DOI: 10.1590/1413-812320212611.03512021

Health regulation and technological development: innovative strategies for accessing medicines in the SUS

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Abstract *Regulatory science involves articulating knowledge that can establish the scientific bases for the definition of adequate and efficient regulatory mechanisms and practices. The interfaces between systemic and sectoral health and technological development policies were studied based on documentary analysis, especially from the National Pharmaceutical Policy (PNAF), with impacts on health regulation and stimulating the production of medicines of interest to the Unified Health System (SUS). The initiatives for the nationalized production of ARV "Efavirenz", which was the subject of a compulsory license in 2007, and the establishment of Partnerships for Productive Development (PDP), contributed to defining innovative regulatory frameworks and practices, emphasizing the Regulatory Technical Committees (CTR) for monitoring the internalization of technologies and health registration of the resulting products. The permeation capacity of the principles and strategic axes of the PNAF was identified in the sectoral policies that were analyzed. As of 2014, no macro or sectoral policies on expanding access to medicines in the SUS with impacts on regulations were identified.*

Key words *Pharmaceutical policy, Health surveillance, Medicines*

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Introduction

The Brazilian setting requires the consideration of health regulation and its permeation in the context of public policies in light of the process of construction of the right to health, the Unified Health System (SUS), and the formulation of the National Health Policy, which includes the National Pharmaceutical Policy (PNAF) as one of its components[1], and other sectoral policies.

In the field of health, the relationships of production and consumption of goods, services, or technologies are marked by their comprehensive interfaces, especially in the sectors underpinning the so-called Health Economic-Industrial Complex (CEIS). This complex can be defined as a selected set of productive activities that maintain cross-sector relationships for the purchase and sale of goods, services, or knowledge and technology, with a clear sector interdependence relationship[2]. These relationships are subject to the actions of the State as a promoter of possible interfaces and regulator in the relationships established in the context of the CEIS[3]. This complex has a common institutionality, represented by the entities of health regulation, technological incorporation, and research ethics[4].

The development of new technologies and their availability for global consumption requires regulatory definitions that transcend the limits of the countries of origin[5-7], generating constant challenges to the action of regulatory bodies and states[8-10], which calls for the strengthening of regulatory systems, components of health systems[11,12].

Although the term "Health Surveillance" is unique to Brazil, health regulation does not diverge from internationally accepted concepts[13,14]. The dynamics of health surveillance are linked to scientific and technological development and the political processes that permeate the State, the market, and societies.

In this context, regulatory science is a field of knowledge in which the articulation and interfaces between different types of knowledge enable the development of scientific bases that can be used to ensure the safety, quality, and effectiveness of products and services made available to societies, and of instruments and practices that contribute to the decision and implementation of regulatory mechanisms[15-17]. This field of knowledge has been the focus of attention of regulatory agencies recognized globally[18,19].

This study aimed to identify and analyze interfaces between sectoral policies geared to technological development for the production of medicines of interest to the Brazilian Unified Health System (SUS) and health regulation, guided by the PNAF, to identify regulatory actions and practices that can contribute to reducing SUS vulnerabilities and achieve sustainable access to medicines.

Methods

This study was carried out by documentary research, adopting the model proposed by Walt and Gilson[20] to analyze health policies (Health Policy Analysis, HPA). The analytical model is comprehensive and analyzes complex relationships, highlighting the interrelationship between the four constituent elements of the so-called "policy analysis triangle" and its categories, namely, context, content, and process, for which different stakeholders can contribute. Concerning the content analysis of the policies, the strategies defined in the Situational Strategic Planning method described by Matus[21] were used. The association of different analytical tools is supported by different authors[22,23], which may contribute to the greater strength and scope of the analyses performed.

Given the polysemic nature of the term "policy", the study adopted the understanding of "public policy" as a process in which public action programs are elaborated and implemented, considering political-administrative devices coordinated around the explicit objectives of the governmental action in a defined sector or geographic space[24].

The study covered the period from 2003 to 2019, referring to the formulation and 15 years of PNAF's implementation. Documents were searched on the websites of the Ministries of Health, Economy and Science, Technology and Innovation, the National Health Council, the National Health Surveillance Agency (ANVISA), and the National Bank for Economic and Social Development (BNDES) and printed publications of these institutions.

The study included public actions related to the development and internalization of technologies to produce medicines of interest to the SUS, access to, and health regulation of medicines. Documents addressing only organizational aspects and administrative rules were excluded from the analysis. The search identified 212 documents, which were read in full. The inclusion and exclusion criteria shortlisted this number to 110 documents for analysis.

Results

Chart 1 presents the synthesis of the analysis regarding the typology and content of public policies with identified interfaces between technological development and health regulation during the study period. The contexts, processes, and stakeholders related to the policies mentioned above were analyzed from these data, the results of which are shown in Chart 2. References to health regulation or health surveillance held a prominent place in the analyses.

Discussion

In 2003, pharmaceutical care was defined as one of the priorities of the Brazilian Ministry of Health, reflected in the establishment of the Secretariat of Science, Technology and Strategic Supplies (SCTIE), its Department of Pharmaceutical Care and Strategic Supplies (DAF)[25,26], and holding the First National Conference on Medicines and Pharmaceutical Policy[27,28]. The National Pharmaceutical Policy (PNAF) was established in the National Health Council (CNS) by Resolution CNS No. 338/2004[1], and ratified by the Minister of Health[29], consolidating the permeations between access and rational use of medicines with the intersectoral policies of scientific, technological and industrial, development in Brazil[26,27].

The PNAF was the first public policy formulated and established within the social control of the SUS[30], assuming a strategic role beyond the health care process. Its principle is its guiding role in formulating other sectoral policies, emphasizing medicines, industrial development,

Chart 1. Summary of the analysis of public policies with interfaces between technological development in the area of medicines and health regu-lation, in the 2003-2019 period.

Year	Macropolitics (Systemic policy)	Micropolitics (Sectoral policy)	Policy content		
			Desired situation	Actions	Ações
2003-2004	Formulating the National Pharmaceutical Care Policy (PNAF)	Institutionalizing the PNAF, at the different levels of management and performance of the SUS	Fragmented actions within the federal management of the SUS Users difficult access to medicines in the SUS Disconnection between access to medication and health care actions	Overcoming the fragmentation of actions involving planning, acquisition, distribution and access to medicines in the SUS The SUS as a guide for the demand for medicines from the pharmaceutical productive sectors, with qualifi-cation of the health care process	Conducting a national thematic conference and identifying the PNAF assumptions Defining and institutionalizing the PNAF, with characteristics of intersectorality and guidance for other policies Qualifying the PNAF as a priority strategic policy within the scope of federal management
2003-2006	Strengthening the pharmaceutical production chain and technological development in the sector	Including the Ministry of Health in conducting the Pharmaceutical Productive Chain Competitiveness Forum	Strong retraction of the Brazilian pharmaceutical industry and setting worsened by the adoption of the Industrial Property Law (1996)	Stimulus for sustainable development in the sector, with the aggregation of capacities for the internalization and development of technologies of interest to the SUS	Identification of consensuses to stimulate the development of the (private and public) pharmaceutical productive sectors and inclusion of Drugs and Medicines as priorities in the Brazilian Industrial, Technological, and Foreign Trade Policy

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Year	Macropolitics (Systemic policy)	Micropolitics (Sectoral policy)	Policy content		
			Desired situation	Actions	Ações
2004	Formulating the National Policy on Science, Technology, and Innovation in Health (PNCTIS)	Institutionalizing the PNCTIS	Incipient development of science, technology and innovation activities in the health-related structures.	Sustainable national development, with support for the production of knowledge adjusted to the country's needs	Organization of the Second National Conference on Science, Technology and Innovation in Health Definition and institutionalization of the PNCTIS
2007	Reducing the vulnerability of the National STD/AIDS Program and ensuring access to ARVs in the SUS	Maintaining the feasibility of financing for the acquisition of ARVs	The cost of drug Efavirenz aggravates the vulnerability of the SUS and fruitless negotiations for price reductions	Lower acquisition costs of drug Efavirenz, with a reduced vulnerability of the National STD/AIDS/SUS Program	Adoption of a Compulsory License for public and non-commercial use of patents on the drug Efavirenz to meet the demands of the SUS
2008	Formulating the Productive Development Policy	CEIS as a mobilizing program in the strategic area of health	Little encouragement to productive health-related structures	Increased investments in research, development, and innovation in health	Inclusion of the Economic-Industrial Health Complex (CEIS) in the development policy
2009	Empowering the CEIS as an instrument of Brazilian industrial policy	Articulation of the productive sectors with the demands of the SUS	Growing SUS demand for technologies and increased spending on medicines	Internalization of technologies of interest to the SUS, reducing technological dependence and costs	Adoption of "partnerships for productive development" (PDP) as a strategy for employing the purchasing power of the State and positive induction of the health productive system
2012	Strengthening the national industry, with increased productive capacity, innovation, and competitiveness	Structuring and modernization of public health technology and innovation infrastructure	Structural and financing difficulties for the internalization of high-priced technology with a great health impact	Encouraging local production of high-cost products or products with a high health and social impact	Strengthening public producers and expanding their role in market regulation, with local development of strategic technologies for the SUS
2014	Rationalizing the State's purchasing power	Redefining the guidelines and criteria for the definition of strategic products for the SUS and establishment of PDPs	Need to improve the regulatory framework of PDPs and the process of defining strategic products	Expanding people's access to strategic products with cost-effectiveness and advantage, reducing the vulnerability of the SUS	Review of requirements for the definition of strategic products for the SUS and the formalization and monitoring of PDPs

Source: Elaborated by the authors, based on analytical models proposed by Walt and Gilson[20] and Matus[21].

Ciência & Saúde Coletiva, 26(11):5427-5440, 2021

Chart 2. Public policies with interfaces with technological development in the area of medicines, their impacts on the health regulatory field, and stakeholders involved, in the 2003-2019 period.

Year	Macropolitics (Systemic policy)	Impact on health regulations	Processes identified	Stakeholders involved
2003-2004	The National Pharmaceutical Care Policy (PNAF)	Strategic axes of the PNAF pointed to the need to build a health surveillance policy for people's access to safe, effective, and quality services and products	The establishment of the PNAF within the social con-trol of the SUS, from the First National Conference on Medicines and Pharmaceutical Care (CNMAF) The definition of the PNAF by the National Health Council (CNS) and ratification by the Minister of Health	National Health Council Ministry of Health Pan American Health Organization. Delegates participating in the First CNMAF.
2003-2006	Strengthening the pharmaceutical production chain and technological development in the sector	Need for the National Health Surveillance System (SNVS) to adopt mechanisms for the internalization of guidelines resulting from the consensus obtained in the Forum on Competitiveness of the Pharmaceutical Productive Chain	Establishment of consensus at the Forum on Competi-tiveness of the Pharmaceutical Productive Chain: eco-nomic and strategic relevance of medicines for the SUS; pharmaceutical industrial policy as a government priority and state policy Inclusion of pharmaceuticals and medicines as one of the four priorities of Brazil's Industrial, Technological, and Foreign Trade Policy (PITCE)	Government representations, coordinated by the Ministries of Development, Industry and Trade and Health. Representations of the productive segments. Representations of workers. Representations of research institutions.
2004	The National Policy on Science, Technology, and Innovation in Health (PNCTIS)	Emphasis on the role of Anvisa regarding the prior consent for patenting health supplies	Establishment of the PNCTIS took place within the social control of the SUS, based on the definitions of the Second National Conference on Science, Technology, and Innovation in Health (CNCTIS) and approval by the National Health Council	National Health Council Ministries of Health, Science and Technology, and Education Researchers Social stakeholders that are part of the SUS social control

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and science and technology policies. Concerning health regulation, the PNAF defined the construction of a health surveillance policy to guarantee people's access to safe, effective, and quality services and products[1] as one of its priority axes. This construction is still underway since Brazil has not yet advanced in establishing a national health surveillance policy. Regarding medicines, the PNAF assumes the strategic role of systemic policy (macropolitics), while the SUS guides the demand to the productive pharmaceutical sectors, whose capillarity began to influence the formulation or decision-making within other systemic public policies and sectoral policies (micropolitics).

From 2003 to 2006, the Ministry of Health worked painstakingly in joint coordination with the Ministry of Development, Industry, and For-

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Year	Macropolitics (Systemic policy)	Impact on health regulations	Processes identified	Stakeholders involved
2007	Reducing the vulnerability of the National STD/AIDS Program and ensuring access to ARVs in the SUS	*Edition of Ordinance No. 583/2007/Anvisa, which established the Technical-Regulatory Committee (CTR) within ANVISA to monitor the development, production and registration in Brazil of the drug object of Decree no. 6,108 of May 4, 2007*	Statement by the Brazilian government regarding the public interest of patent rights over drug Efavirenz to grant a compulsory license for non-commercial use Edition of Presidential Decree No. 6.108/2007, establishing the compulsory licensing of Efavirenz Edition of Interministerial Ordinance No. 128/2008, which established the guidelines for contracting drugs and medicines by the bodies and entities that make up the Unified Health System	Ministry of Health Ministry of Justice Civil House of the Presidency of the Republic ANVISA Oswaldo Cruz Foundation, including the direction of the Pharmaceutical Technology Institute – Farmanguinhos Non-governmental organizations representing the segments of people living with HIV/AIDS
2008	The Productive Development Policy	Executive Group of the Health Industrial Complex (GECIS) responsible for actions to ensure equality in health regulation, support for the quality of national production, modernization of health surveillance actions, simplification and streamlining of regulatory processes	Resumption and expansion of the scope and depth of the Industrial, Technological and Foreign Trade Policy (PITCE) established in 2004, with the definition of CEIS as one of its priorities The national entity managing the SUS assumes the role of conducting intersectoral initiatives to regulate and improve the efficiency of the CEIS, involving the industrial, economic, and technological fields to meet the demands of the SUS	Ministry of Health Civil House of the Presidency of the Republic Ministries of Development, Industry and Trade; Finance; Planning; Foreign Affairs; and Science, Technology, and Innovation ANVISA and other national regulatory and development agencies

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eign Trade of the Forum on Competitiveness of the Pharmaceutical Productive Chain[31], and the stakeholders involved advanced discussions on scientific, technological, and industrial development to meet the demands of the SUS. In a context marked by the search for consensus, the Forum identified the economic and strategic relevance of medicines for the SUS, characterizing the pharmaceutical industrial policy as a "government priority" and "State policy" and recommending the prioritization of public policies geared to modernization and training of public pharmaceutical laboratories to conduct research and development (R&D) activities, and the implementation of public-private partnerships as a mechanism for inducing industrial production

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Year	Macropolitics (Systemic policy)	Impact on health regulations	Processes identified	Stakeholders involved
2009	Empowering the CEIS as an instrument of Brazilian industrial policy	Edition of the Resolution of the Collegiate Board of ANVISA (RDC) No. 02/2011, establishing Technical-Regulatory Committees (CTR) to follow-up and monitor the Partnerships for Productive Development (PDP)	GECIS defining the PDPs as industrial policy mecha-nisms used in health to internalize the production and transfer of drug technology, active pharmaceutical in-gredients, and products of interest to the SUS PDP as an instrument of the health policy to encour-age the CEIS and meet the demands of the SUS	ANVISA's technical and management body Representations of public pharmaceutical laboratories Representations of the private companies that are part of the PDP GECIS
2012	Strengthening the national industry, with increased productive capacity, innovation, and competitiveness	Inclusion of Anvisa in the managing committee of the Program for the Development of the Health Industrial Complex (PROCIS) and edition of ANVISA's RDC No. 50/2012, which provided for the procedures for registration of products in the process of developing or transferring technologies subject to public-public or public-private PDP of interest to the SUS	Incorporating the GECIS into the "Brasil Maior" Plan, established in 2011 by Decree No. 7.540 Establishing the Program for the Development of the Health Industrial Complex (PROCIS) through the Ministry of Health Ordinance No. 506/2012 to strengthen the infrastructure of production and innova-tion in health in the public sector Defining the guidelines for the establishment of PDPs, through Ministry of Health Ordinance No. 837/2012	ANVISA's technical and management body PROCIS Steering Committee Public and private producers participating in the PDPs

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in the sector[31]. These definitions were aligned with those indicated by the PNAF.

A relevant consequence of the Forum was the inclusion of the topic "pharmaceuticals and medicines" as one of the four priorities of the Industrial, Technological, and Foreign Trade Policy (PITCE), an important advance in the coordination of sectoral policies to support the development of productive health sectors[32,33]. A more immediate result of such prioritization, in April 2004, the National Bank for Economic and Social Development (BNDES) launched the Pharmaceutical Chain Support Program (PROFARMA), initially to enable investments to adapt the national pharmaceutical park to new regulatory requirements and induce innovative activity in the pharmaceutical chain[34]. Although the Forum's recommendations indicated the need for the National Health Surveillance System (SNVS) to adopt mechanisms for internalizing the guidelines resulting from the consensus obtained[31], no concrete actions in this regard had been identified until late 2006.

In 2004, the challenge of formulating a National Policy on Science, Technology, and Innovation in Health (PNCTIS) found a political-institutional context favorable to the resumption of discussions emanating from the First Thematic

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Year	Macropolitics (Systemic policy)	Impact on health regulations	Processes identified	Stakeholders involved
2014	Rationalizing the State's purchasing power	Edition of RDC 43/2014/ Anvisa: Approves the Technical Regulation for registrations granted to public or private entities resulting from PDP processes or technology transfers to internalize the production of the Ministry of Health strategic medicines, the binding conditions of the registration to the matrix process of that drug registration object of the clone primary petition, and the respective post-registration and registration renewal procedures	The National Health Plan (2012 -2015), harmonized with the Annual Multi-Year Plan (PPA) and approved by the National Health Council, established, as one of its 16 (sixteen) guidelines, the guideline for strength-ening the production complex and science, technology and innovation in health as a structuring vector of the national agenda for economic, social and sustainable development, reducing the vulnerability of access to health Ministry of Health redefining the guidelines for the transfer and absorption of technology, acquisition of strategic products for the SUS within the PDPs	ANVISA's technical and management body Ministry of Health

Source: Elaborated by the authors, based on analytical models proposed by Walt and Gilson[20] and Matus[21].

Conference held in 1994[35], insofar as science and technology policy in health is a component of the National Health Policy[35,36]. The establishment of the Secretariat of Science, Technology, and Strategic Supplies (SCTIE)/MS contributed to this positive setting. The Second National Conference on Science, Technology and Innovation in Health (CNCTIS) held in July 2004 resulted in the proposed consolidated text of the PNCTIS, which was submitted for deliberation by the CNS[37]. Many items defined by the PNCTIS had an unequivocal relationship with the definitions of the PNAF, and regarding health regulation, the PNCTIS highlighted the role of ANVISA regarding the prior consent for patenting of health supplies[37].

The instrument of prior consent by ANVISA in the requests to grant patents for pharmaceutical products and processes resulting from the introduction of art. 229-C to the Intellectual Property Law (Law No. 9,279/96) by Law No. 10.196, of February 14, 2001[38]. The application of the provisions of art. 229-C was the object of Joint Ordinance No. 1, of April 2017, agreed upon by ANVISA and the National Institute of Industrial Property (INPI)[39]. The definitions of this ordinance limit the application of the procedure of prior consent by ANVISA since it may submit subsidies to the INPI's examination regarding the patentability criteria in applications of interest to drug policies or pharmaceutical care within the SUS, but no veto power over compliance with these criteria. This decision followed the opposite path to that indicated by the PNCTIS[37].

In April 2007, after fruitless negotiations with the company holding the patent, the Brazilian government declared the patent rights on Efavirenz *a matter of public interest to grant a compulsory license for non-commercial use*[40], which was followed by the enactment of the Presidential Decree Nº 6.108/2007, establishing the compulsory licensing of Efavirenz[41], government re-

Ciência & Saúde Coletiva, 26(11):5427-5440, 2021

sponse to the context of high vulnerability of the National STD/AIDS Program (PN DST/AIDS), established in 1986[42-44] and whose free access to medicines by people living with HIV was established by Law No. 9.313, of November 1996[45]. The impacts of the Brazilian Patent Law[46] and the constant price hike of ARVs started to affect the sustainability of the Brazilian program, with around 70% of the PN STD/AIDS budget in the 2006-2007 period committed to the acquisition of imported ARVs[47]. After adopting the compulsory license, the national production of Efavirenz was taken over by the Farmanguinhos/Fiocruz[4,48] Pharmaceutical Technology Institute, facilitated by partnerships with national pharmaceutical and pharmochemical companies.

This initiative was anchored in the Interministerial Ordinance No. 128/2008, which established the *guidelines for contracting drugs and medicines by the bodies and entities that make up the Unified Health System*[49,50]. This productive arrangement was one of the pioneering examples of the use of the strategy that would later shape the Partnerships for Productive Development (PDP)[4]. These actions were aligned with the principles and strategic axes of PNAF[1].

In this scenario, ANVISA acted proactively and published Ordinance No. 583/2007, which established *the Technical-Regulatory Committee (CTR) within ANVISA to monitor the development, production, and registration of the drug object of the Decree N° 6.108 in Brazil, dated May 4, 2007*[51]. This definition was innovative in the Brazilian regulatory-health setting, enabling an early and collaborative interface between the regulatory authority and the productive entities responsible for technological development initiatives of national interest. In February 2009, Farmanguinhos/Fiocruz delivered to the Ministry of Health the first batches of nationalized production of ARV Efavirenz[52], facilitated by the reduced regulatory times promoted by the CTR.

The National Policy for Productive Development was established in May 2008 as one of the initiatives to confront the marked acceleration of the deficit in the Brazilian trade balance in the pharmaceutical and medicine segments since the 2000s[53]. It defined the Economic-Industrial Health Complex (CEIS) as one of its priorities, accompanied by the establishment of the Executive Group for the Health Industrial Complex (GECIS) through Decree/2008[54,55]. As the national manager of the SUS, the Ministry of Health assumed the role of conducting intersectoral initiatives to regulate and improve the efficiency of the CEIS, involving the industrial, economic, and technological fields, and meet SUS demands[4,56]. The development policy defined in 2008 resumed and expanded the breadth and depth of the PITCE established in 2004[57]. As provided for in the Decree of its establishment[55], the setting of a permanent forum for articulation with civil society to provide advice to the GECIS was defined, which placed the premise for the different social stakeholders' participation in proposing strategies actions for the development of the health sector[58]. Regarding health regulation, GECIS' competencies included actions to guarantee isonomic health regulation and support the quality of national production, including the modernization of health surveillance actions and the establishment of a support network for the quality and competitiveness of local production and the simplification and streamlining of regulatory processes[36,53]. These definitions reinforced ANVISA's initiatives to adopt the CTRs as a regulatory practice, especially from the positive results observed in the process resulting from the compulsory license adopted in 2007.

In the setting where public health policies were directed towards a virtuous articulation between health care and industrial development[59], public procurement has become a vital instrument for inducing technological training and development of the productive base to reduce the vulnerability of the SUS and generate investments, employment, and income[4]. These assumptions are aligned with the guidelines and strategic axes established in the PNAF. As of 2009, PDPs were defined as an instrument established within the health policy to stimulate the CEIS and meet SUS demands[4,36,60,61]. They are, therefore, an industrial policy mechanism used in health to internalize production and transfer drug technology, active pharmaceutical ingredients, and products of interest to the SUS[62]. This initiative occurs under the coordination of the Ministry of Health presented under the GECIS in 2009[61], through the establishment of a partnership between the technology holding company and a public producer entity qualified to supply the product to the SUS during the period of technological absorption, with the centralized acquisition by the Ministry of Health[4,63,64]. This strategy was a practical consequence of the inclusion of CEIS among the strategic axes of national health planning, strengthening the national pharmacochemical industry and official pharmaceutical laboratories, based on the arrangement for the transfer of technologies demanded

by the SUS[28]. In building and implementing the PDPs, the Ministry of Health, primarily through the SCTIE, assumed a prominent role as an institutional actor, with significant results for the sustainability of access to medicines in the SUS. From 2011 to early 2017, the savings resulting from the centralized purchase of medicines covered by the PDP reached BRL 4.68 billion[36]. In this context, ANVISA defined the establishment of Technical-Regulatory Committees (CTR) to follow up and monitor the different partnerships defined for each public pharmaceutical laboratory involved[61,63]. Such CTRs were formally anchored in the Resolution of the Collegiate Board of Directors (RDC) of ANVISA of 02/2011[65], building on the successful regulatory practice experience adopted when the compulsory license of Efavirenz was issued in 2007.

The actions to include the CEIS in the national development policy and its strengthening to meet the demands of the SUS were reinforced with the incorporation of the GECIS into the *Brasil Maior* Plan, established in 2011 by Decree No. 7.540[66,67]. In this new setting, the Ministry of Health established the Program for the Development of the Health Industrial Complex (PROCIS) through MS Ordinance No. 506/2012[68] to strengthen the infrastructure of production and innovation in health in the public sector. In this context, the guidelines for establishing PDPs were defined through the Ministry of Health's Ordinance No. 837/2012[69], which was based on the National Health Plan[70].

The interfaces of PROCIS with health surveillance are shown by the inclusion of ANVISA in its management committee[68] and the actions of this agency geared to technological and industrial development, such as the edition of RDC No. 50/2012, which provided for the procedures *for the registration of products in the process of developing or transferring technologies that are the object of public-public or public-private Productive Development Partnerships of interest to the Unified Health System*[71]. This regulatory-sanitary definition innovated by setting mechanisms for the systematic internalization of all information related to the development of drugs subject to PDP, resulting in the gradual and monitored composition of product dossiers, with the reduced regulatory time required for the analysis and definition of the respective records and acceleration of their availability in the SUS.

The revision of the legal framework supporting the PDPs was defined by the Ministry of Health's Ordinance No. 2.531/2014[72]. This regulation is related to the macro-policy of use and rationalization of the State's purchasing power, including the criteria for defining strategic products for the SUS and fostering the development of the CEIS[73]. The regulation of the use of the State's purchasing power was the object of the National Policy for Technological Innovation in Health (PNITS), defined by Decree No. 9.245/2017[74], in a weakening Brazilian democracy promoted by the legal-parliamentary coup of 2016[75]. However, the PNITS did not add any advances regarding health regulation. The context in which the PDP regulation was revised was marked by the need for greater transparency in the processes for its definition and the search for greater legal certainty for decision-making within public management. The initiatives adopted were strongly influenced by the recommendations resulting from the audit carried out by the Federal Court of Accounts (TCU), which assessed the regularity of the PDP signed by the Ministry of Health[76]. The new legal framework was an evolution regarding the criteria for defining strategic products for the SUS established in 2008 by Ordinance MS No. 978[77]. However, a recent study indicates that the criteria adopted for constructing a strategic list of products for the SUS do not incorporate elements of health technology assessment and the use of evidence, and the process lacks interactions between researchers and decision-makers[78,79]. Concerning health regulation, the revised legal guidelines of the PDP reaffirmed the role of the CTR and included ANVISA in the Technical Assessment Committees (CTA), responsible for analyzing and evaluating the PDP proposals. Such definitions reinforce ANVISA's strategic role in the context of the CEIS incentive policy and understanding CTR as a practice model in the health-regulatory field.

Final considerations

The study identified essential interfaces between the evolution of regulatory frameworks and practices with initiatives to foster technological development for the national production of medicines of interest to the SUS, based on the guidelines of the National Pharmaceutical Care Policy (PNAF).

Establishing the PDPs was an essential strategy for reducing SUS vulnerabilities. It implemented the Technical Regulatory Committees (CTR) as an innovative practice in health surveillance, considering the successful experience

Ciência & Saúde Coletiva, 26(11):5427-5440, 2021

carried out during the compulsory license for the national production of Efavirenz in 2007. The incentives to the CEIS also boosted the adoption of new milestones and new regulatory practices regarding the internalization and development of technologies, keeping interfaces with PNAF's guiding capacity on sectorial policies aimed at people's access to medicines, with a reduction in time for its availability in the SUS, cost reduction, and addressing SUS vulnerabilities. However, as of 2014, no significant developments were identified in this context.

Although the study period was capped at year 2019, it was essential to refer to the current situation of the COVID-19 pandemic, which shows that investments in scientific and technological development and the adoption of milestones and new regulatory practices are fundamental for the country. Likewise, Brazil must overcome the gaps generated in the sectoral policies with the resumption and enhancement of the advances achieved. To this end, it is crucial to observe the principles defined in the national health policy and its social control, the strengthening of the national system of science, technology, and innovation, and the preservation of state companies with impacts on the health sector, where the State is a regulator that can prioritize national development, as opposed to subordinating it to particular economic interests or institutional neglect.

Collaborations

N Rech and MR Farias worked on the conception and final writing of the paper.

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Article submitted 24/03/2021
Approved 02/08/2021
Final version submitted 04/08/2021

Editors chief: Romeu Gomes, Antônio Augusto Moura da Silva