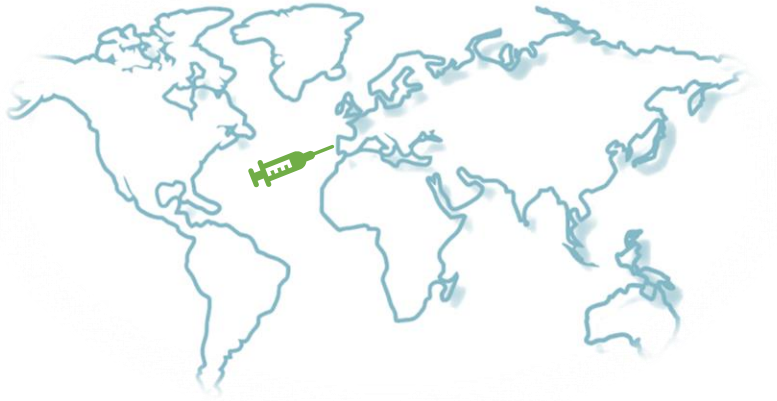
UNIDADE LOCAL DE SAÚDE COIMBRA

1 2 9 0 FACULDADE DE MEDICINA UNIVERSIDADE D COIMBRA

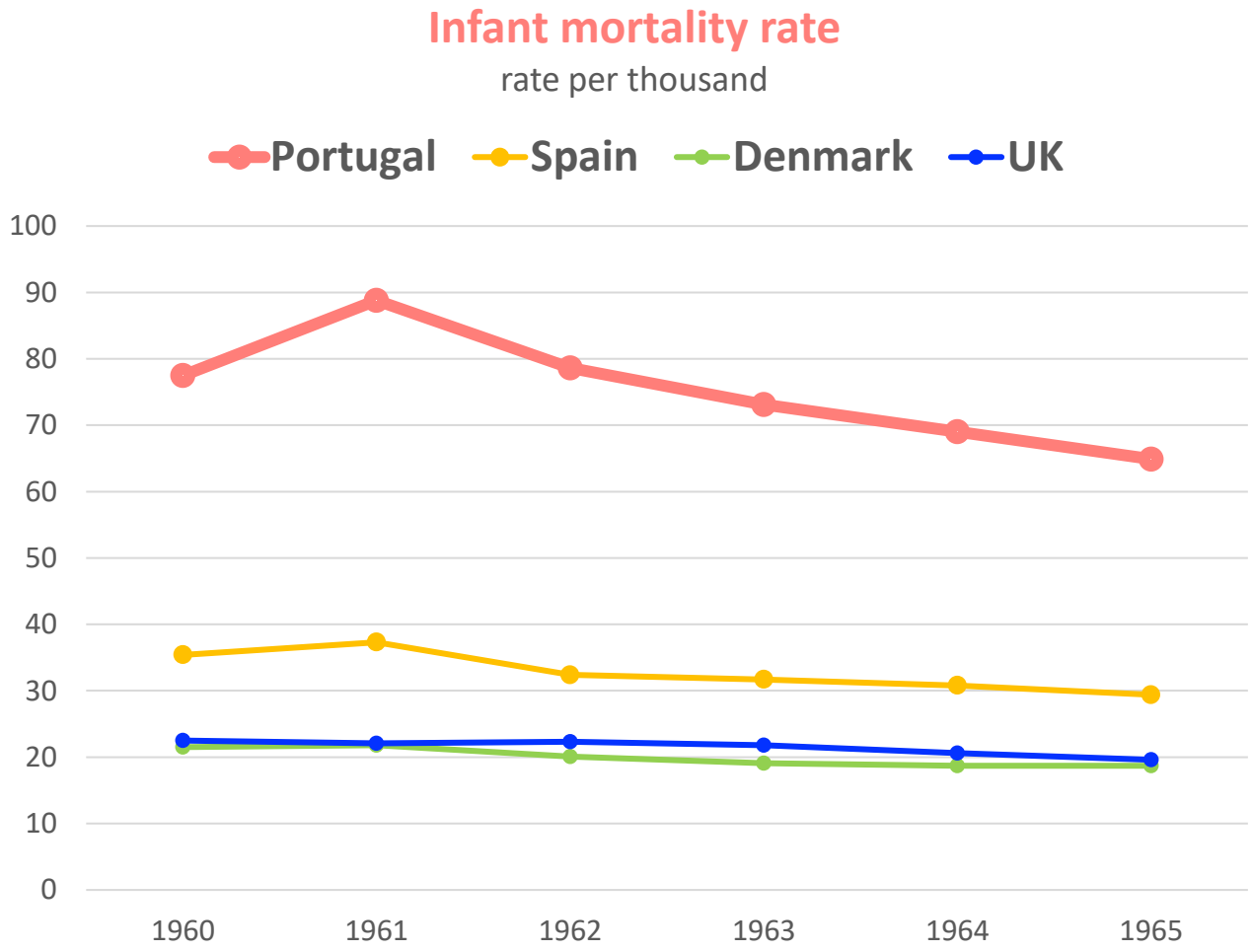
Adult Immunization Board

From children to adults: applying Portugal's Pediatric vaccine success to adult immunization



Fernanda Rodrigues
Hospital Pediátrico de Coimbra, ULS Coimbra
Faculdade de Medicina, Universidade de Coimbra
Portugal

1960s in Portugal: the impressive infant mortality rate



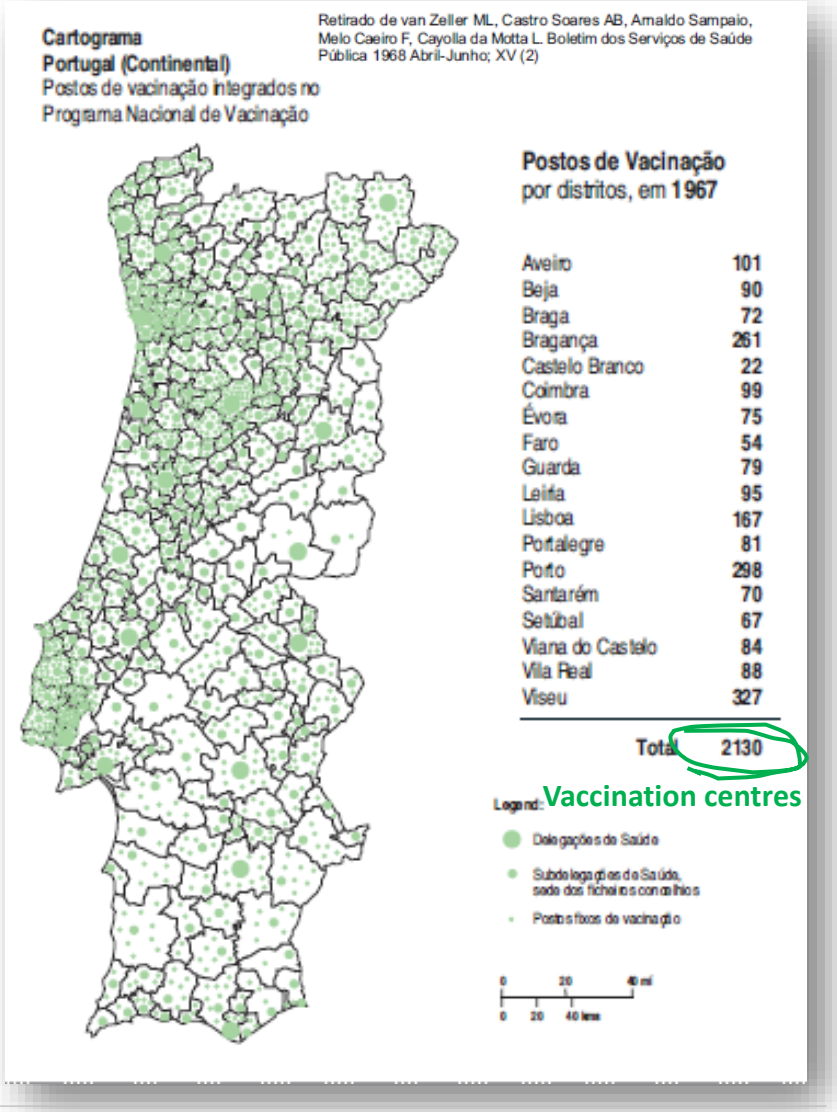
Data Sources: Eurostat | UN | NSI - Rapid, Joint, Nowcast Data Collections l Source: PORDATA l Last updated: 2024-04-02

Need for urgent action: the National Vaccination Programme (NVP)

Arnaldo Sampaio (1908-1984)

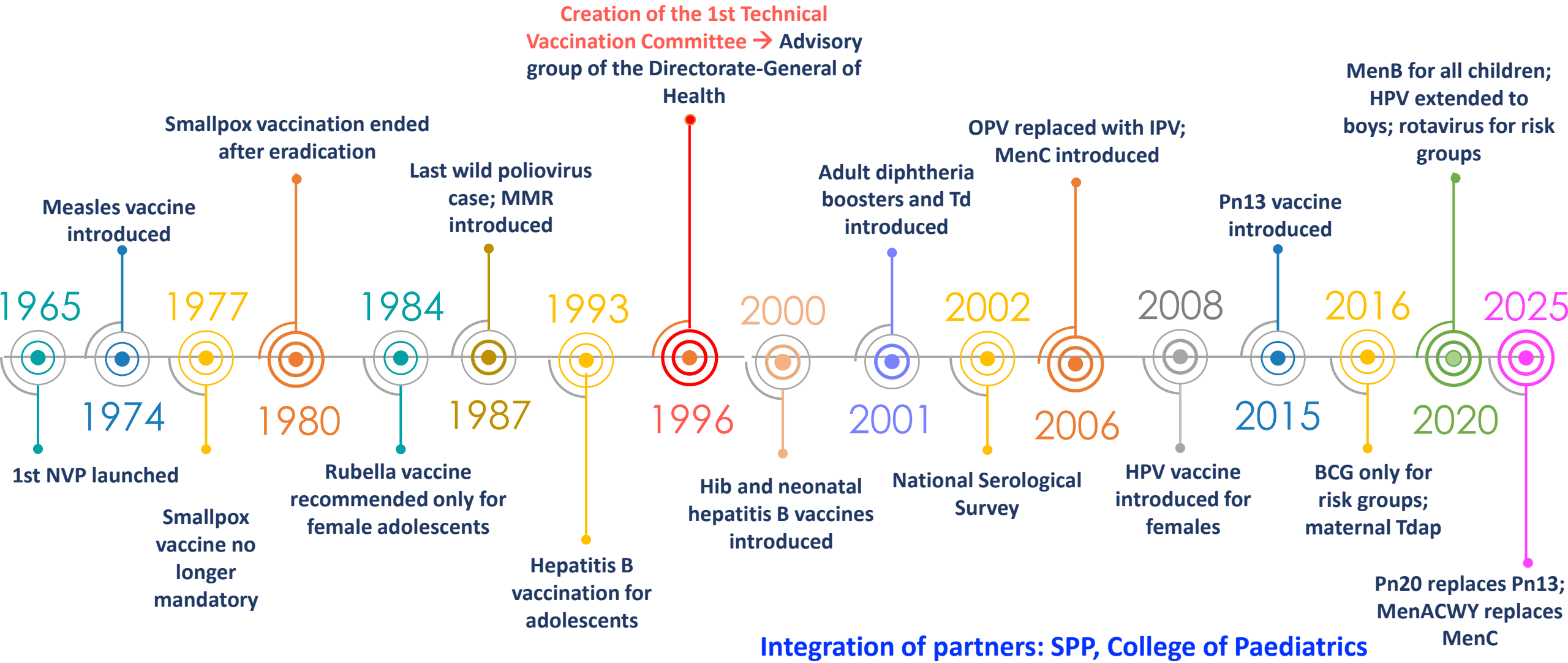
1st NIP - 1965
1. Smallpox
2. Diphtheria
3. Tetanus
4. Whooping cough
5. Polio (oral)
6. TB

Characteristics of the NVP
Universal
Free for the user, publicly funded
Managed at a national level but decentralised
Network of vaccination centres based on existing services (proximity)
Information system with records for reminders and evaluating results at regional and national level
Individual vaccination record with vaccination history held by each person



O Programa Nacional de Vacinação: nota histórica. Freitas G. Portugal Saúde em Números 2013, 1; 50-54. www.dgs.pt; Courtesy of Ana Leça

Chronology of the NVP in Portugal



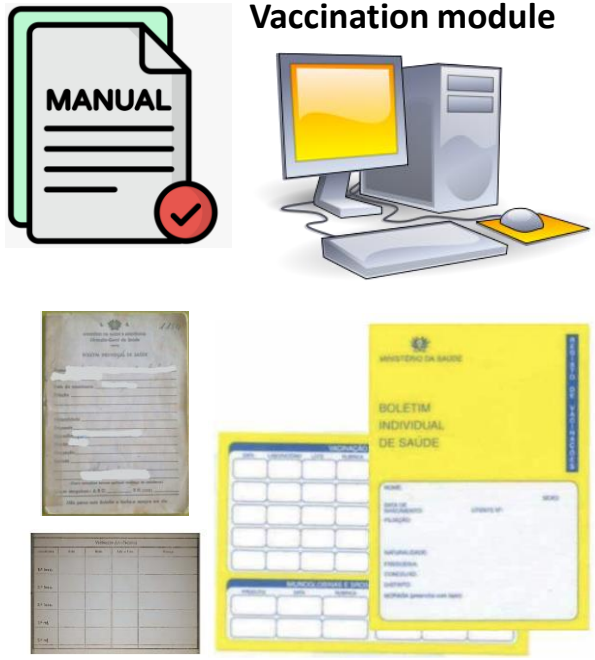
Integration of partners: SPP, College of Paediatrics

https://www.dgs.pt/ficheiros-de-upload-2013/1-enquadramento-e-notas-historicas-pdf.aspx

National Vaccination Registration and Management Platform

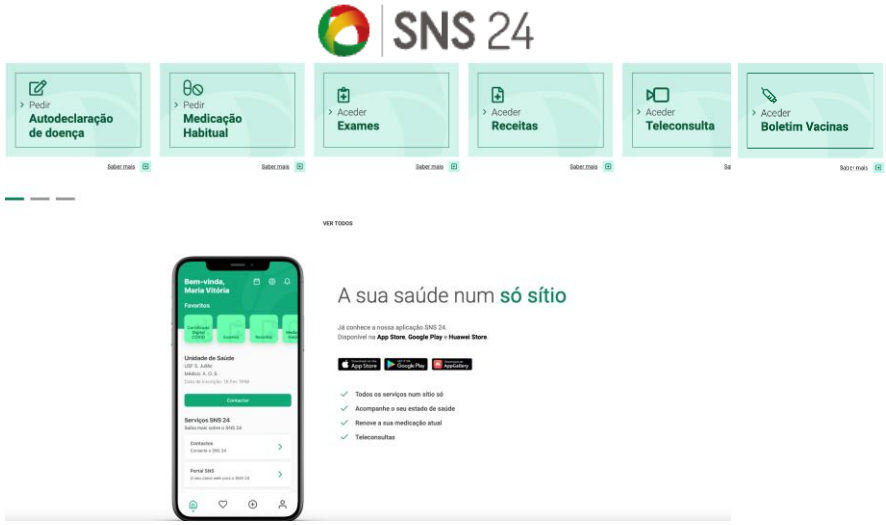
Centralised digital registry

SINUS - 2003
Vaccination module



e-VACINAS - 2016

Vacina contra		1ª	2ª	3ª	4ª	5ª	6ª		8ª	9ª
Difteria		06-10-1969 DTPw	20-11-1969 DTPw	23-11-1969 DTPw	17-02-1971 DTPw	04-10-1976 DT			13-08-2010 Td	13-08-2030
Tétano		06-10-1969 DTPw	20-11-1969 DTPw	23-11-1969 DTPw	17-02-1971 DTPw	04-10-1976 DT	01-07-1982 T		13-08-2010 Td	13-08-2030
Tosse convulsa (pertussis)		06-10-1969 DTPw	20-11-1969 DTPw	23-11-1969 DTPw	17-02-1971 DTPw					
Haemophilus influenzae b										
Poliomielite		06-10-1969 VAP	20-11-1969 VAP	24-06-1970 VAP	17-02-1971 VAP	04-10-1976 VAP	13-08-2010 VIP			
D. pneumocócica (conjugada)										
D. meningocócica (serogrupo B)										
D. meningocócica (serogrupo C)										
Sarampo										
Rubéola										
Parotidite epidémica										
Papiloma vírus humano										
COVID-19		28-12-2020 Covid19Pfizer	20-01-2021 Covid19Pfizer	25-11-2021 Covid19Pfizer						
Rotavírus										
Febre tifóide		13-08-2010 Tifóide								
Gripe sazonal		21-10-2009 Gripe	15-10-2020 GripeSNS	21-10-2021 GripeSNS	10-10-2022 GripeSNS					
Gripe pandémica		27-10-2009 Pandemica								
Raiva		13-08-2010 Raiva	23-08-2010 Raiva	08-09-2010 Raiva						
Varíola										



Electronic vaccination Bulletin

- **Monitor vaccine coverage at local, regional, and national levels**
- **Monitor vaccination records – notify people with delayed vaccination**
- **Access vaccination status of patients in health care services**

Linked to the electronic health record

Rotavirus

> Pediatr Infect Dis J. 2015 May;34(5):509-12. doi: 10.1097/INF.0000000000000647.

Case control study of rotavirus vaccine effectiveness in Portugal during 6 years of private market use

Robin Marlow [1], Muriel Ferreira, Eugénio Cordeiro, Caroline Trotter, Luis Januário, Adam Finn, Fernanda Rodrigues

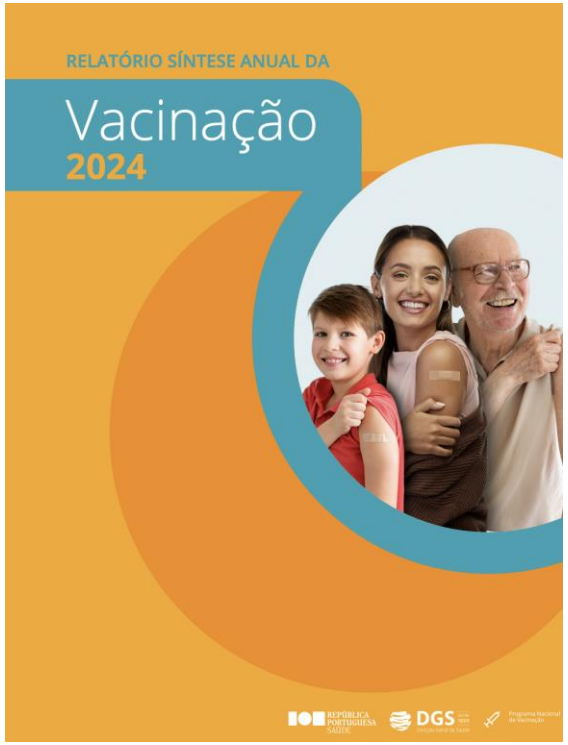
Neisseria meningitidis

> JAMA. 2020 Dec 1;324(21):2187-2194. doi: 10.1001/jama.2020.20449.

Association of Use of a Meningococcus Group B Vaccine With Group B Invasive Meningococcal Disease Among Children in Portugal

Fernanda M P Rodrigues [1 2], Robin Marlow [3], Maria João Simões [4], Leon Danon [5 6], Shamez Ladhani [7 8], Adam Finn [3]

Monitoring and evaluation of the NVP



Programa Nacional de Vacinação

Relatório anual 2024

junho de 2025

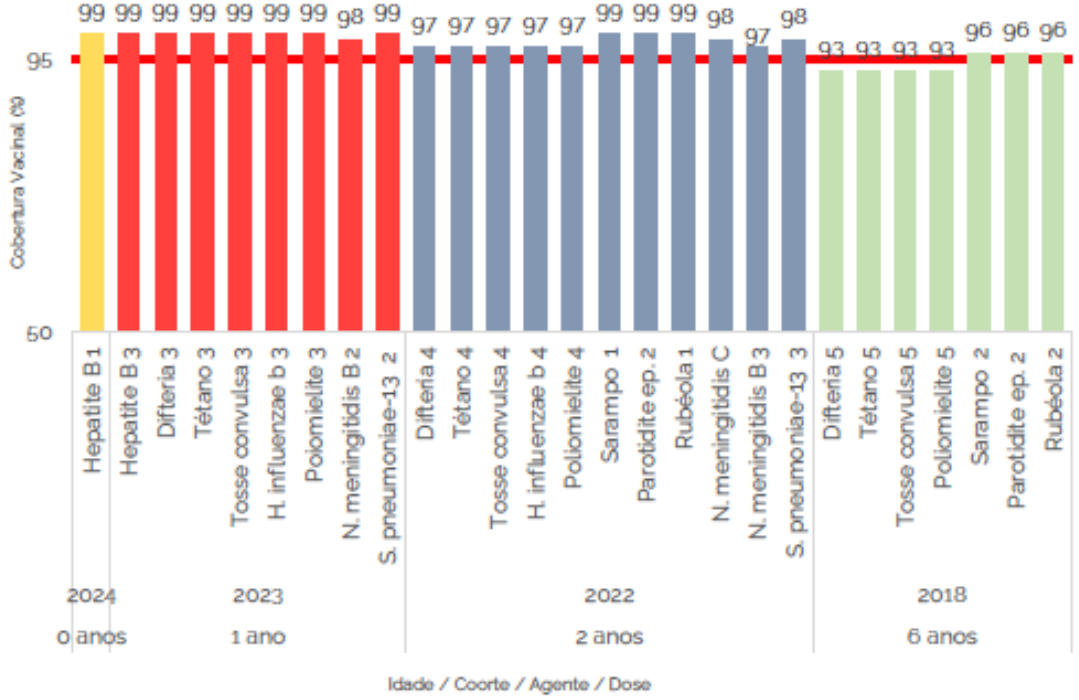
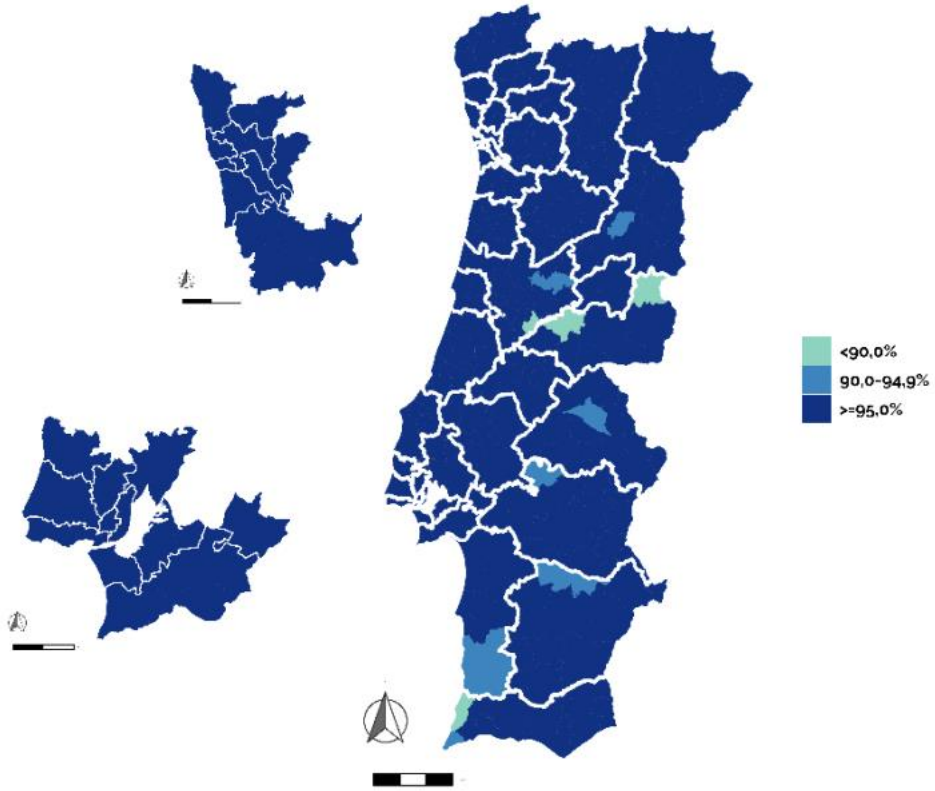


Figura 1. Esquema geral recomendado. Cobertura vacinal por idade/coorte/agente patogénico/dose. Avaliação 2024, em Portugal Continental. Fonte: VACINAS

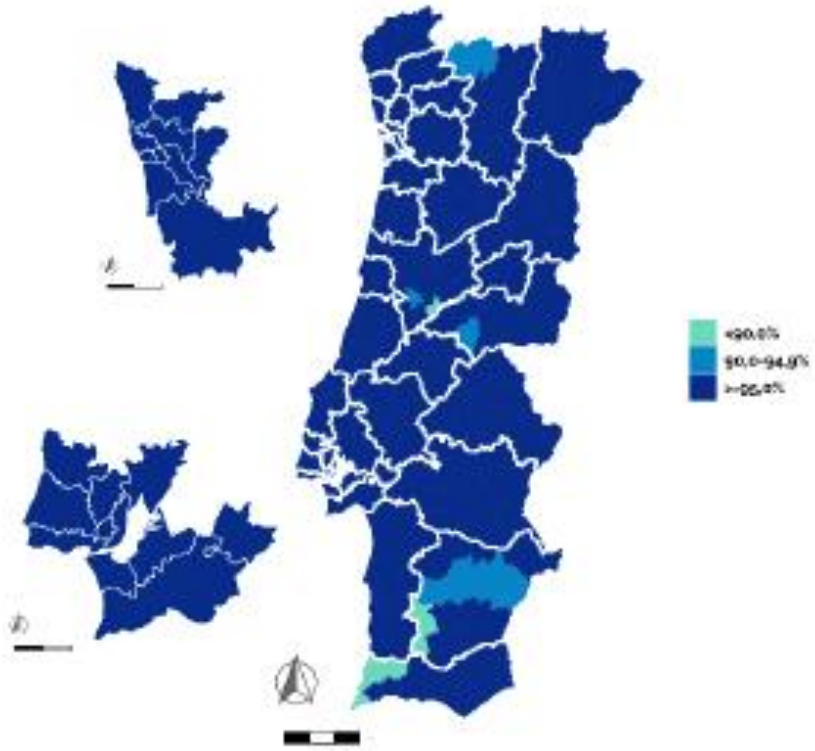
https://www.dgs.pt/em-destaque/cobertura-vacinal-ate-aos-7-anos-mantem-se-elevada-pdf.aspx I https://www.dgs.pt/ficheiros-de-upload-2013/relatorio-pnv-2024-pdf.aspx

Monitoring and evaluation of the NVP

- **1.ª dose da vacina contra a hepatite B (VHB)**



- **2.ª dose da vacina contra a doença invasiva por *S. pneumoniae* (Pn13)**



https://www.dgs.pt/ficheiros-de-upload-2013/relatorio-pnv-2024-pdf.aspx

Monitoring and evaluation of the NVP

- 5.ª dose das vacinas contra a difteria, tétano, tosse convulsa e poliomielite (DTPa, VIP)

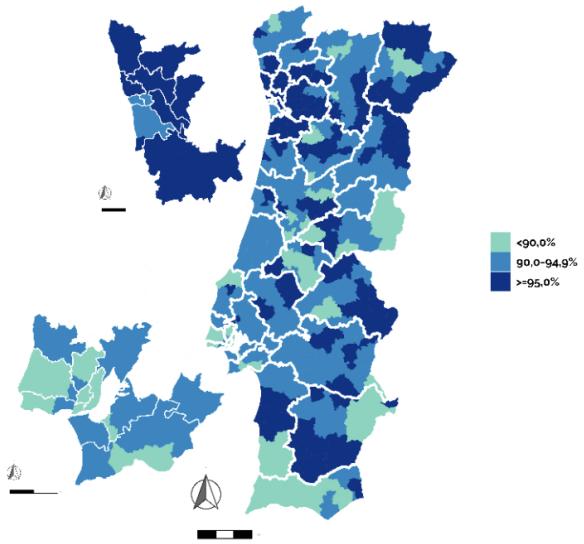


Figura 11. Cobertura vacinal da 5.ª dose das vacinas contra a difteria, tétano e tosse convulsa (DTPa) e poliomielite (VIP), por município de residência. Coorte de 2018 (6 anos). Avaliação 2024, em Portugal Continental (com destaque para a Área Metropolitana do Lisboa e Área Metropolitana do Porto). Fonte: VACINAS

- 2.ª dose da vacina contra o sarampo, parotidite epidémica e rubéola (VASPR)

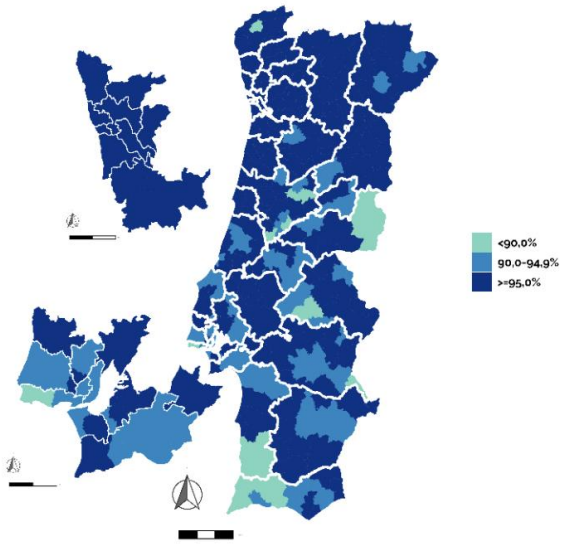


Figura 12. Cobertura vacinal da 2.ª dose da contra o sarampo, parotidite epidémica e rubéola (VASPR), por município de residência. Coorte de 2018 (6 anos). Avaliação 2024, em Portugal

https://www.dgs.pt/ficheiros-de-upload-2013/relatorio-pnv-2024-pdf.aspx

Other strategies to improve vaccination rates

- Children are registered in Primary Health Centres and the Vaccination Information System allows management of the NIP child by child: individual vaccination records are checked regularly with necessary actions taken, including reminders for the children who are not up to date with the vaccination schedule – **promotion of active invitations**
- Vaccination dates combined with child health check-up appointments
- Use all opportunities to vaccinate

- Access to vaccination and registration of vaccination (including the National Vaccination Registry System) is also possible outside the NHS (private and social health institutions), which increases accessibility

The School Health Programmes includes promotion of vaccination, using yearly school registration to remind about it

Promoting public awareness of the importance of vaccination such as the European Immunization Week activities - **Community initiatives**

Example of the implementation of the RSV immunisation campaign in 2024-25

Assessment of the health burden

Received: 3 April 2022 | Revised: 21 October 2022 | Accepted: 25 October 2022

DOI: 10.1111/irv.13066

Influenza Other Respi Viruses. 2023;17:e13066

ORIGINAL ARTICLE

Burden and severity of children's hospitalizations by respiratory syncytial virus in Portugal, 2015–2018

Surveillance

VIGI RSV REDE NACIONAL DE VIGILÂNCIA DO VÍRUS SINCICIAL RESPIRATÓRIO

Respiratory Syncytial Virus Surveillance Network (VigiRSV)

Example of the implementation of the RSV immunisation campaign in 2024-25

Specific norm (Technical guide) for HCP

REPÚBLICA PORTUGUESA
SAÚDE

DGS desde 1899
Direção-Geral da Saúde

NORMA

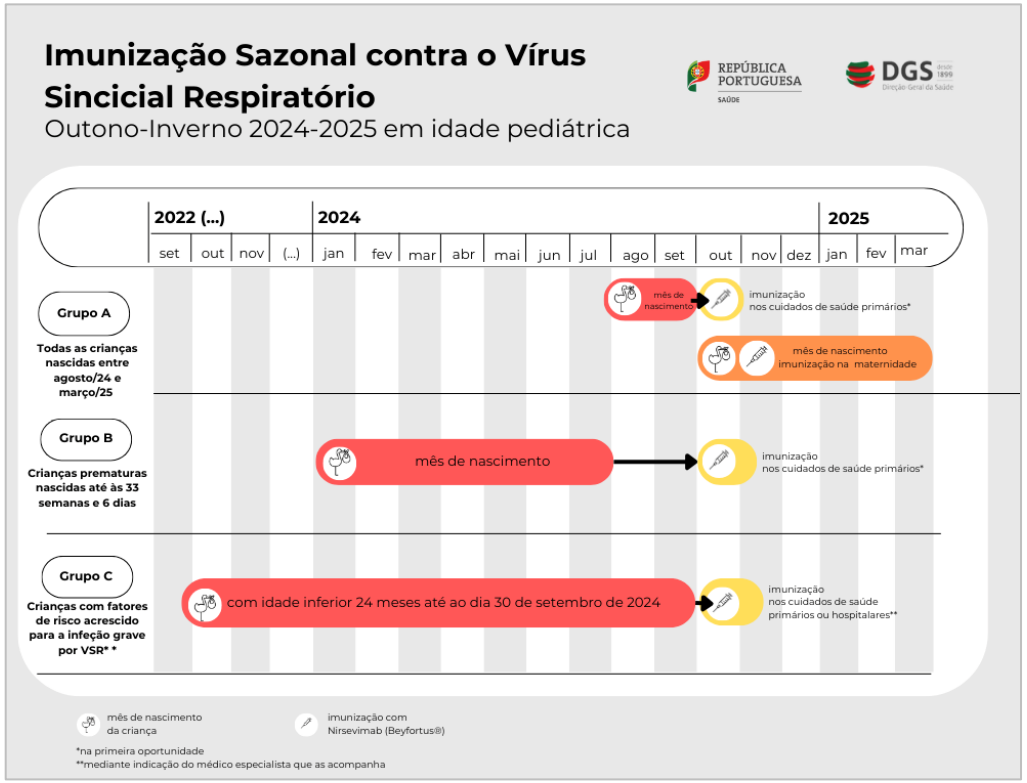
NÚMERO: 05/2024

DATA: 12/08/2024

Rita Sá Machado
Assinado de forma digital por Rita Sá Machado
Dados: 2024.08.12 18:35:00 +01'00'

ASSUNTO: Imunização Sazonal contra o Vírus Sincicial Respiratório em Idade Pediátrica: Outono-Inverno 2024-2025

PALAVRAS-CHAVE: Vírus Sincicial Respiratório; imunização; anticorpo monoclonal; nirsevimab



https://www.dgs.pt/ficheiros-de-upload-2013/calendario-imunizacao-vsr-png.aspx

Example of the implementation of the RSV immunisation campaign in 2024-25

Communication and literacy

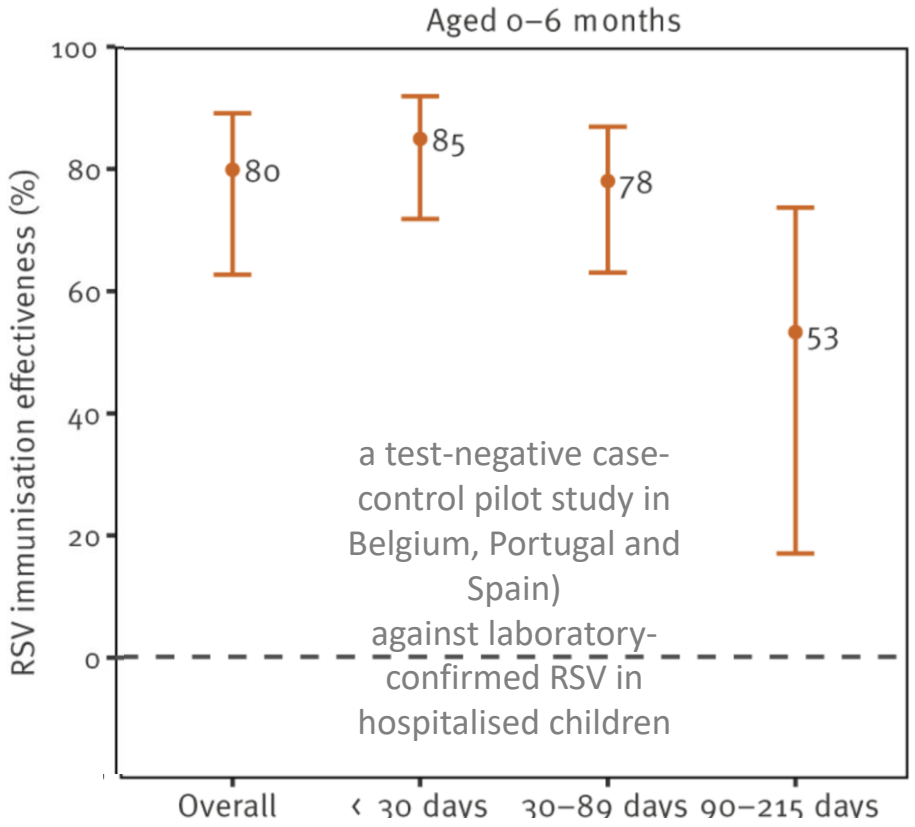
https://www.dgs.pt/ficheiros-de-upload-2013/diapositivos-webinario-vsr-pdf.aspx I https://www.dgs.pt/ficheiros-de-upload-2013/guia-pratico-para-profissionais-de-saude-vsr.aspx

Example of the implementation of the RSV immunisation campaign in 2024-25

Coverage

Mês de Nascimento	Cobertura (%)
Agosto de 2024	83,5
Setembro de 2024	85,9
Outubro de 2024	86,3
Novembro de 2024	88,7
Dezembro de 2024	89,8
Janeiro de 2025	87,1
Fevereiro de 2025	86
Março de 2025	83,4
Total	86,3

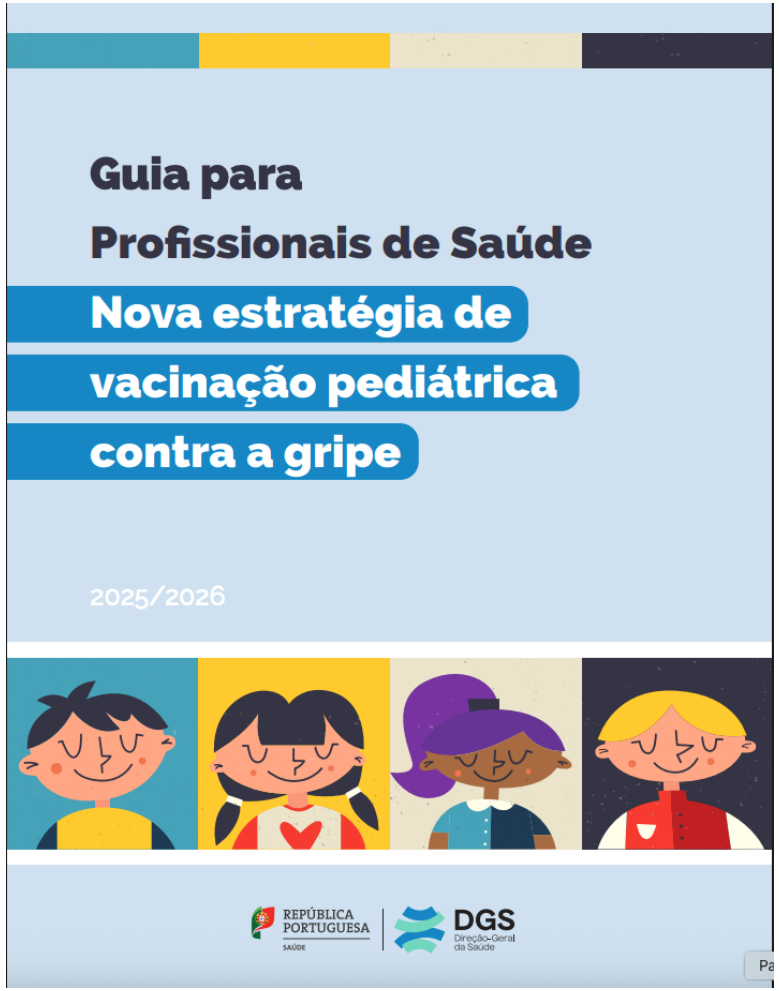
Effectiveness



l https://www.dgs.pt/ficheiros-de-upload-2013/relatorio-pnv-2024-pdf.aspx l Camelia, S, et al. Euro Surveill. 2025;30(45):pii=2500816.

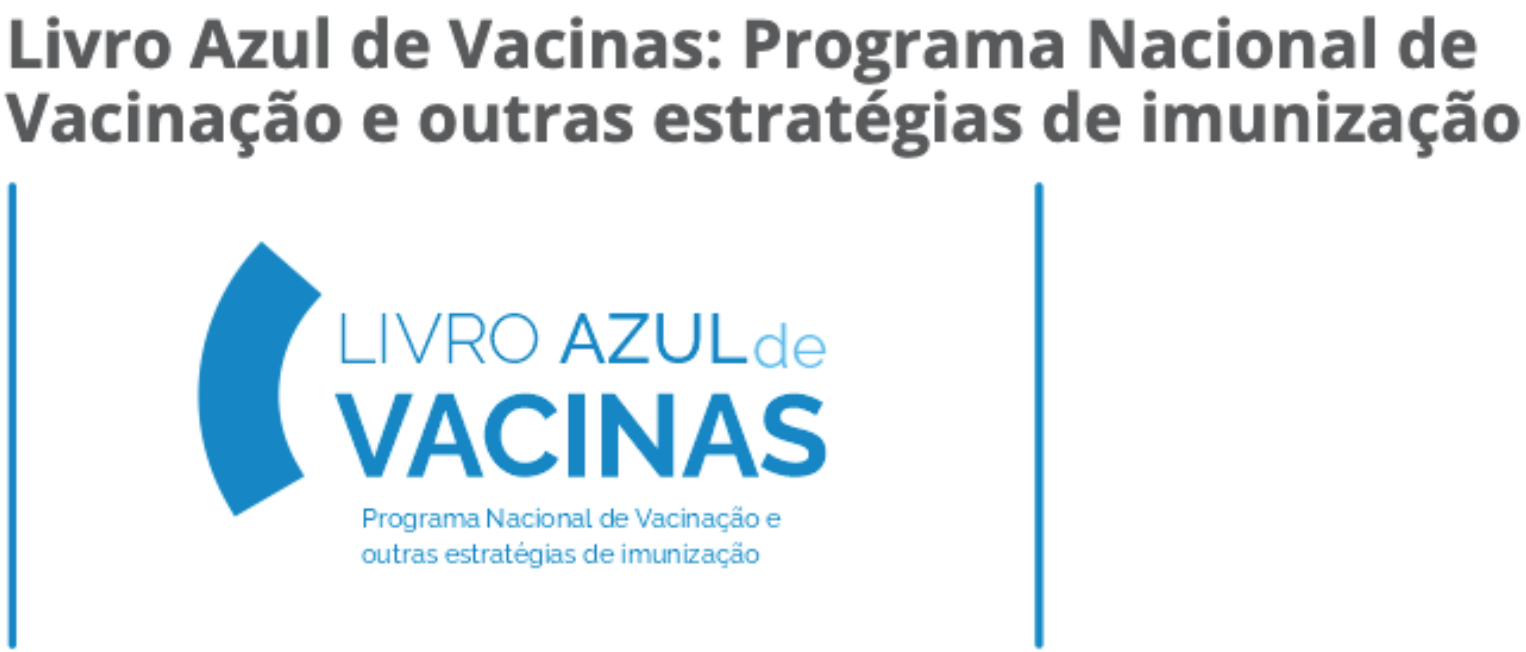
Example of the implementation of the flu immunisation campaign in 2025

Communication and literacy



https://www.dgs.pt/ficheiros-de-upload-2013/guia-para-profissionais-de-saude-nova-estrategia-de-vacinacao-pediatrica-contra-a-gripe-20252026-pdf.aspx

The Blue Book: a new national technical reference for vaccination



https://www.dgs.pt/ficheiros-de-upload-2013/1-enquadramento-e-notas-historicas-pdf.aspx

Strong and very active PID community in Portugal

Sociedade de Infeciologia Pediátrica

Created in 2000

1 Website

2 Organises regular PID meetings and vaccine courses - **educational initiatives**

3 Working groups that promote and support several multicentre studies: epidemiology and disease burden, vaccine effectiveness and impact, impact in the QoL - **collaborative network**

- Paediatric *Neisseria meningitidis* Surveillance Group
- Paediatric Pneumococcal Invasive Disease Surveillance Group
- Paediatric *Haemophilus influenzae* Invasive Disease Surveillance Group
- Paediatric Whoophing cough Surveillance Group

https://www.sip-spp.pt/

Strong and very active PID community in Portugal: publications

> Microorganisms. 2021 Jul 1;9(7):1428. doi: 10.3390/microorganisms9071428.

Pediatric Invasive Pneumococcal Disease Three Years after PCV13 Introduction in the National Immunization Plan-The Continued Importance of Serotype 3

Catarina Silva-Costa [1], Joana Gomes-Silva [1], Lúcia Prados [1], Mário Ramirez [1], José Melo-Cristino [1], On Behalf Of The Portuguese Group For The Study Of Streptococcal Infections [1],

> Microbiol Spectr. 2022 Aug 31;10(4):e0107722. doi: 10.1128/spectrum.01077-22. Epub 2022 Jul 6.

Continued Vaccine Breakthrough Cases of Serotype 3 Complicated Pneumonia in Vaccinated Children, Portugal (2016-2019)

Catarina Silva-Costa [# 1], Joana Gomes-Silva [# 1], Marcos D Pinho [1], Ana Friães [1], Mário Ramirez [1], José Melo-Cristino [1]

> J Infect. 2024 Oct;89(4):106242. doi: 10.1016/j.jinf.2024.106242. Epub 2024 Aug 6.

Rebound of pediatric invasive pneumococcal disease in Portugal after the COVID-19 pandemic was not associated with significant serotype changes

Catarina Silva-Costa [1], Joana Gomes-Silva [1], Marcos Pinho [1], Ana Friães [1], Fábio Subtil-Limpo [1], Mário Ramirez [2], José Melo-Cristino [1]; Portuguese Group for the Study of Streptococcal Infections and the Portuguese Study Group of Invasive Pneumococcal Disease of the Pediatric Infectious Disease Society [1]

> Pneumonia (Nathan). 2024 Nov 25;16(1):26. doi: 10.1186/s41479-024-00151-x.

Pneumococci remain the main cause of complicated pediatric pneumonia in the post-pandemic era despite extensive pneumococcal vaccine use

Joana Gomes-Silva [1], Marcos D Pinho [1], Ana Friães [1], Mário Ramirez [2], José Melo-Cristino [1], Catarina Silva-Costa [1]; Portuguese Group for the Study of Streptococcal Infections; Portuguese Study Group of Invasive Pneumococcal Disease of the Pediatric Infectious Disease Society

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Fernanda M P Rodrigues [1 2], Robin Marlow [3], Maria João Simões [4], Leon Danon [5 6], Shamez Ladhani [7 8], Adam Finn [3]

> Vaccine. 2023 Feb 3;41(6):1182-1189. doi: 10.1016/j.vaccine.2022.12.011. Epub 2022 Dec 13.

Prospective study of loss of health-related quality adjusted life years in children and their families due to uncomplicated and hospitalised varicella

Fernanda Rodrigues [1], Robin Marlow [2], Catarina Gouveia [3], Paula Correia [4], Ana Brett [5], Catarina Silva [6], Inês Gameiro [6], Inês Rua [6], João Dias [6], Marta Martins [6], Rui Diogo [6], Teresa Lopes [6], Elsa Hipólito [7], Diana Moreira [8], Manuela Costa Alves [9], Filipa Prata [10], Miguel Labrusco [11], Susana Gomes [12], Alexandre Fernandes [13], Alexandra Andrade [14], Catarina Granjo Morais [15], Maria João Virtuoso [16], Maria Manuel Zarcos [17], Ana Teresa Raposo [18], Adam Boon [2], Adam Finn [2]

Multicenter Study > Pediatr Infect Dis J. 2023 Sep 1;42(9):824-828. doi: 10.1097/INF.0000000000004011. Epub 2023 Jun 30.

Haemophilus influenzae Type b Vaccine Failure in Portugal: A Nationwide Multicenter Pediatric Survey

José Gonçalo Marques [1 2], Florbela Maria Inácio Cunha [3], Maria Paula Bajanca-Lavado [4]; Portuguese Study Group on Haemophilus influenzae Invasive Disease in Children

Strong and very active PID community in Portugal

Sociedade de Infeciologia Pediátrica

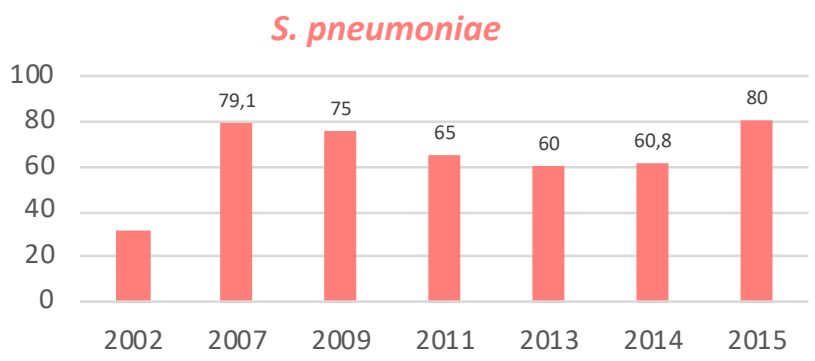
Created in 2000

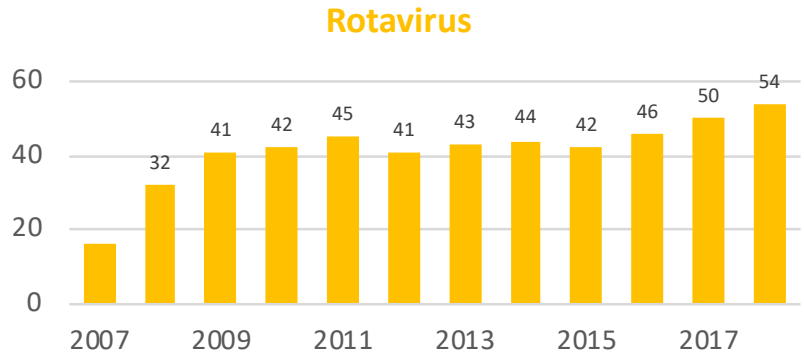
4 Vaccine Committee

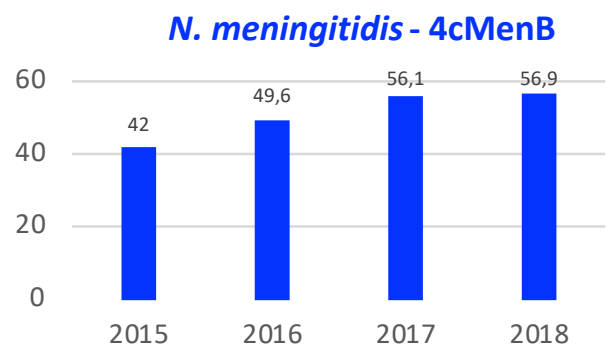
Vaccines outside the NVP

https://www.sip-spp.pt/

High use of vaccines on the private market





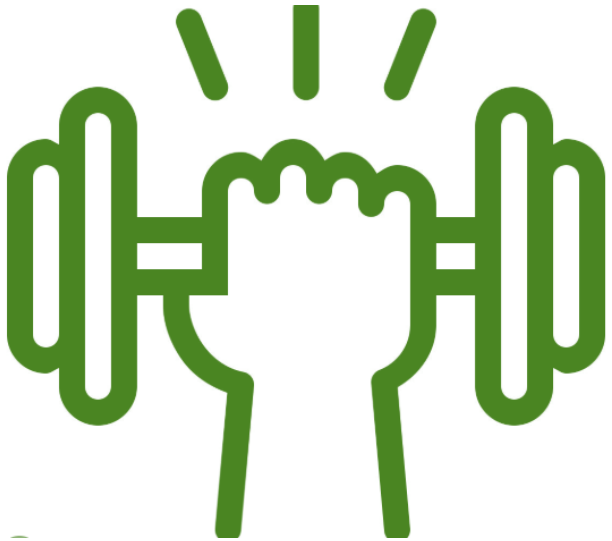


- **High level of public acceptance and engagement in paediatric vaccination**

Source: Sales (Rotavirus and *S. pneumoniae*); Aplicação VACINAS (*N. meningitidis*)

Paediatric vaccination programme and other forms of immunisation

Strengths



- **Very solid programme developed over 60 years**
- **Free for the user and publicly funded**
- **Sets clear coverage targets**
- **High level of public acceptance and engagement in paediatric vaccination**
- **Very strong NHS digital health systems**
- **Very active paediatric and PID societies**
- **Strong political commitment**

Paediatric vaccination programme and other forms of immunisation

- **NHS difficulties**
- **Geographical disparities**
- **Inequity when vaccines are not in the NIP**
- **Absence of formal cost-benefit evaluation process**
- **Budgetary constraints**
- **Era of Vaccine hesitancy and Misinformation in the world**

- **Strengthening primary health care systems**
- **Use all opportunities to immunise**
- **Eliminate/reduce barriers to vaccine access**
- **Identify drivers of suboptimal vaccine acceptance and uptake in certain areas of the country**
- **Engage with under-served populations in order to reduce inequalities in vaccine uptake**
- **Consider schools as alternative vaccination sites**