

Minas Gerais Reference Center for Special Immunobiologicals: clinical and epidemiological profile (2005–2022)

*Centro de Referência para Imunobiológicos Especiais de Minas
Gerais: perfil clínico-epidemiológico (2005–2022)*

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Gerais: perfil clínico y epidemiológico (2005–2022)*

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How to cite this article:

Oliveira TM, Bragança ALG, Alcantara TMPC, Carvalho NS, Ribeiro JGL, Prosdoci EC, et al. Minas Gerais Reference Center for Special Immunobiologicals: clinical and epidemiological profile (2005–2022). Rev Gaúcha Enferm. 2025;46(spe1):e20250108. <https://doi.org/10.1590/1983-1447.2025.20250108.en>

ABSTRACT

Objective: To analyze the clinical and epidemiological profile of remote consultations evaluated by the Reference Center for Special Immunobiologicals of Minas Gerais, Brazil, between 2005 and 2022.

Method: Cross-sectional and retrospective study. Data collection was performed by extracting data from the request forms evaluated in virtual consultations. The statistical program Stata® was used for the analysis. Categorical variables were described using absolute and relative frequencies, and continuous variables were described using median and interquartile range.

Results: Of the 84,800 forms evaluated, 32,750 individuals were eligible to receive special immunobiologicals, with 65,521 doses prescribed. Among these individuals, 11,505 (35.1%) were children, 1,943 (6.0%) were adolescents, 12,024 (36.7%) were adults, and 7,278 (22.2%) were people over 60 years of age. There was a predominance of males with white skin color. The prescription of the Pneumococcal 23 vaccine was more prevalent among adolescents, adults, and the elderly (30.8%, 34.9%, and 63.6%, respectively).

Conclusion: This study analyzed the clinical and epidemiological profile of patients treated at the Reference Center for Special Immunobiologicals in Minas Gerais over a period of 17 years. The characterization of users and prescribed immunobiologicals made it possible to identify this profile, highlighting the relevance of the service.

Descriptors: Immunization; Immunization Programs; Children; Adolescents; Adults; Elderly.

RESUMO

Objetivo: Analisar o perfil clínico-epidemiológico dos atendimentos não presenciais avaliados pelo Centro de Referência para Imunobiológicos Especiais de Minas Gerais, Brasil, entre os anos de 2005 e 2022.

Método: Estudo transversal e retrospectivo. A coleta de dados ocorreu por meio da extração dos dados das fichas de solicitação avaliadas nos atendimentos virtuais. Utilizou-se o programa estatístico Stata® para a análise. As variáveis categóricas foram descritas por meio de frequência absoluta e relativa, e as contínuas, por mediana e intervalo interquartil.

Resultados: Das 84.800 fichas avaliadas, 32.750 indivíduos foram elegíveis para o recebimento dos imunobiológicos especiais, sendo prescritas 65.521 doses. Dentre os indivíduos, 11.505 (35,1%) eram crianças, 1.943 (6,0%) adolescentes, 12.024 (36,7%) adultos e 7.278 (22,2%) pessoas com mais de 60 anos. Houve predomínio de indivíduos do sexo masculino, de cor de pele da autora referida branca. A prescrição da vacina Pneumococo 23 foi mais prevalente entre os adolescentes, adultos e pessoas idosas (30,8%, 34,9% e 63,6% respectivamente).

Conclusão: O presente estudo analisou o perfil clínico-epidemiológico dos atendimentos realizados no Centro de Referência para Imunobiológicos Especiais de Minas Gerais ao longo de 17 anos. A caracterização dos usuários e dos imunobiológicos prescritos possibilitou identificar esse perfil, apontando a relevância do serviço.

Descritores: Imunização; Programas de Imunização; Criança; Adolescente; Adulto; Idoso.

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RESUMEN

Objetivo: Analizar el perfil clínico-epidemiológico de las consultas no presenciales evaluadas por el Centro de Referencia para Inmunobiológicos Especiales de Minas Gerais, Brasil, entre los años 2005 y 2022.

Método: Estudio transversal y retrospectivo. La recopilación de datos se realizó mediante la extracción de los datos de las fichas de solicitud evaluadas. Se utilizó el programa estadístico Stata®. Las variables categóricas se describieron con frecuencia absoluta y relativa, y las continuas, por mediana e intervalo intercuartílico.

Resultados: De las 84 800 fichas, 32 750 personas eran elegibles, y se prescribieron 65 521 dosis. Entre los individuos, 11 505 (35,1%) eran niños, 1943 (6,0%) adolescentes, 12 024 (36,7%) adultos y 7278 (22,2%) personas mayores de 60 años. Hubo un predominio de individuos de sexo masculino, de raza blanca según su propia declaración. La prescripción de la vacuna neumocócica 23 fue más frecuente entre los adolescentes, los adultos y las personas mayores (30,8 %, 34,9 % y 63,6 %, respectivamente).

Conclusión: El presente estudio analizó el perfil clínico-epidemiológico de las consultas realizadas en el Centro de Referencia para Inmunobiológicos Especiales de Minas Gerais a lo largo de 17 años, destacando la relevancia del servicio.

Descriptores: Inmunización; Programas de vacunación; Niños y niñas; Adolescentes; Adultos; Ancianos.

■ INTRODUCTION

Vaccination is an effective public health measure for controlling and eradicating vaccine-preventable infections⁽¹⁾. According to the World Health Organization (WHO), approximately 2 to 3 million deaths are prevented annually due to immunization actions^(1,2).

In Brazil, the National Immunization Program (PNI), implemented in 1973, offers different immunobiologicals free of charge through the Unified Health System (SUS) and the Ministry of Health (MS)^(1,2). The PNI is recognized worldwide for its large contribution and capillarity, currently including 49 different immunizers among the vaccination schedules defined for children, adolescents, adults, elderly people and pregnant women⁽²⁾.

To ensure equity of care in vaccination campaigns, in 1993, the PNI was expanded with the creation of the Reference Centers for Special Immunobiologicals (CRIE), public vaccination centers that offer free special immunizations not included in the population's routine vaccination record⁽³⁾. These immunobiologicals are made available to individuals with clinical conditions, such as congenital or acquired immunodeficiencies, neurological and hematological diseases, immunosuppressive treatments, heart diseases, lung diseases, and others, with exposure to risk situations that present a greater chance of infection or serious illness from certain pathogens, as well as those with specific immunization recommendations and their own schedule⁽²⁻⁴⁾.

In 1994, the state-level CRIE was inaugurated in Minas Gerais, in the capital Belo Horizonte. Currently, the management of the Center is shared between the Municipality of Belo Horizonte and the State Department of Health⁽⁵⁾. The initiative was designed to contribute to the access of individuals with diseases that increase the risk of infections preventable by immunization actions⁽³⁾, and it also makes it possible to optimize home contacts, vaccines, serums and immunoglobulins not offered in Basic Health Units^(2,3,6).

To be eligible for targeted care and have access to special immunobiologicals, users must have a medical prescription justifying the indication, accompanied by a clinical report detailing the diagnosis and health status⁽³⁾. The request is evaluated by a qualified CRIE professional, a physician or nurse, who, based on the current indication criteria, authorizes and dispenses the immunobiological to the patient^(3,7). In this scenario, the importance of telemedicine in CRIE care stands out, as it is a promising strategy for health care, well-accepted by users, and that can improve access and expand the reach of the PNI⁽⁸⁾.

With the aim of structuring more physical centers and virtual services, since 2022, the CRIE-MG has been decentralized in the state's macro-regions⁽⁹⁾. Thus, the Virtual CRIE was developed to expand access to special immunobiologicals for the eligible population, allowing non-face-to-face services to this group, so that these individuals can be vaccinated at a health center close to their homes, without the need to physically travel to CRIE⁽⁸⁻¹⁰⁾.

Immunization is considered a strategy for reducing morbidity and mortality, especially among individuals with special clinical conditions, by preventing infections that can worsen health conditions and increase the risk of serious complications^(2,3,11). In this context, the implementation of services provided by CRIE contributes to the achievement of public health goals, since it enables the immunization of individuals who have contraindications to conventional vaccines or who require special regimens to increase protection against vaccine-preventable diseases, in addition to reducing the socioeconomic impacts of vaccine-preventable conditions^(3,12).

Therefore, the present study aimed to analyze the clinical and epidemiological profile of remote care services evaluated by CRIE-MG between 2005 and 2022. It raises questions about service demands and produces information on the care provided to special population groups monitored at a CRIE in the southeastern region of the country. The study is relevant because it fosters discussions about the indications

for special immunobiologicals and, consequently, contributes to expand access to the CRIE.

METHOD

Cross-sectional study that uses data from the Information System of Reference Centers for Special Immunobiologicals (SI-CRIE) of CRIE in Minas Gerais, Brazil, from 2005 to 2022.

The State of Minas Gerais is composed of 853 municipalities, covering an area of 586,522.122 km² and with an estimated population of 21,322,691 inhabitants, as of 2024. To optimize health management, the state is divided into 19 Regional Health Superintendencies (SRS) and 9 Regional Health Management (GRS). These territorial units perform essential functions such as the implementation of state health policies, advice on the organization of services, and the coordination, evaluation, and monitoring of health actions⁽¹³⁾.

The CRIE-MG, located in the city of Belo Horizonte, plays a central role in supporting the other CRIEs in the state and acts as a matrix unit for the network^(3,9). Therefore, the services analyzed in this study come from requests for non-face-to-face services sent by the GRS and SRS, through the macro-regional health units, for evaluation by CRIE-MG professionals.

To make a request, the patient must complete a special immunobiological request form from the user's local referral service. This form is forwarded by the regional health units for evaluation by CRIE-MG professionals. The form is evaluated based on the criteria and guidelines of the current CRIE Manual. In cases where the patient has an indication for the requested immunobiological, the CRIE-MG professional issues an approval report for the request, allowing the patient to receive the necessary immunobiological, by returning the case to the macro-regional health units⁽⁴⁾.

Data was collected using a database provided by the State Department of Health, which already contained anonymized information, making it impossible to identify users. This procedure ensured data confidentiality and privacy, in accordance with ethical principles for research involving human subjects. The analyzed data were obtained by extracting information recorded in spreadsheets from special immunobiological request forms received by the Minas Gerais CRIE, intended for virtual CRIE services, between 2005 and 2022.

In this study, sociodemographic variables were analyzed, such as sex (male and female); age (in years and by life cycle—children between zero and nine years old, adolescents

over nine and up to 18 years old, adults between 19 and 59 years old, and people over 60 years old); self-referred race/color (white, indigenous, black, and mixed race); and regional health unit responsible for referral (28 units in the state). Clinical and care variables were composed of the period of care stratified into three blocks, based on the behavior of the variable and milestones such as the COVID-19 pandemic (2005 to 2012, 2013 to 2019, and 2020 to 2022), clinical diagnosis of the referred individual (15 categories), and the reason for referral (30 categories), as well as variables related to the immunobiologicals prescribed (19 categories).

Given the large number of categories for the immunobiological indication and clinical diagnosis variables, only the four most frequent categories observed in the data for these variables in each life cycle were presented. The increased demand made SI-CRIE insufficient for recording and managing requests. Therefore, during 2022, records of remote consultations were migrated to other spreadsheets. This may explain the high number of records during this period, as well as the social isolation measures resulting from the COVID-19 pandemic.

Therefore, this study included all request forms for remote care evaluated between June 2005 and April 2022 that were considered eligible for immunobiological prescription. To minimize potential sources of bias, when the spreadsheets were available, a consistency analysis of the records was performed.

Essential variables for carrying out the analyses were missing, and the exclusion criterion was incomplete data regarding the variables date of birth, sex, and the referring unit. These criteria were adopted to address the study objective and to more accurately present the epidemiological profile of individuals, as well as life cycle analyses.

Furthermore, by applying the exclusion criteria and analyzing data consistency, which identified exact duplicates, 32 records were excluded from this analysis. Some other variables had incomplete records, which resulted in a reduction in the number of records analyzed for some variables.

The data were subjected to descriptive analysis using the Stata® statistical program, version 17.0. Categorical variables were described using absolute and relative frequencies, and continuous variables using median and interquartile range (IQR), after verifying data asymmetry. The study was approved by the Research Ethics Committee of Universidade Federal de Minas Gerais, under Protocol no. (CAAE 78079324.2.0000.5149).

■ RESULTS

From June 2005 to April 2022, 84,800 people were assisted through CRIE-MG's remote service (Figure 1). After analysis, 32,750 of these individuals met the current criteria for vaccination with immunobiologicals offered by the CRIE. It should be noted that more than one immunobiological may have been authorized for the same patient, depending on the indication, resulting in a total of 65,521 immunobiologicals prescribed during the period analyzed.

Among the individuals, 11,505 (35.1%) were children between zero and nine years old, 1,943 (6.0%) adolescents aged over nine years up to 18 years old, 12,024 (36.7%) adults and 7,278 (22.2%) people over 60 years old.

Regarding the child population, most (6,115 — 53.1%) were male, self-reported white skin color (2,785 — 60.9%), and had a median age of 1.51 years. Among adolescents, 54.8% were male, with 53.7% self-reported white skin color, and a median age of 12.45 years. In the adult group, 6,194 (51.5%) were male, with the most prevalent self-reported white skin color 3,445 (48.1%) and a median age of 42.49 years. Elderly people had a median age of 72 years, female prevalence 3,992 (54.8%), and self-reported white skin color in 3,251 (66.7%) of the analyzed data. Most of the care was provided between 2013 and 2019 and the lowest frequency was found between 2020 and 2022 (Table 1).

Most referrals for non-face-to-face care to CRIE-MG during the study period came from the Regional Health Unit (URS) of Coronel Fabriciano with 14.7% (4,836) referrals, followed by the URS of Pouso Alegre and Divinópolis, with 9.6% and 9.2% of requests, respectively (Table 2).

The second highest prevalence of indications for "chronic lung disease" was observed in children and adolescents. The most prevalent indication for special immunobiologicals in adults was "people living with HIV/AIDS," and for the elderly, the most prevalent indication was "chronic lung disease."

The "respiratory system disease" category was the second most prevalent. Among adults, the "some infectious and parasitic diseases" category was the most frequent, and among older adults, the most common clinical diagnosis was "respiratory system disease." Data are presented in Chart 1.

Regarding the most prescribed immunobiologicals for each life cycle, the Pneumococcal 23 vaccine was most prevalent in adolescents, adults, and the elderly, reaching 30.8%, 34.9%, and 63.6%, respectively. In children, the most prevalent immunobiological was Pneumo conjugate 7v, with 18.1% (Table 3). For each referred individual, more than one immunobiological may have been prescribed, depending on the indication and/or clinical diagnosis, with a prominent prescription for the Pneumococcal 23 immunobiological, with 21,245 (32.4%) indications.

Figure 1 – Flowchart of sample entry into the study. Belo Horizonte, Minas Gerais, Brazil, 2025.

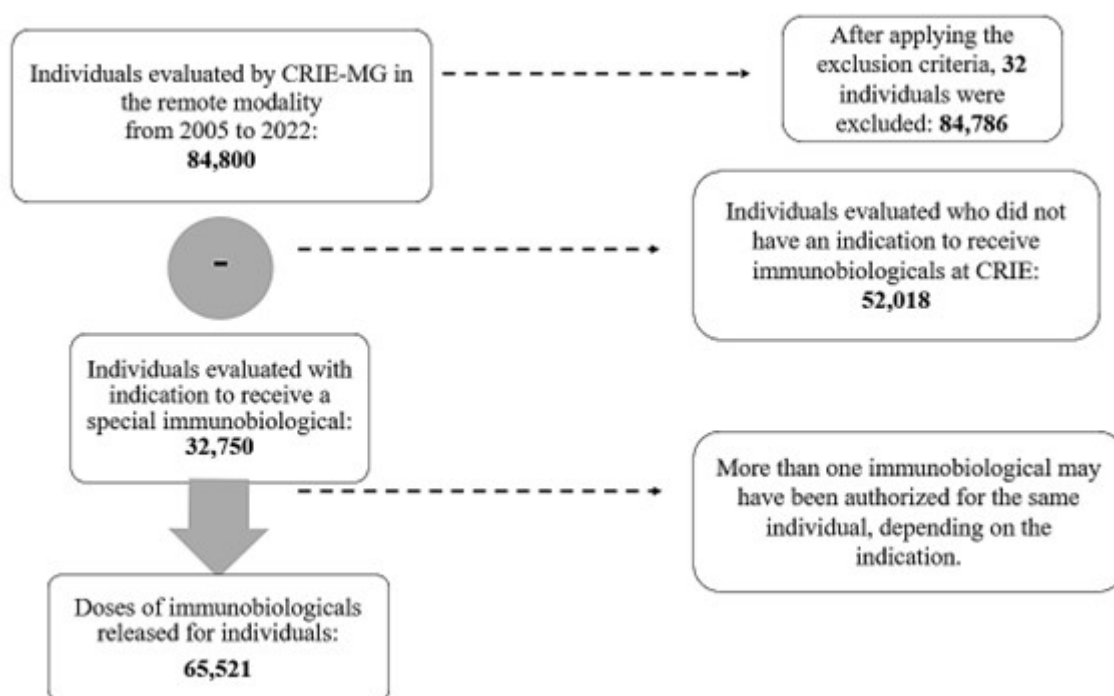


Table 1 – Sociodemographic analysis of the individuals included in the study, by life cycle. Belo Horizonte, Minas Gerais, Brazil. 2025.

Sociodemographic variables		Period n (%)			Life cycles n (%)			
		2005-2012 n=26,588	2013-2019 n=31,826	2020-2022 n=7,111	Children n=11,505	Teenagers n=1,943	Adults n=12,024	Elderly people n=7,278
Sex n=32,750	Feminine	6,343 (47.9)	8,765 (50.1)	982 (48.6)	5,390 (46.9)	878 (45.2)	5,830 (48.5)	3,997 (54.9)
	Masculine	6,885 (52.1)	8,734 (49.9)	1,040 (51.4)	6,115 (53.1)	1,065 (54.8)	6,194 (51.5)	3,287 (45.1)
Self-reported race/color n=17,441	White	2,324 (60.3)	7,032 (57.2)	574 (44.7)	2,785 (60.9)	449 (53.7)	3,445 (48.1)	3,251 (66.7)
	Indigenous	2 (0.1)	17 (0.1)	2 (0.2)	11 (0.2)	2 (0.2)	6 (0.1)	2 (0.0)
	Brown	1,199 (31.1)	4,178 (34.0)	581 (45.2)	1,512 (33.1)	291 (34.8)	2,892 (40.4)	1,264 (26.0)
	Black	329 (8.5)	1,074 (8.7)	128 (9.9)	263 (5.8)	94 (11.3)	818 (11.4)	356 (7.3)
Age (in years) n=32,750	Median (IIQ)*	4.63 (1.25; 25.03)	49.26 (24.05; 66.47)	48.46 (29.25; 62.36)	1.51 (0.56; 3.88)	12.45 (10.50; 14.87)	42.49 (31.51; 52.11)	72.29 (65.93; 79.96)

Note: *IIQ – Interquartile Range.

Table 2 – Regional health units referring individuals included in the study, Belo Horizonte, Minas Gerais, Brazil. 2025.

Regional health units of Minas Gerais	n (%)
URS Coronel Fabriciano	4,836 (14.8)
URS Pouso Alegre	3,171 (9.7)
URS Divinópolis	3,001 (9.2)
URS Alfenas	1,908 (5.8)
URS Juiz de Fora	1,819 (5.5)
URS Varginha	1,800 (5.5)
URS Sete Lagoas	1,615 (4.9)
URS Itabira	1,537 (4.7)

Table 2 – Cont.

Regional health units of Minas Gerais	n (%)
URS Montes Claros	1,305 (4.0)
URS Barbacena	1,290 (3.9)
URS Governor Valadares	1,198 (3.7)
URS Ubá	1,113 (3.4)
URS Passos	951 (3.0)
URS Patos De Minas	914 (2.8)
URS Ponte Nova	868 (2.6)
URS Uberaba	866 (2.6)
URS Leopoldina	713 (2.2)
URS São João Del Rei	625 (1.9)
URS Manhuaçu	569 (1.7)
URS Diamantina	480 (1.5)
URS Januária	442 (1.3)
URS Teófilo Otoni	422 (1.3)
URS Ituiutaba	412 (1.3)
URS Unaí	394 (1.2)
URS Pedra Azul	247 (0.7)
URS Pirapora	184 (0.6)
URS Belo Horizonte	69 (0.2)
URS Uberlândia	1 (0.0)
Total	32,750 (100.0)

Note: *URS: Regional Health Units.

Chart 1 – Indication for special immunobiologicals and clinical diagnosis of individuals included in the study by life cycle. Belo Horizonte, Minas Gerais, Brazil. 2025.

Life cycle	Indication of special immunobiological	n (%)	Clinical diagnosis	n (%)
Children	Others	3,396 (29.0)	Others	3,390 (29.5)
	Chronic lung disease	2,240 (19.5)	Respiratory system diseases	2,361 (20.5)
	Susceptible newborn	1,419 (12.3)	Some conditions originating in the perinatal period	1,730 (15.0)
	Chronic cardiovascular disease	670 (5.8)	Diseases of the blood and hematopoietic organs	1,253 (10.9)
Teenagers	Others	602 (31.0)	Others	636 (32.7)
	Chronic lung disease	407 (20.9)	Respiratory system diseases	413 (21.3)
	Anatomical or functional asplenia	229 (11.8)	Diseases of the blood and hematopoietic organs	409 (21.0)
	Patients with hemoglobinopathies	123 (6.3)	Endocrine, nutritional and metabolic diseases	103 (5.3)
Adults	People living with HIV/AIDS	2,903 (24.1)	Some infectious and parasitic diseases	3,303 (27.5)
	Others	2,129 (17.7)	Others	2,741 (22.8)
	Chronic lung disease	1,301 (10.8)	Respiratory system diseases	1,314 (10.9)
	Anatomical or functional asplenia	962 (8.0)	Diseases of the blood and hematopoietic organs	1,225 (10.2)
Elderly People	Chronic lung disease	2,190 (30.1)	Respiratory system diseases	2,267 (31.1)
	Others	1,188 (16.3)	Others	1,652 (22.7)
	Diabetes <i>Mellitus</i>	1,089 (15.0)	Endocrine, nutritional and metabolic diseases	1,104 (15.1)
	Protocol	624 (8.6)	Diseases of the circulatory system	659 (9.0)

Note: * The four most frequent categories of each variable in each life cycle were selected.

Table 3 – Immunobiologicals prescribed for individuals included in the study, by life cycle. Belo Horizonte, Minas Gerais, Brazil. 2025.

Immunobiologicals	Life cycles n (%)				Total doses per immunobiological
	Children	Teenagers	Adults	Elderly People	
BCG*	2 (0.0)	–	–	–	2 (0.0)
Adult Double vaccine	–	8 (0.20)	273 (1.0)	83 (0.8)	364 (0.5)
Children's Double	1 (0.0)	–	1 (0.0)	1 (0.0)	3 (0.0)
Typhoid Fever	1 (0.0)	–	15 (0.1)	-	16 (0.0)
<i>Haemophilus influenza</i> B (Hib)	2,526 (11.1)	297 (7.3)	2,593 (9.4)	880 (8.0)	6,296 (9.6)
Hepatitis A	2,019 (8.9)	566 (13.9)	3,866 (14.0)	858 (7.8)	7,309 (11.2)
Hepatitis B	156 (0.7)	48 (1.2)	793 (2.9)	193 (1.8)	1,190 (1.8)
Influenza	3,741 (16.4)	942 (23.2)	4,522 (16.3)	711 (6.5)	9,916 (15.1)
Meningococcal Conjugate	2,052 (9.0)	560 (13.8)	4,311 (15.6)	885 (8.0)	7,808 (11.9)
Pentavalent†	2 (0.0)	1 (0.0)	–	–	3 (0.0)
Pneumo conjugate 10V	4 (0.0)	–	6 (0.0)	1 (0.0)	11 (0.0)
Pneumococcal conjugate 7	4,137 (18.1)	25 (0.6)	30 (0.1)	6 (0.1)	4,198 (6.4)
Pneumococcus 23	3,354 (14.7)	1,249 (30.8)	9,662 (34.9)	6,980 (63.6)	21,245 (32.4)
Inactivated polio	416 (1.8)	25 (0.6)	323 (1.2)	115 (1.0)	879 (1.3)
Tetavalent‡	2 (0.0)	–	–	–	2 (0.0)
Triple acellular	2,463 (10.8)	7 (0.2)	97 (0.3)	42 (0.4)	2,609 (4.0)
Triple viral	3 (0.0)	1 (0.0)	10 (0.0)	–	14 (0.0)
Triple-DTP§	–	–	10 (0.0)	1 (0.0)	11 (0.02)
Varicella	1,929 (8.5)	334 (8.2)	1,158 (4.2)	224 (2.0)	3,645 (5.6)

Note: *BCG: Bacillus Calmette and Guérin, †Pentavalent (DTP+Hepatitis B+Hib), ‡Tetavalent: DTP+Hib, Triple-DTP: SAdsorbed diphtheria, tetanus and pertussis vaccine.

DISCUSSION

During the study period, 84,800 requests for remote appointments were analyzed, and 65,521 doses of immunobiologicals were released for 32,750 individuals at CRIE-MG. Most of these individuals were adults who reported being white. The Pneumococcal 23 vaccine stood out among the vaccines released for adolescents, adults, and the elderly.

This study provides a detailed analysis of the remote care provided at CRIE-MG, considering life cycles, sociodemographic profiles, clinical conditions, and indications for special immunobiologicals offered over a 17-year period. The results support the strengthening of the PNI's role in assisting vulnerable populations and highlight the importance of CRIE as a necessary service to meet a growing and diverse demand for special immunobiologicals, especially among populations with specific conditions.

Argentina, Brazil, and Uruguay have ranked first in the vaccination rankings for special populations in Latin America due to policies that include immunobiologicals targeted at priority groups⁽¹⁴⁾. These policies cover groups of individuals more susceptible to diseases or at risk of complications for themselves or others^(3,4,14). Such aspects demonstrate these countries' commitment to ensuring expanded protection for higher-risk populations and their efforts to reduce gaps in immunological vulnerability, with a view to contributing to the prevention of vaccine-preventable infectious diseases⁽¹⁴⁾.

The sociodemographic analysis of this study reveals that, although all age groups are contemplated, children were the second more frequently referred, which may indicate this group's vulnerability to immunization. Low-income families or those with limited access to health care have lower vaccination rates, reflecting socioeconomic disparities in access to health services, especially exacerbated by the COVID-19 pandemic^(1,15). Specialized immunobiologicals are essential for protecting population groups with greater immunological vulnerability, such as immunocompromised individuals, children with comorbidities, pregnant women, and the elderly^(4,11,14,15).

A higher prevalence of care was obtained for people who self-identified as white, which may reflect the persistence of historical inequalities that directly impact the health of these populations and reinforces the need for equity for the black and brown population in Brazil⁽¹⁶⁾. The Brazilian population, composed of black people (black and brown), continues to be neglected in public policies and in the provision of quality health care, exacerbating inequality in access to health services^(1,13). Furthermore, a national study highlighted greater vaccination difficulties among children of black or brown mothers, also reinforcing the need for equitable

public policies aimed at removing barriers to vaccination and improving the quality of health services⁽¹⁷⁾.

Most referrals for remote care came from the Coronel Fabriciano URS. The Coronel Fabriciano URS serves 35 municipalities in the state and is responsible for providing health services to approximately 790,000 people⁽¹³⁾. These regions, with a history of successful agricultural and industrial cycles, have developed more than the others⁽¹⁸⁾, which may partially explain this emphasis on referrals to the CRIE.

As an organizational principle of the SUS, decentralization has favored the reduction of regional and social inequalities, the expansion of a health care network, and access to vaccination for the entire Brazilian population, regardless of location⁽¹⁹⁾. As a reflection of the national health conferences, important advances such as decentralization and social participation stand out, as well as the role they played in defining guidelines and priorities. However, on the other hand, there are still ongoing challenges in building a more equitable and effective health system⁽²⁰⁾.

The data from this study highlight the predominance of conditions such as chronic lung diseases and infections, especially in children and the elderly, a result consistent with those found in the literature, which presents these groups as being at higher risk for complications associated with respiratory infections and other chronic conditions^(21,22). The epidemiological relevance of respiratory diseases, particularly among children and the elderly, is considered, making it necessary to maintain specific vaccination coverage for these groups⁽²³⁾. The WHO reinforces the importance of immunizing vulnerable children with specific vaccines to ensure individual protection and reduce the circulation of infectious agents^(1,24).

The indication of special immunobiologicals among the adult group revealed a higher prevalence of people living with HIV/AIDS, a situation with a major impact on the quality of life of the young and adult population⁽²⁴⁾. Implementation, continuous updating and recommendation for the use of special immunobiologicals are supported by public policies that aim to reduce the morbidity associated with these diseases, represent an advance in benefiting the vulnerable population and optimize the costs of hospitalizations and treatments resulting from preventable infections^(9,11).

It is worth highlighting the need for research that provides greater access for individuals recommended to receive the immunobiologicals available at the CRIE.

A collaboration between nursing teams to integrate the HIV Outreach Service (SEAP) and CRIE services found a strategy to facilitate access to the PCV-13 vaccine for people living with HIV at their point of care, thus overcoming physical barriers, logistical management of vaccines, and professional training⁽²⁵⁾.

Regarding clinical diagnoses, the prevalence of “respiratory tract diseases” and “infectious and parasitic diseases” among users reveals that CRIE-MG virtually serves a population that, in addition to being at high risk, has a diverse clinical profile. These findings reflect the challenges faced in public health, considering the country’s epidemiological transition and the increase in chronic diseases in Brazil^(3,26). In this context, it is worth highlighting that, while some infectious and parasitic diseases still exist, the diversity of other diagnoses leads to reflection on the heterogeneity of the population and reinforces the need for disease prevention and health promotion actions to achieve reductions in cases of diseases considered vaccine-preventable⁽²⁷⁾.

Among the immunobiologicals indicated for children, the most notable are pneumococcal 7V, Influenza, and Pneumococcal 23V, immunobiologicals that prevent complications of respiratory diseases. The use of pneumococcal conjugate vaccines in children has resulted in a significant and well-documented reduction in cases of invasive pneumococcal disease and pneumonia, especially in middle- and high-income countries, where these vaccines were introduced starting in 2000⁽²⁸⁾. A study conducted in Canada to evaluate the impact of the pneumococcal conjugate vaccine at the population level on hospitalizations for pneumonia and costs states that publicly funded pneumococcal vaccine programs significantly reduced the burden of pneumococcal disease between 2005 and 2015⁽²⁹⁾.

The influenza vaccine was among the most recommended for older adults. The importance of promoting healthy aging and expanding vaccination coverage is evident, adopting a lifelong immunization approach to reduce the impact of these diseases⁽²³⁾. In this scenario, the increase in life expectancy, combined with technological and medical advances, has resulted in a significant increase in the prevalence of chronic diseases in the population⁽²⁶⁾, which increase the risk of infections that can be prevented by immunization, also preventing decompensation of the underlying disease^(3,11).

The free and equitable inclusion of individuals with special health conditions is crucial to minimize health inequalities and address the particularities of each individual, recognizing the diversities that permeate the Brazilian population^(15,17,18). Furthermore, initiatives such as these are reinforced by global programs that advocate immunization as an essential tool to combat inequalities, expand vaccination coverage, and offer enhanced protection against preventable diseases^(3,14).

In this scenario, the assessments carried out by the doctor and/or nurse responsible for the CRIE stand out^(4,8,25). Strengthening and expanding the CRIE, as well as adopting training and surveillance measures, are essential strategies to improve access and effectiveness of vaccination in vulnerable populations^(3,6). Nursing works to promote and implement

vaccination strategies comprehensively, at the individual and community levels. Therefore, vaccination transcends the sphere of individual health, constituting an ethical and social commitment, essential for collective protection and the well-being of the population⁽³⁰⁾.

The findings of this study highlight the need for continuous improvement of vaccination policies, considering specific clinical and sociodemographic factors. Another relevant aspect is the fact that the “others” category is prominent in the completion of special immunobiological request forms for the variables of immunobiological indication and clinical diagnosis. This occurred due to limitations in the SI-CRIE itself, in which the fields were limited and sometimes did not include the user’s indications and diagnoses at the time of evaluation.

With each new edition of the CRIE manual, the indications for special immunobiologicals are updated to contribute to the quality and safety of these products offered to eligible individuals^(3,6). Limitations in the classification of health conditions or in the completion of medical records may suggest the need for standardization and improvement in the recording of diagnoses and indications, to optimize and improve the analysis and comparability of data over time.

Due to the use of secondary data, this study has some limitations, which may be related to the quality of the records kept by healthcare professionals or possible inaccuracies in the records. Nevertheless, the study presents a comprehensive synthesis of the available data, offering an overview of the reality of remote care services assessed by CRIE in Belo Horizonte, Minas Gerais, Brazil.

■ CONCLUSION

The present study attempted to analyze the clinical and epidemiological profile of services provided at CRIE-MG over a 17-year period. During this period, 84,800 requests for remote care were analyzed, and 65,521 doses of immunobiologicals were dispensed to 32,750 individuals. Of these, 31,826 care services were provided between 2013 and 2019, most of which to adults, aged 19 to 59 years (36.7%), referred by the URS of Coronel Fabriciano (14.8%). Chronic lung disease was among the four most frequent indications across all life cycles, and the Pneumococcal 23 vaccine stood out among the prescribed immunizations (32.4%). The results showed that the characterization of users and prescribed immunobiologicals allowed for the identification of the clinical and epidemiological profile of each life cycle, highlighting the importance of the service. In this context, the decentralization of the CRIEs is an initiative that enhances the benefits for public health within the scope of special immunization.

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■ Availability of data and material

Access to the dataset may be granted upon request to the corresponding author.

■ Acknowledgments

To the Observatory of Research and Studies in Vaccination of the UFMG School of Nursing (OPESV – EE UFMG), the Municipality of Belo Horizonte (PBH) and the State Department of Health of Minas Gerais (SES-MG) for their support in carrying out this study.

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Associate editor:

Ricardo de Mattos Russo Rafael

Editor-in-chief:

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Received: 05.01.2025

Approved: 09.17.2025

