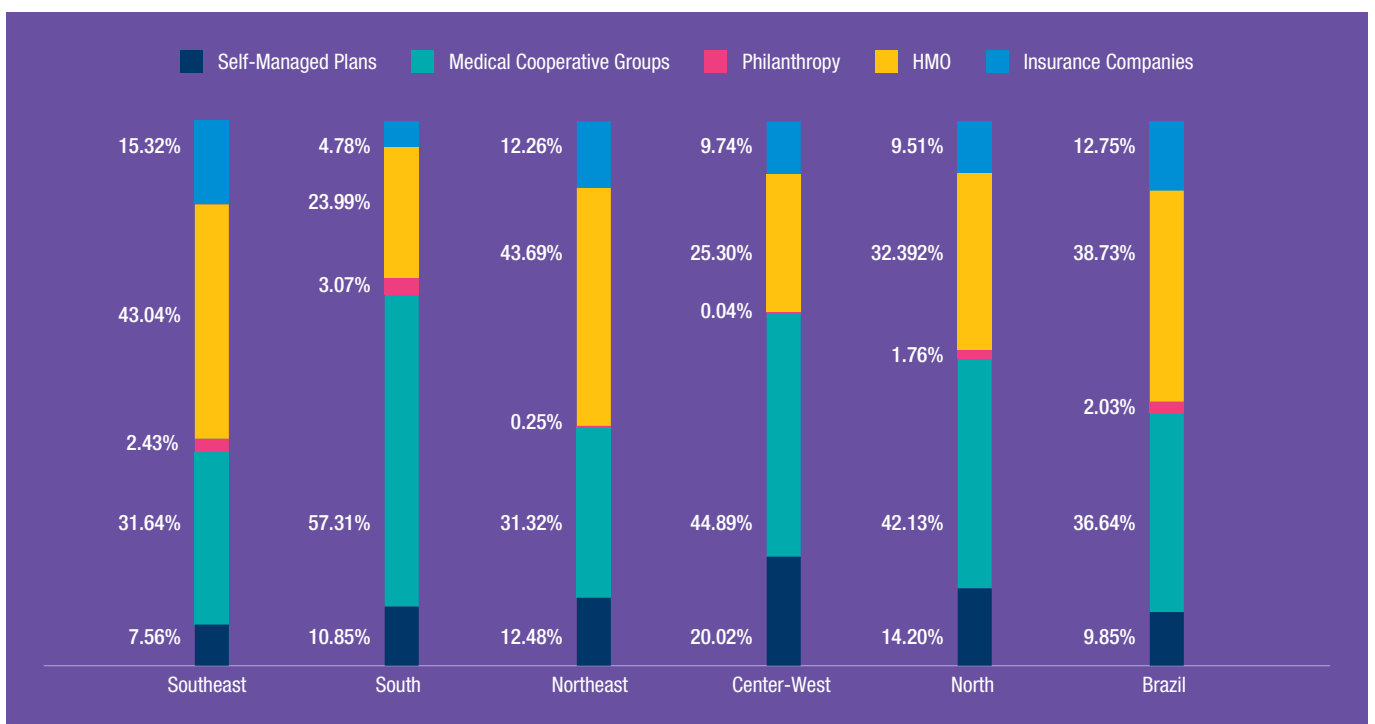
Source: ANS (on 13/Feb/2019). Does not include dental-only plans.

When we consider the different health plan modalities, we note that in the South, North and Center-West regions, the predominant modality are medical cooperative groups. In the Southeast and Northeast regions, on the other hand, physician network groups occupy this position. The presence of self-managed plans is the most relevant in the Center-West region, with a 20.02% share of all beneficiaries of medical-hospital plans in December 2018. In turn, the Southeast region has the highest share of beneficiaries in the health insurance modality, with 15.32% of the total at the end of 2018 (Graph 25).



GRAPH 25

Distribution of beneficiaries by modality per region
December 2018



Source: ANS (on 02/Feb/2019). Does not include dental-only plans.

- ✓ As tecnologias mais avançadas
- ✓ A mão de obra mais bem treinada
- ✓ 98% dos clientes satisfeitos

- + de 40 clientes Gocil no segmento da saúde
- + de 7,5 milhões de pessoas impactadas mensalmente pelos serviços da Gocil nesse setor

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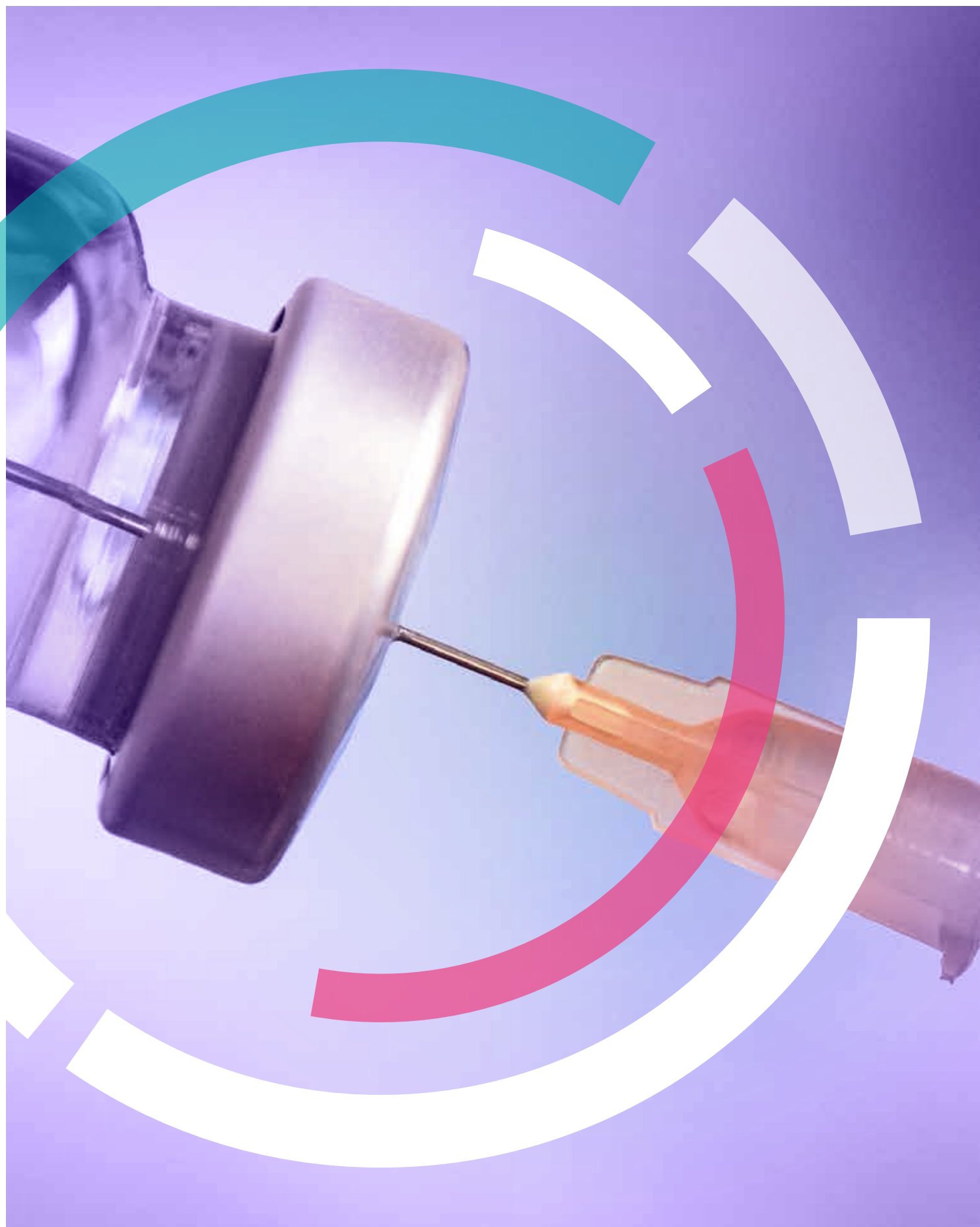
#somosEXCELÊNCIA #somosINOVAÇÃO

#somosGOCIL



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Clinical and epidemiological profile

Analyzing the distribution of diseases among patients is fundamental to identify the determining factors for the incidence of pathologies to thus properly manage hospital resources.

Knowing the hospital's care profile is essential to anticipate demand and improve the quality of care.

Every year, Anahp requests a descriptive report of all hospital admissions in order to outline the characteristics of the group's patient population. For the information to be relevant, it is essential to identify correctly the diagnoses in patients' medical records.

In 2018, about 10.6% of all hospital discharges

in the sample assessed were classified in the ICD chapter of genitourinary diseases (referring to genital and urinary organs). Another very significant chapter among the hospital discharges for this group were digestive tract diseases, which accounted for 9.8% of the discharges, followed by pregnancy, with 9.3%.

2018 Epidemiological profile

The medical record of patients is essential for clinical management and monitoring, as it provides information about the diagnosis and the progress of the patient status, serving as a tool for care safety. In most hospitals, the Medical Archive Department (SAME) is responsible for managing the clinical information by storing, tracking and auditing medical records, supported by the Medical Record Review Committee and Deaths Committee. Currently, all hospitals document their diagnoses and performed procedures at hospital discharge.

To ensure the quality of information, Medical Archive (SAME) teams codify the diagnoses and procedures, according to the rules recommended by the International Classification of Diseases (ICD). The active participation of the Medical Archive Department (SAME) in codifying medical records provides greater

quality to documented diagnoses. In 2018, 99% of the sample that answered the annual questionnaire had already implemented electronic prescription. The implementation of electronic medical records reached 86% of the organizations. It is worth

remembering, however, that, in December 2018, about 73% of the members filled out the form. Other data about evolution of medical records are found in Chart 1 and indicate opportunities for improving hospitals' clinical management.

| CHART 1 | | Quality indicators of medical records in Anahp hospitals (percentage of hospitals) 2018 | |
|-----------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|--|
| INDICATORS | | 2018 | |
| IMPLEMENTED ELECTRONIC MEDICAL PRESCRIPTION | | 99% | |
| PICTURE ARCHIVING AND COMMUNICATION SYSTEM (PACS) IN THE RECORD | | 91% | |
| IMPLEMENTED ELECTRONIC MEDICAL RECORD | | 86% | |
| BAR CODE OR RFID | | 81% | |
| BUSINESS INTELLIGENCE (BI) | | 74% | |

Source: SINHA/Anahp Annual Questionnaire.



Hospital discharges are analyzed based on the main diagnoses according to the chapters of the International Classification of Diseases (ICD) 10th edition. The classification of diseases and problems, excluding cases without record (ignored), involve: neoplasms (cancer); diseases of the digestive system; pregnancy, childbirth and puerperium; diseases of the genitourinary system; diseases of the circulatory system; symptoms (signs and abnormal findings not elsewhere classified); factors (people in contact with healthcare services for examinations and investigations, like follow-up tests after cancer treatment; removal of and fitting of orthosis and prosthesis; post-delivery care and examination); diseases of the respiratory system; injury and poisoning (fractures and injuries resulting from accidents and external causes); diseases of the

TABLE 1

Hospital discharges according to ICD-10 chapter
2016 to 2018

| ICD CHAPTER | 2016 | | 2017 | | 2018 | |
|----------------------|------------------|---------------|------------------|---------------|------------------|---------------|
| | TOTAL | % | TOTAL | % | TOTAL | % |
| GENITOURINARY | 166,653 | 11.87 | 175,021 | 11.07 | 176,855 | 10.57 |
| DIGESTIVE | 148,501 | 10.57 | 160,949 | 10.18 | 164,615 | 9.84 |
| PREGNANCY | 144,617 | 10.30 | 166,641 | 10.54 | 155,581 | 9.30 |
| RESPIRATORY | 102,033 | 7.26 | 112,412 | 7.11 | 149,892 | 8.96 |
| NEOPLASM | 187,346 | 13.34 | 164,270 | 10.39 | 147,177 | 8.80 |
| CIRCULATORY | 127,852 | 9.10 | 151,147 | 9.56 | 135,907 | 8.13 |
| MUSCULOSKELETAL | 77,553 | 5.52 | 88,222 | 5.58 | 98,552 | 5.89 |
| INJURY AND POISONING | 70,147 | 4.99 | 86,641 | 5.48 | 89,824 | 5.37 |
| INFECTIOUS DISEASES | 34,359 | 2.45 | 34,941 | 2.21 | 49,540 | 2.96 |
| PERINATAL | 29,347 | 2.09 | 36,364 | 2.30 | 38,642 | 2.31 |
| ENDOCRINE | 34,055 | 2.42 | 37,945 | 2.40 | 34,864 | 2.08 |
| NERVOUS SYSTEM | 25,388 | 1.81 | 28,142 | 1.78 | 33,663 | 2.01 |
| SKIN | 17,574 | 1.25 | 18,182 | 1.15 | 24,070 | 1.44 |
| CONGENITAL | 11,665 | 0.83 | 14,387 | 0.91 | 15,936 | 0.95 |
| EAR | 6,629 | 0.47 | 9,961 | 0.63 | 11,490 | 0.69 |
| MENTAL | 4,155 | 0.30 | 5,217 | 0.33 | 9,288 | 0.56 |
| BLOOD | 7,253 | 0.52 | 7,747 | 0.49 | 9,044 | 0.54 |
| EYES AND ADNEXA | 4,768 | 0.34 | 10,909 | 0.69 | 7,321 | 0.44 |
| FACTORS | 119,510 | 8.51 | 133,281 | 8.43 | 156,921 | 9.38 |
| SYMPTOMS | 83,441 | 5.94 | 136,127 | 8.61 | 151,205 | 9.04 |
| NO INFORMATION | 1,726 | 0.12 | 2,530 | 0.16 | 12,291 | 0.73 |
| TOTAL | 1,404,573 | 100.00 | 1,581,036 | 100.00 | 1,672,677 | 100.00 |

Source: SINHA/Anahp.

musculoskeletal system; endocrine diseases (Table 1 and Graph 1). The improvement of the clinical and epidemiological profile depends directly on the quality of the data

documented by the multi-professional team during care. Some more general classifications, such as factors and symptoms, may show a less specific and less directional epidemiological

profile. In 2018, it was possible to identify growth of hospital discharges classified among these less specific ICD codes, which led to identify a large window for improvement of these data.

Correction made on 27/May/2019.



10.6% of all hospital discharges were related to genitourinary diseases.



In 2018, 10.6% of all discharges in the sample of hospitals evaluated were related to the genitourinary chapter (referring to the genital and urinary organs), followed by the chapter on the digestive system (referring to diseases of the liver, stomach, appendix and other organs of the digestive system), which accounted for 9.8% of all discharges.

GRAPH 1

Hospital discharges according to ICD-10 chapter 2016 to 2018



Source: SINHA/Anahp.

In order to analyze the morbidity profile and healthcare use patterns for all Anahp member hospitals,

it is also possible to see hospital discharges by ICD chapter and regions (Table 2).

| ICD CHAPTER | 2018 | | | | |
|----------------------|---------|---------|-----------|-----------|-------------------|
| | BRAZIL | SOUTH | SOUTHEAST | NORTHEAST | NORTH CENTER-WEST |
| GENITOURINARY | 10.57% | 8.84% | 11.90% | 8.79% | 11.54% |
| DIGESTIVE | 9.84% | 8.52% | 10.72% | 9.24% | 9.81% |
| PREGNANCY | 9.30% | 8.89% | 9.90% | 8.57% | 7.61% |
| RESPIRATORY | 8.96% | 10.47% | 8.25% | 9.40% | 6.90% |
| NEOPLASM | 8.80% | 6.17% | 10.61% | 8.50% | 5.61% |
| CIRCULATORY | 8.13% | 6.76% | 9.02% | 7.75% | 7.56% |
| MUSCULOSKELETAL | 5.89% | 6.30% | 5.97% | 5.22% | 4.92% |
| INJURY AND POISONING | 5.37% | 4.97% | 5.22% | 6.48% | 5.90% |
| INFECTIOUS DISEASES | 2.96% | 3.42% | 2.39% | 4.03% | 3.23% |
| PERINATAL | 2.31% | 1.52% | 2.86% | 2.06% | 1.68% |
| ENDOCRINE | 2.08% | 1.81% | 2.18% | 2.12% | 2.51% |
| NERVOUS SYSTEM | 2.01% | 2.41% | 2.03% | 1.44% | 1.36% |
| SKIN | 1.44% | 1.64% | 1.27% | 1.78% | 1.08% |
| CONGENITAL | 0.95% | 1.21% | 0.93% | 0.79% | 0.30% |
| EAR | 0.69% | 0.80% | 0.62% | 0.85% | 0.35% |
| MENTAL | 0.56% | 0.90% | 0.39% | 0.61% | 0.25% |
| BLOOD | 0.54% | 0.53% | 0.53% | 0.60% | 0.53% |
| EYES AND ADNEXA | 0.44% | 0.34% | 0.56% | 0.31% | 0.12% |
| FACTORS | 9.38% | 10.03% | 6.88% | 11.55% | 24.12% |
| SYMPTOMS | 9.04% | 12.22% | 7.63% | 9.77% | 4.36% |
| NO INFORMATION | 0.73% | 2.26% | 0.14% | 0.15% | 0.24% |
| TOTAL | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

Source: SINHA/Anahp.



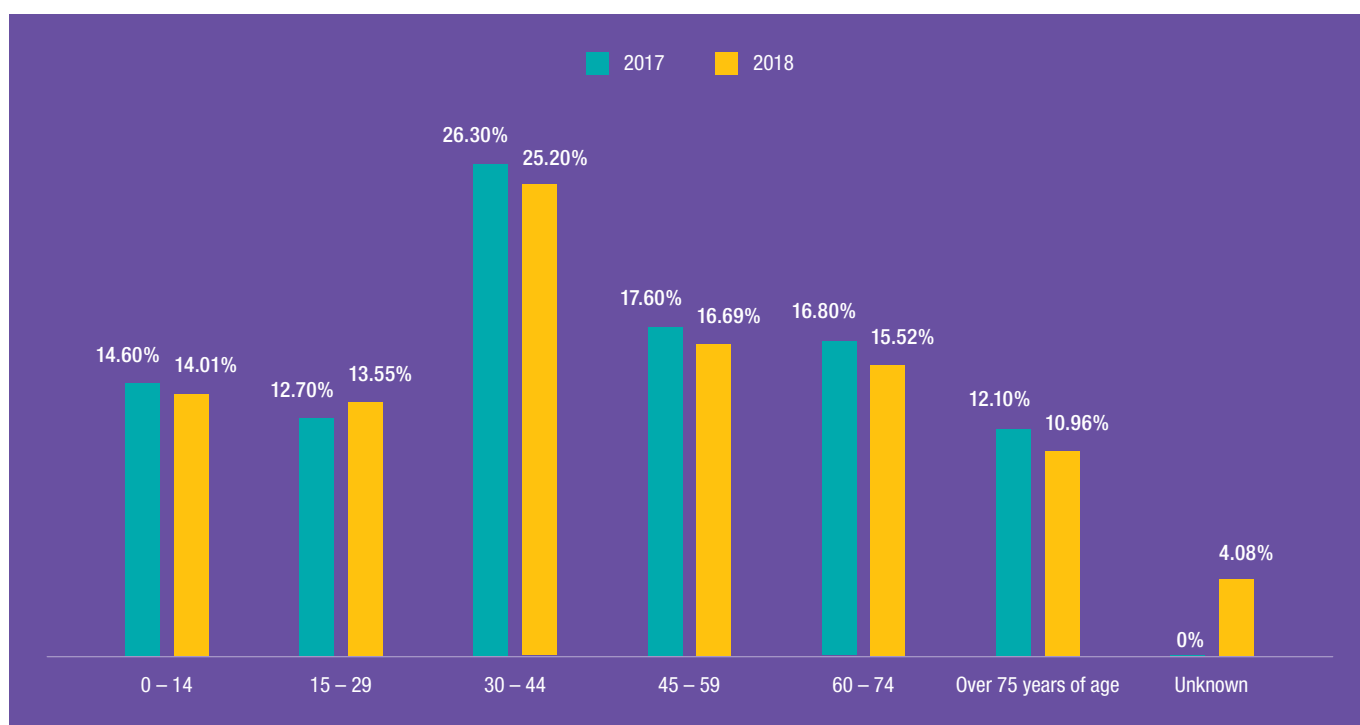
In Graph 2, it is possible to see the percentage of hospital discharges classified by age group. The share of patients aged over 75 years in hospital discharges was 11.0% in 2018. It is precisely in older age groups that the coverage rate of health plan beneficiaries (percentage of the population covered by private plans) is higher, reaching 30% among people aged 70 to 79, and 38.6% among those aged 80 years or more (Graph 3).

When we analyze discharge data per age group and region, it is possible to see that the region that provided care to the highest number of patients aged 75 years and older was the Northeast region, which also accounted for highest number of patients in the youngest age group (0 to 14 years).

The North / Center-West region, in turn, accounted for the largest number of cases of patients aged between 30 and 59 years – 45.39% (Graph 4).

GRAPH 2

Hospital discharges by age group (%)
2017 and 2018

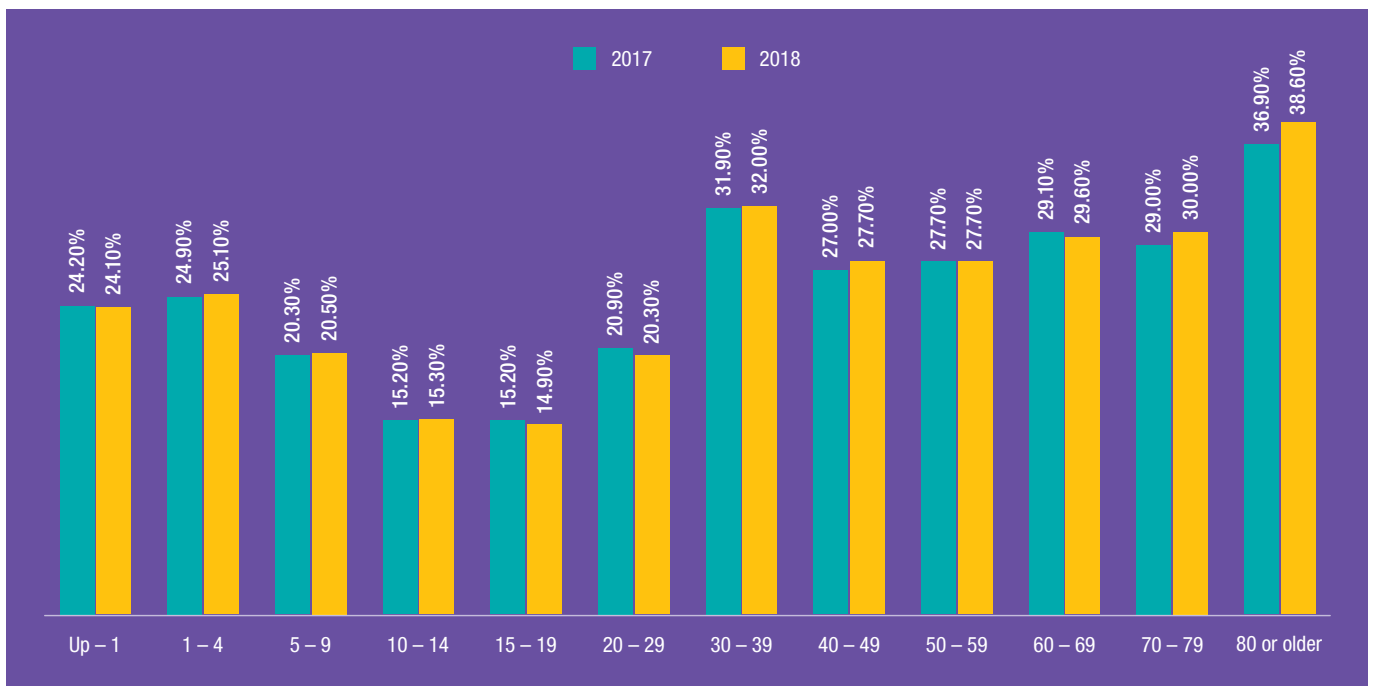


Source: SINHA/Anahp.

Correction made on 27/May/2019.

GRAPH 3

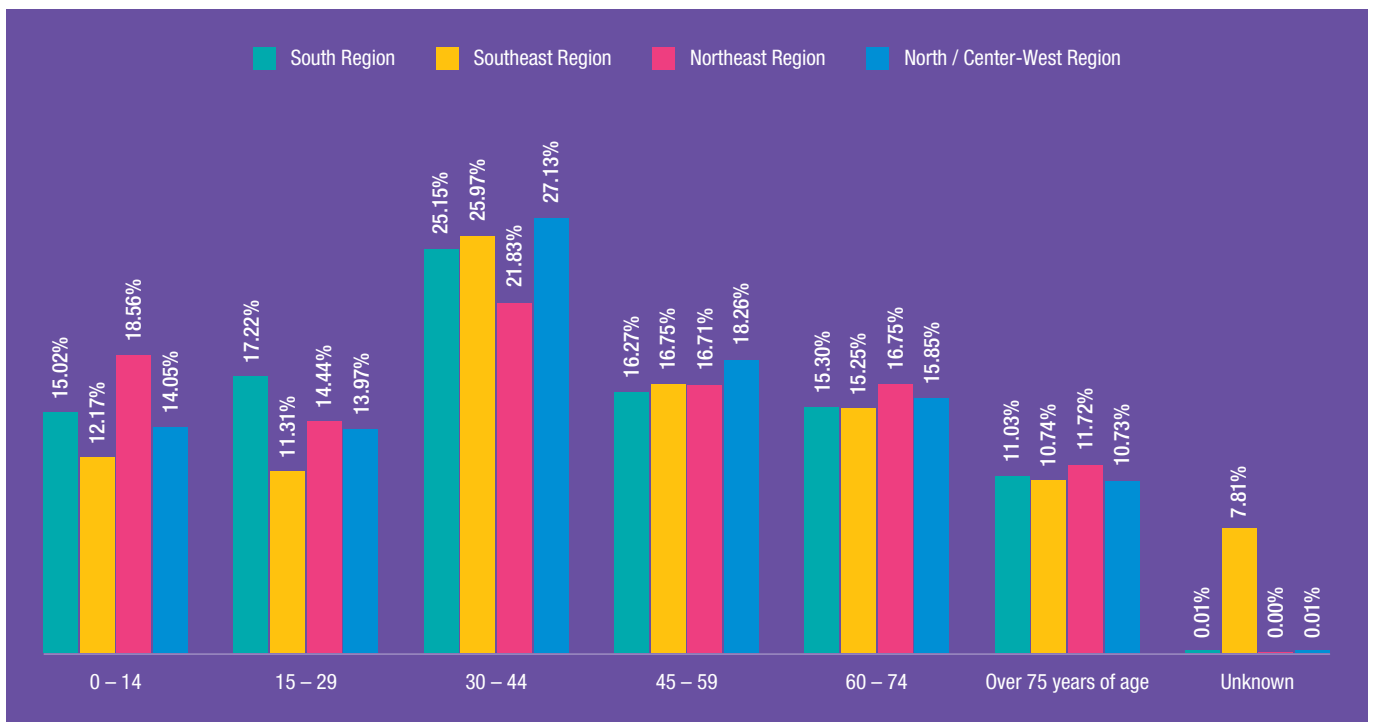
Coverage rate of medical-hospital plan beneficiaries by age group
2017 and 2018



Source: ANS (on 07/Mar/2019). Does not include dental-only plans.

GRAPH 4

Hospital discharges per age group (%) and region
2018



Source: SINHA/Anahp.

Correction made on 27/May/2019.

When correlating the main diagnoses to age group, it is possible to see the highest incidence of neoplasms among patients aged between 45 and 74 years – 4.8%. The diseases of the

respiratory system are most frequent in children and adolescents – 2.6% in the age group from 0 to 14 years of age – followed by the elderly – 3.4% in the age group older than 60 years (Table 3).

TABLE 3

Hospital discharges according to main diagnosis grouped per ICD-10 chapter and age group | 2018

| ICD CHAPTER | 2018 | | | | | |
|----------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 0 TO 14 | 15 TO 29 | 30 TO 44 | 45 TO 59 | 60 TO 74 | 75 AND OLDER |
| GENITOURINARY | 0.85% | 1.41% | 3.26% | 2.13% | 1.50% | 1.02% |
| DIGESTIVE | 0.83% | 1.15% | 2.49% | 2.15% | 1.84% | 0.94% |
| PREGNANCY | 0.02% | 3.09% | 5.77% | 0.04% | 0.00% | 0.00% |
| RESPIRATORY | 2.58% | 1.48% | 1.40% | 0.83% | 0.87% | 1.29% |
| NEOPLASM | 0.33% | 0.47% | 1.67% | 2.29% | 2.51% | 1.17% |
| CIRCULATORY | 0.11% | 0.30% | 1.26% | 1.89% | 2.43% | 1.86% |
| MUSCULOSKELETAL | 0.21% | 0.58% | 1.45% | 1.57% | 1.27% | 0.51% |
| INJURY AND POISONING | 0.45% | 0.91% | 1.30% | 1.01% | 0.78% | 0.68% |
| INFECTIOUS DISEASES | 0.50% | 0.52% | 0.55% | 0.36% | 0.41% | 0.52% |
| PERINATAL | 1.99% | 0.02% | 0.03% | 0.00% | 0.00% | 0.00% |
| ENDOCRINE | 0.12% | 0.30% | 0.76% | 0.41% | 0.24% | 0.21% |
| NERVOUS SYSTEM | 0.36% | 0.28% | 0.41% | 0.37% | 0.29% | 0.20% |
| SKIN | 0.28% | 0.25% | 0.29% | 0.23% | 0.19% | 0.14% |
| CONGENITAL | 0.66% | 0.09% | 0.08% | 0.05% | 0.03% | 0.01% |
| EAR | 0.17% | 0.08% | 0.11% | 0.10% | 0.12% | 0.07% |
| MENTAL | 0.02% | 0.10% | 0.12% | 0.10% | 0.08% | 0.12% |
| BLOOD | 0.13% | 0.07% | 0.08% | 0.06% | 0.08% | 0.09% |
| EYES AND ADNEXA | 0.03% | 0.04% | 0.06% | 0.08% | 0.10% | 0.05% |
| FACTORS | 3.29% | 0.96% | 1.85% | 1.26% | 1.09% | 0.66% |
| SYMPTOMS | 1.05% | 1.35% | 2.07% | 1.61% | 1.56% | 1.33% |
| NO INFORMATION | 0.04% | 0.13% | 0.20% | 0.14% | 0.13% | 0.09% |
| TOTAL | 14.01% | 13.55% | 25.20% | 16.69% | 15.52% | 10.96% |

Source: SINHA/Anahp.



| NOT REPORTED | GRAND TOTAL |
|--------------|-------------|
| 0.41% | 10.57% |
| 0.45% | 9.84% |
| 0.38% | 9.30% |
| 0.52% | 8.96% |
| 0.36% | 8.80% |
| 0.28% | 8.13% |
| 0.29% | 5.89% |
| 0.25% | 5.37% |
| 0.10% | 2.96% |
| 0.27% | 2.31% |
| 0.06% | 2.08% |
| 0.09% | 2.01% |
| 0.04% | 1.44% |
| 0.04% | 0.95% |
| 0.05% | 0.69% |
| 0.01% | 0.56% |
| 0.04% | 0.54% |
| 0.08% | 0.44% |
| 0.29% | 9.38% |
| 0.06% | 9.04% |
| 0.00% | 0.73% |
| 4.08% | 100.00% |

Concerning mean length of stay by age group, patients over 60 years of age presented higher rates than the overall mean (Graph 5). These

patients many times have several comorbidities, and they need to stay more days in hospital before they reach health stability.



Source: SINHA/Anahp.

The discharges that presented the highest length of stay were perinatal diagnoses related to complications during pregnancy or after birth, followed by infectious diseases (tuberculosis, viral hepatitis, and bacterial, viral and other infectious

diseases, among others) (Table 4). When evaluating the most frequent pathologies among age groups, we note that 28.6% of the patients are hospitalized for up to five days. Among the hospital discharges with the highest mean length of stay (more

than five days) were circulatory and respiratory, and infectious diseases. Regarding patient gender, among the beneficiaries of health plans, 53.3% were female, while 46.7% were male in 2018.

Among Anahp hospitals, it is possible to see the same trend, where 57.5% of all discharges were of female patients, 38.5% were male patients, and 4.1% were patients with unreported or undefined gender (Graph 6).

There is a predominance of discharges classified in the age group from 30 to 44 years, which accounts for about 25% of all discharges. If we classify by gender, 18% are women in the same age group.

The age group where it is possible to identify the largest number of women is between 30 and 44 years of age. Men are predominant in the age group from 45 to 59 years (Graph 7).

| ICD CHAPTER | 2018 | |
|----------------------|------------------------|----------------|
| | AVERAGE LENGTH OF STAY | GRAND TOTAL |
| GENITOURINARY | 2.95 | 10.57% |
| DIGESTIVE | 2.75 | 9.84% |
| PREGNANCY | 2.22 | 9.30% |
| RESPIRATORY | 5.81 | 8.96% |
| NEOPLASM | 4.40 | 8.80% |
| CIRCULATORY | 5.36 | 8.13% |
| MUSCULOSKELETAL | 3.10 | 5.89% |
| INJURY AND POISONING | 3.59 | 5.37% |
| INFECTIOUS DISEASES | 8.39 | 2.96% |
| PERINATAL | 8.92 | 2.31% |
| ENDOCRINE | 4.03 | 2.08% |
| NERVOUS SYSTEM | 5.22 | 2.01% |
| SKIN | 4.99 | 1.44% |
| CONGENITAL | 4.99 | 0.95% |
| EAR | 2.59 | 0.69% |
| MENTAL | 7.27 | 0.56% |
| BLOOD | 5.52 | 0.54% |
| EYES AND ADNEXA | 1.35 | 0.44% |
| FACTORS | 2.70 | 9.38% |
| SYMPTOMS | 4.53 | 9.04% |
| NO INFORMATION | 7.21 | 0.73% |
| TOTAL | | 100.00% |

Source: SINHA/Anahp.



The hospital discharges that presented the highest length of stay were perinatal diagnoses.

GRAPH 6

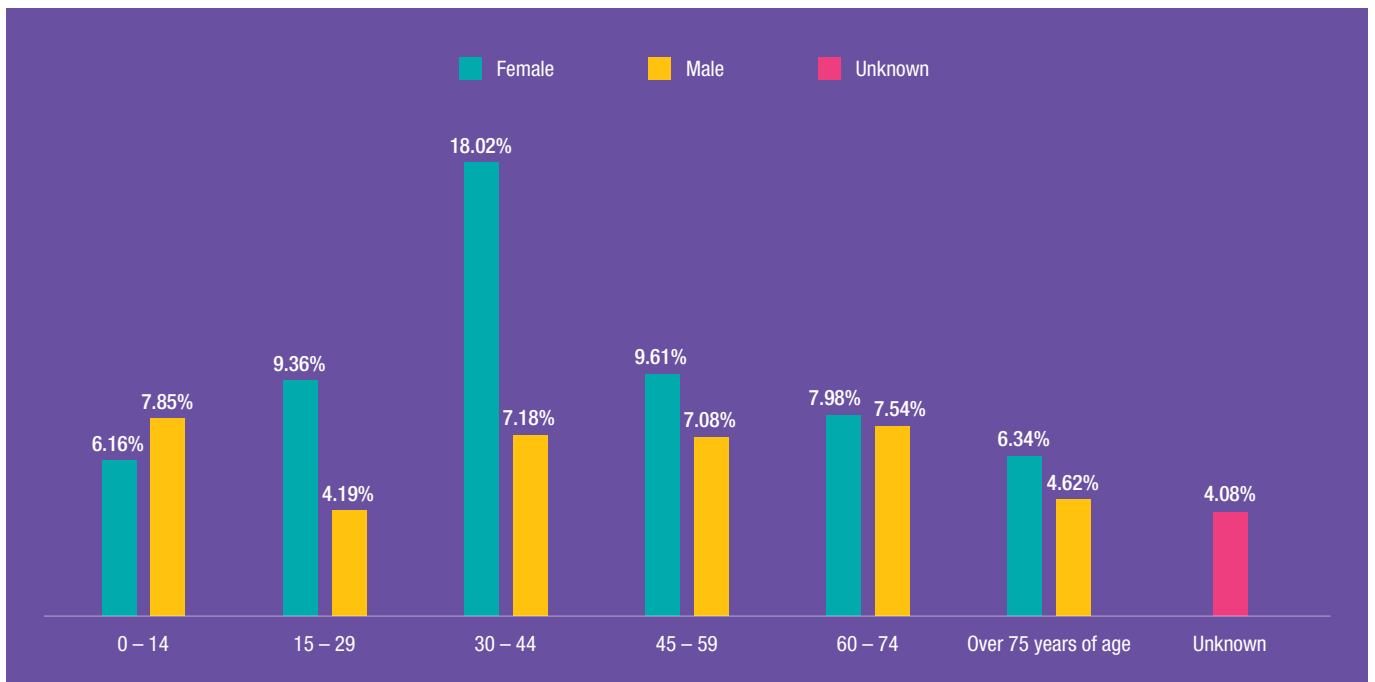
Comparison of patient distribution per gender, among health plan beneficiaries and discharges from Anahp hospitals | 2018



Source: Source: ANS (on 07/Mar/2019). Does not include dental-only plans. SINHA/Anahp.

GRAPH 7

Hospital discharges according to gender and age group 2018



Source: SINHA/Anahp.

Correction made on 27/May/2019.

It is also important to note the outcomes: in 94% of the cases, patients were discharged because they improved. Administrative discharges (evasion, external transfer and at the patient's request) accounted for 1%, whereas 3% of the

total of discharges were due to death. The highest incidence of negative outcomes was among discharges classified as neoplasms, accounting for 1.7% of all deaths (Table 5). In view of the importance of properly filling out the information in patient

medical records, there is still room for improvement, as 1% of all discharges did not state their reason, and about 19% of them are classified as healthcare factors and contacts, that is, it is not possible to identify the exact reason why the patient was admitted.

TABLE 5

Types of hospital discharge per ICD-10 chapter
2018

| ICD CHAPTER | 2018 | | | | GRAND TOTAL |
|----------------------|------------------|------------------------|--------------------------|--------------|----------------|
| | DISCHARGE -DEATH | DISCHARGE -IMPROVEMENT | ADMINISTRATIVE DISCHARGE | NOT REPORTED | |
| GENITOURINARY | 0.14% | 10.25% | 0.09% | 0.10% | 10.57% |
| DIGESTIVE | 0.11% | 9.54% | 0.09% | 0.10% | 9.84% |
| PREGNANCY | 0.00% | 9.26% | 0.04% | 0.00% | 9.30% |
| RESPIRATORY | 0.25% | 8.57% | 0.09% | 0.05% | 8.96% |
| NEOPLASM | 1.71% | 6.75% | 0.22% | 0.11% | 8.80% |
| CIRCULATORY | 0.26% | 7.66% | 0.12% | 0.09% | 8.13% |
| MUSCULOSKELETAL | 0.01% | 5.70% | 0.05% | 0.13% | 5.89% |
| INJURY AND POISONING | 0.05% | 5.19% | 0.07% | 0.07% | 5.37% |
| INFECTIOUS DISEASES | 0.18% | 2.71% | 0.04% | 0.03% | 2.96% |
| PERINATAL | 0.03% | 2.16% | 0.11% | 0.01% | 2.31% |
| ENDOCRINE | 0.03% | 2.00% | 0.03% | 0.02% | 2.08% |
| NERVOUS SYSTEM | 0.03% | 1.93% | 0.04% | 0.02% | 2.01% |
| SKIN | 0.01% | 1.40% | 0.01% | 0.01% | 1.44% |
| CONGENITAL | 0.03% | 0.89% | 0.02% | 0.01% | 0.95% |
| EAR | 0.00% | 0.68% | 0.00% | 0.00% | 0.69% |
| MENTAL | 0.01% | 0.52% | 0.02% | 0.00% | 0.56% |
| BLOOD | 0.01% | 0.51% | 0.01% | 0.01% | 0.54% |
| EYES AND ADNEXA | 0.00% | 0.43% | 0.00% | 0.00% | 0.44% |
| FACTORS | 0.08% | 8.88% | 0.27% | 0.16% | 9.38% |
| SYMPTOMS | 0.31% | 8.48% | 0.16% | 0.09% | 9.04% |
| NO INFORMATION | 0.01% | 0.68% | 0.04% | 0.01% | 0.73% |
| TOTAL | 3.26% | 94.19% | 1.52% | 1.02% | 100.00% |

Source: SINHA/Anahp.

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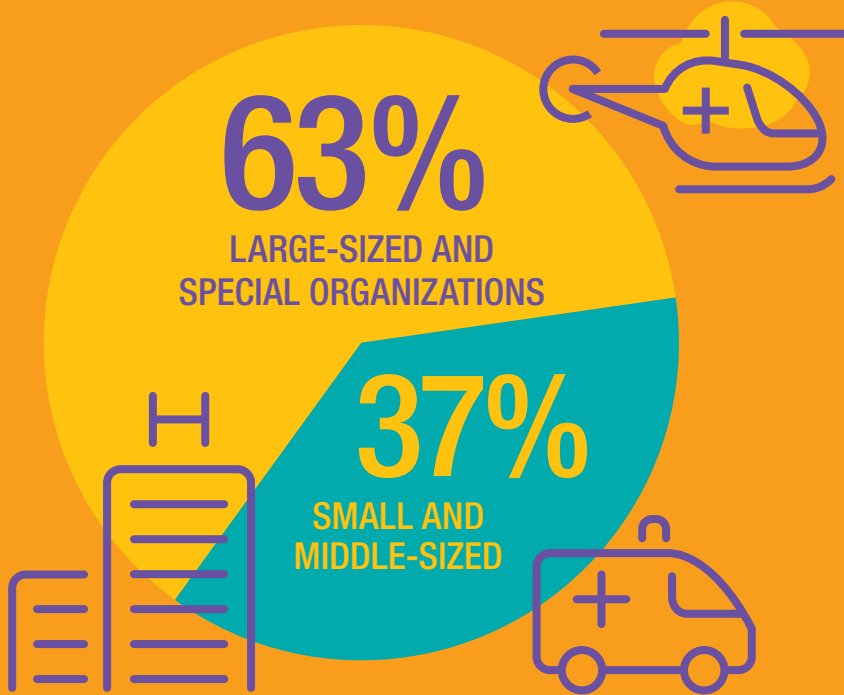


CLINICAL PERFORMANCE

This section presents the annual structure and production of Anahp hospitals, the analyses of operational, clinical, quality and safety indicators and the institutional protocols

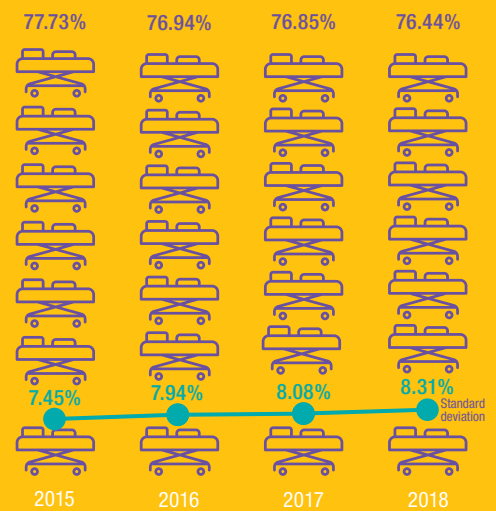
Executive Summary

ANAHP MEMBERS ARE HIGH COMPLEXITY HOSPITALS:



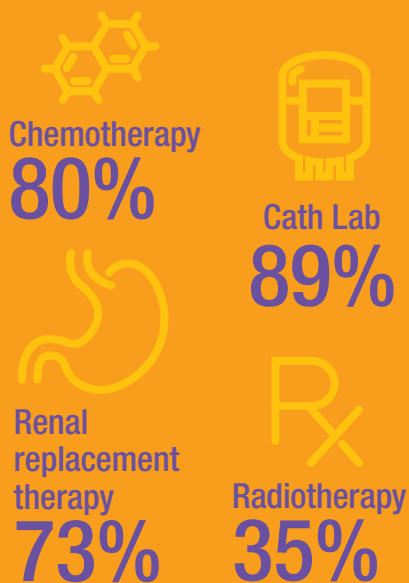
GENERAL OPERATIONAL OCCUPANCY RATE

Tendency of reducing



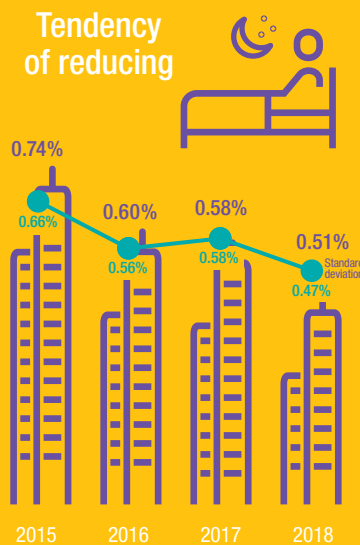
Source: SINHA/Anahp

FOR DIAGNOSTIC AND THERAPEUTIC SUPPORT 2018



RATE OF RESIDENT PATIENTS (> 90 days)

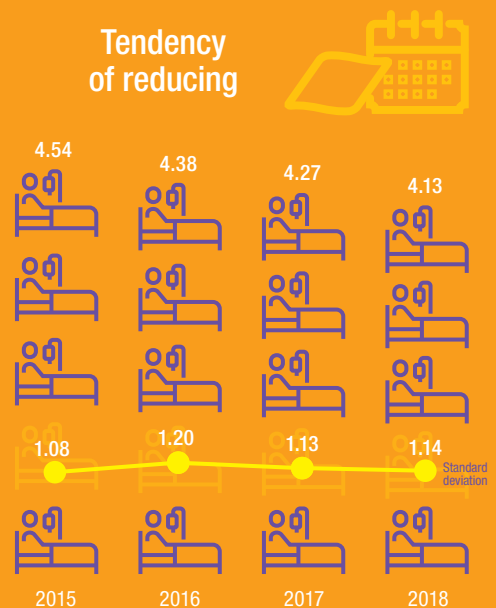
Tendency of reducing



Source: SINHA/Anahp

MEAN LENGTH OF STAY (days)

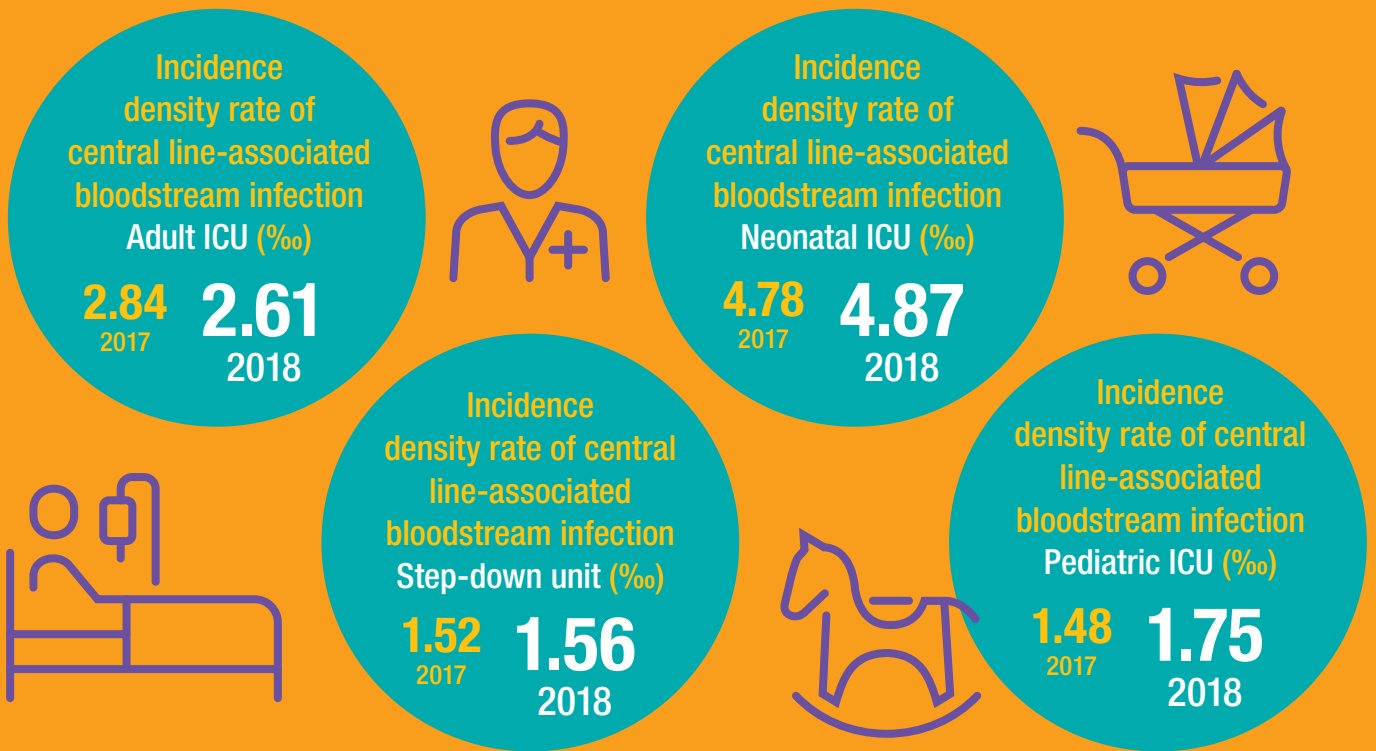
Tendency of reducing



Source: SINHA/Anahp

Source: Annual Questionnaire SINHA/Anahp

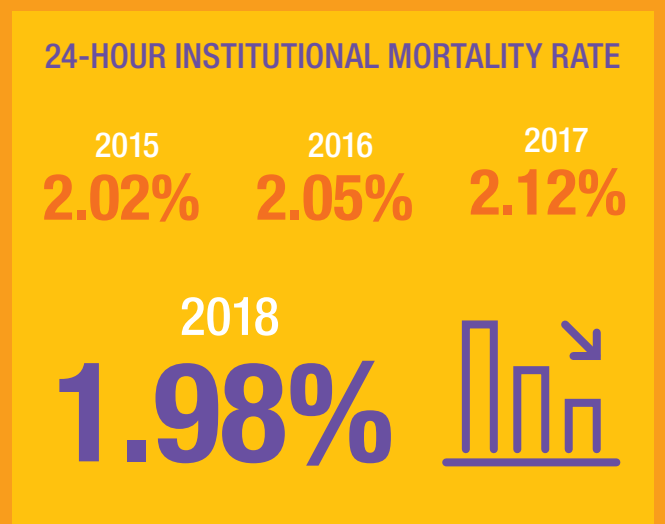
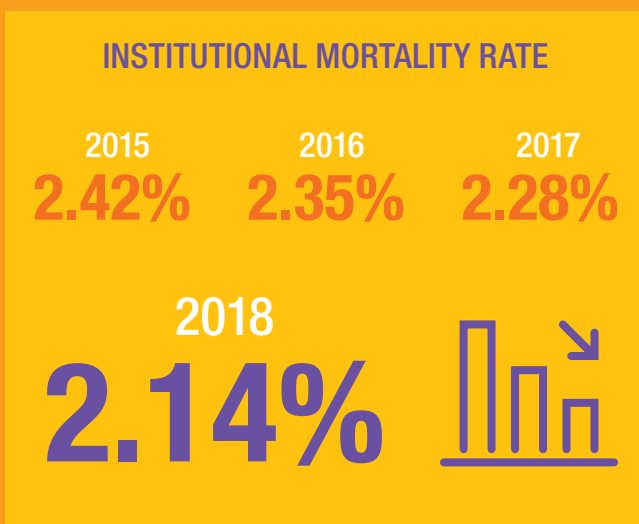
CLINICAL CARE QUALITY AND SAFETY INDICATORS



INSTITUTIONAL PROTOCOLS

| Selected pathologies | Indicators | 2018 | | Parameters |
|-----------------------------|------------------------------------------|-------|-----|-----------------------------|
| Acute myocardial infarction | Door-to-balloon Median time (minutes) | 62.90 | 90 | American Heart Association |
| Ischemic stroke | Door-to-report Median time (minutes) | 37.05 | <45 | American Stroke Association |
| | Door-to-needle Median time (minutes) | 35.01 | <60 | American Stroke Association |

Source: SINHA/Anahp



Source: SINHA/Anahp





Structure and annual production

94% of Anahp members have at least one certification of excellence.

63% of Anahp hospitals are large-sized and special organizations.

This chapter was developed based on data obtained from Anahp annual survey questionnaires and it included 80 hospitals in 2018, or 73% of all Anahp members. Anahp hospitals have a heterogeneous structure, including general and specialized hospitals, with and without maternity and

most of them perform urgency/ emergency care. To learn more about the hospitals, we will describe the main characteristics of the sample concerning service provision. In 2018, Anahp reached the number of 109 member hospitals and 94% of them have at least one certification of excellence.

Structure 2018

Hospital size is defined by the Ministry of Health as follows:

- Small-sized hospital: Hospital that has installed capacity of up to 50 beds;
- Middle-sized hospital: Hospital that has installed capacity between 51 and 150 beds;
- Large-sized hospital: Hospital that has installed capacity between 151 and 500 beds;
- Special hospital: Hospital that has installed capacity above 500 beds.

Based on this classification, Anahp has 63% of the hospitals classified as large-sized and special, that is, with greater clinical complexity.

Among Anahp members, 48% have maternity and 51% of the respondents see high-risk pregnancy patients.

Moreover, in 86% of the hospitals there are outpatient units, totaling over 2,000 medical offices.

The diagnostic support structure is robust (Table 2) as 96% of the hospitals have a CT machine, being owned by the hospital in 74% of them. The production to external patients (not admitted in the hospital) is predominant and encompasses over 1 million tests.

| TABLE 1 | Outpatient units |
|------------------------------------------|------------------|
| | 2018 |
| ORGANIZATIONS THAT HAVE OUTPATIENT UNITS | 86% |
| MEDICAL OFFICES | 2,430 |


Source: Annual Questionnaire SINHA/Anahp.

| TABLE 2 | Imaging area |
|----------------------------|--------------|
| | 2018 |
| COMPUTED TOMOGRAPHY SCAN | 1,426,312 |
| MAGNETIC RESONANCE IMAGING | 897,146 |

Source: Annual Questionnaire SINHA/Anahp.

Concerning Magnetic Resonance, 91% of Anahp hospitals have the device, and 74% of them own the machines. The total production reached over 800,000 MRI studies.

For diagnostic and therapeutic support (Table 3), 89% of them have cath lab, 90% offer chemotherapy services, 73% provide renal replacement therapy and 35%, radiotherapy.



48% of Anahp member hospitals have maternity.

| TABLE 3 | Diagnostic and therapeutic support |
|---------------------------|------------------------------------|
| | 2018 |
| CATH LAB | 89% |
| CHEMOTHERAPY | 80% |
| RENAL REPLACEMENT THERAPY | 73% |
| RADIOTHERAPY | 35% |

Source: Annual Questionnaire SINHA/Anahp

Concerning transplants, half of the respondents performed a transplant in 2018, amounting to about 2,800 transplants in the period, especially bone marrow and kidney (Table 4). Among other types of transplants, the most frequent ones were cornea and skeletal muscle tissues.

| TABLE 4 | | Transplant performance | |
|----------------------------------------|--|------------------------|--|
| | | 2018 | |
| ORGANIZATIONS THAT PERFORM TRANSPLANTS | | 50% | |
| BONE MARROW | | 833 | |
| KIDNEY | | 757 | |
| LIVER | | 502 | |
| HEART | | 54 | |
| PANCREAS | | 41 | |
| OTHERS | | 614 | |

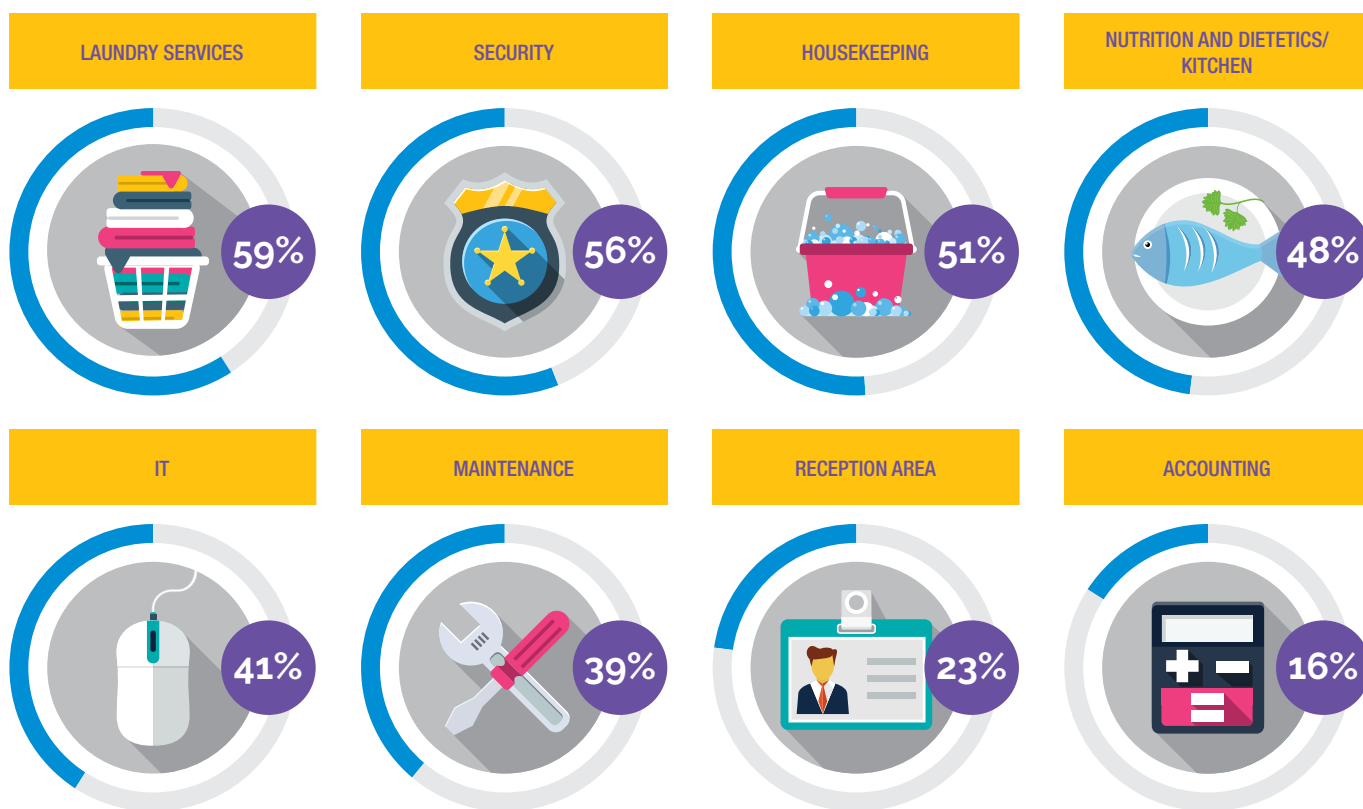
Source: Annual Questionnaire SINHA/Anahp.



Service outsourcing enables organizations to focus on their core activity, granting supporting activities to be performed by contracted companies. This is a common strategy among Anahp members, as we can see in the figure that follows:



Outsourced services



Source: Annual Questionnaire SINHA/Anahp.

Compared to 2017, the percentage of outsourced services in laundry (81% in 2017), security (76% in 2017) and housekeeping (58% in 2017) was reduced.

Compliance structure

As a result of global actions towards more ethical transparent relations, in 2015 Anahp identified the need to contribute further by sharing the experience of its member organizations, international benchmarking and the constructive discussion about Corporate Compliance, a topic that has been addressed in practically all Anahp events since then.

As one of the strategic goals set forth by Anahp – to positively influence the market through collaborative initiatives, the first edition of the Corporate Compliance Code – Compliance for Private Hospitals was devised as a guiding document for the development of a

comprehensive Code of Conduct, providing to hospital organizations the support to recognize and trust their initiatives to encourage transparent market practices. In 2016, realizing that the topic gained more momentum in the industry, Anahp created its Compliance Strategic Committee to propose strategies, policies, rules and procedures directed to disseminating and adopting a culture of compliance at corporate and clinical levels of healthcare organizations. In that same year, we launched the Manual of Anahp Compliance Program. In 2018, as a result of more mature and robust understanding about the importance of a Compliance

Program in healthcare organizations, Anahp gave one more step towards the launch of the Code of Conduct, relying on the work of the Compliance Strategic Committee. Instead of supporting the hospitals to develop their own compliance programs and codes of conduct, Anahp created the minimum required standards to be followed by all Anahp member organizations. As the following step, in 2018 Anahp proposed the creation of simple quantitative indicators that evidence the progression of Anahp member hospitals in implementing compliance initiatives. See below the information identified from this survey.

Compliance



Source: Annual Questionnaire SINHA/Anahp





Operational management

Anahp hospitals have observed decrease in occupancy rates and mean length of stay, increasing bed turnover.

In a still challenging economic situation, the use of best practices is essential to maintain good clinical outcomes.

To set references for continuous improvement, since 2007 Anahp has gathered indicators related to clinical performance to assess efficiency of operational bed management, productivity and clinical effectiveness. In general, in recent years, there has been a drop in occupancy rates and mean length of stay, at the same time there has been

increase in bed turnover.

Similarly to previous years, in 2018 Anahp had many meetings focused on benchmarking and alignment of operational practices to provide to member hospitals the possibility to share experiences and contribute to keep the appropriate operational standards and indicators.



There has been reduction in number of patients-day and, consequently, decline in occupancy rate of Anahp hospitals.

Operational indicators

The analyses that follow show the progression of general operational management indicators, which can be analyzed by regions of the country. Next, we present the analysis of indicators of areas such as Adult Intensive Care Unit (ICU), Step-Down Unit, Pediatric ICU and Neonatal ICU.

Operational management indicators for SINHA were calculated based on the data of 109 respondent hospitals in 2018 (Graph 1).

Occupancy rate has shown a decreasing trend for the past four years, reaching 76.44% in 2018.

Between 2015 and 2017, as result of the decrease in number of healthcare plan beneficiaries, there has been a reduction in number of patients-day and, consequently, a decline in occupancy rate of Anahp hospitals. In 2018, due to the gradual recovery of Brazilian economy, the number of beneficiaries picked up again, which will impact the operational data in upcoming years (Graph 2).

TABLE 1

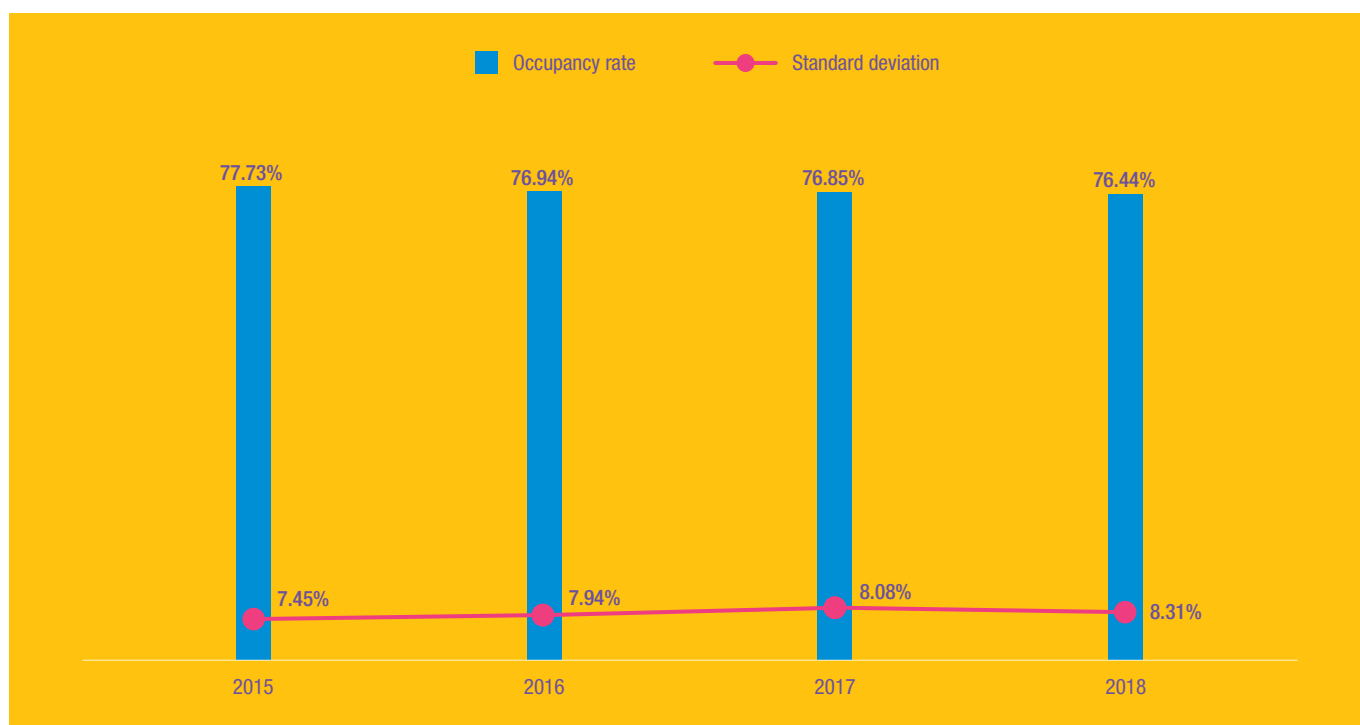
Annual summary of operational indicators

| INDICATOR | 2015 | 2016 | 2017 | 2018 | STANDARD DEVIATION 2018 |
|---------------------------------------------------------------------------------------------------------|------------|------------|------------|------------|-------------------------|
| OCCUPANCY RATE | 77.73% | 76.94% | 76.85% | 76.44% | 8.31% |
| NUMBER OF HEALTH PLAN BENEFICIARIES | 49.204.100 | 47.612.126 | 47.177.703 | 47.377.920 | – |
| MEAN LENGTH OF STAY | 4.54 | 4.38 | 4.27 | 4.13 | 1.14 |
| TURNOVER RATE | 5.15 | 5.33 | 5.34 | 5.62 | 1.79 |
| REPLACEMENT INTERVAL RATE | 1.33 | 1.34 | 1.32 | 1.36 | 0.63 |
| HOSPITAL ADMISSION FROM THE EMERGENCY DEPARTMENT (CORRELATION WITH TOTAL NUMBER OF ED VISITS) | 6.62% | 6.93% | 8.15% | 8.55% | 5.88% |
| HOSPITAL ADMISSION FROM THE EMERGENCY DEPARTMENT (CORRELATION WITH TOTAL NUMBER OF HOSPITAL DISCHARGES) | 39.55% | 40.94% | 41.93% | 43.21% | 15.54% |
| INSTITUTIONAL MORTALITY RATE | 2.42% | 2.35% | 2.28% | 2.14% | 1.22% |
| INSTITUTIONAL MORTALITY RATE WITHIN 24 HOURS | 2.02% | 2.05% | 2.12% | 1.98% | 1.19% |
| RATE OF RESIDENT PATIENTS AT THE HOSPITAL (> 90 DAYS) | 0.74% | 0.60% | 0.58% | 0.47% | 0.51% |

Source: SINHA/Anahp.

GRAPH 1

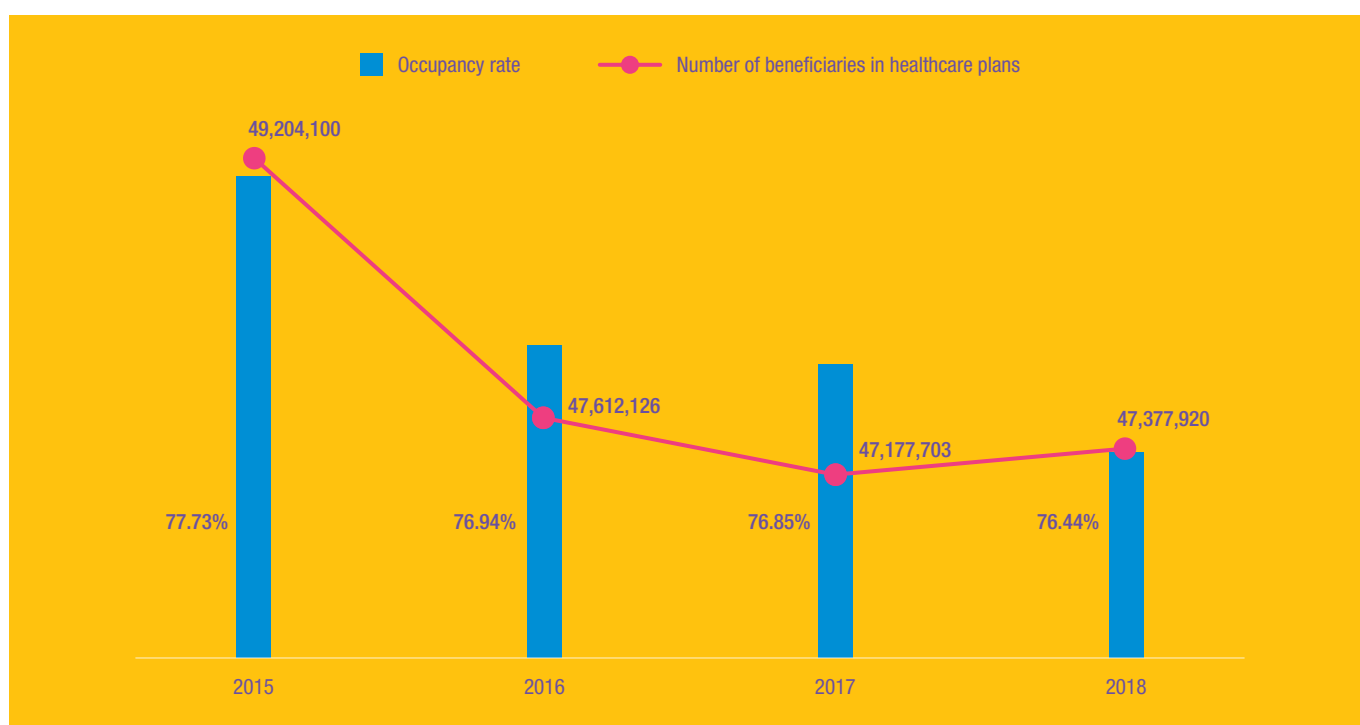
Rate of general operational occupancy



Source: IBGE.

GRAPH 2

General operational occupancy rate vs. Number of beneficiaries in healthcare plans



Source: SINHA/Anahp and ANS.

The general mean length of stay kept the same decreasing trend, going from 4.54 in 2015 to 4.13 in 2018 (Graph 3). Consequently, the turnover rate, which measures the number of admissions on each bed during a given period, went up from 5.15 times in 2015 to 5.62 times in 2018, on average.

The bed turnover interval, which measures the average time a bed remains free between the patient's discharge and the admission of a new patient, went up from 1.33 days in 2015 to 1.36 days in 2018. The Hospital Emergency Department is the main admission point for clinical patients, reason

why it is important to analyze how many visits are converted into hospital admissions.

In 2018, the number of admissions through the Emergency Department over the total hospital discharges reached 43.21%. When compared to 2015, there has increase of 3.66 percentage points. The trend to observe an increase in the number of admissions through the ED may also be confirmed by analyzing the number of total admissions via ED over the total number of ED visits, which has increased, going from 6.62% in 2015 to 8.55% in 2018, or 1.93 percentage point increase (Graph 4).



GRAPH 3

Mean length of stay at Anahp hospitals 2015 to 2018 (days)



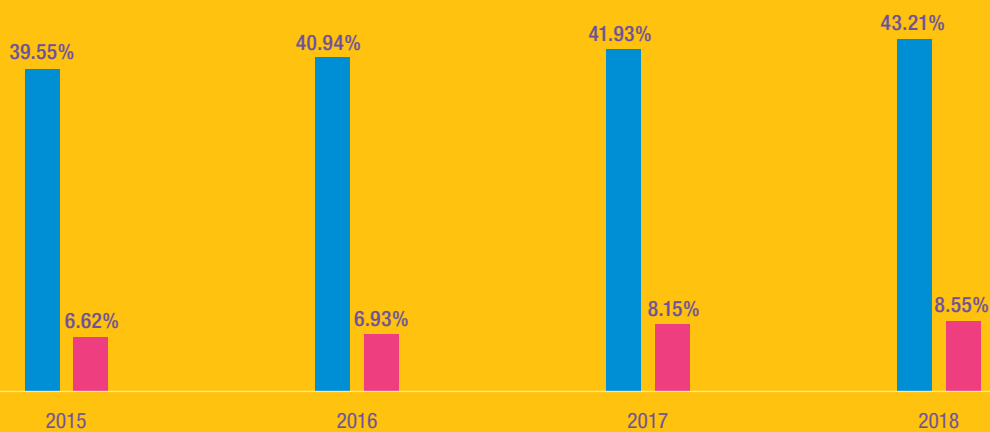
Source: SINHA/Anahp.



GRAPH 4

Hospital admissions through the Emergency Department

- Hospital admission through Emergency Department (related to total number of ED visits)
- Hospital admission through Emergency Department (related to total hospital discharges)

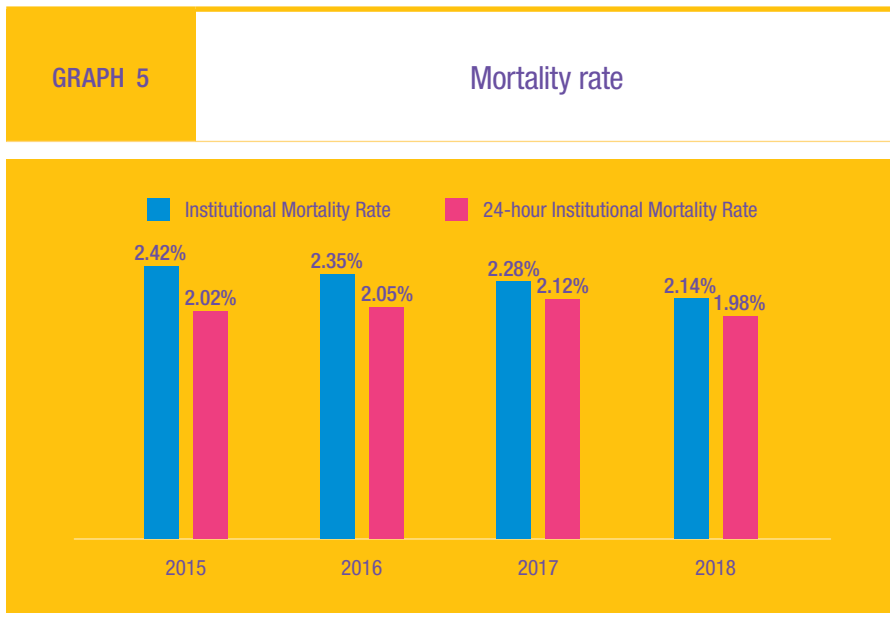


Source: SINHA/Anahp.

Mortality rates have shown decreasing trend in recent years, confirming the dissemination of best practices and quality improvement promoted by Anahp.

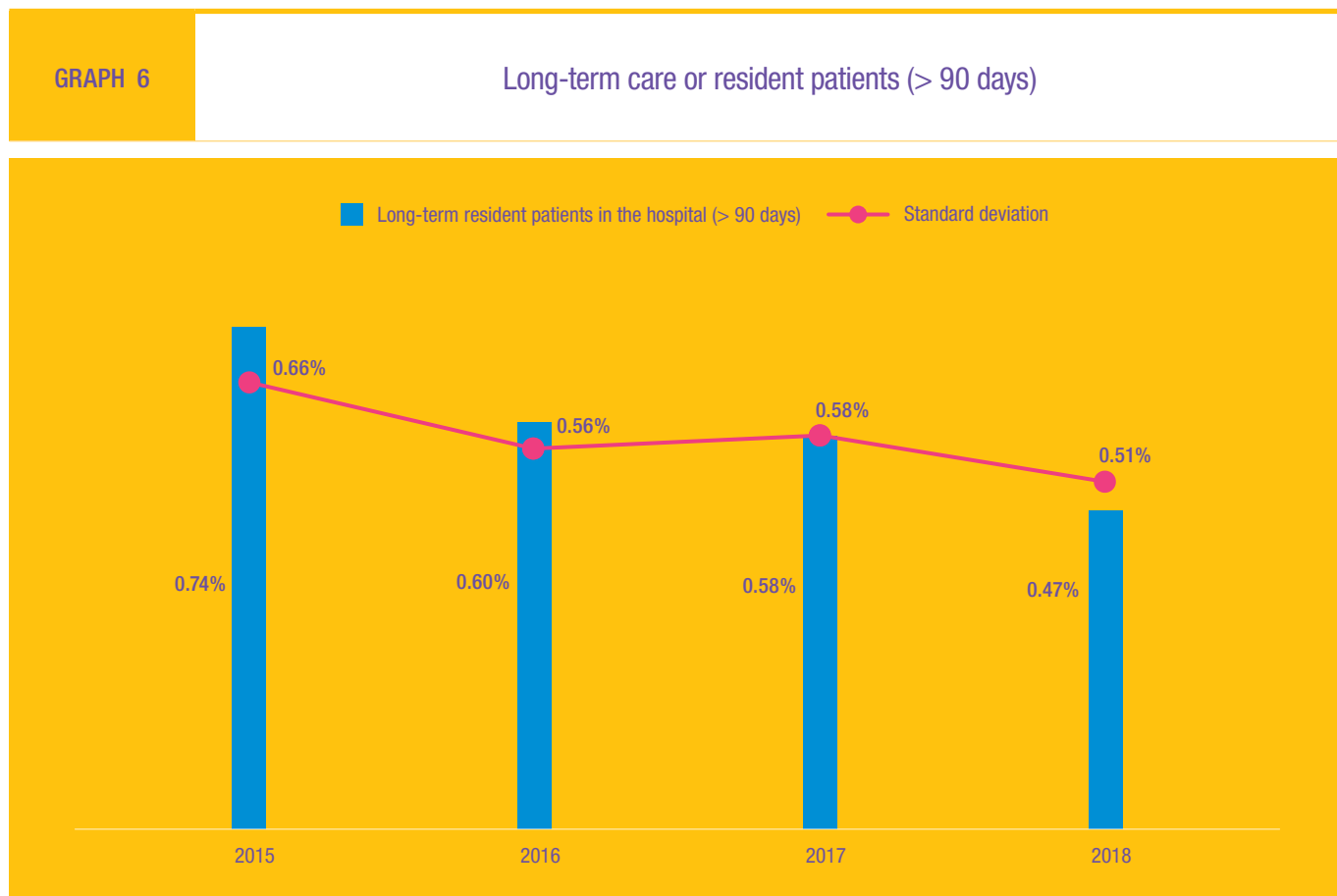
Institutional mortality rate, which measures mortality in the organization regardless of the admission time, was 2.14% in 2018, whereas institutional mortality rate equal or greater than 24 hours after hospital admission was 1.98% in the same year (Graph 5).

In turn, rate of long-term stay patients (longer than 90 days) has been declining, reaching 0.47% in 2018 (Graph 6).



Source: SINHA/Anahp.

| | STANDARD DEVIATION | | | |
|--------------------------------------|--------------------|-------|-------|-------|
| | 2015 | 2016 | 2017 | 2018 |
| INSTITUTIONAL MORTALITY RATE | 1.29% | 1.26% | 1.26% | 1.22% |
| 24-HOUR INSTITUTIONAL MORTALITY RATE | 1.24% | 1.19% | 1.24% | 1.19% |



Source: SINHA/Anahp.

The figure shows the mean bed occupancy rate of Anahp member hospitals per region in Brazil. Table 2 shows operational indicators per region. The lowest occupancy rate was in the Northeast region and the highest rate was seen in North/Center-West regions, which also showed the shortest mean length of stay and, consequently, the highest bed turnover (average number of patients that used the hospital bed in a given period).

North/Center-West region had the lowest rate of admissions from ED visits and the lowest rate of hospital discharge per patients admitted through the ED. In turn, institutional mortality rate was the lowest in the Southeast region.

Occupancy rate Brazil 2018 (Anahp Hospitals)



Source: SINHA/Anahp.

TABLE 2

Regional operational indicators

| INDICATOR | 2018 | | | | |
|---------------------------------------------------------------------------------------------------------|------------|--------------|------------------|------------------|------------------------------|
| | BRAZIL | SOUTH REGION | SOUTHEAST REGION | NORTHEAST REGION | NORTH AND CENTER-WEST REGION |
| OCCUPANCY RATE | 76.44% | 75.87% | 76.97% | 74.13% | 79.56% |
| NUMBER OF HEALTH PLAN BENEFICIARIES | 47,377,920 | 6,949,219 | 28,823,844 | 6,635,566 | 4,934,093 |
| MEAN LENGTH OF STAY | 4.13 | 4.08 | 4.05 | 4.72 | 3.86 |
| TURNOVER RATE | 5.62 | 5.41 | 5.73 | 4.67 | 6.23 |
| REPLACEMENT INTERVAL RATE | 1.36 | 1.28 | 1.26 | 1.59 | 1.26 |
| HOSPITAL ADMISSION FROM THE EMERGENCY DEPARTMENT (CORRELATION WITH TOTAL NUMBER OF ED VISITS) | 8.55% | 8.47% | 8.45% | 8.24% | 6.69% |
| HOSPITAL ADMISSION FROM THE EMERGENCY DEPARTMENT (CORRELATION WITH TOTAL NUMBER OF HOSPITAL DISCHARGES) | 43.21% | 41.65% | 44.15% | 36.95% | 51.76% |
| INSTITUTIONAL MORTALITY RATE | 2.14% | 2.56% | 1.83% | 2.74% | 2.36% |
| INSTITUTIONAL MORTALITY RATE WITHIN 24 HOURS | 1.98% | 2.33% | 1.64% | 2.53% | 2.41% |
| RATE OF RESIDENT PATIENTS AT THE HOSPITAL (> 90 DAYS) | 0.47% | 0.36% | 0.50% | 0.55% | 0.21% |

Source: SINHA/Anahp.



Most patients seen at Anahp hospitals are admitted to perform surgical procedures. In 2018, this rate was 57.96%, 2.37 pp higher than in 2017 (Table 3).

Surgical mortality rate was 0.30% in 2018, practically stable over 2015, when it reached 0.27% (Graph 7).

Using the classification determined by ASA (American Society of Anesthesiologists) that groups the anesthetic risk into classes – low risk (ASA 1 and 2), medium risk (ASA 3 and 4), and high risk (ASA 5 e 6), it was observed that in 2018 surgical mortality rate in group ASA 1 and 2 was stable, it was reduced for group ASA 3 and 4 and increased in group ASA 5 and 6 compared to figures from 2017.

TABLE 3

Regional operational indicators

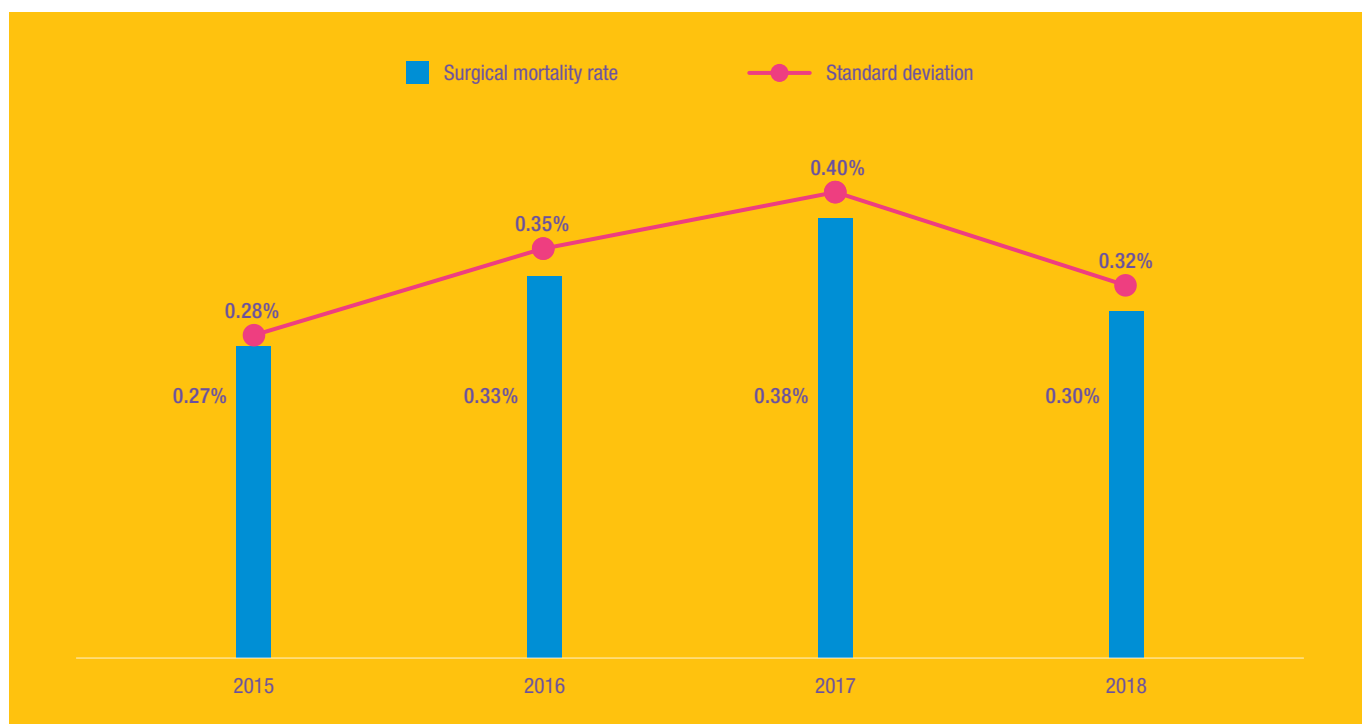
| INDICATOR | 2015 | 2016 | 2017 | 2018 | STANDARD DEVIATION 2018 |
|-----------------------------------------------------|--------|--------|--------|--------|-------------------------|
| N OF PATIENTS UNDERGOING SURGICAL PROCEDURES | * | * | 55.59% | 57.96% | 19.07% |
| RATE OF SURGERY PER PATIENT | 1.32 | 1.38 | 1.46 | 1.51 | 0.46 |
| SURGICAL MORTALITY RATE | 0.27% | 0.33% | 0.38% | 0.30% | 0.32% |
| RATE OF SURGICAL MORTALITY ACCORDING TO ASA 1 AND 2 | 0.06% | 0.06% | 0.06% | 0.05% | 0.09% |
| RATE OF SURGICAL MORTALITY ACCORDING TO ASA 3 AND 4 | 2.05% | 2.45% | 2.73% | 2.32% | 2.83% |
| RATE OF SURGICAL MORTALITY ACCORDING TO ASA 5 AND 6 | 24.03% | 19.96% | 10.22% | 12.02% | 22.17% |

Source: SINHA/Anahp.



GRAPH 7

Surgical mortality



Source: SINHA/Anahp.

Operational indicators – Intensive Care Units

Taking into consideration the intensive care units, the Adult ICU presented a decreasing trend in occupancy rate and increase in mean length of stay, impacting the turnover rate when comparing 2017 over 2018.

In 2018, occupancy rate was 2.62 pp lower than in 2015. Alternatively, the mean length of stay was 1.66 days higher in 2018 over 2015.

| TABLE 4 | | Operational indicators – Adult ICU | | | | |
|---------------------------------|--------|------------------------------------|--------|--------|-------------------------|--|
| INDICATOR | 2015 | 2016 | 2017 | 2018 | STANDARD DEVIATION 2018 | |
| OCCUPANCY RATE ADULT ICU | 80.74% | 79.66% | 79.82% | 78.12% | 15.17% | |
| MEAN LENGTH OF STAY – ADULT ICU | 5.12 | 5.25 | 5.51 | 6.78 | 5.79 | |
| TURNOVER RATE – ADULT ICU | 4.91 | 4.79 | 4.46 | 4.28 | 1.96 | |
| TURNOVER INTERVAL – ADULT ICU | 1.32 | 1.55 | 1.58 | 1.94 | 1.76 | |

Source: SINHA/Anahp.

Along the same lines, the step-down unit showed reduction in occupancy rate and increasing trend in mean length of stay in 2018 over 2017. Consequently, the turnover rate showed decreasing trend during the same period.

In Step-Down Units there was decrease in occupancy rate (3.89 pp over 2015) and increase in mean length of stay (1.68 days 2018 over 2015) (Table 5).

| TABLE 5 | | Operational indicators – Adult Step-Down Unit | | | | |
|----------------------------------------|--------|-----------------------------------------------|--------|--------|-------------------------|--|
| INDICATOR | 2015 | 2016 | 2017 | 2018 | STANDARD DEVIATION 2018 | |
| OCCUPANCY RATE IN STEP-DOWN UNIT | 84.77% | 82.21% | 85.17% | 80.88% | 13.43% | |
| MEAN LENGTH OF STAY STEP-DOWN UNIT | 6.15 | 6.35 | 7.24 | 7.83 | 5.63 | |
| TURNOVER RATE – STEP-DOWN UNIT | 4.02 | 4.05 | 3.93 | 3.80 | 1.94 | |
| BED TURNOVER INTERVAL – STEP-DOWN UNIT | 1.18 | 1.66 | 1.09 | 1.42 | 0.92 | |

Source: SINHA/Anahp.

In turn, the occupancy rate in the Pediatric ICU has presented increasing trend since 2015, reaching 73.17% in 2018. The mean length of stay was 7.77 days, with turnover rate of 3.19 times in 2018.

| TABLE 6 | | Operational indicators – Pediatric ICU | | | | |
|---------------------------------------|--------|----------------------------------------|--------|--------|-------------------------|--|
| INDICATOR | 2015 | 2016 | 2017 | 2018 | STANDARD DEVIATION 2018 | |
| OCCUPANCY RATE – PEDIATRIC ICU | 70.82% | 71.47% | 72.96% | 73.17% | 14.20% | |
| MEAN LENGTH OF STAY – PEDIATRIC ICU | 7.65 | 7.37 | 7.59 | 7.77 | 4.69 | |
| TURNOVER RATE – PEDIATRIC ICU | 3.00 | 3.09 | 3.12 | 3.19 | 1.62 | |
| BED TURNOVER INTERVAL – PEDIATRIC ICU | 3.25 | 3.09 | 3.20 | 3.46 | 3.22 | |

Source: SINHA/Anahp.

The occupancy rate in the Neonatal ICU was 72.08% in 2018. The mean length of stay was 15.93 days in 2018, 2.2 days higher than in 2015. Thus, bed turnover rate was 1.45 times in 2018.

| TABLE 7 | | Operational indicators – Neonatal ICU | | | | |
|--------------------------------------|--------|---------------------------------------|--------|--------|-------------------------|--|
| INDICATOR | 2015 | 2016 | 2017 | 2018 | STANDARD DEVIATION 2018 | |
| OCCUPANCY RATE NEONATAL ICU | 76.31% | 68.70% | 75.59% | 72.08% | 17.93% | |
| MEAN LENGTH OF STAY – NEONATAL ICU | 13.76 | 14.02 | 13.23 | 15.93 | 10.92 | |
| TURNOVER RATE – NEONATAL ICU | 1.72 | 1.58 | 1.71 | 1.45 | 0.69 | |
| BED TURNOVER INTERVAL – NEONATAL ICU | 4.35 | 6.66 | 5.49 | 7.67 | 7.41 | |

Source: SINHA/Anahp.

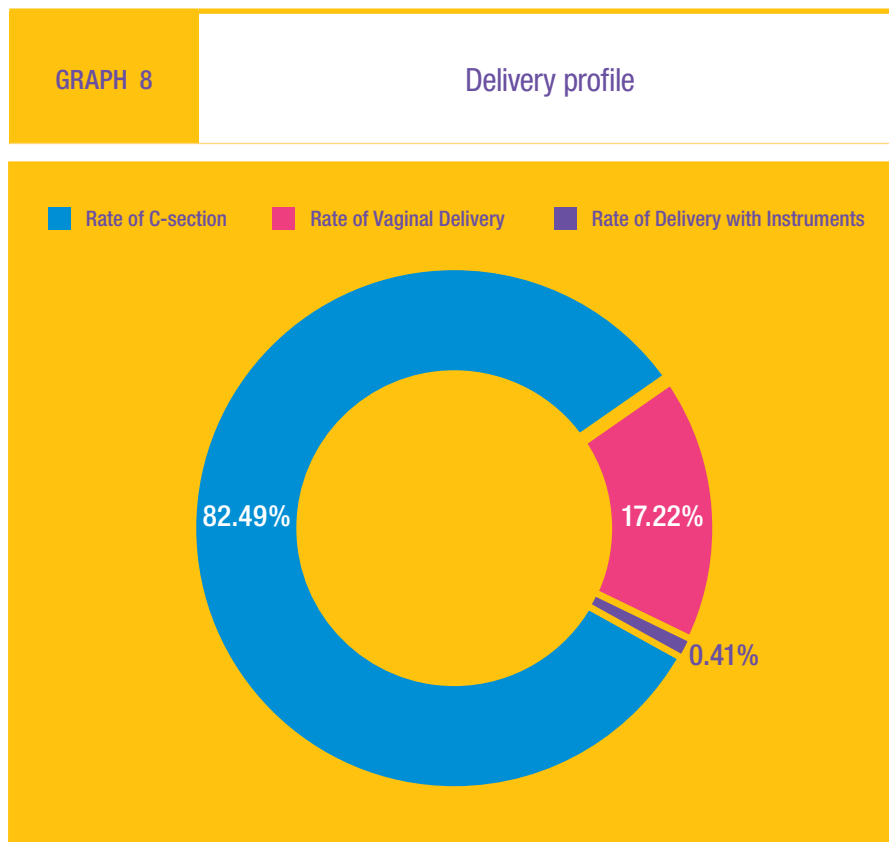
Concerning specific indicators about maternal/ neonatal care, it can be observed in Table 8 that the occupancy rate of the maternity was

67.65% in 2018, which represented 7.74 pp decrease over 2015. The mean length of stay in 2018 was 2.20 days, with turnover rate of 8.65 times.

Including all Anahp hospitals, a total of 140,000 deliveries were performed in 2018. A total of 82.49% were C-sections.

| INDICATOR | 2015 | 2016 | 2017 | 2018 | STANDARD DEVIATION 2018 |
|-----------------------------------|--------|--------|--------|--------|-------------------------|
| OCCUPANCY RATE – MATERNITY | 75.39% | 69.43% | 72.04% | 67.65% | 16.01% |
| MEAN LENGTH OF STAY – MATERNITY | 2.46 | 2.34 | 2.25 | 2.20 | 0.51 |
| TURNOVER RATE – MATERNITY | 9.07 | 8.44 | 8.99 | 8.65 | 2.40 |
| BED TURNOVER INTERVAL – MATERNITY | 0.87 | 1.12 | 0.94 | 1.09 | 0.73 |

Source: SINHA/Anahp.



Source: SINHA/Anahp.



TABLE 9

Maternity/Neonatal indicators

| INDICATOR | 2017 | 2018 | STANDARD DEVIATION 2018 |
|------------------------------------------------------------|--------|--------|-------------------------|
| RATE OF C-SECTION | 82.19% | 82.49% | 10.87% |
| RATE OF DELIVERY WITH INSTRUMENTS | 0.43% | 0.41% | 0.69% |
| RATE OF VAGINAL DELIVERY | 17.56% | 17.22% | 10.68% |
| NEONATAL MORTALITY UP TO 27 DIAS (EVERY 1,000 LIVE BIRTHS) | 2.56 | 3.30 | 2.40 |
| NB MATERNAL MORTALITY (EVERY 100,000 WOMEN) | 25.86 | 19.71 | 53.01 |

Source: SINHA/Anahp.



Maternal death, according to the 10th Disease Classification Manual (ICD 10) is “death of a woman during pregnancy or up to 42 days after end of gestation, regardless of the duration or location of the pregnancy, caused by anything related to or worsened by pregnancy or measures related to it, but not caused by accidents or incidents.”

Data from the Ministry of Health (2018)¹ have shown that direct maternal mortality (ratio of maternal mortality defined as number of maternal deaths by 100,000 live births of mothers living in some specific geographic area, calculated without any correction factors) was 57.60 in 2015. It is important to note that identification of maternal deaths have historically had two problems:

i) under-diagnosis – when death is determined as being due to other cause; and ii) under-registration – when death is not reported. Among Anahp hospitals this number was 19.71 in 2018. According to data from the Ministry of Health (2018)¹, early neonatal mortality, defined as number of deaths of residents aged zero to 6-day-old divided by number of live births of resident mothers by thousand, was 7.00 in 2015. Late neonatal mortality, in turn, defined as the number of deaths of residents aged 7 to 27 days by number of live births of resident mothers by thousand – was 2.40 in 2015. Among Anahp hospitals this number was 3.30 to each one thousand newborns in 2018.

1. Available on: http://bvsms.saude.gov.br/bvs/publicacoes/saude_brasil_2017_analise_situacao_saude_desafios_objetivos_desenvolvimento_sustentavel.pdf





Care quality and safety

Anahp Hospitals continuously invest to improve patient care.

Using good practices is necessary for good clinical and operational performance.

For many years, Anahp and its members have been continuously seeking to improve the quality of care and to turn hospitals into safer environments.

The pursuit for transparency in processes and patient safety were themes that guided the industry's discussions and concerns through the year.

Similarly to previous years, Anahp hospitals worked to prevent pressure ulcers, to make medication prescription safe, and to enhance barriers for safer surgeries.

Considering that safety indicators have

undergone extensive review and changes based on the national literature, such as that published by Anvisa – Health Regulation Agency, and international literature, such as that published by JCI – Joint Commission International in 2017, we are going to present data only for the years of 2017 and 2018.

In addition, through its Work Groups, Anahp provides a series of protocols and manuals that contribute significantly to the safety and quality of patient care, standardizing best practices that are revisited and updated frequently by the Groups.

Safety indicators

The patient safety system has the goal of seeking to reduce patient harm as something strategic for organizations, aiming at both care improvement and operational efficiency. With this goal, Anahp's hospitals seek external guidelines and assessments to organize internal processes and to learn best practices.

In recent years, many hospitals affiliated to Anahp have won more than one certification, both for hospitals and for certain clinical care programs. Hospitals may be accredited by one or more accreditation models, namely, national – National Accreditation Organization (Organização Nacional de Acreditação, ONA) – or international – Qmentum International Accreditation

Program – Accreditation Canada, Joint Commission International (JCI), or National Integrated Accreditation for Healthcare Organizations (NIAHO). Patient safety is also an increasingly more important theme in Brazil. In 2013, the Ministry of Health launched the National Patient Safety Program with the aim of monitoring and preventing harm in healthcare, to apply and inspect care rules and protocols that prevent failures in healthcare. The data assessed include prevention of pressure ulcers, prescription safety, medication management and use, safe surgeries, and fall prevention. Some years ago, Anvisa started requiring the mandatory monitoring and reporting of data on healthcare-

associated infections. In 2017, the Agency updated the criteria for the monitoring and handling of hospital materials with the aim of mitigating this type of harm to patients. In that sense, Anahp's hospitals adapted the specifications of the indicators proposed by SINHA to market requirements and, mainly, to improve patient care. Therefore, the results obtained in 2017 and 2018 are presented below.

One of the indicators monitored by Anahp is the incidence density of central-line-associated bloodstream infections (CLABSI) in ICUs (Table 1). According to Anvisa's data¹, the incidence density of laboratory-confirmed primary CLABSIs in Adult



1. <https://www20.anvisa.gov.br/segurancadopaciente/index.php/publicacoes/item/boletim-seguranca-do-paciente-e-qualidade-em-servicos-de-saude-n-16-avaliacao-dos-indicadores-nacionais-das-infeccoes-relacionadas-a-assistencia-a-saude-iras-e-resistencia-microbiana-do-ano-de-2016>

ICUs was 4.60 per one thousand patient-days in 2016. In neonatal intensive care units (NICU), this number was 8.10 per one thousand patient-days, while in pediatric ICUs, it was 5.30 per one thousand patient-days in the same year.

Among Anahp hospitals, the incidence density of central-line-associated bloodstream infections in Adult ICUs was 2.61 per one thousand patient-days in 2018. In neonatal intensive care units (NICU), this number was 4.87 per one thousand patient-days, while in pediatric ICUs, it was 1.75 per one thousand patient-days in the same year. Meanwhile, in Step-down Units, this figure was 1.56 per one thousand patient-days in 2018.



Hospitals may be accredited by one or more accreditation models, namely national (ONA) or international (Accreditation Canada, JCI and NIAHO).

TABLE 1

Central line-associated bloodstream infections

| INDICATOR | 2017 | 2018 | STANDARD DEVIATION 2018 |
|-------------------------------------------------------------------------------------------|--------|--------|-------------------------|
| INCIDENCE DENSITY OF CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS – ADULT ICUS (‰) | 2.84 | 2.61 | 3.79 |
| CENTRAL LINE UTILIZATION RATE – ADULT ICUS (%) | 49.56% | 49.27% | 18.88% |
| INCIDENCE DENSITY OF CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTION – NEONATAL ICUS (‰) | 4.78 | 4.87 | 8.42 |
| CENTRAL LINE UTILIZATION RATE – NEONATAL ICUS (%) | 29.20% | 30.16% | 19.22% |
| INCIDENCE DENSITY OF CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS – PEDIATRIC ICUS (‰) | 1.48 | 1.75 | 3.48 |
| CENTRAL LINE UTILIZATION RATE – PEDIATRIC ICUS (%) | 46.47% | 43.64% | 23.54% |
| INCIDENCE DENSITY OF CENTRAL LINE ASSOCIATED BLOODSTREAM INFECTIONS – STEP-DOWN UNITS (‰) | 1.52 | 1.56 | 2.72 |
| CENTRAL LINE UTILIZATION RATE – STEP-DOWN UNITS (%) | 36.48% | 32.48% | 18.16% |

Source: SINHA/Anahp.



Monitoring the incidence density of the use of central lines has contributed for more adequate indications, more opportune removals, and more standardized handling by nursing teams. Hospitals should increase their efforts to reduce the utilization of central lines, or limit the time patients stay with the device, as, according to Anvisa, patient exposure time to invasive devices is the main risk factor for infections. Another indicator monitored by Anahp's hospitals is the density of catheter-associated urinary tract infections related to the utilization rate of these devices (Table 2). The literature recommends limiting to the minimally necessary the time hospitalized patients have a urinary catheter. Anvisa² data from 2016 show that the incidence density of urinary tract infections (UTI) associated with catheters in Adult ICUs was 5.10 per one thousand patient-days, while in Pediatric ICUs, it was 4.90 per one

thousand patient-days that year. In Anahp's hospitals, the incidence density of urinary tract infections (UTI) associated with catheters in Adult ICUs was 1.95 per one thousand patient-days, while in Pediatric ICUs, it was 0.99 per one thousand patient-days in 2018. Meanwhile, in Step-down Units, this figure was 2.56 per one thousand patient-days in the same year. The correlated assessment of these indicators serves as the basis for each hospital, considering their own epidemiological features, to adopt preventive measures in order to reduce the incidence of infections. The prevalence of comorbidities and higher patient severity scores at admission increase the risk of device-associated hospital infections. In this manner, the quality provided in intensive care units is one of the key aspects in the management of hospital services.

2. <https://www20.anvisa.gov.br/segurancadopaciente/index.php/publicacoes/item/boletim-seguranca-do-paciente-e-qualidade-em-servicos-de-saude-n-16-avaliacao-dos-Indicadores-nacionais-das-infeccoes-relacionadas-a-assistencia-a-saude-iras-e-resistencia-microbiana-do-ano-de-2016>



TABLE 2

Urinary tract infections

| INDICATOR | 2017 | 2018 | STANDARD DEVIATION 2018 |
|-----------------------------------------------------------------------------------------|--------|--------|-------------------------|
| INCIDENCE DENSITY OF CATHETER-ASSOCIATED URINARY TRACT INFECTIONS – ADULT ICUS (‰) | 1.99 | 1.95 | 3.36 |
| UTILIZATION RATE OF INDWELLING URINARY CATHETERS – ADULT ICUS (%) | 39.67% | 37.20% | 17.61% |
| INCIDENCE DENSITY OF CATHETER-ASSOCIATED URINARY TRACT INFECTIONS – PEDIATRIC ICUS (‰) | 0.78 | 0.99 | 3.03 |
| UTILIZATION RATE OF INDWELLING URINARY CATHETERS – PEDIATRIC ICUS (%) | 16.64% | 12.57% | 10.64% |
| INCIDENCE DENSITY OF CATHETER-ASSOCIATED URINARY TRACT INFECTIONS – STEP-DOWN UNITS (‰) | 3.13 | 2.56 | 5.78 |
| UTILIZATION RATE OF INDWELLING URINARY CATHETERS – STEP-DOWN UNITS (%) | 11.81% | 10.57% | 7.47% |

Source: SINHA/Anahp.

Ventilator-associated pneumonia is an infection associated with the use of this device for more than two days by intubated patients. The results obtained in the period analyzed are presented in Table 3.

According to Anvisa data from 2016³, the incidence density of ventilator-associated pneumonia (VAP) in Adult ICUs was 13.60 per one thousand patient-days. In neonatal intensive care units (NICU), this number was 7.90 per one thousand patient-days, while in pediatric ICUs, it was 5.50 per one thousand patient-days in the same year.

Among Anahp hospitals, the incidence density of ventilator-associated pneumonia (VAP) in Adult ICUs was 5.40 per one thousand patient-days in 2018. In neonatal intensive care units (NICU), this number was 1.88 per one thousand patient-days, while in pediatric ICUs, it was 0.83 per one thousand patient-days in the same year.

In turn, the result achieved was 1.78 per one thousand patient-days in 2018.



Assessing safety indicators means adopting preventive measures to reduce infection rates.

TABLE 3

Ventilator-associated pneumonia

| INDICATOR | 2017 | 2018 | STANDARD DEVIATION 2018 |
|----------------------------------------------------------------------------|--------|--------|-------------------------|
| INCIDENCE DENSITY OF VENTILATOR-ASSOCIATED PNEUMONIA – ADULT ICUS (‰) | 5.21 | 5.40 | 8.94 |
| UTILIZATION RATE OF MECHANICAL VENTILATION – ADULT ICUS (%) | 24.04% | 22.62% | 11.91% |
| INCIDENCE DENSITY OF VENTILATOR-ASSOCIATED PNEUMONIA – NEONATAL ICUS (‰) | 1.22 | 1.88 | 4.80 |
| UTILIZATION RATE OF MECHANICAL VENTILATION – NEONATAL ICUS (%) | 13.70% | 15.05% | 11.99% |
| INCIDENCE DENSITY OF VENTILATOR-ASSOCIATED PNEUMONIA – PEDIATRIC ICUS (‰) | 1.29 | 0.83 | 2.40 |
| UTILIZATION RATE OF MECHANICAL VENTILATION – PEDIATRIC ICUS (%) | 26.58% | 25.32% | 15.58% |
| INCIDENCE DENSITY OF VENTILATOR-ASSOCIATED PNEUMONIA – STEP-DOWN UNITS (‰) | 1.67 | 1.78 | 2.91 |
| UTILIZATION RATE OF MECHANICAL VENTILATION – STEP-DOWN UNITS (%) | 4.76% | 4.80% | 5.93% |

Source: SINHA/Anahp.

3. <https://www20.anvisa.gov.br/segurancadopaciente/index.php/publicacoes/item/boletim-seguranca-do-paciente-e-qualidade-em-servicos-de-saude-n-16-avaliacao-dos-Indicadores-nacionais-das-infeccoes-relacionadas-a-assistencia-a-saude-iras-e-resistencia-microbiana-do-ano-de-2016>

Reducing healthcare-related infection risks and preventing complications for patients is a continuous quality improvement effort in organizations. In this manner, the actions in that direction have resulted in a faster return of patients to their activities, lower social cost, lower rate of disability, and better quality of life. These actions also contribute to a reduction in the risk of readmissions, which saves

resources of the healthcare system. Surgical site infections are infections associated with surgical procedures with or without the placement of implants, in inpatients and outpatients. Clean surgeries are the surgeries without signs of inflammation, without contact with the respiratory, alimentary, genital, or urinary tracts and, therefore, with a smaller likelihood of causing infections in patients. Data from São Paulo's

Epidemiological Surveillance Center (CVE) indicate that acceptable infection rates for clean surgeries may vary from 1 to 5%⁴. The measurement of indicators related to this type of infection favors the identification of the correlation between prevention actions implemented by the hospital staff, and their impact on the occurrence of these infections. The following data are related to clean surgeries (Table 4):

| INDICATOR | 2017 | 2018 | STANDARD DEVIATION 2018 |
|-------------------------------------------------------------------------------|-------|-------|-------------------------|
| RATE OF SURGICAL SITE INFECTIONS AFTER CLEAN SURGERIES (%) | 0.46% | 0.60% | 1.07% |
| RATE OF SURGICAL SITE INFECTIONS AFTER APPENDECTOMIES (%) | 0.25% | 0.09% | 0.43% |
| RATE OF SURGICAL SITE INFECTIONS AFTER KNEE REPLACEMENT SURGERIES (%) | 0.92% | 0.69% | 2.57% |
| RATE OF SURGICAL SITE INFECTIONS AFTER TOTAL HIP REPLACEMENT SURGERIES (%) | 0.70% | 0.47% | 2.00% |
| RATE OF SURGICAL SITE INFECTIONS AFTER CHOLECYSTECTOMIES (%) | 0.10% | 0.08% | 0.30% |
| RATE OF SURGICAL SITE INFECTIONS AFTER COLECTOMIES (%) | 1.79% | 2.75% | 7.35% |
| RATE OF SURGICAL SITE INFECTIONS AFTER CRANIOTOMIES (%) | 2.57% | 2.04% | 5.47% |
| RATE OF SURGICAL SITE INFECTIONS AFTER HERNIORRHAPHIES AND HERNIOPLASTIES (%) | 0.17% | 0.18% | 0.69% |
| RATE OF SURGICAL SITE INFECTIONS AFTER HYSTERECTOMIES (%) | 0.16% | 0.19% | 0.70% |
| RATE OF SURGICAL SITE INFECTIONS AFTER MASTECTOMIES (%) | 0.05% | 0.31% | 1.42% |
| RATE OF SURGICAL SITE INFECTIONS AFTER C-SECTIONS (%) | 0.31% | 0.37% | 0.60% |
| RATE OF SURGICAL SITE INFECTIONS AFTER CABG SURGERIES (%) | 3.41% | 2.84% | 6.92% |

Source: SINHA/Anahp.

4. <http://www.saude.sp.gov.br/resources/cve-centro-de-vigilancia-epidemiologica/areas-de-vigilancia/infeccao-hospitalar/2019/definicoeseconceitos.pdf>



Also related to patient safety in the surgical environment, Anahp's hospitals have been monitoring side marking, that is, the site of surgical interventions (right, left

or both, for multiple structures) marked by the surgeon. In the analysis of this indicator, the higher the better, that is, the safer the surgeon will be at the time of the

surgical procedure. Among Anahp hospitals, side marking rate was 94.91% in 2018, as observed in Table 5:

| TABLE 5 | | Side marking | | |
|--------------------------|--------|--------------|-------------------------|--|
| INDICATOR | 2017 | 2018 | STANDARD DEVIATION 2018 | |
| RATE OF SIDE MARKING (%) | 95.79% | 94.91% | 9.00% | |

Source: SINHA/Anahp.

To assess the quality of nursing care and the practices adopted for the continuing improvement of care, two indicators have been historically used: incidence density of pressure ulcers and incidence density of falls. According to Anvisa's 2016⁵ data, 5,892 cases of fall were reported by hospitals, number that may be

underestimated due to underreporting of this event by multidisciplinary teams. In this manner, to analyze this indicator, we must take into account the assumption that the smaller the number of events, that is, the smaller the incidence, the better. In 2018, these indicators obtained the results below (Table 6):

| TABLE 6 | | Falls | | |
|------------------------------------------------------------------------------------------------|--------|-------|-------------------------|--|
| INDICATOR | 2017 | 2018 | STANDARD DEVIATION 2018 | |
| INCIDENCE DENSITY OF FALLS IN PATIENTS AGED 18 AND OVER (‰) | 0.99 | 0.92 | 0.93 | |
| INCIDENCE DENSITY OF FALLS THAT CAUSED INJURY IN PATIENTS AGED 18 AND OVER(‰) | 0.20 | 0.22 | 0.30 | |
| PERCENTAGE OF FALLS THAT CAUSED MODERATE OR SEVERE INJURY (PATIENTS AGED 18 AND OVER) (%) | 7.47% | 6.76% | 13.74% | |
| INCIDENCE DENSITY OF FALLS IN PATIENTS YOUNGER THAN 18 YEARS (‰) | 0.31 | 0.22 | 0.50 | |
| INCIDENCE DENSITY OF FALLS THAT CAUSED INJURY IN PATIENTS YOUNGER THAN 18 YEARS (‰) | 0.06 | 0.05 | 0.18 | |
| PERCENTAGE OF FALLS THAT CAUSED MODERATE OR SEVERE INJURY (PATIENTS YOUNGER THAN 18 YEARS) (%) | 10.00% | 8.49% | 14.36% | |

Source: SINHA/Anahp.

5. <https://www20.anvisa.gov.br/segurancadopaciente/index.php/publicacoes/item/boletim-seguranca-do-paciente-e-qualidade-em-servicos-de-saude-n-15-incidentes-relacionados-a-assistencia-a-saude-2016>

Pressure ulcers are localized injuries on the skin and/or underlying soft tissues, usually over the patient's bone or associated the use of a medical device or any other device. The injury occurs as the result of intense and/or prolonged pressure

in combination with shear stress. According to Anvisa's data, in 2016, 14,068 cases of pressure ulcers were reported in Brazil in inpatients units only, data that reinforces the importance of monitoring this indicator.

Anahp's hospitals constantly monitor the incidence and prevalence indicators of this adverse event, so that, together, they may find effective barriers to mitigate harm. The results obtained are shown in Table 7 below.

TABLE 7

Pressure ulcers

| INDICATOR | 2017 | 2018 | STANDARD DEVIATION 2018 |
|----------------------------------------------------------------------------------------------|------|------|-------------------------|
| INCIDENCE DENSITY OF HOSPITAL ACQUIRED PRESSURE ULCERS IN PATIENTS AGED 18 AND OVER (‰) | 0.85 | 1.44 | 1.47 |
| INCIDENCE DENSITY OF HOSPITAL ACQUIRED PRESSURE ULCERS IN PATIENTS YOUNGER THAN 18 YEARS (‰) | 0.10 | 0.29 | 0.86 |
| PREVALENCE OF HOSPITAL ACQUIRED PRESSURE ULCERS IN PATIENTS AGED 18 AND OVER (‰) | 0.73 | 0.92 | 0.95 |
| PREVALENCE OF HOSPITAL ACQUIRED PRESSURE ULCERS IN PATIENTS YOUNGER THAN 18 YEARS (‰) | 0.01 | 0.07 | 0.28 |

Source: SINHA/Anahp.



6. <https://www20.anvisa.gov.br/segurancadopaciente/index.php/publicacoes/item/boletim-seguranca-do-paciente-e-qualidade-em-servicos-de-saude-n-15-incidentes-relacionados-a-assistencia-a-saude-2016>

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Institutional protocols

Anahp hospitals use standardized protocols to improve clinical outcomes and enhance patients' satisfaction.

Use of institutional protocols intends to guide the professionals in providing care to some specific clinical conditions.

Institutional protocols are instruments developed to standardize processes and guide professionals on how to provide care to a specific pathology. Moreover, they focus on reducing variability, that is, reaching more homogenous processes to enhance patient satisfaction, clinical safety

and appropriate cost management. In 2017, Anahp hospitals started to monitor these protocols under a new perspective. SINHA measured indicators were set based on new international practices. Thus, this chapter presents the results from 2017 and 2018.

Acute myocardial infarction

Acute myocardial infarction, a cardiac muscle lesion caused by interruption of blood circulation in part of the heart, causes 7.2% mortality in the country (94,148 deaths), according to data from 2016 by DataSUS (SUS IT Department, Category ICD 10-I21 acute myocardial infarction). In the same year, there were 1,309,774 deaths in Brazil.

Still according to DataSUS, the increase in the condition is related to risk factors such as an imbalanced diet rich in fat, carbohydrates, salt and processed foods, alcohol abuse, smoking and use of other drugs, recurrent stressful situations and sedentary life.

Table 1 shows the values for Anahp hospitals and the international benchmark. Indicator Median door-to-balloon time – which measures the time between patient’s arrival at the hospital door and opening of a coronary artery at the cath lab – was 62.90 minutes in 2018 among Anahp member hospitals. According to the American Heart Association the recommendation is maximum 90 minutes. It is important

to highlight that data dispersion is significant: the standard deviation for this indicator is 41.32 minutes, showing the heterogeneity of the sample. For the same year, the indicator Median length of stay of AMI patients

was 5.70 days and mortality rate in the same sample was 4.86%.

Aspirin prescription at discharge for patients with diagnosis of acute myocardial infarction was 98.60% in 2018.



TABLE 1

Acute myocardial infarction protocol

| SELECTED PATHOLOGIES | INDICATORS | 2017 (AVERAGE ANAHP HOSPITALS) | 2018 (AVERAGE ANAHP HOSPITALS) | STANDARD DEVIATION 2018 | PARAMETERS |
|-----------------------------|---------------------------------------------------------|--------------------------------|--------------------------------|-------------------------|-------------------------------|
| ACUTE MYOCARDIAL INFARCTION | MEDIAN DOOR-TO-BALLOON TIME (MINUTES) | 72.90 | 62.90 | 41.32 | 90 AMERICAN HEART ASSOCIATION |
| | MEDIAN LENGTH OF STAY OF AMI PATIENTS (DAYS) | 5.50 | 5.70 | 4.14 | |
| | MORTALITY OF AMI INPATIENTS (%) | 4.79% | 4.86% | 8.27% | |
| | ASPIRIN PRESCRIPTION AT DISCHARGE OF AMI INPATIENTS (%) | 97.63% | 98.60% | 7.49% | |

Source: SINHA/Anahp.

Ischemic stroke

Ischemic stroke is caused by shortage of blood in a brain area due to obstruction of an artery. Data by the World Stroke Organization indicate that for every six subjects, one will have a stroke



during his lifespan. According to the American Stroke Association, ischemic stroke amounts to 87% of all occurrences of strokes. In Brazil, strokes (both ischemic and hemorrhagic) respond for 3.10% of the mortality in the country (41,019 deaths), according to data from 2016 DataSUS (Category ICD-10-I64 Stroke not specified as hemorrhagic or ischemic). The incidence of stroke is associated with compliance rate to treatment of hypertension and intensive exposure to risk factors. The risk factors include smoking, high glucose levels, alcohol abuse, sedentary life and obesity. Thus, the initiatives directed to prevention, such as promoting smoking cessation, increase in physical activity, and reduction of body mass index are essential to reduce the incidence of cerebrovascular diseases. Fast access to healthcare services in such cases is key for the prognosis, medical intervention

and level of disability resulting from the disease. Quality of life and social impact on the family after discharge of the patient are directly affected by fast and appropriate interventions. Results from Anahp hospitals (Table 2) show that indicator Door-to-Report time – which is the median time from patient’s admission into the ED with suspicion of ischemic stroke to the report of the head imaging test to support diagnosis – was about 37.05 minutes in 2018. The international literature recommends less than 45 minutes. The indicator Door-to-Needle Time – which is the median time from admission into the ED up to beginning of venous thrombolysis in patients with suspicion of ischemic stroke eligible to the procedure – was about 35.01 minutes in 2018. The American Stroke Association recommends up to 60 minutes. In 2018, the median length of stay of ischemic stroke patients was 5.67 days and the disease lethality was 5.64%.

| TABLE 2 | | Ischemic stroke protocol | | | |
|----------------------|----------------------------------------------------------|--------------------------------|--------------------------------|-------------------------|----------------------------------|
| SELECTED PATHOLOGIES | INDICATORS | 2017 (AVERAGE ANAHP HOSPITALS) | 2018 (AVERAGE ANAHP HOSPITALS) | STANDARD DEVIATION 2018 | PARAMETERS |
| ISCHEMIC STROKE | MEDIAN DOOR-TO-REPORT TIME (MINUTES) | 35.68 | 37.05 | 29.30 | < 45 AMERICAN STROKE ASSOCIATION |
| | MEDIAN DOOR-TO-NEEDLE TIME (MINUTES) | 32.34 | 35.01 | 40.74 | < 60 AMERICAN HEART ASSOCIATION |
| | MEDIAN LENGTH OF STAY OF ISCHEMIC STROKE PATIENTS (DAYS) | 5.79 | 5.67 | 4.05 | |
| | MORTALITY OF ISCHEMIC STROKE INPATIENTS (%) | 6.85% | 5.64% | 9.09% | |

Source: SINHA/Anahp.

Congestive Heart Failure

Known as CHF, this pathology prevents blood from being pumped as much and as frequently as necessary for human body to properly operate.

In Brazil, data from DataSus in 2016 reported 28,777 deaths related to this disease, identified as ICD I50 (heart failure).

The results of Anahp hospitals (Table 3) show that the Median length of stay of CHF patients was 6.72 days, with mortality rate of 5.26% in 2018.

The utilization of ACE inhibitors (angiotensin converting enzyme)/ ARA (angiotensin receptor antagonist) and beta-blockers, according to the Brazilian Society of Cardiology, reduces mortality and morbidity in patients with heart failure and left ventricle systolic dysfunction.

In 2018, the utilization rate of these agents was 88.41% and 94.29%, respectively. The standard deviation for these indicators was 17.40% for Utilization rate of ACEI/ ARA in patients with CHF at discharge and 10.09% for Beta-blockers at discharge of eligible patients with CHF.



TABLE 3

Congestive Heart Failure

| SELECTED PATHOLOGIES | INDICATORS | 2017 (AVERAGE ANAHP HOSPITALS) | 2018 (AVERAGE ANAHP HOSPITALS) | STANDARD DEVIATION 2018 |
|-----------------------------|---------------------------------------------------------------------|--------------------------------------|--------------------------------------|-------------------------------|
| CONGESTIVE HEART FAILURE | MEAN LENGTH OF STAY CHF PATIENTS (DAYS) | 7.56 | 6.72 | 3.72 |
| | MORTALITY OF CHF INPATIENTS (%) | 7.49% | 5.26% | 7.45% |
| | RATE OF ACEI OR ARA UTILIZATION AT DISCHARGE FOR CHF PATIENTS (%) | 89.43% | 88.41% | 17.40% |
| | RATE OF BETA-BLOCKER AT DISCHARGE IN ELIGIBLE PATIENTS WITH CHF (%) | 93.29% | 94.29% | 10.09% |

Source: SINHA/Anahp.

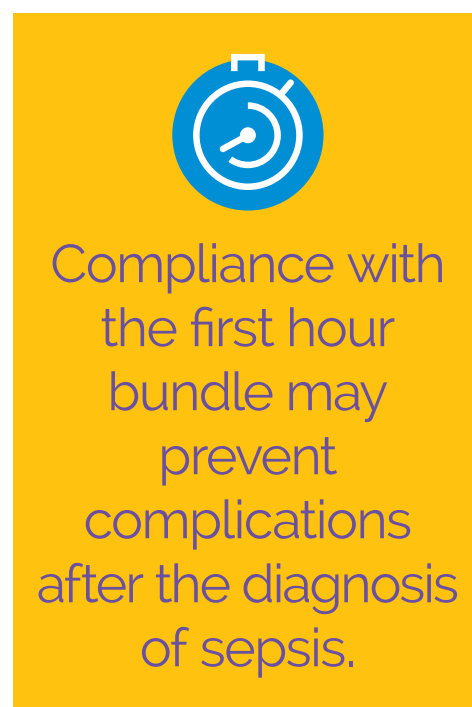
Sepsis

Sepsis is a life-threatening organic dysfunction caused by deregulated response of the body to an infection. According to Instituto Latino Americano de Sepse (ILAS), a protocol should be implemented due to high prevalence, high morbidity and mortality rates and high cost related to treatment.

The first hour bundle includes a series of actions that the hospital should adopt up to one hour after the diagnosis, to minimize the risks to the patient. The actions involve collection of arterial lactate, peripheral and central indwelling or short-term catheter collection for blood culture, and

antibiotic administration.

In 2018, compliance with the first hour bundle among Anahp hospitals was 80.67% for patients older than 18 years and 68.86% for patients aged younger than 18 years. In turn, the rate of antibiotics within the first hour from diagnosis was 86.72% and 88.04%, respectively (Table 4). The median length of stay for sepsis was 8.59 days for patients over 18 years and 7.62 days for patients younger than 18 years in 2018. The lethality rate of the disease was 16.24% (≥ 18 years) and 8.04% (younger than 18) among Anahp hospitals in the same year.



| TABLE 4 | | Community-acquired sepsis | | | |
|------------------------|------------------------------------------------------|---------------------------|--------|--------------------|--|
| SELECTED PATHOLOGIES | INDICATORS | 2017 | 2018 | STANDARD DEVIATION | |
| SEPSIS \geq 18 YEARS | COMPLIANCE WITH FIRST HOUR BUNDLE (%) | 78.81% | 80.67% | 22.64% | |
| | MEDIAN LENGTH OF STAY OF SEPSIS PATIENTS (DAYS) | 9.45 | 8.59 | 5.72 | |
| | RATE OF ANTIBIOTICS WITHIN 1 HOUR FROM DIAGNOSIS (%) | 82.69% | 86.72% | 15.60% | |
| | MORTALITY RATE (%) | 21.24% | 16.24% | 15.36% | |
| SEPSIS < 18 YEARS | COMPLIANCE WITH FIRST HOUR BUNDLE (%) | 72.22% | 68.86% | 39.80% | |
| | MEDIAN LENGTH OF STAY OF SEPSIS PATIENTS (DAYS) | 15.64 | 7.62 | 5.79 | |
| | RATE OF ANTIBIOTICS WITHIN 1 HOUR FROM DIAGNOSIS (%) | 81.27% | 88.04% | 20.15% | |
| | MORTALITY RATE (%) | 14.01% | 8.04% | 13.96% | |

Source: SINHA/Anahp.





Home care

Hospital as an integrator of healthcare system.

Considering the change of population profile, which includes increased number of elderly patients, constant integration between hospitals that provide critical care support and home care services that offer stable patients a routine of care and rehabilitation becomes increasingly necessary.

Considering the change of population profile, which includes increased number of elderly patients with more chronic conditions, constant integration between hospitals – that provide critical care support – and home care services – that offer patients a routine of care and rehabilitation in stable cases – has become increasingly necessary.

Moreover, the strong change in patient care concept, going from providing care to providing an experience – requires all players to transform the service into a positive experience during the entire process. Since 2017, Anahp has collected performance information from its home care members. This chapter presents the results obtained until 2018.

Home care

Home care is characterized by the provision of services to patients at home, taking into consideration the family structure and home infrastructure.

There has been significant increase in Home Care Services due to health resources optimization, maximization of hospital beds and safe transition from hospital to home. It has contributed to further sustainability of healthcare system and reduced the need for readmissions, especially among patients with chronic diseases or stable acute disorders.

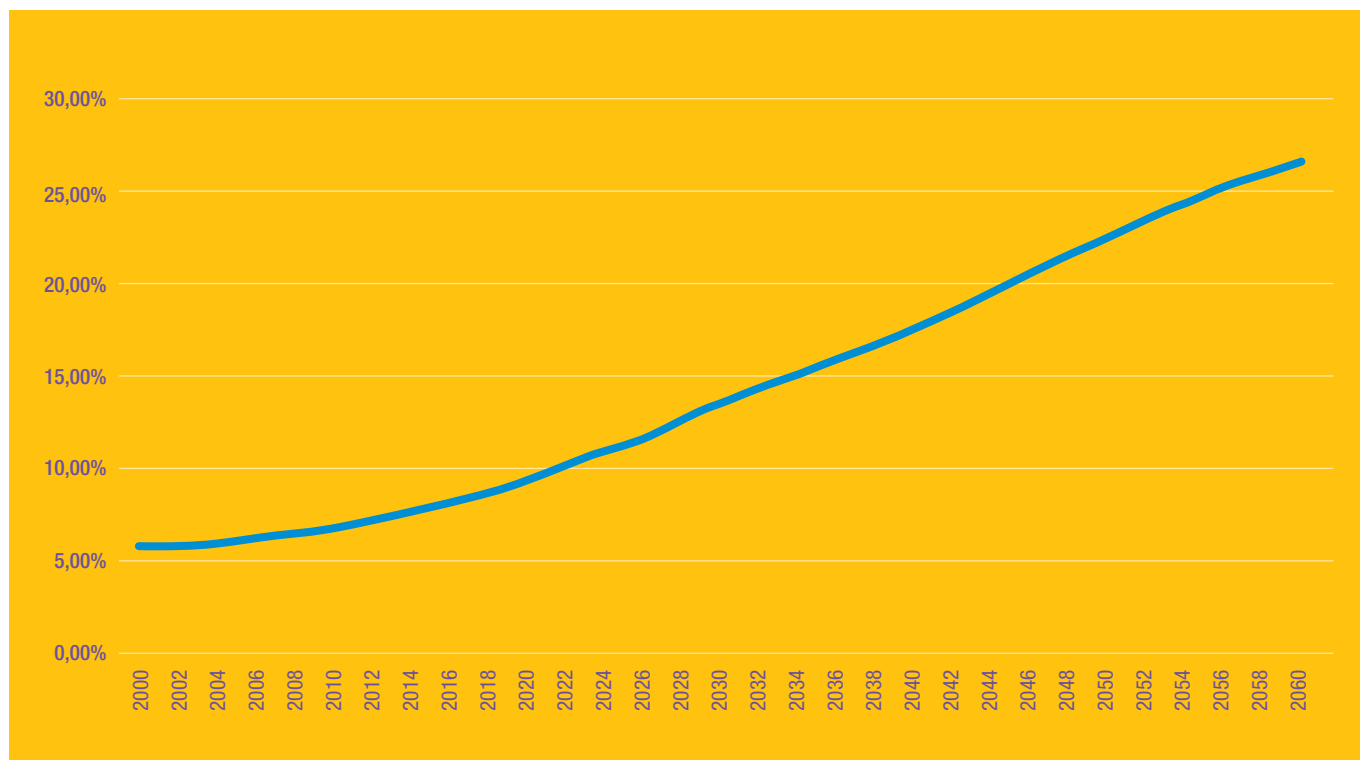
Considering the change of population profile, which includes increased number of elderly patients with more chronic conditions, constant integration between hospitals – that provide critical care support – and home care services – that offer patients a routine of care and rehabilitation in stable cases – has become increasing necessary. According to estimates of IBGE – Brazilian Institute of Geography and Statistics – by 2060 elderly people will comprise 27% of the total population in Brazil.



Changes in population profile have led to the necessary and growing integration between hospitals and home care services.

GRAPH 1

People aged over 65 years or more (% in the population) Brazil
2000 – 2060



Source: IBGE.

Home care is essential to reduce length of hospital stay and to maximize rehabilitation of patients and treatment of diseases that require continuous care.

According to data from *Pesquisa Melhor em Casa* (Better at Home)

by Ministry of Health, in 2017 SUS served about 30,000 patients at their homes.¹

In view of that, in 2015 Anahp created a Home Care Work Group to provide benchmark and disseminate best practices among members. In

2017 it added to SINHA platform of indicators the collection of data about home care performance.

Similarly to the other indicators, technical forms for standardized data collection were created for each indicator shown below (Table 1):

| TABLE 1 | | Operational indicators | |
|----------------------------------------------------------------|--------|------------------------|--|
| INDICATOR | 2017 | 2018 | |
| MEAN LENGTH OF STAY (DAYS) OF PATIENTS IN HOME HOSPITALIZATION | 259.35 | 351.85 | |
| DISCHARGE RATE | 9.81% | 14.15% | |
| MORTALITY RATE | 1.69% | 1.79% | |

Source: SINHA/Anahp

Having very different service descriptions, Home Hospitalization replaces or complements hospital interventions. Thus, the mean length of stay of patients in home hospitalization cannot be compared to hospital mean length of stay. In 2018, the mean length of stay of home hospitalization was 351 days and the discharge rate of these patients, which measures the percentage of patients that leave home hospitalization, was 14.15%.

In patients with stable health, mortality rates in home care tend to be higher – 1.79% in 2018. The indicator was stable comparing 2018 over 2017 – 1.69%. Home care is provided at patients' own houses and it should consider the specificities of having the family there and sometimes many caregivers, including the rules and technical norms required to provide safe care. The family plays a key role to ensure successful

care and transition of the patient back into the regular routine, whenever possible. Home hospitalization adopts some routines used at the hospitals, adapted to the home setting and adjusted to the specificities of the home care services provided. Thus, some indicators published before are being assessed and audited in 2019, reason why their numbers are not published in this section.

1. <http://portalarquivos2.saude.gov.br/images/pdf/2018/abril/13/Pesq-satisfacao-relatorio-3edicao.pdf>



INSTITUTIONAL PERFORMANCE

This section presents the analyses of economic and financial indicators, people management and sustainability of Anahp member hospitals

Executive Summary

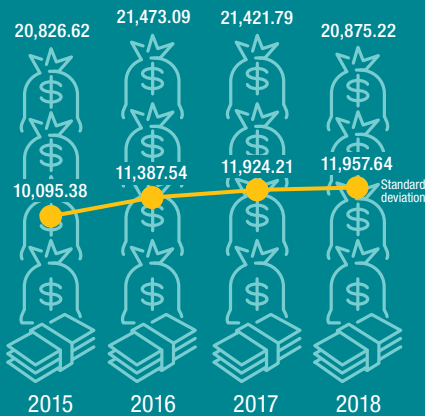
ECONOMIC-FINANCIAL MANAGEMENT

Despite decrease in average days of sales outstanding in hospitals, the denial rate has increased.

PEOPLE MANAGEMENT

NET REVENUE PER HOSPITAL DISCHARGE

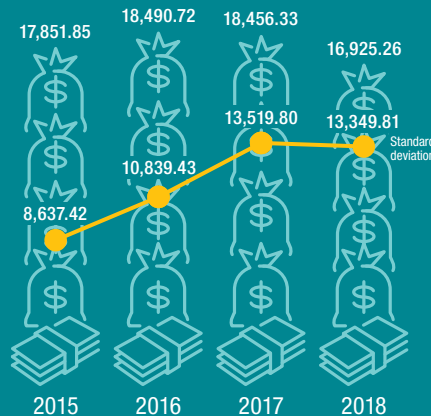
Actual variation (discounting inflation)



Source: SINHA/Anahp

TOTAL EXPENSES PER HOSPITAL DISCHARGE

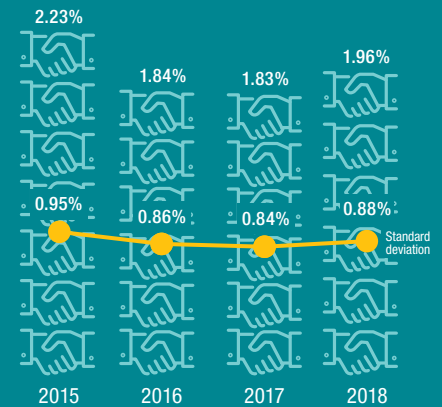
Actual variation (discounting inflation)



Source: SINHA/Anahp

HIRING RATE BY TOTAL HEADCOUNT

(%) – Average Anahp hospitals

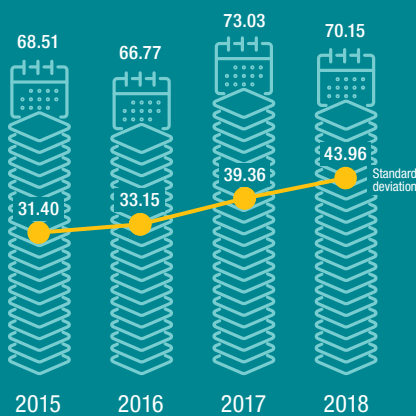


Source: SINHA/Anahp

AVERAGE DAYS OF SALES OUTSTANDING

(days) Average Anahp hospitals

The days of sales outstanding dropped 3 days in 2018

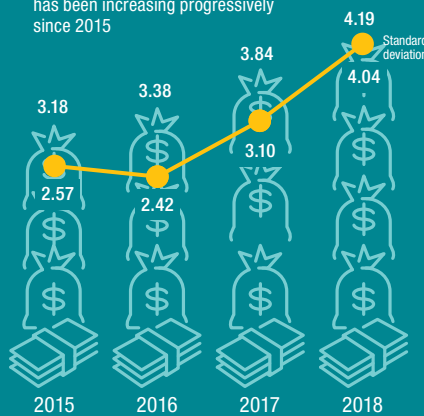


Source: SINHA/Anahp

DENIAL RATE

(% of net revenue) – Average Anahp hospitals

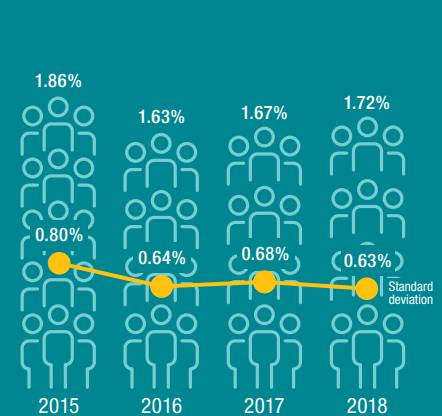
Denial rate (HMO refuses to pay) has been increasing progressively since 2015



Source: SINHA/Anahp

TURNOVER RATE

(%) – Average Anahp hospitals



Source: SINHA/Anahp

PEOPLE MANAGEMENT

The gradual recovery of job opportunities has been portrayed on the people management indicators



The hiring rate by total headcount has shown recovery trend after the third consecutive year of decrease



Increase in personnel turnover without increase in headcount confirms the onset of labor market recovery

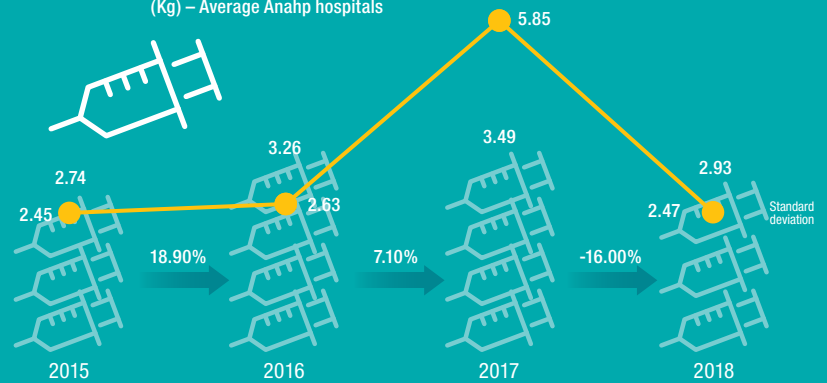
ENVIRONMENTAL SUSTAINABILITY

Average consumption of water, electrical power and waste in Anahp hospitals presented decrease in 2018



INFECTIOUS WASTE GENERATION PER PATIENT-DAY

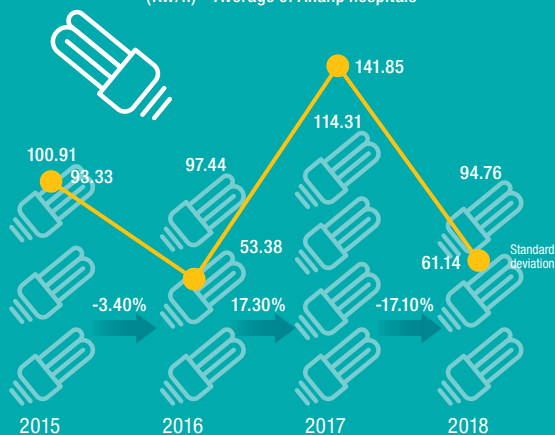
(Kg) – Average Anahp hospitals



Source: SINHA/Anahp

CONSUMPTION OF ELECTRICITY PER PATIENT-DAY

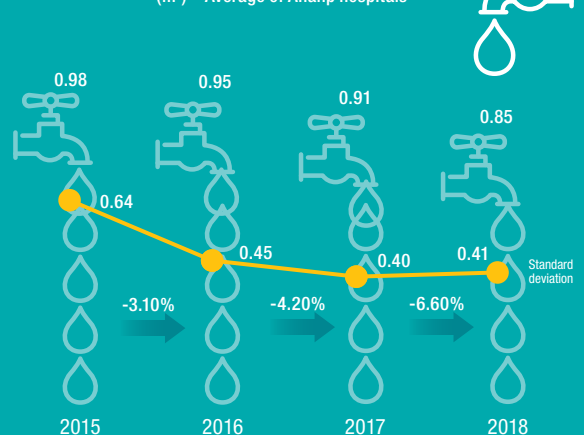
(Kw/h) – Average of Anahp hospitals



Source: SINHA/Anahp

CONSUMPTION OF WATER PER PATIENT-DAY

(m³) – Average of Anahp hospitals



Source: SINHA/Anahp

DISTRIBUTION OF GROSS REVENUE BY PAYING SOURCE BY REGION – 2018

| TYPE OF REVENUE | South | Southeast | Northeast/Center-West | Northeast | Brazil |
|------------------------|--------|-----------|-----------------------|-----------|--------|
| Healthcare Plans | 86.21% | 94.43% | 96.65% | 77.76% | 90.97% |
| Medical Cooperatives | 57.17% | 20.95% | 30.70% | 22.40% | 31.80% |
| Self-managed Plans | 17.86% | 26.34% | 41.17% | 50.74% | 27.16% |
| Insurance Plans | 11.13% | 36.61% | 17.16% | 16.38% | 26.91% |
| Health Management Org. | 4.33% | 15.72% | 10.60% | 10.21% | 12.49% |
| Philanthropy | 9.51% | 0.17% | 0.03% | 0.12% | 1.52% |
| International Plans | 0.01% | 0.21% | 0.33% | 0.18% | 0.12% |
| SUS | 8.72% | 1.61% | 0.14% | 18.76% | 4.65% |
| Out-of-pocket self-pay | 3.83% | 3.39% | 2.78% | 3.18% | 3.45% |
| Other payers | 1.24% | 0.57% | 0.43% | 0.31% | 0.92% |

Source: SINHA/Anahp





Economic-financial management

Expense management improvement is the pillar of the financial balance of Anahp hospitals.

Expense control helps explain the margin balance in 2018.

After a drop in EBITDA margin, Anahp member hospitals found balance by focusing on controlling expenses and waste. In addition to the significantly long periods to collect from healthcare management organizations, hospitals still struggle to attain

financial balance because of the growing denials index (payment refusals by HMO). In other words, hospitals' difficulty to receive payments from HMO has a negative impact on their operations, reducing revenues and creating instability in cash flow.

Economic-financial performance of Anahp hospitals

Hospital revenue and expenses are the combination between the quantity and type of care provided to patients, customer portfolio profile, costs related to the provision and improvement of services, as well as the maintenance and expansion of the hospital's facilities.

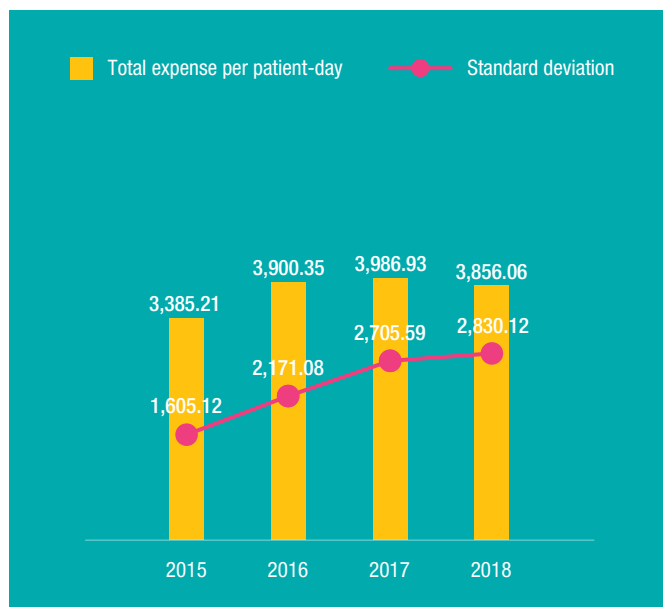
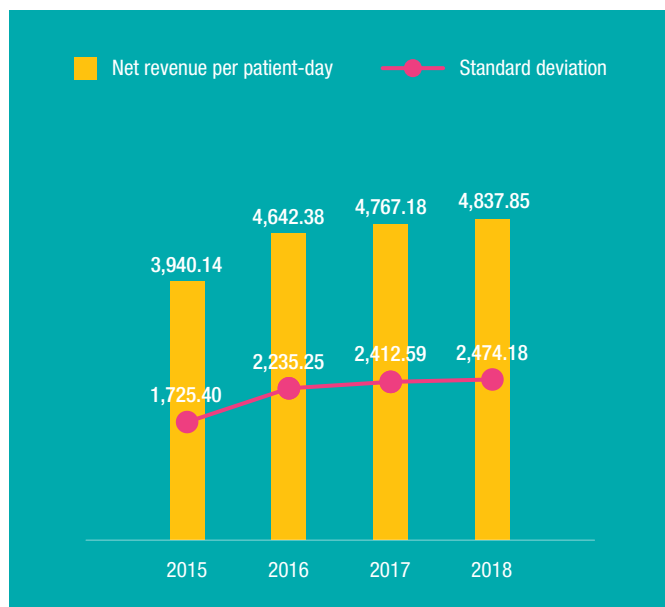
In 2018, the net revenue per patient-day grew 1.48%, while the total expense per patient-day dropped 3.28%¹ (Graph 1).

When we discount inflation (measured by IPCA), we see an actual drop of 0.2% in net revenue per patient-day and 0.7% in total expenses per patient-day in 2018 (Graph 2).



GRAPH 1

Net revenue and total expense per patient-day (R\$)
Average of Anahp hospitals



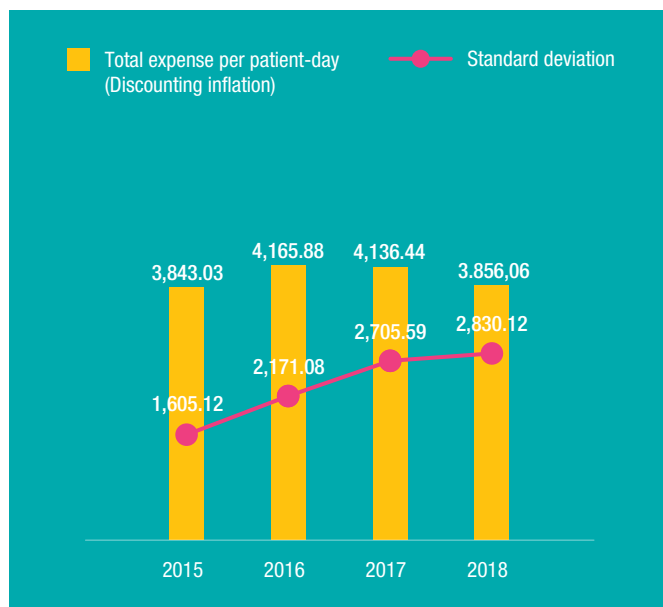
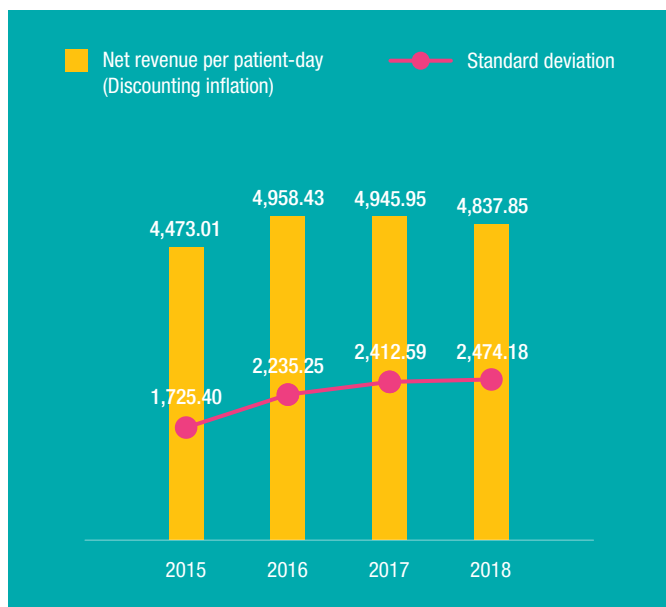
Source: SINHA/Anahp.

1. Net revenue is formed by gross revenue after the payment of taxes due over revenue and denied and unpaid amounts. Total expenditures, in turn, include: personnel; support and logistics contracts; technical and operational contracts; medications, materials, implants and special materials; medical gas; other hospital supplies; maintenance and technical assistance; utilities (electricity, water and prices controlled by the government); financial expenses (including interest in loans); depreciation; and other operational expenses.



GRAPH 2

Net revenue and total expense per patient-day (R\$ 2018)
Actual variation (discounting inflation) – Average of Anahp hospitals




Source: SINHA/Anahp.

Now, when we analyze the indicators by hospital discharge, the results are similar to indicators by patient-day. Net revenue per hospital discharge grew 1.10% in 2018, whereas total expense per hospital discharge dropped 4.86% in the same period (Graph 3).

When we discount inflation, we note an actual drop of 2.55% in net revenue per hospital discharge and 8.30% in expense per hospital discharge (Graph 4).

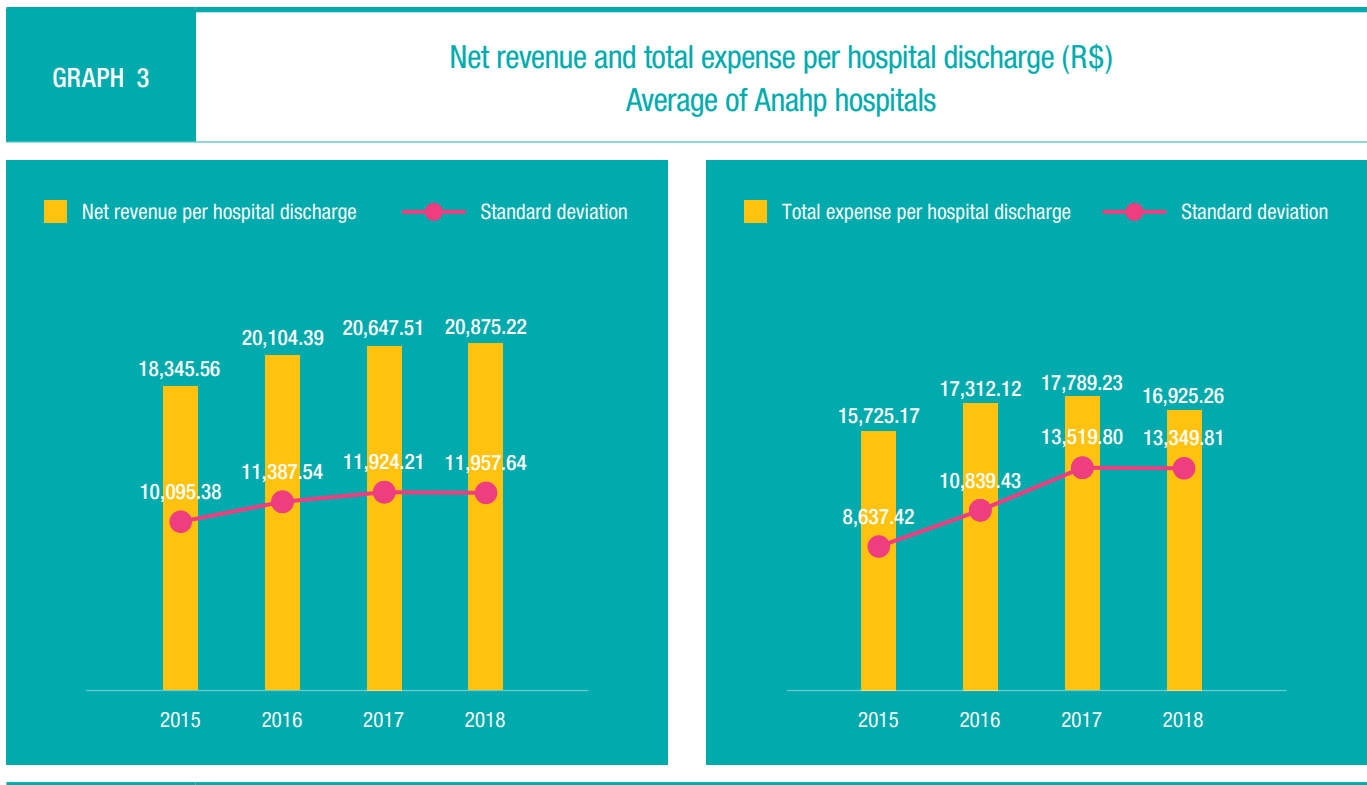
Considering this indicator, the industry is still far from the level reached between 2014 and 2016. The net revenue of Anahp hospitals, measured both in relation to patient-day and in relation to hospital discharges, has been growing below the average adjustment of health plans (11.17% in 2018) and indicators such as the Variation of



The average EBITDA margin of Anahp hospitals was 13.65% in 2018.

Medical-Hospital Costs – VCMH of the Institute of Supplemental Health Studies – IESS, which measures the evolution of health costs (a 16.90% high in 2017).

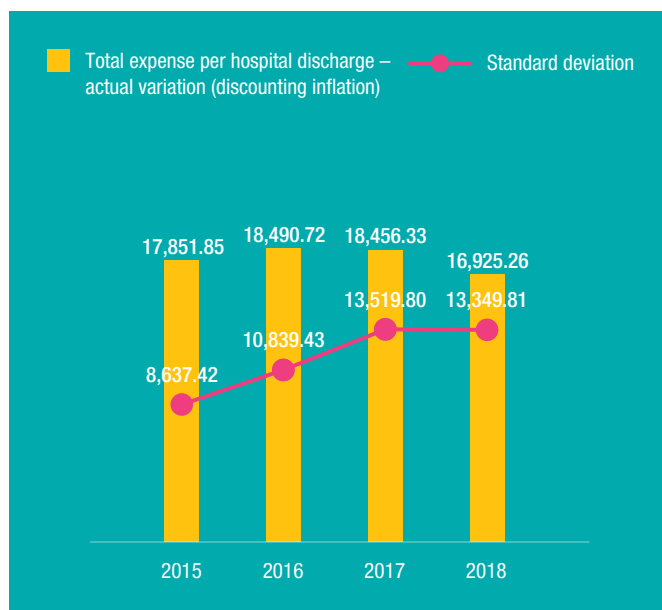
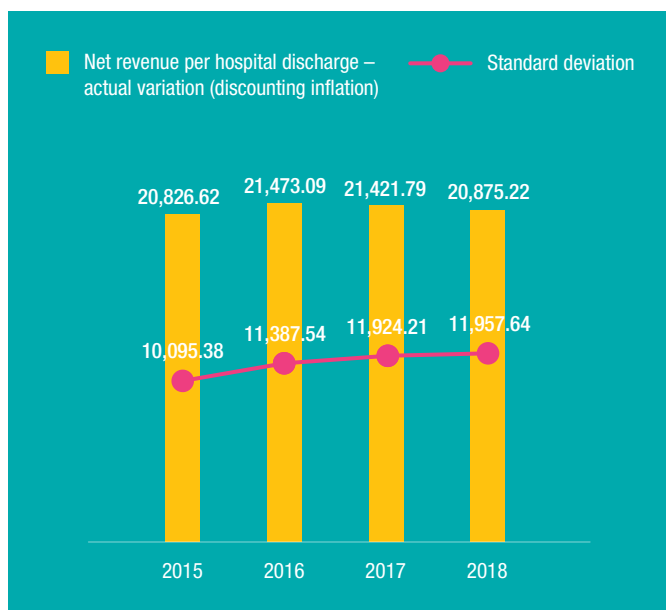
As hospitals controlled expenses, the average EBITDA margin of Anahp hospitals remained stable between 2017 and 2018 – 13.13% to 13.65% respectively (Graph 5).



Source: SINHA/Anahp.

GRAPH 4

Net revenue and total expense per hospital discharge (R\$ 2018)
Actual variation (discounting inflation) – Average of Anahp hospitals



Source: SINHA/Anahp.

GRAPH 5

EBITDA margin (%)
Average of Anahp hospitals



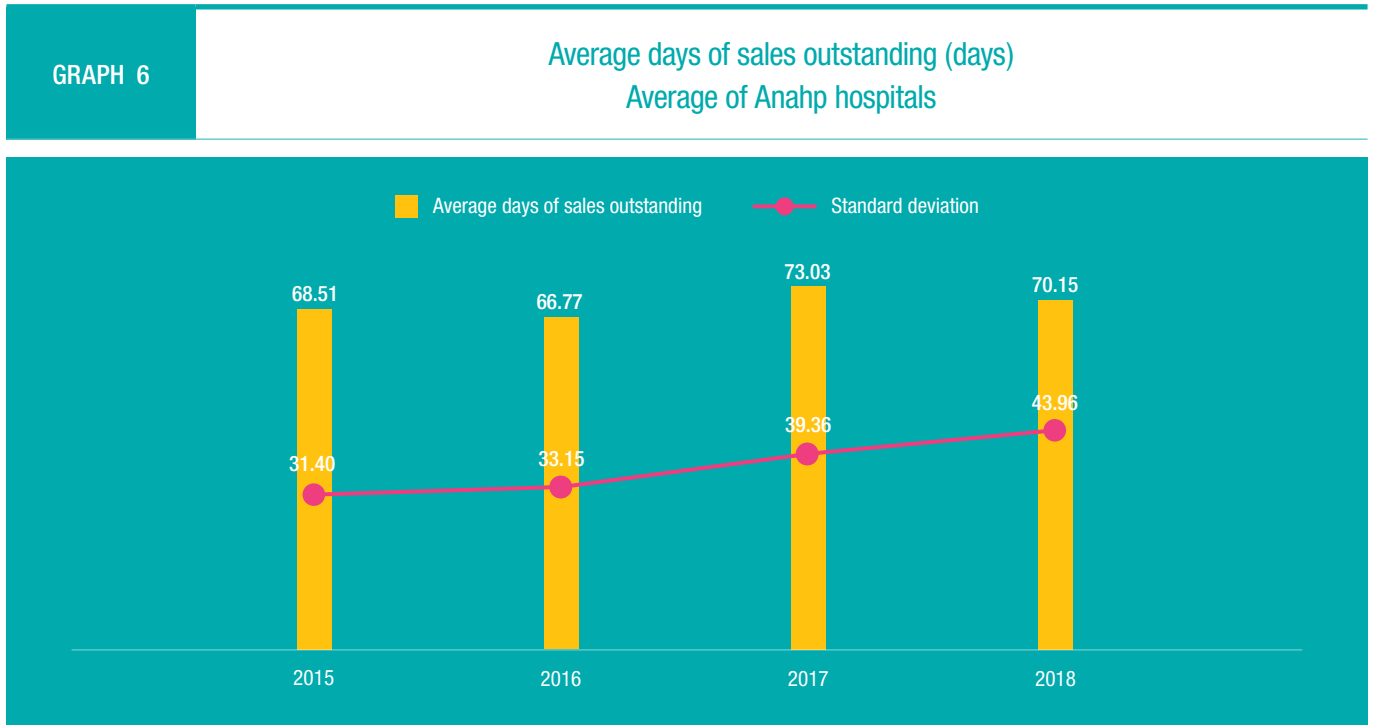
Source: SINHA/Anahp.

Denials and days of sales outstanding

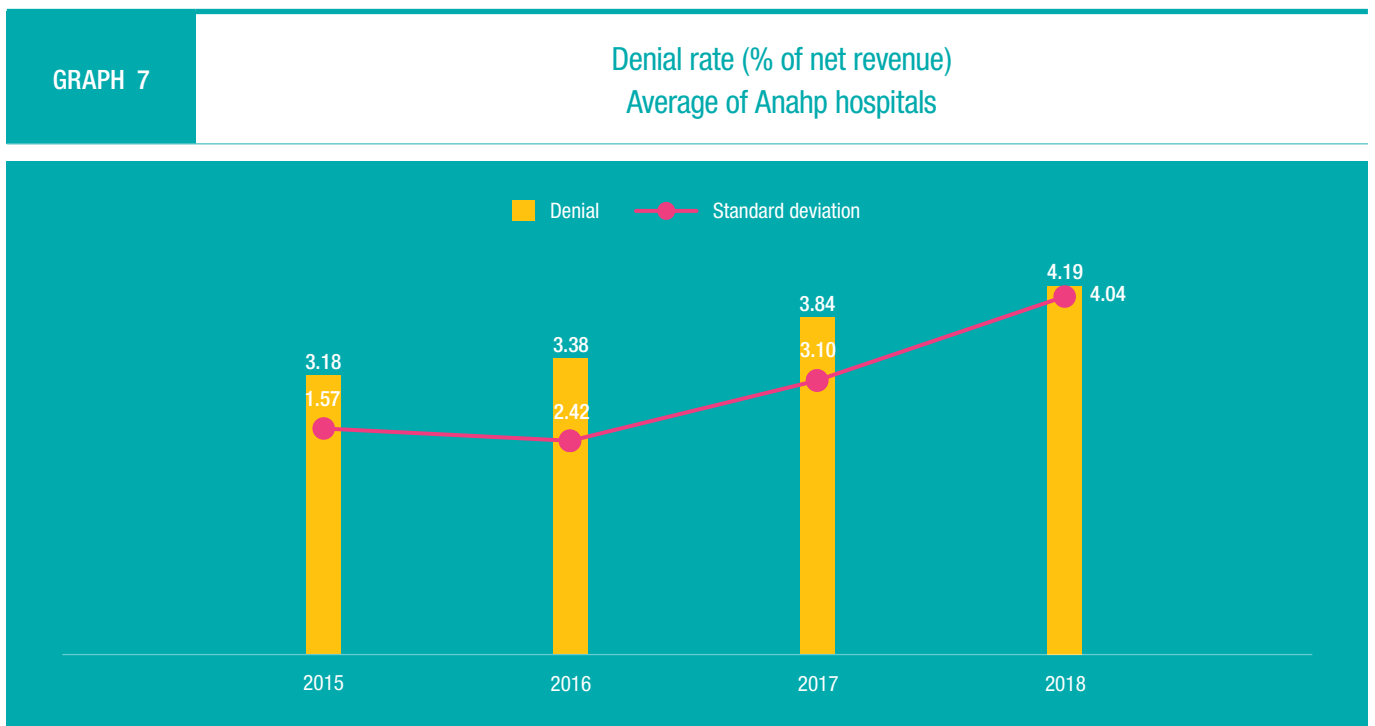
Two very important indicators for Anahp members and their financial cycles are days of sales outstanding and denial rates (payment refusal by

HMOs). Even though the days of sales outstanding went down from 73.03 days in 2017 to 70.15 days in 2018 (Graph 6), the denial rate, measured

as a share of net revenue, grew from 3.84% to 4.19% (Graph 7), negatively impacting the hospitals.



Source: SINHA/Anahp.



Source: SINHA/Anahp.



Even though the days of sales outstanding decreased three days in 2018, denial rate increased and reached 4.19%, which had a negative impact on hospitals.

Expenses profile

Expenses with labor, including both formal employees and technical service providers, accounted for more than 50% of the expenses of Anahp hospitals in 2018. These lines, incidentally, represented the two main drivers of cost pressure for hospitals in 2018. The share of personnel cost (expense with employees) remained stable, accounting for 37.32% in 2018. The share of financial expense contracts, in turn, has presented a downward trend, from 2.44% in 2017 to 2.06% in 2018.

TABLE 1

Distribution of total expenses according to type of expense
Average of Anahp hospitals

| TYPE OF EXPENSES | 2015 | 2016 | 2017 | 2018 | STANDARD DEVIATION 2018 |
|-------------------------------------|--------|--------|--------|--------|-------------------------|
| COST WITH PERSONNEL | 36.25% | 36.18% | 37.44% | 37.32% | 12.03% |
| TECHNICAL AND OPERATIONAL CONTRACTS | 12.97% | 13.04% | 14.01% | 13.72% | 8.73% |
| MEDICATION | 10.99% | 10.81% | 10.73% | 10.79% | 4.35% |
| IMPLANTS AND SPECIAL MATERIALS | 8.21% | 8.45% | 7.83% | 7.18% | 5.36% |
| OTHER EXPENSES | 6.21% | 6.92% | 6.61% | 8.18% | 8.52% |
| MATERIALS | 6.50% | 6.20% | 6.57% | 6.37% | 2.77% |
| SUPPORT AND LOGISTIC CONTRACTS | 5.34% | 4.87% | 3.98% | 4.27% | 3.30% |
| OTHER SUPPLIES | 2.99% | 3.18% | 3.24% | 2.77% | 2.02% |
| DEPRECIATION | 3.00% | 2.91% | 2.83% | 2.87% | 1.22% |
| FINANCIAL EXPENSES | 2.80% | 3.05% | 2.44% | 2.06% | 2.35% |
| UTILITIES | 2.43% | 2.30% | 2.04% | 2.24% | 1.32% |
| MAINTENANCE AND SERVICES | 1.91% | 1.75% | 1.96% | 1.91% | 1.21% |
| MEDICINAL GASES | 0.39% | 0.34% | 0.31% | 0.32% | 0.31% |

Source: SINHA/Anahp.

Expenses with implants and special materials were proportionally lower than in 2015, going from 8.21% of total expenses to 7.18% in 2018.

Revenue profile

Medications accounted for 24.66% of the revenues of Anahp hospitals in 2018. Materials accounted for 20.36%; daily fees and rates, 21.65%; other operational revenues, 19.01%; Orthoses, Prostheses, Implants and Special Materials, 8.30%; medical gases, 2.30%; other revenues from services, 3.39%; and lastly, donations, 0.34%.

In 2018, 90.97% of the revenues of Anahp hospitals came from health plan providers. Of that total, 31.80% came from medical cooperative groups, 27.16% from self-managed plans, 26.91% from insurance companies, 12.49% from health management organizations, 1.52% from philanthropy, and 0.12% from international plans.

SUS (Brazilian Unified Healthcare System) provided 4.65% of the revenues; 3.45% was out-of-pocket; and 0.92% came from other payers.



TABLE 2

Distribution of gross revenue per type
Average of Anahp hospitals

| TYPE OF REVENUE | 2015 | 2016 | 2017 | 2018 | STANDARD DEVIATION 2018 |
|--------------------------------|--------|--------|--------|--------|-------------------------|
| MEDICATIONS | 24.25% | 23.66% | 25.13% | 24.66% | 10.22% |
| MATERIALS | 18.32% | 21.34% | 22.16% | 20.36% | 7.41% |
| DAILY FEES AND RATES | 21.33% | 19.31% | 20.92% | 21.65% | 8.33% |
| SADT (DIAGNOSTIC SERVICES) | 12.50% | 12.62% | – | – | – |
| OTHER OPERATIONAL REVENUES | 11.66% | 12.03% | 18.10% | 19.01% | 11.49% |
| IMPLANTS AND SPECIAL MATERIALS | 9.18% | 8.68% | 8.66% | 8.30% | 4.82% |
| MEDICINAL GASES | 2.76% | 2.36% | 2.49% | 2.30% | 1.45% |
| OTHER REVENUES FROM SERVICES | – | – | 2.11% | 3.39% | 4.72% |
| DONATIONS | – | – | 0.43% | 0.34% | 0.87% |

Source: SINHA/Anahp.



TABLE 3

Distribution of gross revenue per payer
Average of Anahp hospitals

| TYPE OF REVENUE | 2015 | 2016 | 2017 | 2018 | STANDARD DEVIATION 2018 |
|-------------------------------------------|--------|--------|--------|--------|-------------------------|
| HEALTH PLANS | 88.92% | 91.70% | 90.27% | 90.97% | 10.08% |
| MEDICAL COOPERATIVE GROUPS | 35.56% | 34.10% | 31.66% | 31.80% | 24.84% |
| SELF-MANAGED PLANS | 27.30% | 26.04% | 27.86% | 27.16% | 15.99% |
| INSURANCE COMPANIES | 23.96% | 25.85% | 26.53% | 26.91% | 18.95% |
| HEALTH MANAGEMENT ORGANIZATIONS | 12.72% | 13.36% | 13.19% | 12.49% | 10.14% |
| PHILANTHROPY | 0.17% | 0.28% | 0.61% | 1.52% | 4.98% |
| INTERNATIONAL PLANS | 0.28% | 0.38% | 0.16% | 0.12% | 0.36% |
| SUS (BRAZILIAN UNIFIED HEALTHCARE SYSTEM) | 4.85% | 3.75% | 5.32% | 4.65% | 8.62% |
| OUT-OF-POCKET | 6.22% | 4.55% | 3.70% | 3.45% | 2.02% |
| OTHER PAYERS | 0.00% | 0.00% | 0.72% | 0.92% | 1.56% |

Source: SINHA/Anahp.

Regional characteristics of Anahp hospitals

Since 2017, improvements in SINHA platform have made it possible to make several comparisons, including per Anahp region. We have analyzed the relationship between the profile of members of medical-hospital plans and the revenues of Anahp hospitals per payer, per region, as well as the possible impacts of these profiles on the revenue of hospitals. In order to have a relevant sample, we grouped hospitals of the regions North and Center-West. As already addressed in the section Market Profile, when we consider the different types of health plan, we note that in regions South and North/ Center-West,

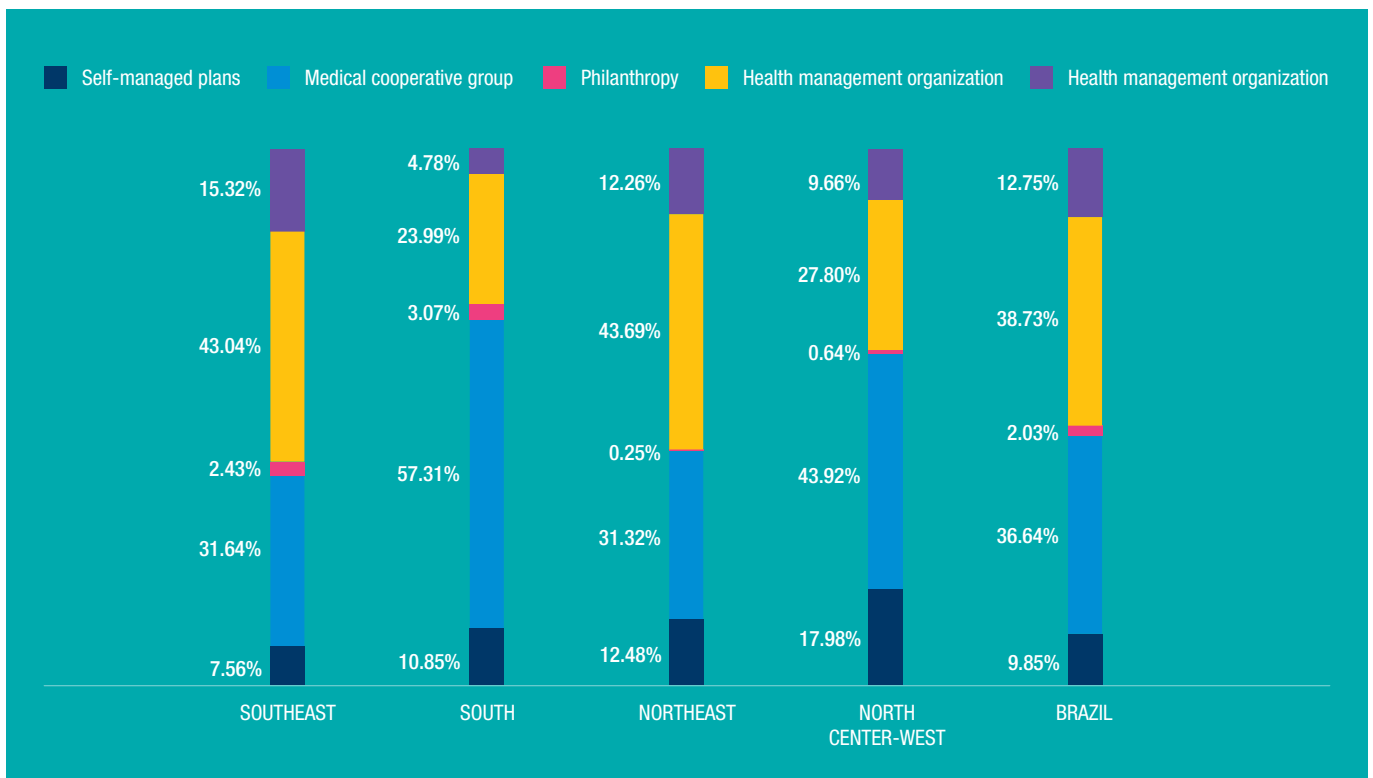
the leading modality, in number of members, is the medical cooperative group (Graph 8). According to ANS data, in the hospitals in the South region, 23.99% of health plan members are in HMOs, and 86.21% of overall revenues come from health plans – 57.17% of which come from medical cooperative groups, followed by 17.86% of self-managed plans. In the Southeast region, where 43.04% of the members belong to HMOs and 31.64% belong to medical cooperative groups, most of the revenues of Anahp hospitals come from plans of insurance companies – 36.61%.



Economic-financial results varied depending on the region.

GRAPH 8

Distribution of members according to type and region
Dec 2018



Source: ANS (on 06/Feb/2019). Does not include dental care-only providers.

TABLE 4

Distribution of gross revenue per payer, per region
Average of Anahp hospitals | 2018

| TYPE OF REVENUE | SOUTH | SOUTHEAST | NORTH / CENTER-WEST | NORTHEAST | BRAZIL |
|-------------------------------------|--------|-----------|---------------------|-----------|--------|
| HEALTH PLANS | 86.21% | 94.43% | 96.65% | 77.76% | 90.97% |
| MEDICAL COOPERATIVE GROUPS | 57.17% | 20.95% | 30.70% | 22.40% | 31.80% |
| SELF-MANAGED PLANS | 17.86% | 26.34% | 41.17% | 50.74% | 27.16% |
| INSURANCE COMPANIES | 11.13% | 36.61% | 17.16% | 16.38% | 26.91% |
| HEALTHCARE MANAGEMENT ORGANIZATIONS | 4.33% | 15.72% | 10.60% | 10.21% | 12.49% |
| PHILANTHROPY | 9.51% | 0.17% | 0.03% | 0.12% | 1.52% |
| INTERNATIONAL PLANS | 0.01% | 0.21% | 0.33% | 0.18% | 0.12% |
| SUS | 8.72% | 1.61% | 0.14% | 18.76% | 4.65% |
| OUT-OF-POCKET | 3.83% | 3.39% | 2.78% | 3.18% | 3.45% |
| OTHER PAYERS | 1.24% | 0.57% | 0.43% | 0.31% | 0.92% |

Source: SINHA/Anahp.



In regions North/Center-West and Northeast, considering Anahp hospitals, self-managed plans were the main payers, in contrast with the ratio of health plan members in the respective ANS regions. It is also noteworthy that in hospitals

in the Northeast region, SUS share (18.76%) is very significant, well above other regions. As to net revenue per hospital discharge, it is possible to see a sharp difference between hospitals in each region, as suggested

by standard deviations. Below, it is possible to see the high discrepancy in the data from the Southeast region, both in relation to Brazil's average and in the standard deviation of the region (Graph 9).

GRAPH 9

Net revenue per hospital discharge (R\$), per region
Average of Anahp hospitals



Source: SINHA/Anahp.

Overall revenue of Anahp hospitals

In 2018, the gross revenue of the set of Anahp hospitals reached R\$ 38.6 billion.

For this issue of Observatório Anahp, as well as in others, we used data from all Anahp hospitals from December each year, so that the growth reflects both the variation in each hospital's total revenue and the increase in the number of members.

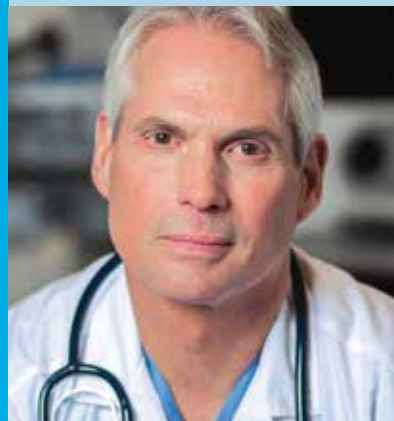


Gross revenues of Anahp hospitals reached R\$ 38.6 billion in 2018.

INOVANDO COM FOCO EM PACIENTES, MÉDICOS E HOSPITAIS

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People management

Cost reduction pressure controls people management indicators.

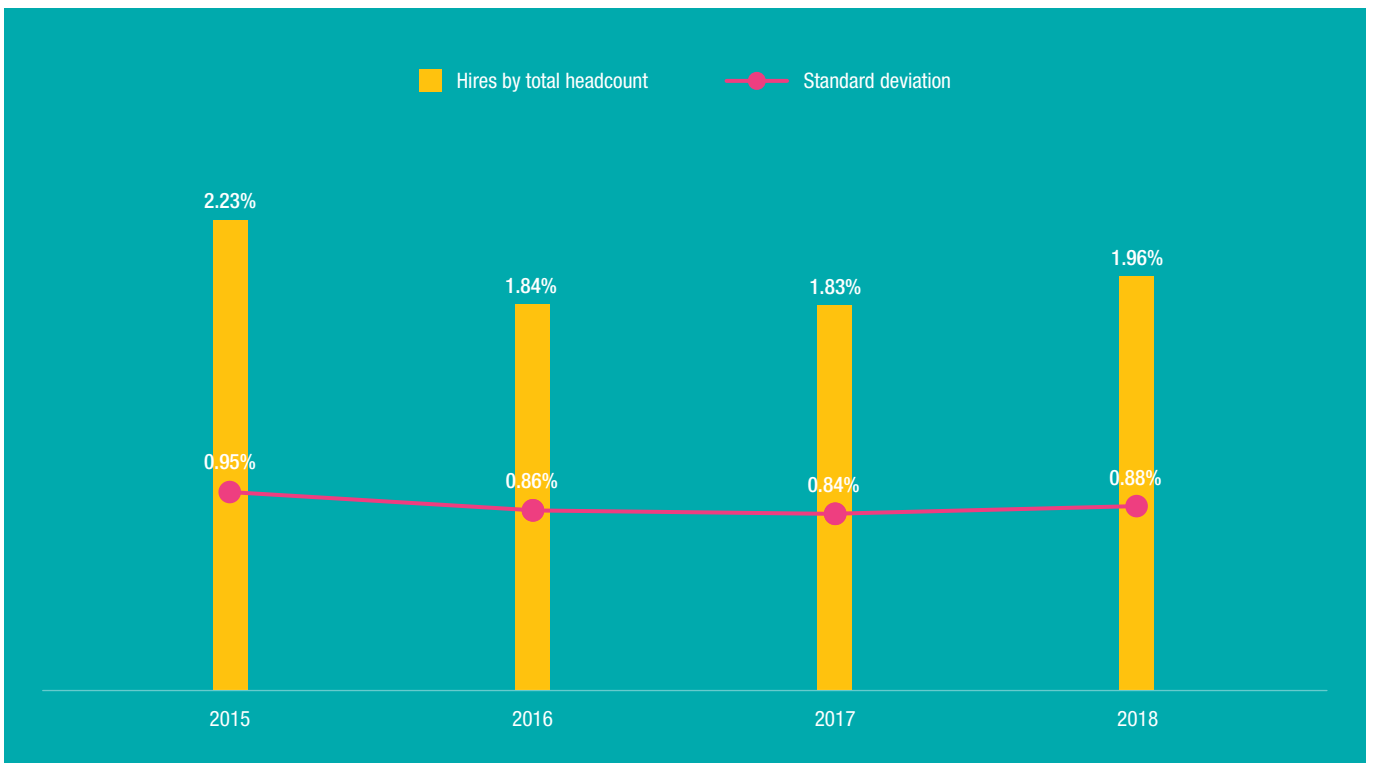
Gradual recovery of jobs in the country starts to show positive evolution in the hospital employment market.

The economic-financial crisis has posed a specific challenge to the hospital industry concerning people management, as the need to control expenses cannot at any account impact patients and quality of care. As already mentioned in the first part of this publication (Market Profile), healthcare industry, especially the hospital segment, has stood out in creating jobs for the past three years in the country.

The gradual recovery of job opportunities has been portrayed on the people management indicators presented by this edition. Moreover, as shown in the previous section (Economic-Financial Management), personnel expenditures, which amount to almost half of hospital expenses, were one of the main pressure points over costs for most hospital last year, which may help to explain the modest increase in hiring.

GRAPH 1

Rate of hires by total headcount (%)
Average Anahp hospitals



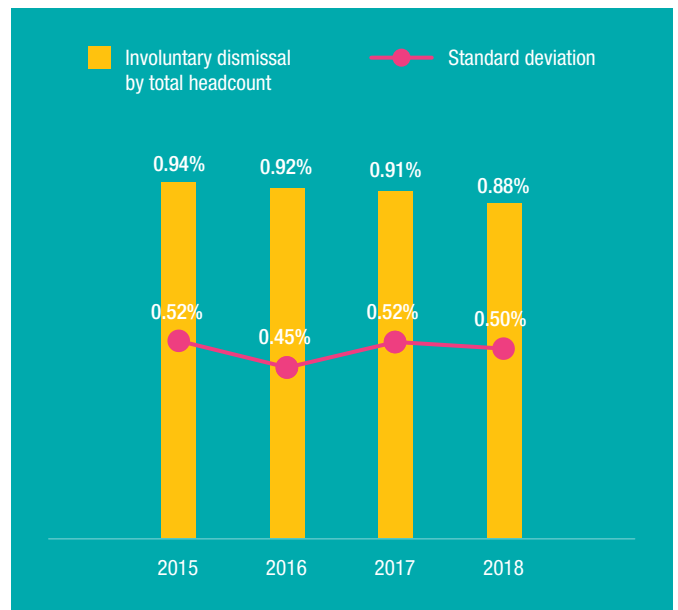
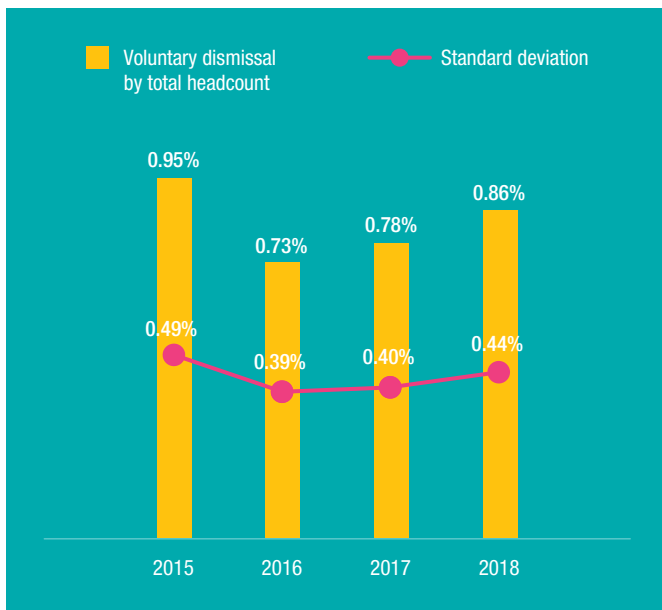
Source: SINHA/Anahp.



In turn, the indicator of voluntary dismissal has been decreasing since 2017, which confirms the results of the indicator presented above. It may be the first indication of marketplace recovery in the hospital setting. The rate of involuntary dismissal reached 0.88% and general dismissal rate was 1.74% in 2018 (Graph 2 and 3). Regardless, the numbers are still much lower if compared to 2015.

GRAPH 2

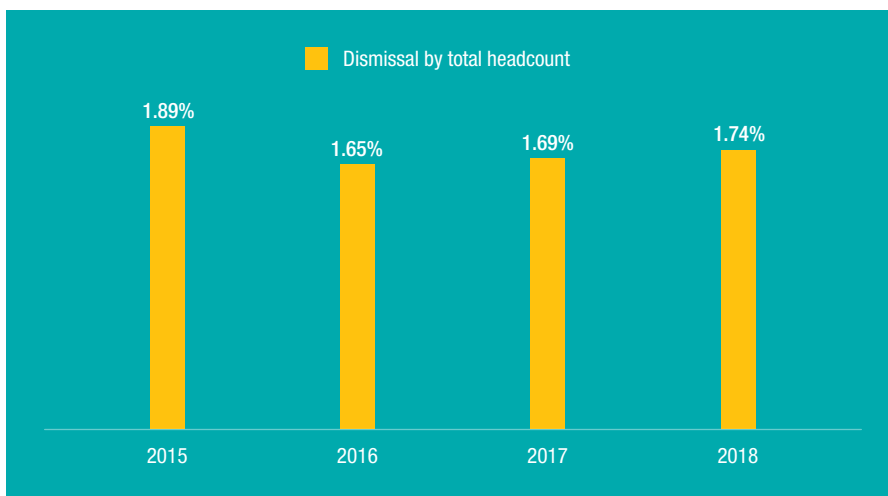
Rate of hires by total headcount (%)
Average Anahp hospitals



Source: SINHA/Anahp.

GRAPH 3

Rate of dismissals by total headcount (%)
Average Anahp hospitals



Source: SINHA/Anahp.



This chapter brings signs of industry recovery in 2018.

The turnover rate is a challenge for operational management of healthcare providers, because it affects the process of inclusion, training and qualification of new professionals. Considering the difficulties and involved costs, it is necessary to define a program to retain professionals and use internally those that are qualified and want to move to a different position or area.

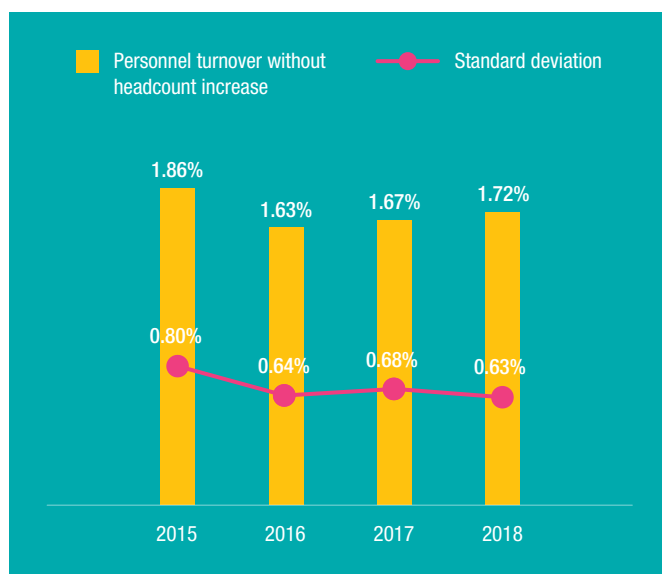
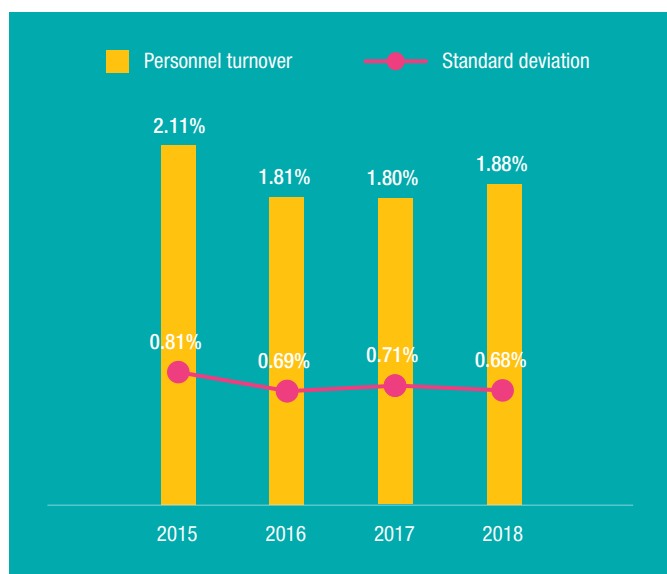
The people turnover is the relation between the hiring (by increase in personnel or replacement) and dismissal and total headcount (active personnel) in a specific period. Thus, it comprises the total turnover of the headcount of the organizations.

During periods of crisis, turnover tends to decrease due to the reduction of job generation and the replacement of employees. It is also affected by the lower likelihood of workers to leave their job, because the market is less active and people develop more risk aversion. It has also been possible to identify the signs of healthcare industry recovery since 2018. Turnover rate without headcount increase went up from 1.67% to 1.72% in 2018, due to small increase in number of voluntary dismissals (Graph 4).



GRAPH 4

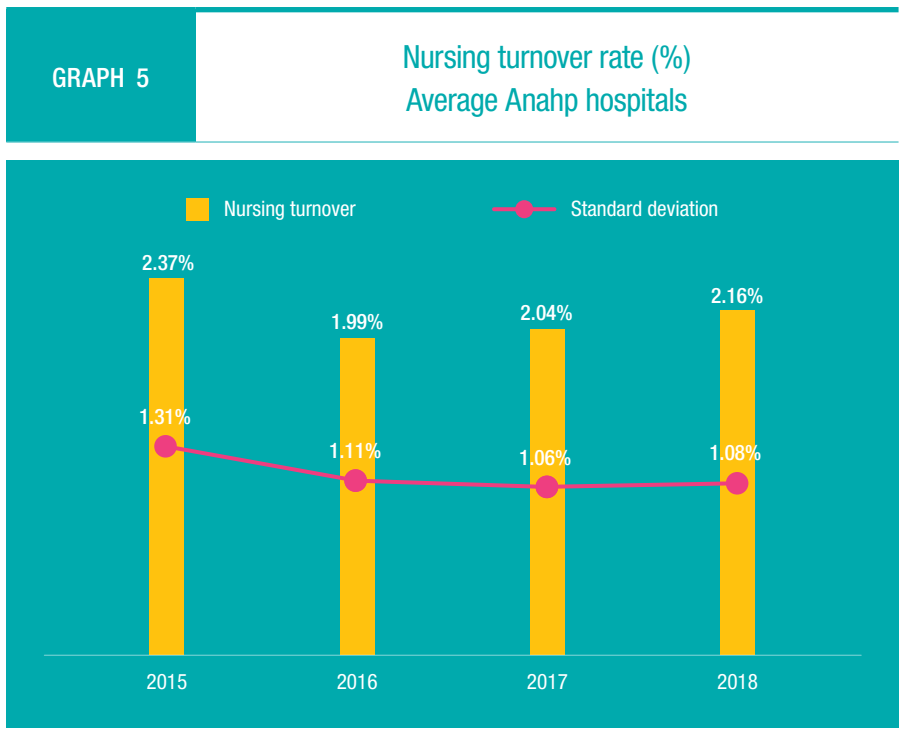
Turnover rate (%) Average Anahp hospitals



Source: SINHA/Anahp.



When we analyze the turnover rate of nursing staff – which is directly related to services provided to patients at bedside – it is possible to identify that it follows the same pace of other turnover indicators (Graph 5).



Source: SINHA/Anahp.

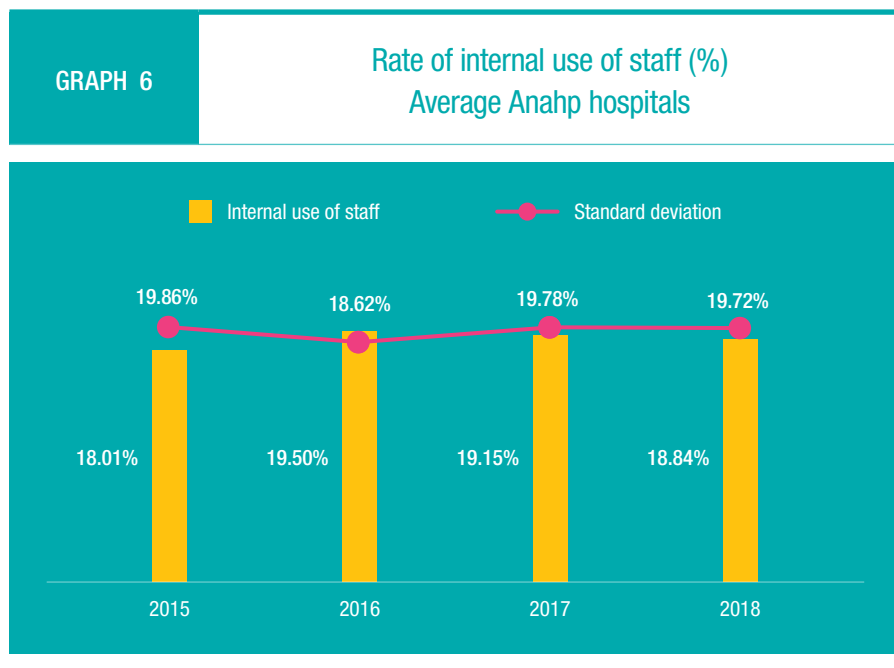
Rate of internal use of staff and average time to fill a job vacancy

Since 2015, recession and the reduced supply of qualified professionals have made organizations invest in internal use of professionals, so as to optimize hiring time and training.

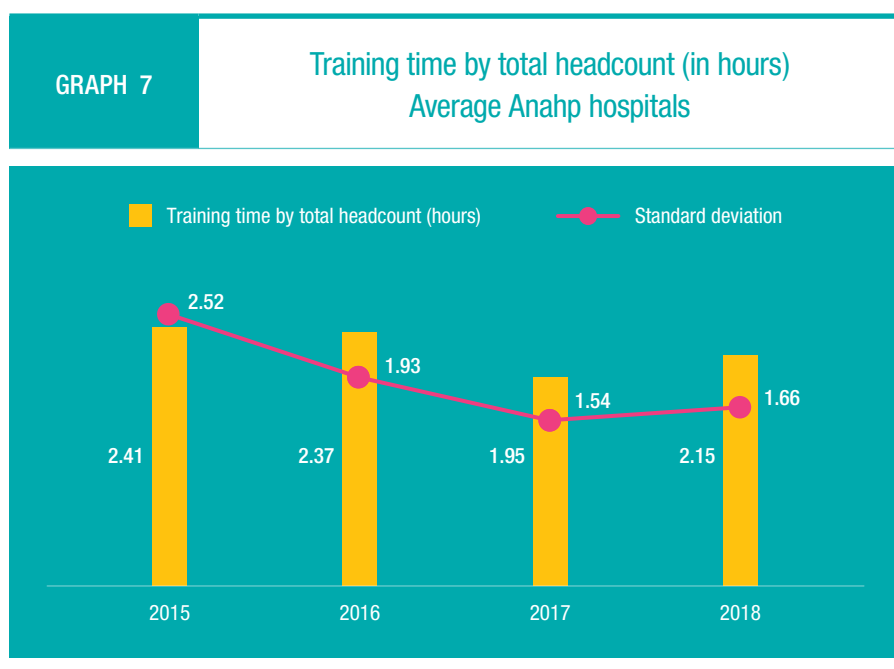
As a consequence, the rate of internal use of staff reached 18.84% in 2018,

below that figure reported in 2017 – 19.15% (Graph 6).

The small decrease in internal use of staff, together with turnover, may explain the increase in training time in 2018 (Graph 7).



Source: SINHA/Anahp.



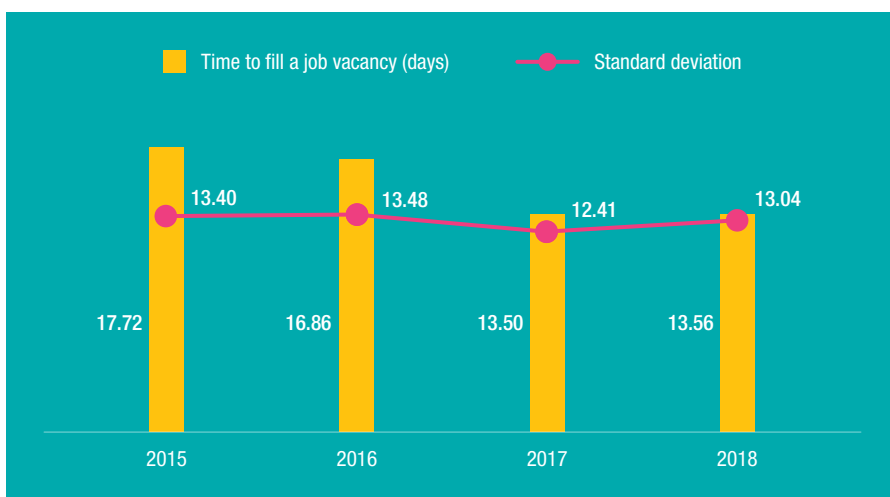
Source: SINHA/Anahp.

Having a less active marketplace (with greater labor supply) and fewer new jobs to be replaced by hospitals (because of the reduction of hiring and dismissing rates), the average time to fulfill a vacancy (time between request of a new job and beginning of work) has been decreasing, going from 17.72 days in 2015 to 16.86 days in 2016, 13.50 days in 2017 and 13.56 in 2018 (Graph 8).



GRAPH 8

Mean time to fill a job vacancy (days)
Average Anahp hospitals



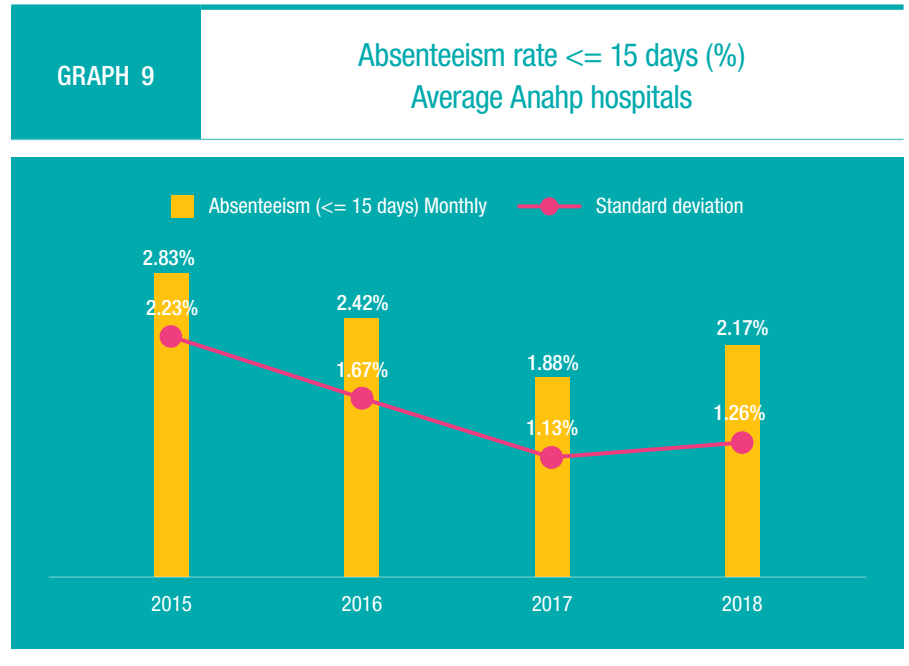
Source: SINHA/Anahp.

Occupational safety and health

Absenteeism is associated with many factors, such as stress, changes to processes and susceptibility to diseases, which are factors that may be aggravated by multiple jobs held by employees. The monthly absenteeism rate below 15 days increased when compared to the rate in 2017, once again reaching more than 2%¹ (Graph 9). The increase in this indicator may be explained by the increase in absenteeism due to unjustified absences, measured since 2017. The indicator reached 0.59% in 2018 (Graph 10). It is important to notice that Anahp members have been paying close attention to absenteeism, focusing on disease prevention and health promotion of their staff. The negative side of absenteeism is increase in overtime, as these additional hours are required to

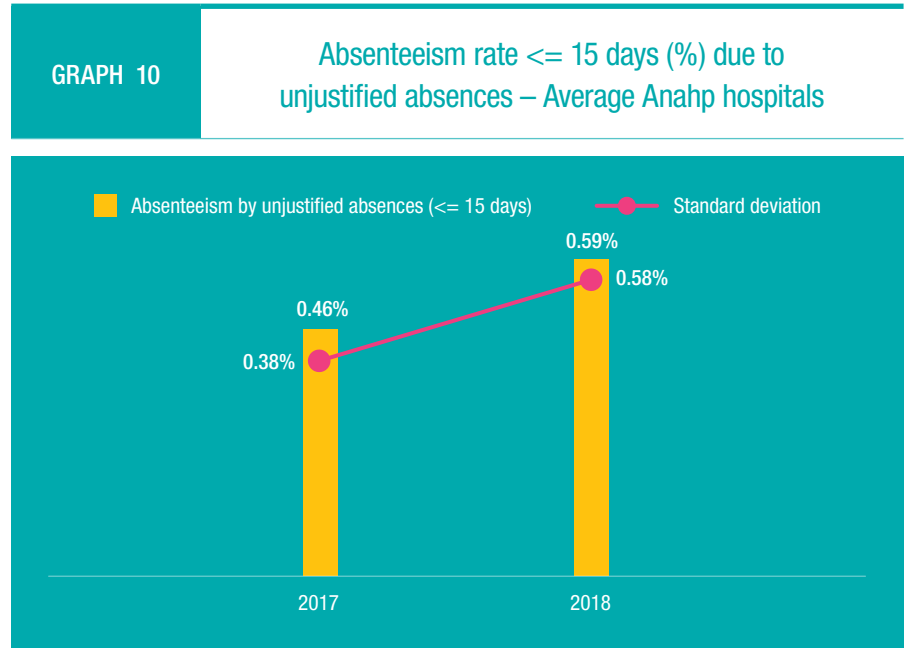
maintain the hospital operation despite delays and absences of staff. The total overtime indicator showed increase over 2017,

especially when we consider the overtime amounted to by the hour bank (Graph 11).



Source: SINHA/Anahp.

Absenteeism rates may be aggravated by multiple jobs held by employees.

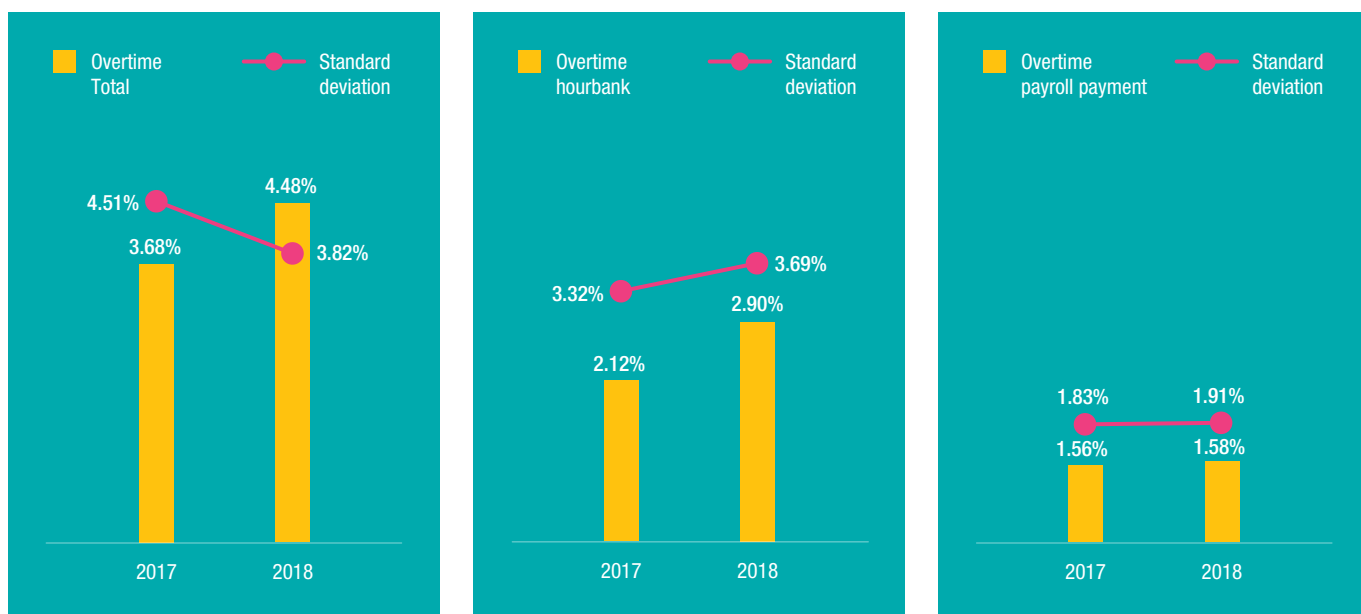


Source: SINHA/Anahp.

1. Absenteeism rate below 15 days is the relation between total number of absent hours due to absences, delays or leaves shorter than 15 days of employees of the hospital divided by total estimated hours of work.

GRAPH 11

Overtime (%) Average Anahp hospitals

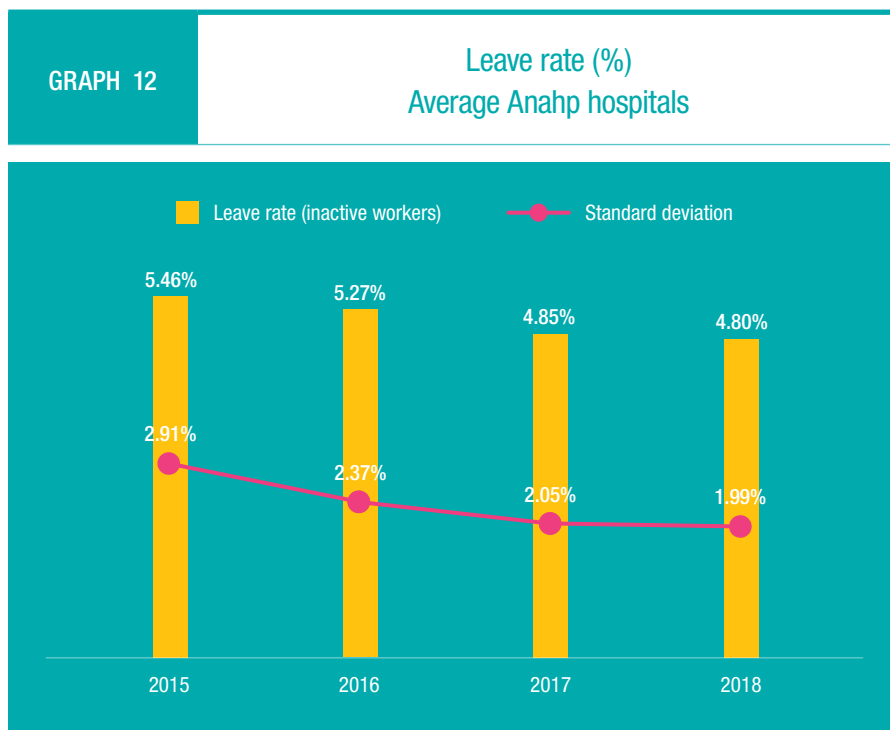


Source: SINHA/Anahp.



The medical leave rate has also been decreasing in recent years, reaching less than 5% in 2018 (Graph 12).

The decrease of this rate has positive impact on staff management for hospitals, as it requires fewer new hires and investments in labor qualification. The number of labor-related accidents dropped again in 2018, which may be evidenced by the reduction in work-related accidents with leave (Graph 13). Concerning accidents within the hospital premises, this rate experienced decrease in 2018 as well, resulting from the additional protection barriers implemented in the workplace (Graph 14).



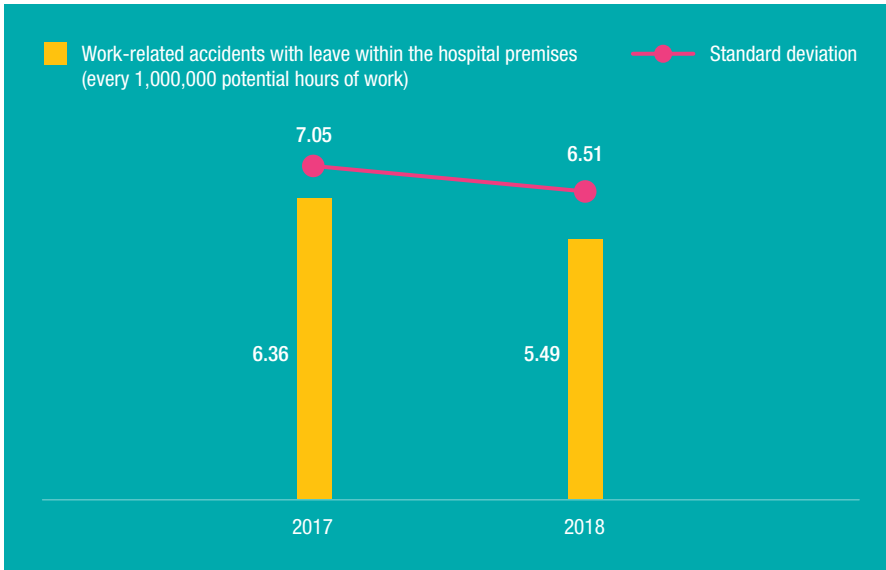
Source: SINHA/Anahp.



Source: SINHA/Anahp.

GRAPH 14

Work-related accidents with leave in the organization Average Anahp hospitals



Source: SINHA/Anahp.



Talent retention

One of the main hurdles of healthcare is to balance the increasing demand for services and the limited supply of extremely well-qualified professionals. To confirm the efficiency in hiring and retaining staff to reduce training and development costs and to minimize clinical damage, Anahp hospitals decided to measure talent effective hiring and retention. These indicators are used, for example, to identify strategies to reduce turnover and absenteeism in the organization.

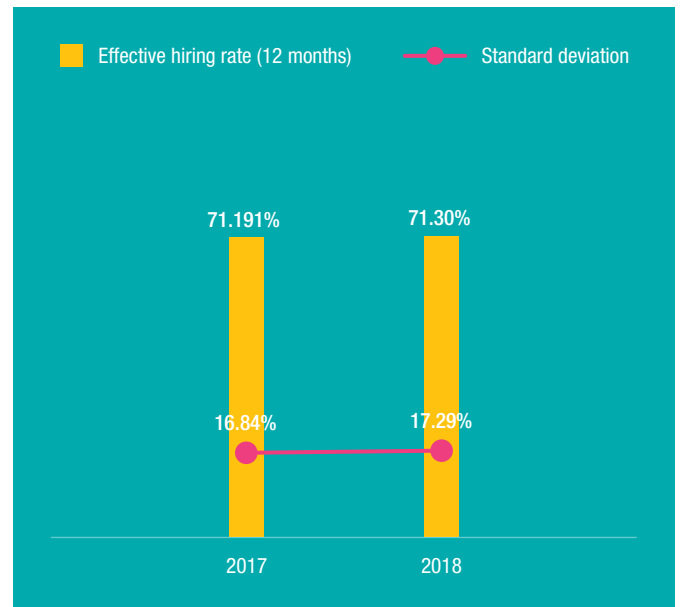
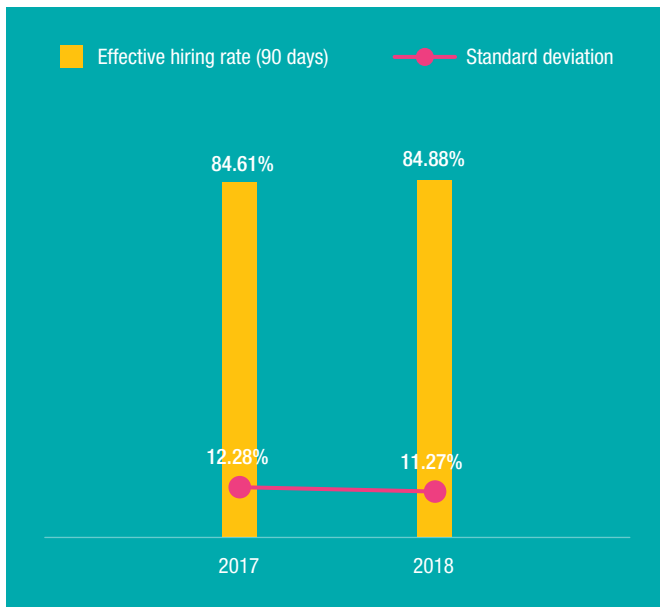
Even though there are still no historical data series to analyze the progression of these rates, disseminating these consolidated numbers already provide an opportunity for comparative studies.

The rate of effective hiring after the three-month probation period and the 12-month adaptation process was maintained stable between 2017 and 2018 and both years presented rates above 70% (Graph 15).



GRAPH 15

Effective hiring rate – 90 days and 12 months
Average Anahp hospitals



Source: SINHA/Anahp.

Regional characteristics of Anahp hospitals

Having highly heterogeneous characteristics, Anahp members are divided throughout Brazil (Graph 16). This edition brings people management indicators

separated by regions, including number of fully-hired staff (Graph 17).



GRAPH 16 Anahp hospitals by region
December 2018



Source: SINHA/Anahp.

GRAPH 17 Full-time hired staff at Anahp hospitals per region
December 2018



Source: Organizational Profile

In 2018, Anahp member hospitals totaled 173,644 employees in their staff. Increase in headcount is related to growth in number of employees in each hospital and increase in number of Anahp member hospitals. Thus, Anahp hospitals have amounted to 14.19% of the total formal headcount in the hospital industry.

Among the constantly monitored indicators by member hospitals in Brazil, the turnover rate shows a number of impacts, additional expenses in hiring and training, and loss of knowledge and investments made in addition to losing knowledge and investments already made in developing the staff.

The challenge of managing staff is more evident when we confirm that their average turnover rate of nursing staff is greater than that of other hospital staff in all regions of the country (Graph 18).

Regional analysis has shown that the problem is more prevalent in South and North-Center West regions, where total turnover rate and nursing turnover rates are higher than the national average.



GRAPH 18

Turnover rates Average Anahp hospitals per region | 2018



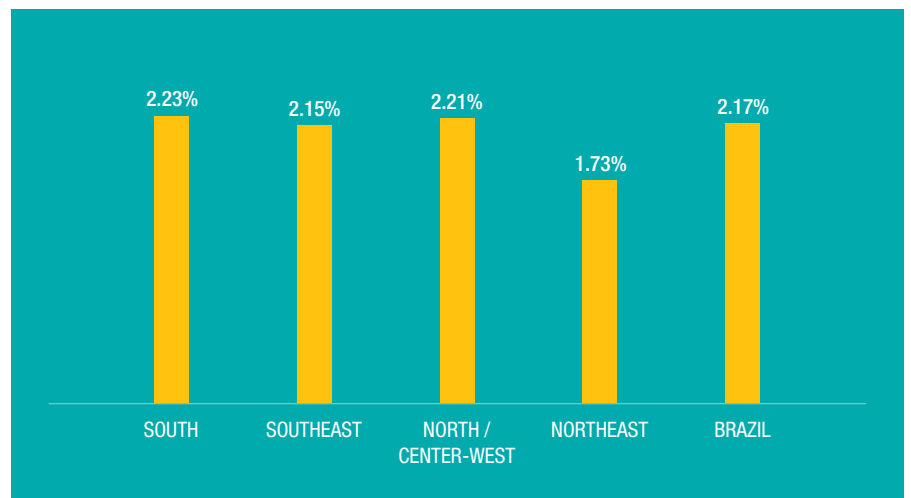
Source: SINHA/Anahp.



South region, for example, also has the highest absenteeism compared to other regions in the country (Graph 19). However, the personnel cost over net revenue is higher than in the other regions or the average in Brazil (Graph 20). It is important to point out, though, as presented in the Economic-Financial Management section, that hospitals in the South region have the lowest average revenue per hospital discharge. These regional indicators suggest a relation between financial and people management indicators at Anahp hospitals.

GRAPH 19

Absenteeism
Average of Anahp hospitals per region



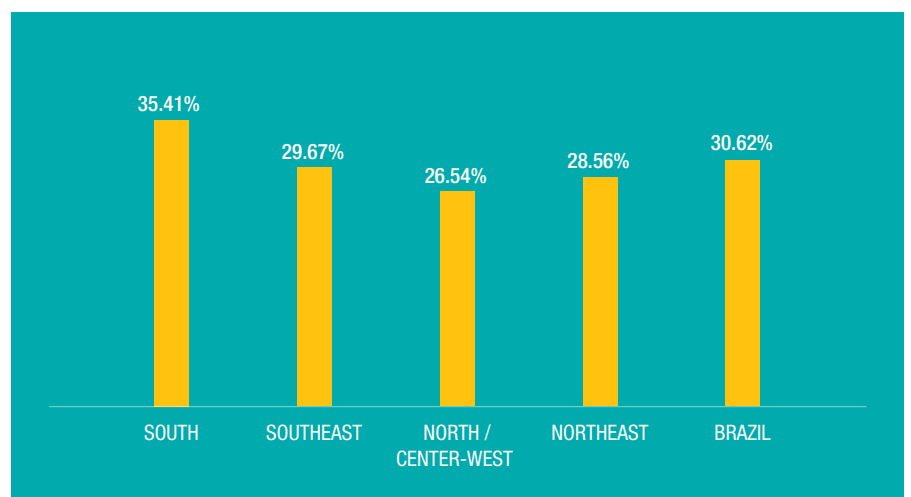
Source: SINHA/Anahp.



Regional indicators suggest a relation between financial and people management indicators at Anahp hospitals.

GRAPH 20

Personnel cost by net revenue
Average Anahp hospitals per region



Source: SINHA/Anahp.





Environmental sustainability

Anahp hospitals presented a decreasing trend of water and electrical power consumption.

Fighting waste is essential for the industry sustainability.

Environmental sustainability is a broad concept and its dissemination, understanding and studies about the most effective way to implement it, are concerns that go beyond the healthcare industry.

The introduction of environmental issues in corporate practices brings new challenges to hospital management. In order to contribute to the eco-systemic balance, social development and economic feasibility of service providers, Anahp member hospitals have started to collect environmental sustainability indicators.

Environmental sustainability indicators help us estimate the challenges and breakthroughs in the industry by incorporating practices that promote sustainable development.

Moreover, as shown in the Economic-

Financial Management section, power and water expenditures amounted to 2.24% of all hospital expenses in 2018. Therefore, measuring these items help Anahp member hospitals make decisions towards better resource optimization practices.

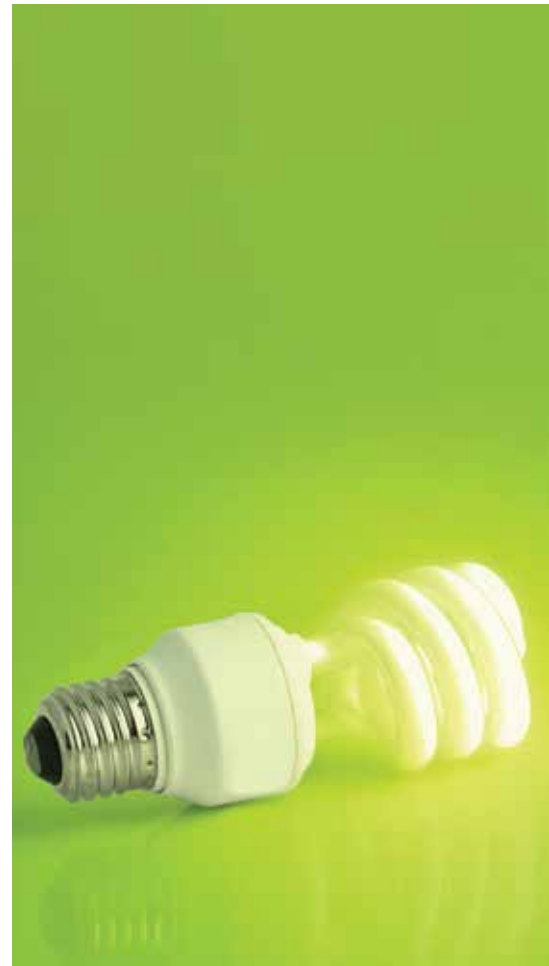
Water and electricity consumption and waste management are directly related to patient-day production, that is, the consumption of these resources tends to increase alongside patient-day demand. Additionally, there is also room for greater efficiency in resource utilization.

The adoption of more efficient practices after the water shortage crisis in Brazil, for example, has led to decrease in average water consumption. In 2018, electrical power consumption has also dropped.

Electrical power consumption

The electrical power consumption by operational bed decreased 18.90% in 2018, after 14.40% increase in 2017 (Graph 1).

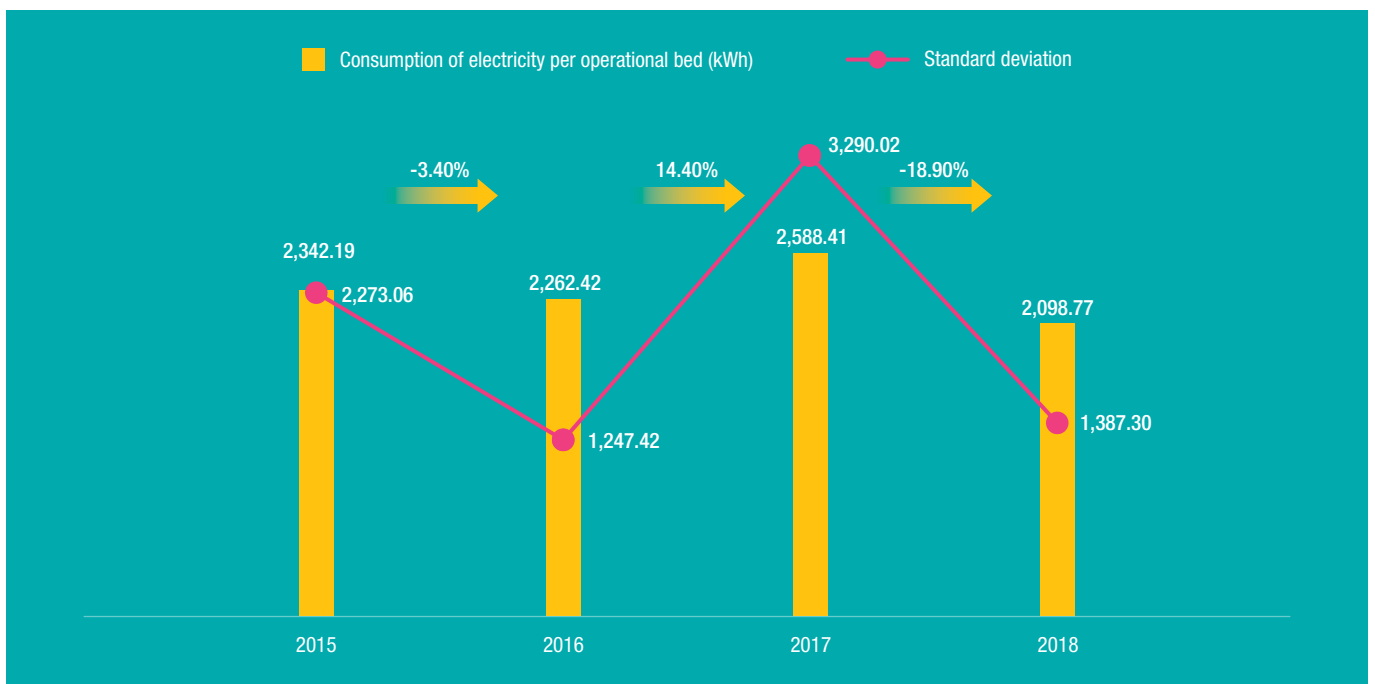
Consumption by patient-day, in turn, increased 17.10% in 2018, after 17.30% increase in 2017 (Graph 2).



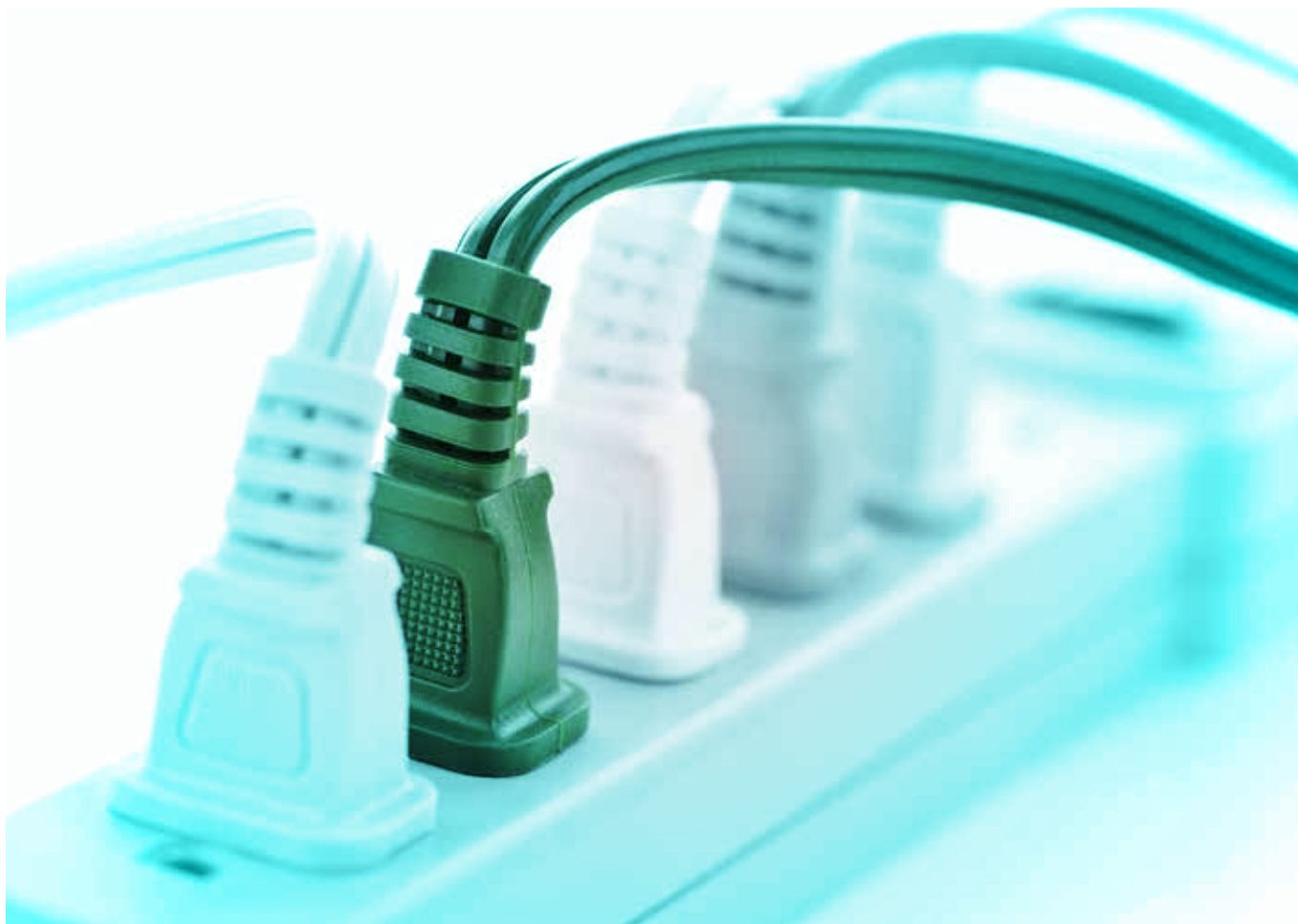
Water and electrical power consumption and generated waste are directly related to patient-day volumes.

GRAPH 1

Consumption of electricity in KW/h per operational bed
Average of Anahp hospitals

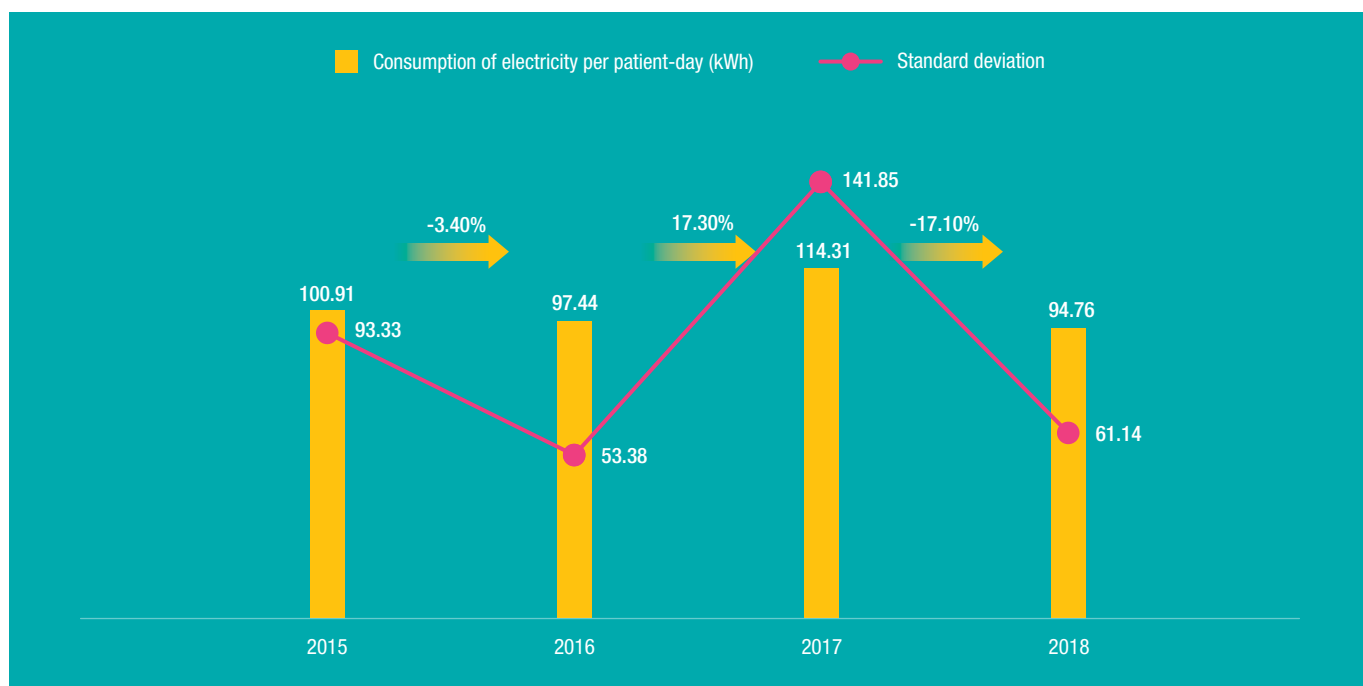


Source: SINHA/Anahp.



GRAPH 2

Consumption of electricity in KW/h per patient-day Average of Anahp hospitals



Source: SINHA/Anahp.

Water consumption

Since 2015, when the worst ever water shortage in the country affected us, hospitals have realized they had to implement initiatives for efficient water consumption.

As a consequence, average water consumption per operational bed went down from 22.56 m³ in 2015 to 19.76 m³ in 2018 (Graph 3), whereas patient-day consumption, which used to be 0.98 m³ in 2015, reached 0.85 m³ last year (Graph 4).



GRAPH 3

Consumption of water in m³ per operational bed
Average of Anahp hospitals

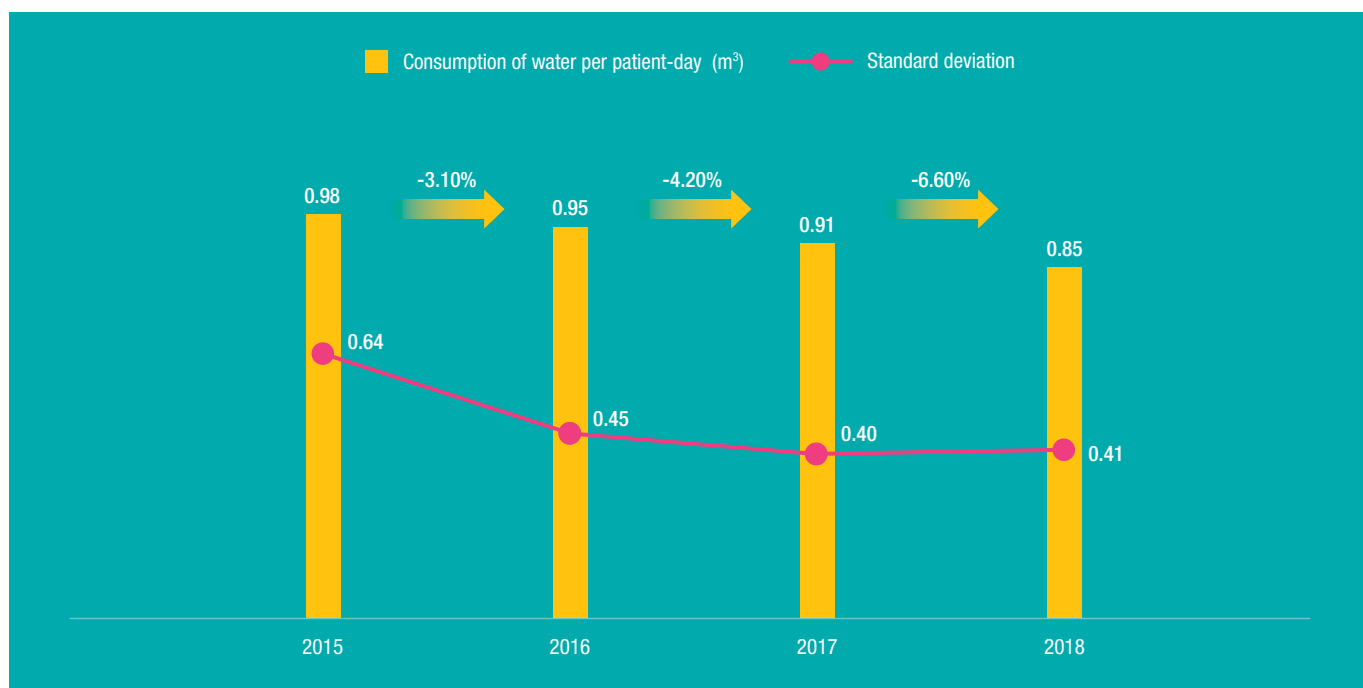


Source: SINHA/Anahp.



GRAPH 4

Consumption of water in m³ per patient-day
Average of Anahp hospitals



Source: SINHA/Anahp.

Waste

Healthcare-related waste derives from care provided to patients in healthcare centers. Some examples are syringes, plastic materials, gases and biological materials.

To mitigate the damage caused by disposal of these resources, Anvisa (Brazilian Regulatory Agency), through RDC No. 33/03, which addresses the Management Plan of Healthcare-Related Waste, has defined rules for generation, segregation, conditioning, collection, storage, transport, treatment and final disposal of waste.

The agency has classified hospital waste into groups that share common characteristics, as follows: Group A – potentially infectious; Group B – chemicals; Group C – radioactive waste; Group D – regular waste, and Group E – sharps and needles.

To encourage best practices, Anahp



Environmental sustainability is a strategic pillar of Anahp member hospitals.

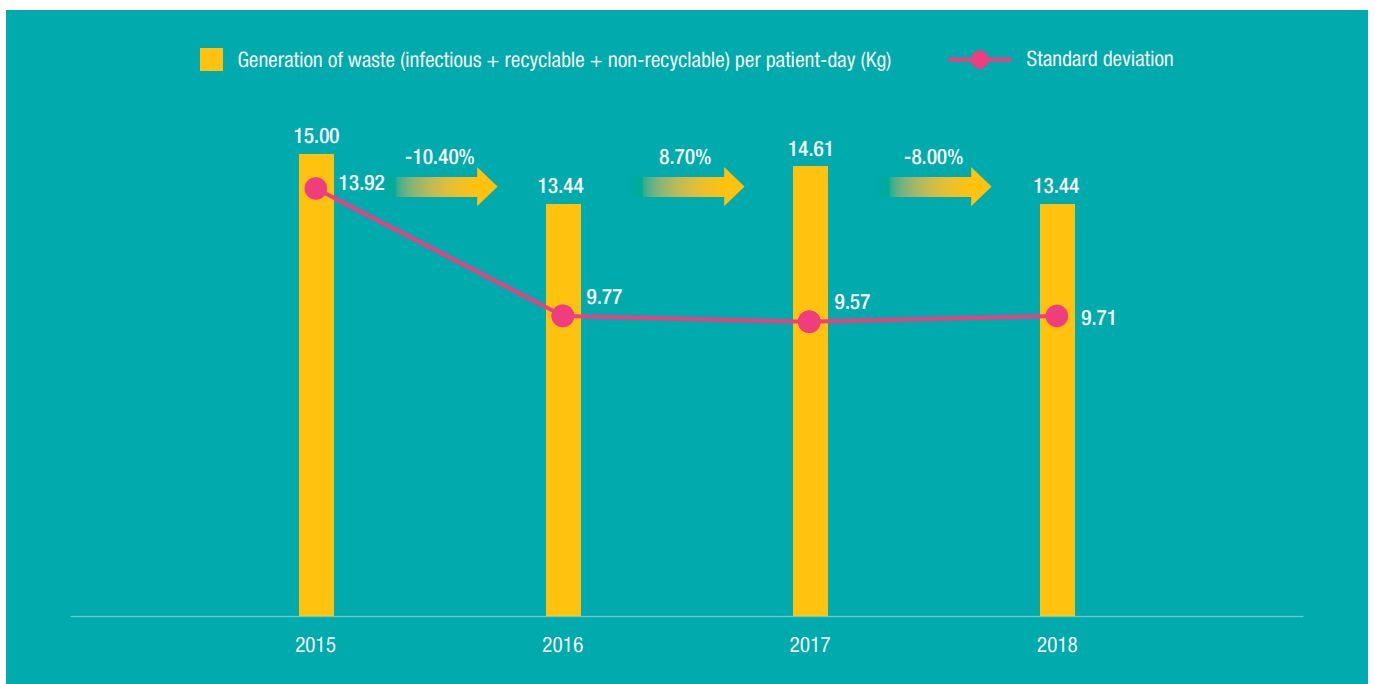
has been following up infectious, recyclable and non-recyclable waste generation indicators since 2014. These indicators follow the same consumption trend as water and electricity, varying according to the number of clinical and surgical patients seen.

In 2018, total waste generation from

Anahp hospitals went down, reaching a level close to that of 2016 for patient-day calculations (Graph 5). Generation of infectious waste (blood, culture media, tissues, organs, waste coming from isolation room and clinical analysis laboratory, sharps, among others) has also decreased (Graph 6).

GRAPH 5

Waste generation (infectious + recyclable + non-recyclable) per patient-day (Kg)
Average Anahp hospitals

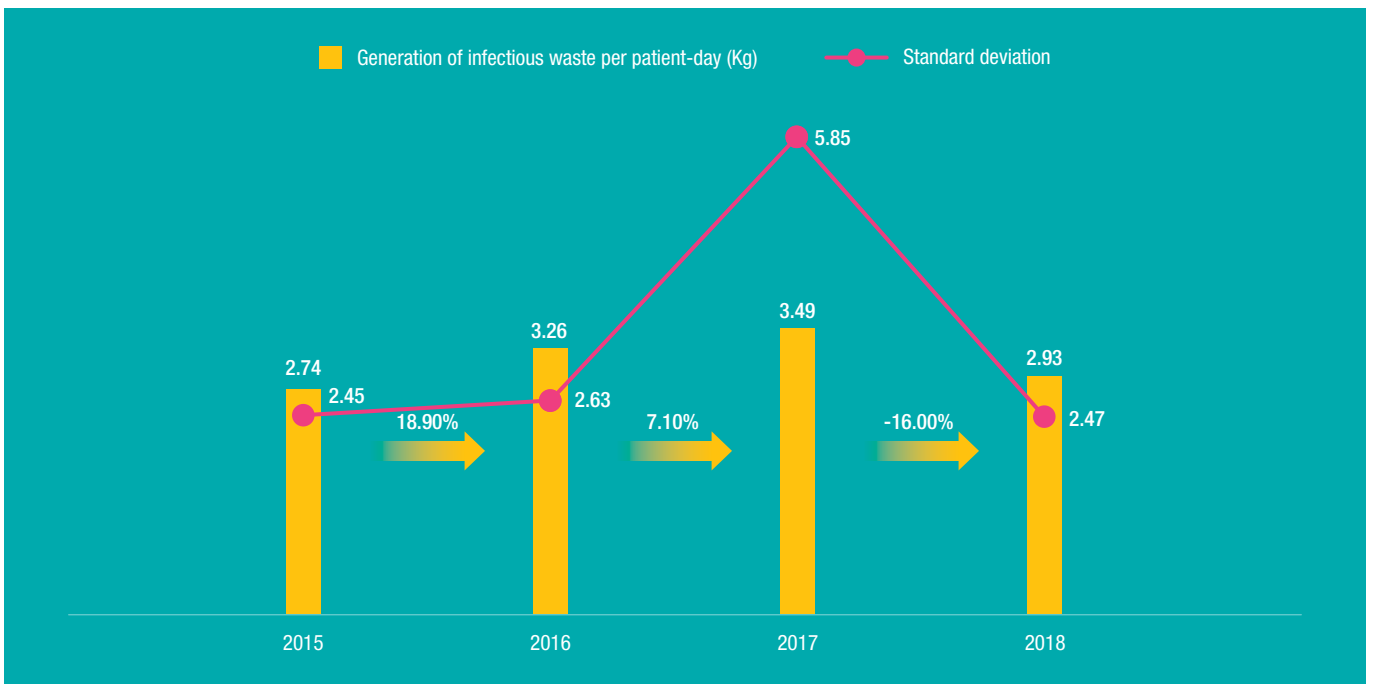


Source: SINHA/Anahp.



GRAPH 6

Generation of infectious waste per patient-day (Kg) Average Anahp hospitals



Source: SINHA/Anahp.



CONTRIBUTIONS FROM THE ACADEMY

This chapter brings a correlation between SINHA data and national and international literature, providing a different analysis related to efficiency and productivity of our member organizations.

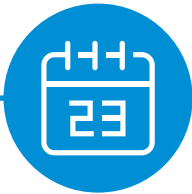




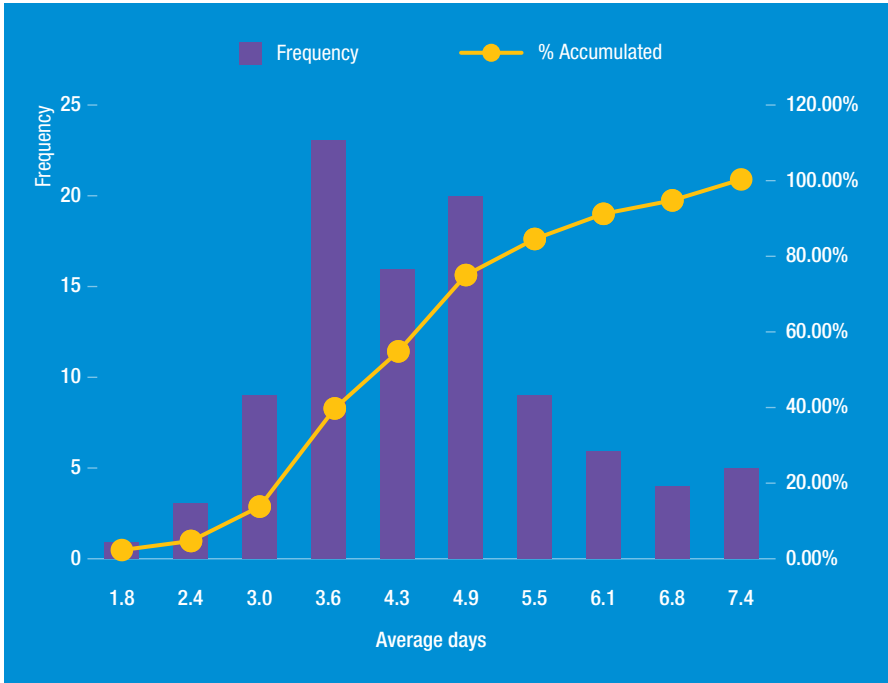
The analyses in this chapter were structured in cooperation with Instituto de Pós-Graduação e Pesquisa em Administração da Universidade Federal do Rio de Janeiro – Coppead.

In 2018 Anahp started a process to come closer to universities, inviting them to join Editorial Committees of technical publications to provide expanded analysis of Anahp data, based on methodologies that could offer a more comprehensive understanding of information. This chapter was structured in cooperation with *Instituto de Pós-Graduação e Pesquisa*

em Administração da Universidade Federal do Rio de Janeiro – Coppead. Based on SINHA data (Anahp System of Indicators), they defined correlations and brought national and international evidence-based insights to make different analyses, related to efficiency and productivity in member organizations. See below some of these correlations.



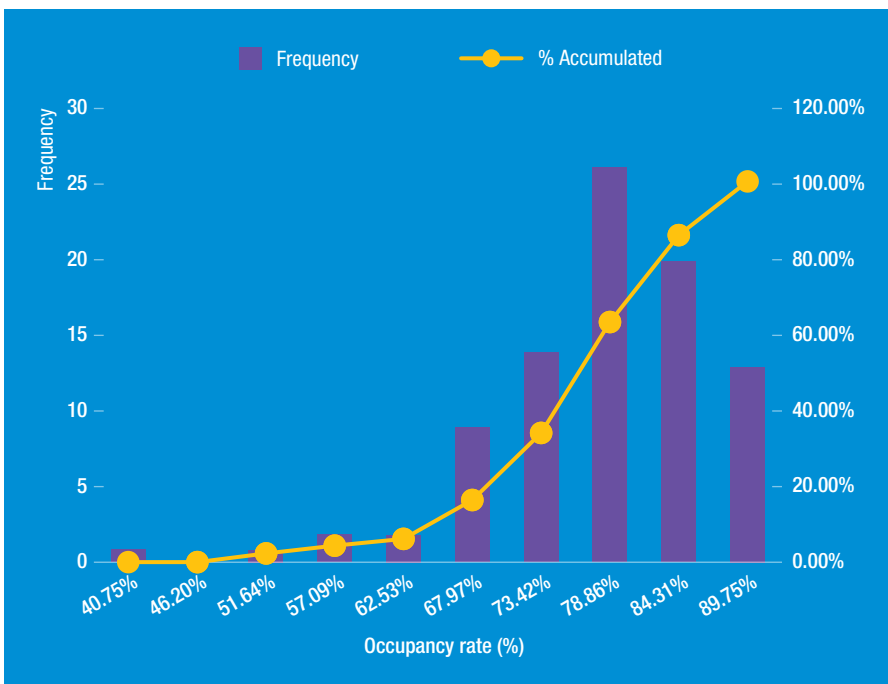
Mean length of stay (days)



Among 61.46% member hospital, patients mean length of stay ranged from 3.6 to 4.9 days. There is slight asymmetry on the right, indicating that some hospitals (25%) have higher mean length of stay, ranging between 5.5 and 8 days.



Occupancy rate – 2018



The occupancy rate of member hospitals is concentrated between 67.97% and 89.75%, a range that encompasses 93.18% of the hospitals. About 7% operate with occupancy rates below 2/3, that is, below 67% of their installed capacity, which means they have significant idle capacity. There is some asymmetry on the left, with one hospital operating with occupancy rates below 50% and five hospitals with occupancy rates between 50 and 60%. The mean occupancy rate followed the trend that has been observed in recent years, reaching 76.44%.



THE TURNOVER RATE – MATERNITY IN DAYS



Positive correlation with: **VAGINAL DELIVERIES (Robson classification 1 to 4) (0.775)**



Negative correlation with: **C-SECTION RATE (-0.473)**

The turnover rate – maternity in days has positive correlation with normal delivery rates and negative correlation with C-sections. Vaginal delivery, in addition to positive effect on the health of mother and baby, has positive correlation with operational indicators of the organization, such as turnover rate of maternity. In a recent systematic review, C-section without medical indication was associated with negative health effects on the mother and child in the short and long-term. The short-term risks included abnormal immune system, increase in likelihood of allergy, atopy and asthma and reduction of intestinal microbiome diversity. The persistence of these risks until the end of the lifespan has not been fully investigated, even though there is an association between C-section and higher incidence of late pediatric obesity and asthma (Sandall et al., 2018).



Reference:

Sandall, J., Tribe, R.M., Avery, L., Mola, G., Visser, G.H., Homer, C.S., Gibbons, D., Kelly, N.M., Kennedy, H.P., Kidanto, H., Taylor, P., Temmerman, M. (2018). Short-term and long-term effects of caesarean section on the health of women and children. *The Lancet* 392, 1349–1357. [https://doi.org/10.1016/S0140-6736\(18\)31930-5](https://doi.org/10.1016/S0140-6736(18)31930-5)



INCIDENCE DENSITY OF VENTILATOR-ASSOCIATED PNEUMONIA



Negative correlation with: **EFFECTIVE NURSES PER OPERATIONAL BEDS (-0.620)**

Effective nurse per operational bed is related to reduction in incidence of ventilator-associated pneumonia in ICU patients. Appropriate sizing of the team is associated with improvement in clinical quality.

In the literature, appropriate sizing of nursing team is correlated with reduction in healthcare-associated infections in the ICUs, such as ventilator-associated pneumonia (Mitchell et al, 2018; Cimiotti et al, 2012). Having the appropriate nursing team provides more time, opportunities and resources for them to implement care practices that are known to reduce the risks of ventilator-

associated pneumonia, such as encouraging less invasive ventilation approaches whenever possible, and providing excellent care in oral hygiene, which becomes part of the routine assessment of ICU patients (Boltey, Yakusheva and Costa, 2017).

Reference:

Boltey, E., Yakusheva, O., Costa, D.K., 2017. 5 Nursing strategies to prevent ventilator-associated pneumonia. Am Nurse Today 12, 42–43.

Mitchell, B.G., Gardner, A., Stone, P.W., Hall, L., Pogorzelska-Maziarz, M., 2018. Hospital Staffing and Health Care-Associated Infections: A Systematic Review of the Literature. Jt Comm J Qual Patient Saf 44, 613–622. <https://doi.org/10.1016/j.jcjq.2018.02.002>





TRAINING TIME OVER TOTAL HEADCOUNT



Negative correlation with:

Incidence density rate of central line-associated bloodstream infection – Step-Down Unit (-0.863)

Incidence density rate of ventilator-associated pneumonia – Step-Down Unit (-0.720)

Incidence density of catheter-associated urinary tract infection – Step-Down Unit (-0.624)

Lethality rate in Sepsis for patients older than 18 (-0.473)

Training time by total headcount is related to reduction in incidence of central line-associated bloodstream infection, ventilator-association pneumonia and catheter-associated urinary tract infection for patients in the Step-Down Unit, plus the lethality rate of sepsis for patients older than 18 years. These results reinforce the importance of training the team constantly to keep up with clinical quality levels. According to the literature, healthcare professional training initiatives are frequently associated with improvement in level of knowledge, skills and/or hospital practices in different areas of care (Dwiel et al, 2019; Jesus et al, 2016; López-Montesinos et al, 2010).



Reference:

Jesus, P.C. de, Oliveira, M.I.C. de, Fonseca, S.C., 2016. Impact of health professional training in breastfeeding on their knowledge, skills, and hospital practices: a systematic review. *J. pediatr. (Rio J.)* 92, 436–450.

López-Montesinos, M.J., Manzanera Saura, J.T., Mikla, M., Ríos, A., López-Navas, A., Martínez-Alarcón, L., Rodríguez, M.M., Ramírez, P., 2010. Organ donation and transplantation training for future professional nurses as a health and social awareness policy. *Transplant. Proc.* 42, 239–242. <https://doi.org/10.1016/j.transproceed.2009.11.008>

Dwiel, K., Hesketh, M.A., Alpert, J.L., Cellini, J., Goodell, K., Phillips, R.S., Sullivan, E.E., 2019. The Impact of Oral Health Training for Primary Care Clinicians: A Systematic Review. *Fam Med* 51.



VOLUNTARY DISMISSAL OVER TOTAL HEADCOUNT



Positive correlation with: **PERSONNEL TURNOVER (0.860)**

In a systematic review, the impact of high turnover of physicians was shown on: a) financial results; b) patients' satisfaction rates; c) staff satisfaction rates; d) institutional public relations (Misra-Hebert et al, 2004). Similarly, a systematic review about the effects of nursing turnover shows the impacts on clinical results and staff and patients' satisfaction rates (Hayes et al., 2012). These results reinforce the importance of

recognizing and maintain these professionals in the organization, encouraging a good workplace.

Reference:
Misra-Hebert, A.D., Kay, R., Stoller, J.K., 2004. A review of physician turnover: rates, causes, and consequences. *Am J Med Qual* 19.
Hayes, L.J., O'Brien-Pallas, L., Duffield, C., Shamian, J., Buchan, J., Hughes, F., Laschinger, H.K.S., North, N., 2012. Nurse turnover: A literature review – An update. *International Journal of Nursing Studies* 49, 887–905. <https://doi.org/10.1016/j.ijnurstu.2011.10.001>



NET REVENUE BY HOSPITAL DISCHARGE



Negative correlation with:

NURSING TURNOVER (-0.525)

PERSONNEL TURNOVER WITHOUT INCREASE IN HEADCOUNT (-0.505)

According to a literature systematic review, healthcare professional absenteeism rates, such as for nurses, may be related to several factors, such as low organizational

support to work, work load and demand, physical and psychological fatigue (Tauton et al., 2017).

Reference:

Taunton, R.L., Kleinbeck, S.V., Stafford, R., Woods, C.Q., Bott, M.J. (2017). Patient outcomes. Are they linked to registered nurse absenteeism, separation, or work load? J Nurs Adm 24.



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