

## **Nursing knowledge about vaccine's conservation and health vaccination practices**

### **Conhecimento da enfermagem sobre conservação de vacinas e boas práticas de vacinação**

DOI:10.34117/bjdv7n6-384

Recebimento dos originais: 07/05/2021

Aceitação para publicação: 17/06/2021

#### **Samuel Lopes dos Santos**

Mestrando em Ciências e Saúde PPGCS  
Universidade Federal do Piauí – UFPI  
Rua Rui Barbosa, 429 AP 01, Centro, Teresina PI.  
E-mail: samuellopes121314@gmail.com

#### **Thyago de Oliveira Afonso**

Graduando em Medicina  
Universidade Federal do Pernambuco – UFPE  
Avenida Paris 184, Universitário - Caruaru/PE  
E-mail: thyago.oafonso@gmail.com

#### **Mariana Pereira Barbosa Silva**

Graduanda de Enfermagem  
Universidade Estadual do Piauí (UESPI)  
Rua Olavo Bilac, 2335, Centro (Sul), Teresina-PI, Brasil  
E-mail: marianapbsilvaa@gmail.com

#### **Maria Idalina Rodrigues**

Graduando em Enfermagem  
Faculdade Mauricio de Nassau-MA  
Rua Rui Barbosa, 429 AP 01, Centro, Teresina PI.  
E-mail: idalinarodrigues2015@gmail.com

#### **Caroline França Fernandes**

Graduação em Enfermagem  
Universidade Federal do Piauí – UFPI  
C. Uni. Ministro Petrônio Portella - Ininga, Teresina - PI  
E-mail: carolinefranca.cf@gmail.com

#### **Kellyane Folha Gois Moreira**

Doutorando Enfermagem PPGENF  
Universidade Federal do Piauí – UFPI  
C. Uni. Ministro Petrônio Portella - Ininga, Teresina - PI  
E-mail: kelly\_folha@hotmail.com

**Patricia Valerio Santos Saraiva**

Mestrado em Saúde da Mulher  
Universidade Federal do Piauí – UFPI  
C. Uni. Ministro Petrônio Portella - Ininga, Teresina - PI  
E-mail: patvalerioenf@hotmail.com

**Francisca de Sousa Vieira**

Bacharelado em Enfermagem  
Faculdade Estácio São Luís  
Rua Rui Barbosa, 429 AP 01, Centro, Teresina PI.  
E-mail: franciscavieira15@yahoo.com.br

**Sara da Silva Siqueira Fonseca**

Mestrado em Saúde da Mulher  
Universidade Federal do Piauí – UFPI  
C. Uni. Ministro Petrônio Portella - Ininga, Teresina - PI  
E-mail: ss.siqueira@hotmail.com

**Suhelen Maria Brasil da Cunha Gama**

Graduação em Nutrição  
Universidade Federal do Piauí – UFPI  
C. Uni. Ministro Petrônio Portella - Ininga, Teresina - PI  
E-mail: suhelen\_gama@hotmail.com

**João Costa Ferreira**

Bacharelado em enfermagem  
Faculdade Mauricio de Nassau-MA  
Rua Rui Barbosa, 429 AP 01, Centro, Teresina PI.  
E-mail: Jc3982@gmail.com

**Simone de Souza Cunha Ribeiro**

Graduação em Enfermagem  
Centro Universitário UNIFACID  
Rua Santa Luzia 610 . Gurupi  
E-mail: Simonecunha101@hotmail.com

**Damila Rufino de Holanda e Silva**

Graduação em Enfermagem  
Universidade Federal do Piauí – UFPI  
C. Uni. Ministro Petrônio Portella - Ininga, Teresina - PI  
E-mail: damilarufino@hotmail.com

**Marcela Flávia Lopes Barbosa**

Mestrado em ciência e saúde PPGCS  
Universidade Federal do Piauí – UFPI  
C. Uni. Ministro Petrônio Portella - Ininga, Teresina - PI  
E-mail: marcelaaflavia@hotmail.com

**Cláudia Resende Carneiro**

Graduação em Nutricionista  
Universidade Federal do Piauí  
Q N, casa, 20 Bairro: Porto do Centro. Teresina-PI  
E-mail: claudiacrc.resende@gmail.com

**Ana Cleide Silva Nascimento**

Graduação em Enfermagem  
Instituto Florence de Ensino Superior-IFES  
C. Uni. Ministro Petrônio Portella - Ininga, Teresina - PI  
E-mail: anacleide\_silva10@hotmail.com

**Lucília da Costa Silva**

Graduação em Fisioterapia  
Cento Universitário Santo Agostinho  
Av. Prof. Valter Alencar, 665 - São Pedro, Teresina - PI  
E-mail: luciliafisio@outlook.com

**Luana Pinheiro Lages**

Mestranda em Biotecnologia e Atenção Básica,  
UniFacid, Teresina-PI, Brasil  
R. Veterinário Bugyja Brito, 1354 - Horto, Teresina - PI,  
E-mail: luanalages@hotmail.com

**ABSTRACT**

Vaccination is constituted as a significant historic gain for the population and one of the most important weapons used in the context of public health for the control, prevention, and eradication of communicable diseases. Therefore, the anchored knowledge of the professionals responsible for the cold chain in the local instances/vaccine rooms has become one of the most important in public health currently. In this sense, the objective is to evaluate, through the literary process, the knowledge of active nursing staff in vaccine rooms. Aiming this, a survey has been carried out using the literary bases of SciELO and VHL, with a total of ten articles selected for the final composition. Thus, clearly the entirety of the selected studies points to a fragmentation of knowledge experienced by nursing professionals about the vaccination process, as well as a lack of training and updates on the subject.

**Keywords:** Immunization, Nursing, Vaccines Conservation.

**RESUMO**

A vacinação se constitui como um ganho histórico significativa para a população e, uma das mais importantes armas usadas no contexto da saúde pública, para controle, prevenção e erradicação de agravos públicos transmissíveis. Assim, faz-se necessário conhecer como estão ancorados os conhecimentos dos profissionais responsáveis pela rede de frio em instancia local/salas de vacinas. Objetivou-se Avaliar por meio do processo literário o conhecimento da equipe de enfermagem atuante nas salas de vacinas. Para tal, foi realizado um levantamento junto as bases literárias da SciELO e BVS, sendo selecionados um total de 10 artigos para a composição final. Pode-se perceber que em sua

totalidade os estudos selecionados apontam para uma fragmentação de conhecimento vivida pelos profissionais de enfermagem, sobre o processo de vacinação, bem como uma deficiência de capacitações e atualização sobre a temática.

**Palavras-chave:** Imunização; Enfermagem; Conservação de Vacinas.

## 1 INTRODUCTION

Since its discovery, vaccines have contributed significantly to the reduction of morbidity and mortality indicators of pathologies preventable using immunobiologicals. Initially, when the sanitary doctor and pioneer in vaccine development, Oswaldo Cruz, introduced the practice of mandatory vaccination in Brazil, the vaccine acceptance rates were not favorable, mainly related to the population's fear from the lack of information. (MAIS. JA, et al., 2019).

In Brazil, the national vaccination campaigns are coordinated by the National Immunization Program (NIP) and regulated by the Cold Chain (RF), which is responsible for regulating and establishing operating conditions for vaccines rooms, as well as the physical structure and guides the most appropriate conservation measures for each immunobiological (BRASIL, 2014).

Furthermore, there is a need to emphasize about the vaccine's conservation process, which starts from its packaging/storage and transportation through the Federal/state/municipal instances until distribution to the Basic Health Units (BHU), where, once established, the local administration actions take place for the distribution to the population (MAIS. JA, et al., 2019).

Nursing, made up of nurses and nursing technicians, is the profession incubated of the responsible for the process of preserving vaccines in refrigerators at an appropriate temperature, monitoring of digital thermometers, and daily annotation on the map until the preparation of the administration of immunobiologicals in the population (SILVA. BS, et al., 2015).

In this sense, these professionals are also responsible for observing whether the individual has developed any unwanted response to the vaccine, identifying and notifying local authorities responsible for the occurrence of these adverse events. (OLIVEIRA, GCA. Et al., 2021).

The Adverse Event Following Immunization (AEFI) is characterized by an unwanted clinical occurrence after receiving the vaccine. Those might occur in moderate

or severe forms; they are considered serious when lead to individual's hospitalization or, for example, the appearance of irreversible sequelae that condition or cause death (OLIVEIRA, GCA. Et al., 2021).

The occurrence of AEFI is linked to the immunological conditions of the recipients, with children and the elderly population being more susceptible for presenting a "weakened" immune system. However, the AEFI may be associated with the inadequate administration and conservation techniques, which might be the use of inappropriate needles, incorrect administration angle, erroneous aspiration of the contents of vials/ampoules, among others harmful actions (DEMIRIS. G, et al., 2019).

The vaccination process in its final step is highly challenging for nursing professionals, requiring updated and well-structured knowledge of the entire application logistics. Thus, this study comes up with a proposal to raise in the literature studies that characterize the nursing knowledge about the vaccination process and its practices (SILVA. BS, et al., 2015).

For guidance, the following question is applied: "What is the level of nursing knowledge about the logistics of the vaccination process?". As the hypothesis: "The knowledge of nursing professionals about the vaccination process is inadequate". In order to answer this question, the following objective was elaborated: "To evaluate, through the literary process, the knowledge of the nursing team working in the vaccine rooms, as well as aiming to know their dependencies for the growth of their knowledge about vaccines".

## **2 METOTHOLOGY**

This study is characterized as a systematic review of the literature, with a qualitative descriptive character. According to Gil, 2010; Galvão, 2008; Hou, 2005. a described study is based on characterizing its object and its nature, with the purpose of finding possible relationships between the variables.

This research followed the subsequent steps: 1) Inquiry of the Problem; 2) consideration of the hypotheses to be tested/search for relations; 3) Data selection from the sources of study; 4) Descriptive and critical analysis of the resultis; 5) Discussion; 6) Conclusion.

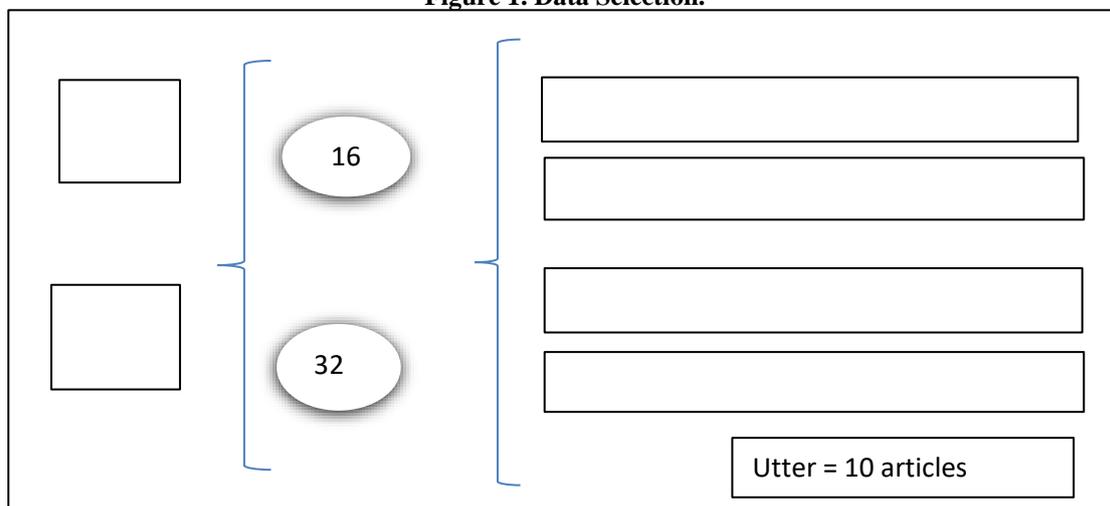
The period of collection is defined between the months of March to April of 2021. The data collection has happened from the virtual databases of the Virtual Health Library (VHL) and Scientific Electronic Library Online (SciElo), by the descriptors:

“Immunization”, “Nursing”, “Vaccine Conservation”. As an advanced search for data recovery, the title sequence has been followed; “abstract; subject matter”.

By the inclusion criterion articles published between 2011 and 2021 have been used, in Portuguese or English language, only when available in full, in the public domain, and broad cohesion with the subject addressed. The following types of articles were excluded: duplicate, incomplete articles and/or in a private domain, making it impossible to analyze the entire article.

This study has selected ten articles. Initially, sixteen articles were retrieved from the VHL and 32 from SciElo, as shown in Figure 1.

**Figure 1. Data Selection.**



Source: The author

### 3 RESULTS

Before presenting the results, it is worth mentioning that in Brazil there are still few studies in the search for measuring the knowledge of nursing professionals about the binomial administration of vaccines and the knowledge about the conservation process of immunobiologicals at the local level/vaccine rooms. In total, ten articles are listed for the construction of this study, within the aforementioned databases. Most of the studies have been carried out in the northeastern and northern regions of the country. Table 1 shows the statement according to the year, the database, the author, and the objective of each study.

**Table 1. Conservation studies about egg vaccines.**

Year	Database	Author	Objective
2011	SciELO	LUNA GLM et al, 2011	To characterize the experience and update of the knowledge about immunization of the nursing team responsible for the activities in the vaccine rooms.
2020	SciELO	SANTOS SL, et al., 2020	To investigate the conditions of conservation of vaccines in the vaccination rooms of the Basic Health Units (BHU).
2020	BVS	FILGUEIRAS FWC. Et al., 2020	To evaluate the quality of vaccine conservation in Primary Health Care Units in a capital city in Brazilian Northeastern.
2015	SciELO	MARINELLI NP. Et al., 2015	To identify the knowledge about the daily activities of the vaccine room, as indicated in the literature.
2011	BVS	WIDSANUGOR N, O. et al.	To evaluate the knowledge and practices of health professionals in relation to an expanded immunization program and cold chain system in Kalasin, Thailand.
2019	BVS	MEDEIROS. SG, et al., 2019	To conduct a review of the performance of the nursing team in the care of vaccines.
2019	BVS	DULTRA, FCS. Et al., 2019	To evaluate the administration of immunobiologicals in vaccination rooms of Basic Family Health Units in a city in the Northeast of Brazil.
2018	BVS	GUIMARÃES, EAA. Et al., 2018	To analyze the scientific production on evidence related to critical events in maintaining the vaccine conservation cold chain.
2015	BVS	ALMEIDA, MG. Et al., 2015	Seeking to know about the practice of professionals on vaccine conservation.
2011	BVS	BRANDÃO, RMS. Et al., 2011	To identify the technical knowledge of vaccinators and aspects related to the conservation process of immunobiologicals in Basic Health Units (BHU)

Source: The author

Intending to make this work more strengthened, the objectives of the selected projects are aligned to determine or measure the knowledge of nursing professionals about the vaccine conservation process. The studies' periodicity is concentrated in the most recent years, in order to approximate reality. Table 2 shows the relationship between the title of the studies and the determination of their conclusions.

**Table 2. Relationship between titles with the central conclusion of the articles.**

Year	To See.	Title	Conclusion
2011	Ciênc. Saúde Coletiva	Aspects related to vaccine administration and conservation in health centers in Northeast Brazil	The need of continuing education in the training of professionals responsible for immunizations.
2020	IJDR	The conservation of immunobiologicals in Basic Health Units in the city of Teresina-Piauí, Brazil.	Updating of professionals involved in conservation, there is a scarcity of this knowledge or even a lack of knowledge of manual updates

2020	Saúde e pesqu.	Vaccine conservation in Primary Health Care: reality in a capital city of northeastern Brazil	The practice of vaccine conservation is still incipient, with inadequate structure and work process
2015	Univap	The knowledge of nursing professionals in the vaccine room: analysis of scientific production	There is an urgent demand for the qualification of nursing professionals in the vaccine room.
2011	Nagoya j. med Sci	Health workers' knowledge and practices related to the expanded immunization program in Kalasin-Thailand.	Inadequate practices in the conservation process and a blank of knowledge about conservation and administration of immunobiologicals.
2019	Biosci j	The nursing team's role in vaccine care: a scoping review	The need of training aimed to professionals working in immunization and the importance of supervision activities in the vaccination room by nurses.
2019	Nursing Magazine of UFPE	Immunobiological administration failures: root cause analysis	Practices involved in the administration of immunobiologicals are far from what is recommended. Failures have been observed involving the appropriate techniques of preparation, storage and conservation of immunobiologicals.
2018	Nursing Magazine of UFPE	Critical events in maintaining vaccine conservation	Nursing professionals' training is necessary to guarantee the quality of the immunization process in vaccine rooms.
2015	BDENF	Knowledge and practice of vaccine conservation professionals.	It is important to invest in the training of these professionals, since knowledge and practice were not considered satisfactory
2011	BDENF	Factors related to vaccine conservation in Basic Health Units	The study has shown deficiencies in the training of professionals.

Source: The author

All the ten selected studies conclude an inadequate and/or deficiency of knowledge on nursing professionals' work, both nurses and nursing technicians/assistants responsible for the main process of sustaining the effectiveness and efficiency of vaccines. In this bias, the lack of nursing's knowledge has been evidenced for years by descriptive studies, in addition to the fragmentation of the knowledge of professionals who work in vaccine rooms related to conservation, administration and guidance on these immunologies.

#### 4 DISCUSSION

Vaccines represent one of the greatest achievements for public health in the 20th century. They are an extremely important weapon in the fight against transmissible diseases and are one of the greatest preventive weapons in the vital context, gaining their space and confidence due to their significant contribution in reducing the morbidity and

mortality of various diseases, in addition to the eradication of evils that spread the population in the end 19th and 20th century (MAIS. JA, et al., 2019).

Vaccines are thermolabile products, that is, they undergo changes in their immunological components when exposed to temperatures outside the recommended by the laboratories, thus affecting their degree of immunogenicity and efficiency. It is important to highlight that the vaccination rooms are the final packaging unit before operation in the population and represent the cold chain in the local environment. (NOVOA. TODA, et al., 2020)

Nursing professionals, from nurses, technicians and assistants, are responsible for the conservation process in vaccination rooms, maintaining the cold chain, sustaining the effectiveness and efficiency of vaccines, administering the population and identifying the occurrence of Adverse Events After Immunization (AEFI) (SANTOS, SL. Et al., 2020).

The final practice of the vaccination process is directly associated with nursing professionals. Thence, the lack of knowledge about immunobiological preservation techniques in vaccine rooms, the lack of knowledge about the occurrence of AEFI, also about their guidance, inadequate vaccine administration techniques, among others, may compromise the credibility of vaccines, directly affecting the immunogenicity potential of them (ZORZETTO. R, 2018).

This study shows in the literature that the knowledge of these professionals is inadequate and insufficient for vaccination practices, and the training of such workers is extremely important, in order to promote a reliable and quality vaccination process. Such line of thought.

corroborates the study by Cunha MWN et al. (2020), carried out in the state of Sergipe-Brazil, involving eight vaccination rooms, aiming to “describe the knowledge of nursing professionals in the vaccination rooms of a municipality in the south-central region of the state” and showing a fragmented and lacking training knowledge, exposing the absence of effective knowledge on the part of both: higher education professionals (supervisor/advisor) and those of technical and/or auxiliary level.

In the study by Oliveira GCA, et al. (2021), “Nursing Assistance On The Immunization Process: An Integrative Review”, a literature search was carried out with a study from 2008 to 2018, in addition, it showed that during the evaluated time the materials pointed to the deficiency in the process vaccination by nursing professionals, in

addition to the lack of courses and training on the subject and the need of periodic training for such an important practice, which is vaccination.

The nurse is appointed, by researchers, as the professional responsible for guiding technicians and assistants about vaccination, denoting for this, the competence to recommend or not vaccination after the occurrence of AEFI, as well as the clarification of frequent doubts that may possibly arise. arise in labor practices within vaccine rooms. However, the aforementioned officials are also unprepared for such actions. (DEMIRIS. G, et al., 2019).

Finally, this work must point out the importance of vaccines as a potential gain for humanity in relation to disease prevention, being able to directly impact the secondary and tertiary services offered by the health system, and moreover how to intervene in the hospitalization process caused by immune preventable diseases (DEMIRIS. G, et al., 2019).

## **5 FINAL CONSIDERATIONS**

This study sought in the literature to understand the currently knowledge of nursing professionals who work in vaccination rooms, evidencing that despite education advances, as well as the considerable indicators presented in the context of public health due to the use of vaccines, the provision of training for these professionals is still scarce, furthermore, the responsible authorities have not yet awakened a systematic look at the issue, in order to seek to qualify the professionals who work in the vaccination rooms.

Consequently, it is noted that the knowledge of those working in nursing is superficial, fragmented, and troubled for the most part, about the final vaccination process, putting at risk the historical construction of respect, quality and efficiency imposed/achieved over the time by immunobiologicals.

Therefore, this study seeks to highlight the importance of developing the booklets, protocols, courses, and other qualifications, which are highly recommended, in order to contribute to training, mitigating the impacts resulting from inadequate techniques on the vaccination process.

## REFERENCES

ALMEIDA, MG. Et al., **Conhecimento e prática de profissionais sobre conservação de vacinas** / Conocimiento y práctica profesional en la conservación de las vacunas. Rev. Pesqui. (Univ. Fed. Estado Rio J., Online) ; 7(1): 2021-2033, jan.-mar. 2015.

BRANDÃO, RMS. Et al., **Fatores relacionados à conservação de vacinas nas Unidades Básicas de Saúde**. Rev. enferm. UFPE on line ; 6(2): 332-338, fev.2011 Disponível em: <https://pesquisa.bvsalud.org/portal/resource/pt/biblio-1033456>

BRASIL. Ministério da Saúde. **Manual de Normas e Procedimentos para Vacinação**. Brasília: O Ministério; 2014.

CUNHA MW, BRANDÃO DE OLIVEIRA IM, et al., **Cohecimento dos profissionais de enfermagem sobre conservação de vacinas**. Rev. iberoam. Educ. investi. Enferm. 2020; 10(1):7-17.

DEMIRIS G, OLIVER DP, WASHINGTON KT. **Defining and Analyzing the Problem. Behavioral Intervention Research in Hospice and Palliative Care**, p. 27-39, 2019 Disponível em: <https://pesquisa.bvsalud.org/portal/resource/pt/biblio-1140633>

DULTRA, FCS. Et al., **Immunobiological administration failures: root cause analysis**. Rev. enferm. UFPE on line ; 13: [1-7], 2019. Disponível em: <https://pesquisa.bvsalud.org/portal/resource/pt/biblio-1046215>

FILGUEIRAS FWC. Et al., **Conservação de vacinas na Atenção Primária à Saúde: realidade em capital do nordeste brasileiro**. Saúde e pesq. 13(3): 475-483, jul.-set. 2020.

GIL, A. C. **Como elaborar projetos de pesquisa**. 5. ed. São Paulo: Atlas, 2010.

GUIMARÃES, EAA. Et al., **Eventos críticos na manutenção da conservação de vacinas**. Rev. enferm. UFPE on line ; 12(6): 1781-1789, jun. 2018 Disponível em: <https://pesquisa.bvsalud.org/portal/resource/pt/biblio-986234>

LUNA GLM. Et al., **Aspectos relacionados à administração e conservação de vacinas em centros de saúde no Nordeste do Brasil**. Ciência & Saúde Coletiva, 16(2):513-521, 2011. Disponível em: <https://www.scielo.org/pdf/csc/2011.v16n2/513-521>

MAIA JA, et al., **Conhecimento dos profissionais de saúde sobre a logística de transporte e armazenamento dos imunobiológicos**. Artigo de Revisão. 2019; 3(1):105-17

MARINELLI, NP. Et al., **conhecimento dos profissionais de enfermagem em sala de vacina: análise da produção científica**. revista.univap.br São José dos Campos-SP-Brasil, v. 21, n. 38, dez.2015.

MEDEIROS. SG, et al., **The nursing team's role in vaccine care: a scoping review / Atuação da equipe de enfermagem no cuidado com vacinas: uma scoping review**. Biosci.

J. 35(6): 1993-2004, nov./dec. 2019. Disponível em:  
<https://pesquisa.bvsalud.org/portal/resource/pt/biblio-1049181?lang=pt>

NÓVOA TDA, et al. **Cobertura vacinal do programa nacional de imunizações (PNI)**. Brazilian Journal of Health Review, 2020;3(4): 7863-7873. Disponível em:<https://doi.org/10.34119/bjhrv3n4-053>

OLIVEIRA, GCA. Et al., **Assistência de enfermagem no processo de imunização: revisão da literatura**. Brazilian Journal of Development ISSN: 2525-8761 Brazilian Journal of Development, Curitiba, v.7, n.1, p.7381-7395 Jan. 2021.

SANTOS, SL. et al. 2020 “**A conservação de imunobiológicos em unidades básicas de saúde do município de teresina pi**” conservation of immunobiologicals in basic health units of the municipality of teresina pi”, International Journal of Development Research, 10, (07), 38636-38641

SILVA BS. **Avaliação normativa das salas de vacina da região Oeste do estado de Minas Gerais, de outubro de 2015 a agosto de 2016** Normative evaluation of vaccine rooms in the western region of the state of Minas Gerais, October 2015.

WIDSANUGORN, O. et al. **Healthcare workers’ knowledge and practices regarding expanded program on immunization in Kalasin, Thailand**. Nagoya j. med. sci., Nagoya, v. 73, n. 4, p. 177-185. 2011.

ZORZETTO R. **As razões da queda na vacina**. Revista pesquisa FAPESP, 2018; 19(270): 19-24. Disponível em: <http://revistapesquisa.fapesp.br/2018/10/26/as-razoes-da-queda-na-vacinacao-2/>