

The Notifications of Accidents for Venomous Animals on Sinan as Parameter of Evaluation of Work Management of Ciave in Distribution of Serum Anti Poisonous on State of Bahia in 2010

Cicero Leite Magalhães^{1*}, Eliana Machado Barreto do Prado² and Jucelino Nery da Conceição Filho³

¹Pharmacist and Biochemist, Crowded at the Anti-Venom Information Center, Salvador/BA, Brazil

²Professor, Essora, Faculty of Nursing, Catholic University of Salvador, Brazil

³Pharmacist and Biochemist, Specialist in Pharmaceutical Assistance, Coordinator of Diagnóstico and Therapeutic Support of the Antivenom Information Center, Salvador/BA, Brazil

*Corresponding Author: Cicero Leite Magalhães, Pharmacist and Biochemist, Crowded at the Anti-Venom Information Center, Salvador/BA, Brazil.

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Abstract

Introduction: All accidents of envenomations animals are notifiable in SINAN (National Disease Reporting System). It recognized the problem of underreporting of these injuries and the loss of their occurrence for taking action in Public Health, the programming of distribution of antivenom serum for public health units. The replacement of serum should be done in a rational and based on reports of injuries.

Objective: The present study aims to analyze the relationship between the use of ampoules of antivenom serum reported by SINAN and distribution of immunobiological through the Information System Strategic Inputs (SIES) in Bahia in 2010.

Methods: Comparative evaluation of CIAVE records and available data on systems SINAN and SIES.

Conclusion: It can be concluded that the large discrepancies observed in Bahia between the number of envenomation's in fact occurred and notifications related to the SINAN do not provide the security necessary for the effective management of inventories by the State CIAVE sera. The distribution of antivenom sera through SIES is impaired by such lack of reliability between notifications and requests sera, preventing the establishment of correlations that lead to a logical programming purchase these inputs more safely.

Keywords: Underreporting; SINAN; SIES; Distribution; Antivenom Serum

Abbreviation

AAP: Accident by Venomous Animals; CEADI: Cenepi Immunobiological Supply and Distribution Center - National Epidemiology Center; CGPNI: General Coordination of the Ciave National Immunization Program - Anti-Venom Information Center; CNCZAP: National Coordination of Zoonosis and Venomous Animals - Regional Health Directorate; FIN: Funasa Individual Notification Form - National Health Foundation; MS: Ministry of Health; PNCAAP: National Program for The Control of Diseases of Venomous Animals;

PNI: National Immunization Program; PNO: National Ophidism Program; SESAB: Bahia State Health Department; SIES: SINAN Strategic Information System - National System of Notifiable Diseases; SVS: Health Surveillance Secretariat; UGP: Program Management Unit

Introduction

As Bochner [1] reports, in 1901, Vital Brazil, when it started the production of antiophidic serum in Brazil, introduced the "Bulletin

for observation of ophitic accident" that was sent together with the serum ampoules, to be filled with the data of the accident that caused the use of this antivenom, and returned to the producing laboratory. This bulletin represented the basis of the current national information systems on this type of accident, fundamental for the structuring of the sera-producing park and for conducting epidemiological studies and, finally, for the country's Health Center.

Currently, the notification of the AAP consists of the correct completion of the Individual Notification Form (FIN), which is available in the health units of each municipality and for each patient, when the accident by venomous animal occurs (or the suspicion of the occurrence of a health problem of compulsory notification, or of national, state and municipal interest). The FIN will be registered in the National System of Notifiable Diseases (SINAN) and will compose lots that will be walked periodically by electronic means to the Epidemiological Surveillance Services of the Municipal Health Departments. In this sense, filling and registering the FIN in SINAN are fundamental procedures for the recognition of the scope and type of disease at the regional level, enabling the establishment of standards of medical care and the supply of strategic supplies appropriate to local realities.

The notification of accidents by venomous animals (AAP) through SINAN, as well as that of all injuries that are included in the National List of Diseases of Compulsory Notification [2], is a relevant instrument to assist air in the planning of health actions, as it defines priorities for intervention and favors the evaluation of the impacts of these interventions. The notifications provide the basis for the cause explanations of the diseases of compulsory notification and their measures, besides the evidence of potential risks to which people are subject, thus contributing to the identification of the epidemiological profile of a given geographical area.

In the analysis of SINAN data, it is noted the existence of a flow of passage of epidemiological information from health units to the Municipal Health Departments, these for the Regional Health Directorates (DIRES), the DIRES for the State Health Secretariats and these for the National Epidemiology Center of the Ministry of Health -CENEPI/FUNASA/MS. Once consolidated, these data will provide subsidies for the establishment of public policies for the management and control of AAP. The data used for the program-

ming of the acquisition and distribution of specific sera by the country are consolidated through SINAN, which is the most comprehensive system for this type of disease and concentrates all the information pertinent to accidents by venomous animals registered within each state and municipality.

The logistics of zenation weapon, inventory control and distribution of antivenovetomes sera is carried out through the SIES (Strategic Supplies Information System), an on-line operating software that, when handled in line with the epidemiological bank of SINAN, constitutes a fundamental tool for the management of acquisition, distribution and serotherapy, reducing costs and minimizing the morbidity and mortality of accidents by venomous animals in Brazil.

However, the breakdown of the luxury of notifications with information for the SINAN database, causes several difficulties in the management of immunobiologicals. Thus, the omission to fill out the FIN, the lack of completeness of the FIN data and the non-registration in the SINAN of the prefilled forms, are factors that lead to the impossibility of generating reliable data, which impairs the operationalization of the SIES in the logistics of the coherent distribution of the in sums in the State of Bahia.

Therefore, it is essential to consolidate SINAN as a national health database so that it can provide more accurate information about AAP. To this end, it is of paramount importance to implement a specific policy that includes educational actions regarding the management of information and regional stocks d and sera. In this way, SINAN could inspire confidence and credibility to be manipulated as a safe parameter in the elaboration of a National Plan for The Management of Antipeçonhentos Serums.

In the meantime, it is of paramount importance to carry out this research that has as general objective to verify if there is a synchronism of data between the SIES, used in the composition of the requests for anti-venomum sera and SINAN, regarding the existing data on THE in the same period. Secondly, the objective is to emphasize how harmful are the underreporting for the establishment of Labor Management about anti-venomous sera. What justifies the plausibility of this is the possibility of collaborating with the monitoring and clarification of professionals regarding the importance of data records in SINAN for the good progress of the distribution of anti-venomous Soros by the SIES in the State of Bahia.

Aim of the Study

Thus, the present study aims to evaluate the process of distribution of antivenomous sera in the State of Bahia, in order to diagnose the existing problems and subsidize future training of professionals involved in it.

Methodology

The methodology is quantitative analysis, comparatively evaluating the data records of CIAVE and SINAN and SIES information systems in Bahia in 2010, through the analysis of the following variables: number of accidents by venomous animals in the tificates, accidents that required serotherapy, ampoules used in the reported cases, ampoules requested by the 31 DIRES of Bahia and ampoules distributed in 2010.

Contextual elements

O sinan

SINAN was implemented from 1993 on a gradually and heterogeneously in the federal units and municipalities. From 1998, the use of SINAN was regulated by Ordinance GM/MS No. 1882 of December 18, 1997, making it mandatory to regularly feed the national database by the states, states and the Federal District.

The SINAN database was systematized according to levels of interest: compulsory diseases; injuries of national interest and injuries of state and municipal interest, and therefore, the federal units and municipalities are allowed to include other activities that they consider important in their region.

Also in 1998, CENEPI constituted a commission to develop instruments, define flows and new software for SINAN, in addition to defining strategies for its immediate implementation throughout the territory in the area, through Ordinance Funasa/MS no. 073 of 9/3/98, as well as designating the National Health Foundation (FUNASA), through CENEPI, as national manager of the System.

The spreadsheets with the information of the notification problems were manually listed and sent to CENEPI via fax or through the post office. In 1997, with the gradual implementation of technological resources to health services, SINAN-DOS was created, where lots of information was passed through floppy, replacing the previous model. In 2001, a new software called SINAN-Windows replaced SINAN-DOS, using CDs - more secure transfer media and higher data storage capacity. From 2007, SINAN-NET has been

implemented nationwide, an online operating software through which the sending of information can be carried out in real time, but which does not yet occur throughout the country due to structural problems in some states.

The national accident control program for venom (PNCAAP)

Created in 1986, under the name of The National Program of Ofdisism (PNO), the National Program for The Control of Accidents by Venomous Animals (so-called in 1988) has been consolidating in the country. The focus of as actions involves the implementation of:

- Policy for coordinating the production and distribution of antivenoms;
- Training of human resources;
- Epidemiological surveillance of accidents in the national sphere.

This joint work coordinated by the Ministry of Health and involving the State and Municipal Health Departments, Toxicological Information Centers, Zoonosis and Venomous Animal Control Centers of biology centers, producer laboratories, scientific societies and universities, has as its main objective the improvement of care to victims of accidents by venomous animals.

The purpose of the PNCAAP, which is part of the National Immunization Program (PNI), is to reduce the lethality of accidents caused by these animals and their severity, through two directives:

- Availability of serum for the treatment of the injured.
- The proper use of serotherapy.

The notification of accidents by venomous animals

According to the Epidemiological Surveillance Guide/Ministry of Health [3], notification is "the communication of the occurrence of a particular disease or health injury, made to the health authority by health professionals or any citizen, for the purpose of adopting relevant intervention measures. Historically, compulsory notification has been the main source of epidemiological surveillance, from which, in most cases, the information-decision-action process is triggered".

It is known (however) that the notification is not always performed, which occurs due to ignorance of its importance and also by discredit in the actions that should result from it. Experience has shown that the functioning of a notification theme is directly

proportional to the ability to demonstrate the proper use of the information received, in order to win the trust of notifiers. GVE/MS (2009) p.22.

However, with the implementation of the then Nacional Program of Of disismo, in 1986, and under what vital Brazil was already doing at the beginning of the 20th century, a system of exchange of sera was established for epidemiological information on ophidic accidents between the Ministry of Health and the State Health Secretariats, as mentioned by Fiszon [4]. This allowed a better dimensioning of accidents by venomous animals in Brazil.

Data on scorpionism and araneism began to be systematically collected from 1988, when they were incorporated into the PNO. This was then called the National Accident Control Program for Venomous Animals.

In 1995, the National Coordination for the Control of Zoonosis and Venomous Animals (CNCZAP) adopted SINAN for the notification of accidents by venomous animals.

Until 2010, accidents by venomous animals were included only in the list of diseases of national interest. This list contains diseases or injuries that the federal (MS), state and municipal levels are interested in monitoring due to their magnitude, transcendence and vulnerability. However, the non-notification of them is not subject to penalties provided for in decree or ordinance at the federal, state or municipal levels. According to the Department of Health Surveillance of the Ministry of Health (SVS/MS), as “a condition of national interest, every accident by venomous animal attended in the health unit should be notified, regardless of whether the patient has undergone serotherapy or not”.

In Bahia, this condition was defined as compulsory notification in 1997, through SESAB Ordinance No. 2,867 of August 5 of that year. Ordinance No. 1,072 of April 20, 2007, ratified the obligation to notify it.

Only in September 2010, through GM Ordinance No. 2,472 of August 31, 2010, the Ministry of Health included accidents by venomous animals in the list of diseases and diseases of compulsory notification. This ordinance was repealed in January 2011 through Ordinance 104/2011, but the mandatory notification of this disease was maintained.

Coincidentally, on January 26, 2011, SESAB publishes the update of the list of diseases and diseases of compulsory notification through Ordinance 125/2011.

The mandatory notification through SINAN, corroborated by Ordinance 1,882 of December 18, 1997 (which deals with the transfer of resources from the Básica-PAB Care Floor), aims to induce the maintenance of regularity in the feeding of the National Database by municipalities, states and the Federal District.

The offer of antipeçonhentos sera in brazil

The Health Surveillance Secretariat is also responsible for the acquisition and distribution of sera to the State Health Departments, in addition to the supervision of storage and quality control. It is also the role of the Surveillance Secretariat in Saúde (SVS) the coordination of vaccination actions of national character, in addition to the acquisition, conservation and distribution of immunobiologicals that integrate the PNI, as is the case of anti-venomous sera.

All products are manufactured in Brazil, in official national laboratories, under the monitoring of SVS. In addition to routine sera, the Health Surveillance Secretariat encourages further research, production and improvement of product quality. Sera are distributed by the SVS to the State Departments of Health, which coordinate the distribution to public hospitals authorized by the State or Municipal Health Department.

The provision of anti-vetosers conditioned to the sending of information about AAP by the municipal and state spheres to SINAN is a very efficient governmental administrative guideline in order to make the information remain active. Consequently, the processes of programming, acquisition and distribution are supported by data that express veracity. The dimensioning of the real regional demands and the mapping of the geographical occurrence of each AAP with use or not of serum, as well as the identification and frequency of the respective accidents in the various regions of Brazil are the fruit of this regulation.

The SIES, the SINAN and the supply of SOROS

Laudon and Laudon [5] authors state that information system can be technically defined “as a set of interrelated components that collects (or recovers), processes, stores and distributes informa-

tion”, this information is responsible for decision making, coordination and control of a company.

The same reasoning applies to the public sector. SINAN, as an information system of crucial importance for implementation for the maintenance of policies and actions in Public Health, provides data that end up in line with the guidelines of other information systems such as SIES, a state instrument for managing inventories of strategic insums.

For Oliveira [6] inventory control systems process data that reflect has in the changes in the articles in stock. Computerized inventory control systems they help the company provide high quality service to customers, while reducing investment and maintenance costs for stows.

The reduction of costs and investments, associated with an efficient logistics of acquisition and distribution of anti-venomsers is a primary objective of SIES, as an inventory management system. As on-line operating software, which provides real-time information on the composition and movement of antivenomous (and other immunobiological) sera throughout the national territory, and provides control of the distribution of serums and vaccines, acquired from national laboratories, and which are sent by the Ministry of Health of each State.

Thus, the SIES aims to subsidize the Program Management Unit (UGP) and the General Coordination of the National Immunization Program (CGPNI) with information that allows the improvement of the management of the activities, as well as the distribution of immunobiologicals. Based on the mapping and recognition of the epidemiological profile of PAAs throughout the territory, the qualitative-quantitative measurement of this type of disease would improve the maneuvers of acquisition and distribution of antivenomous sera, promoting the reduction of public investments in the sector and the minimization of morbidity and mortality resulting from this type of disease.

The flow of notification and the supply of anti-U.S. sera in the state of Bahia

In the state of Bahia, the APS described in the FIN forms are taken to the Epidemiological Surveillance of the respective municipalities for registration in SINAN. Then, these data are sent electronically to DIRES that covers the municipality, which consolidates the data and the s pass on it to the State Department of Health. At the end of each year, it analyzes the demand for immunobiologicals throughout the State and informs the MH that it begins the process

of scheduling the acquisition by the MS of the antivenomous sera for the subsequent period.

On the contrary, the process of distribution of the specific acquired serum takes place, which follows to meet the state demand of the municipalities of the 31 DIRES of Bahia.

To prepare the orders, the DIRES technician must consider the epidemiological profile of the area of coverage, including seasonality, the existing stock, the time interval between the preparation of the order and the receipt of sera, in addition to the notifications made through SINAN. In order to guard against possible shortages, a safety margin of +20% should be used in the composition of ampoule applications.

Through SIES, the Anti-Venom Information Center (CIAVE) coordinates the distribution and control of anti-venom sera and, with the logistical support of CEADI, elaborates the distribution routines for the 31 state directions. Respecting the regional variations and the seasonality existing in the different types of AAP in Bahia, CIAVE carries out the authorization for the distribution of sera through prior analysis of the real local needs, based on the epidemiological criteria available in the SINAN database and the technical-scientific parameters recommended in the Manual of Diagnostic and Treatment of AAP of the MS. The quantity of anti-venomous sera that will be made available to the various DIRES is counted in order to provide full coverage of the number of cases reported in close agreement with the epidemiological information contained in the SINAN database for that given period.

The sub notifications of AAP NO SINAN and its consequences on the management of the work of ciave in the distribution of sera in the state of Bahia through SIES

In the context of the control of notifiable diseases, the notifications in the SINAN database generate a flow of information of inestimable epidemiological value in order to ensure the success of the Work Management of distribution of antivenomous sera in the state of Bahia. The concise feeding of the SINAN database through the consistent notification of accidents by venomous animals contributes to the efficiency in the supply of immunobiologicals in a dimensioned, previsible and safe way.

However, there are barriers to the fluency of this information between the various spheres: the poor completion of the Individual Notification Form [7], the omission to fill it (under notifications) and/or the delay in transmitting the lots of information to the SINAN database are some of them.

According to Cazola [8] in a study conducted on “The importance of Accident Notification by Venomous Animals in Campo Grande - MS”, underreporting is a fait accompli, with divergências in the records of information systems and the ignorance of professionals in notifying them.

The underreporting can disrupt the flow of information that guide the strategic planning in the Health Surveillance Secretariat of the Ministry of Health (SVS/MS), interrupting the data monitoring that leads to the dimensioning of the processes of acquisition and distribution of anti-venom sera by the Ministry of Health, generating potential losses in the assistance to victims of AAP.

If, on the one hand, the notifications of AAP in SINAN provide data that point to the type and frequency of AAP in each Region, constituting an indispensable tool for the identification and quantification of anti-venom sera to be distributed, the underreporting generates distortions in the strategies of inventory management of serums - not only of distribution and control, but fundamentally of the programming of the acquisition of these immunobiologicals by the MH.

It should be emphasized that the entire AAP is, a priori, classified as a medical emergency and that the distribution of anti-ven-

oms cannot be “bureaucratized” to the detriment of the mandatory notification. Moreover, even if it is appropriate to create legal mechanisms that establish as a condition for the distribution of insums the due notification of cases of PAA, this should never be interfered with the distribution of the insums in exceptional cases.

In this context, the Labor Management at CIAVE in distributing the sera through the SIES seeks to equate the divergences that arise from the confrontation between the following variables: number of Reported AAP, number of accidents that required the use of scanner, number of ampoules used in reported cases, number of ampoules requested by the Health Regions and number of ampoules distributed for each DIRES of Bahia per year, and with the purpose of promoting the full coverage of PAAs in the State.

Results

It was notified from January to December 2010, through the National System of Notifiable Diseases (SINAN), the occurrence of 11,937 cases of accidents by venomous animals in the 31 Regional Health Directorates (DIRES) of the state of Bahia (Table 1).

Of this total number of cases, according to SINAN data, antivenomous sera were used in 4,386 (36.7%) resulting in 21,086 ampoules of different types of sera with notified use (Table 2).

DIRES	First	Second	third	4 th	5 th	6 th	7 th	8 th	9 th	10 th	11 th	12 th	13 th	14 th	15 th	16 th
Not Accident	549	674	220	233	202	147	449	210	328	52	21	91	1.396	347	241	287
DIRES	17 th	18 th	19 th	20 th	21 st	22 nd	23 rd	24 th	25 th	26 th	27 th	28 th	29 th	30 th	31 st	Total
Not Accident	148	576	337	1.177	239	76	231	1.427	397	264	405	222	363	377	251	11.937

Table 1: Accidents by Venomous Animals notified in SINAN by DIRES in 2010 in the State of Bahia.

Not Accident: number of accidents reported.

Source: SINAN/CIAVE,/SESAB database of 03/02/2012.

DIRES	First	Second	third	4 th	5 th	6 th	7 th	8 th	9 th	10 th	11 th	12 th	13 th	14 th	15 th	16 th
AAPc/Soro	177	84	118	125	118	110	294	142	182	33	7	19	418	176	110	131
Amp Notif	1.253	510	961	448	767	1.018	1.574	610	739	213	56	135	2.299	576	532	588
DIRES	17 th	18 th	19 th	20 th	21 st	22 nd	23 rd	24 th	25 th	26 th	27 th	28 th	29 th	30 th	31 st	Total
AAPc/Soro	20	109	165	370	53	68	100	342	273	110	76	94	186	118	58	4.386
Amp Notif	48	476	535	1.624	437	369	314	976	1.129	418	275	420	899	552	335	21.086

Table 2: Distribution of Cases of Accidents by Venomous Animals reported in SINAN that used specific serum and the number of ampoules used, by DIRES, in the State of Bahia in 2010.

AAPc/Serum: Number of reported cases that were administered antivenomous serum;

Amp Notif: Number of ampoules used.

Source: SINAN/CIAVE,/SESAB, 03/02/2012 database.

Table 3 expresses the amounts of anti-veal sera requested by dires da Bahia in 2010 through sies, where 71% are much higher than the corresponding number of ampoules reported in SINAN in the respective Health Regions.

DIR-ES	First	Sec-ond	Third	4 th	5 th	6 th	7 th	8 th	9 th	10 th	11 th	12 th	13 th	14 th	15 th	16 th
Amp Notif	1.253	510	961	448	767	1.018	1.574	610	739	213	56	135	2.299	576	532	588
Amp Solic	2.980	1.415	1.356	1.030	1.490	850	4.795	2.550	1.595	745	230	495	2.460	4.730	2.905	2.940
DI-RES	17 th	18 th	19 th	20 th	21 st	22 nd	23 rd	24 th	25 th	26 th	27 th	28 th	29 th	30 th	31 st	Total
Amp Notif	48	476	535	1.624	437	369	314	976	1.129	418	275	420	899	552	335	21.086
Amp Solic	690	2.370	460	1.480	1.530	645	1.340	1.275	1.070	2.915	2.200	1.875	3.705	1.240	1.180	56.541

Table 3: Numbers of ampoules of antivenovetos sera with notified use in SINAN and distributed to DIREs in 2010 in the State of Bahia.

Source: SINAN and SIES.

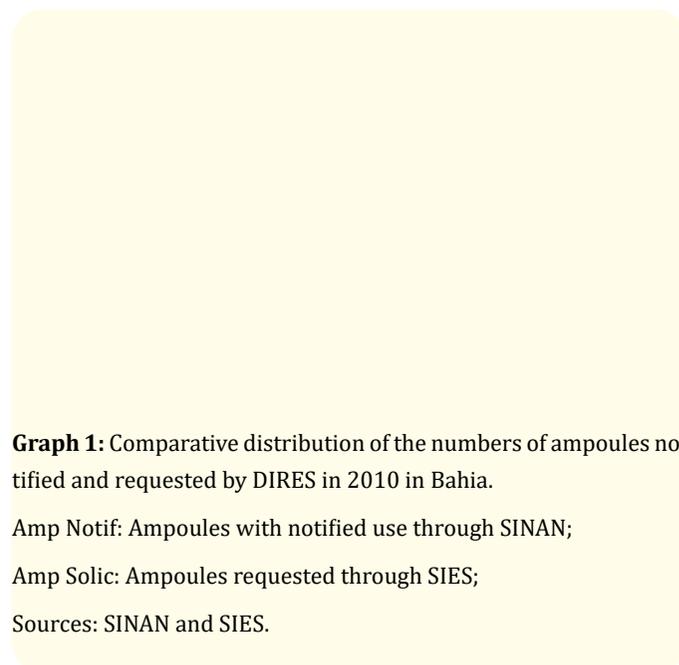
While SINAN recorded the use of 21,086 ampoules of anti-venomous sera, the Strategic Supplies Information System (SIES) recorded the distribution of 39,830 ampoules of these sera to the 31 DIREs of the State of Bahia, which corresponds to a difference of 18,744 ampoules (88.9%) (Table 4)-is to suggests a situation of high underreporting of cases of accidents by venomous animals.

When analysing requests dires through of the total number of ampoules requested in the whole of 2010, it was found that no DIRECTIONS (0%) requested a quantity compatible with what was notified (number of ampoules notified more up to 20%); 22 direc-tions (71%) requested a higher quantity than the number of ampoules notified more up to 20% and 4 directions (13%) requested a lower number than the notified number (Graph 1). This fact shows that the issue of underreporting is present in most of the state’s regional health, with emphasis on the 17th DIREs-Mundo Novo, 14th DIREs-Itapetinga and 27th DIREs-Seabra (Table 5).

	Number of ampoules notified in SINAN	Number of ampoules distributed to DIREs	Difference between A and B
MONTH/2010	(A)	(B)	(%)
January	1.886	3.125	65,7
February	1.793	2.435	35,8
Framework	2.158	2.180	1,0
April	2.504	3.925	56,7
May	2.381	5.750	141,5
June	888	4.080	359,4
July	354	2.430	586,4
August	861	2.470	186,9
September	1.714	3.535	106,2
October	2.268	1.845	-18,6
November	2.083	4.000	92,0
December	2.196	4.055	84,6
TOTAL	21.086	39.830	88,9

Table 4: Monthly amounts of ampoules notified through SINAN and distributed by CEADI to the 31 DIREs in 2010 in the State of Bahia.

Sources: SINAN and SIES.



Analyzing the distribution of data throughout 2010 (Table 4), it is observed that in the course of this year at no time were the quantitative requested compatible with what was notified (plus 20%), as shown in graph 2. In all months there were requests for ampoules much higher than those that were notified. The months of November and December, however, deserve a special analysis, because they correspond to an atypical period: in November, ampoules are requested for the two-month supply (due to the CEADI inventory) and in December only urgent requests are met. In this period, as a rule, requests are smaller than ampoule notifications.

Month 2010	Amp Notif	Amp Solic %	Difference
January	1,886	7,000	271,2
February	1.793	6.060	238,0
Framework	2.158	4.110	90,4
April	2.504	6.105	143,8
May	2.381	6.180	159,6
June	888	6.090	585,8
July	354	3.410	863,3
August	861	3.535	310,6
September	1.714	5.735	234,6
October	2.268	3.651	61,0
November	2.083	3.245	55,8
December	2.196	1.420	-35,3
Total	21.086	56.541	168,1

Table 5: Distribution of the months of 2010 that showed the highest percentage difference between the number of ampoule sit-downs and the number of ampoules requested in Bahia.

Amp Notif: ampoules with notified use through SINAN;

Amp Solic: ampoules requested through SIES;

Source: SINAN/CIAVE/SESAB, SIES/MS and CIAVE/SESAB.

Graph 2: Comparative distribution of the numbers of ampoules notified and requested per month in the State of Bahia in 2010.

Amp Notif: Ampoules with notified use through SINAN;

Amp Solic: Ampoules requested through SIES;

Sources: SINAN and SIES.

Thus, analyzing month by month the variables in focus in 2010, it is noted that the amount of ampoules requested differs from that reported. As shown in table 5, the percentages of the quantity of ampoules requested are extremely eligible- much higher than the recommended safety margin of +20% compared to those reported in SINAN.

Throughout the year, the largest differences between the notified and the requested were in June, July and August, with 527.8%, 722% and 290.8%, respectively. The data obtained do not allow us to identify the reason for this difference.

Figure 1: Figure showing the DIRECTIONS according to the percentage of disparity between solicitations and notifications of antivenomous sera in SINAN in the State of Bahia in 2010. SINAN and SIES Source.

The amounts of ampoules requested through the SIES were analyzed by each of the 31 regional health groups and compared with the quantities used reported through SINAN. As shown in figure 1, direes presented the largest difference (1,337.5%) between the number of ampoule reported and the number of ampoules requested was the 17th DIRES- Mundo Novo, followed by the 14th DIRES-Itapetinga and 27th DIRES-Seabra with 721.2% and 700.0%, respectively; 26th DIRES-Santa Maria da Vitória, with 597.4%; 15^a DIRES-Juazeiro and 16th DIRES-Jacobina, with 446.1% and 400.0%, respectively; 18th-Itaberaba, 28th Lord of Bomfim, 23rd-Boquira, 8th DIRES-Eunápolis, 29th DIRES-Amargosa and 11th DIRES-Cícero Dantas showed differences between 397.9% and 310.7%; 12th DIRES-Serrinha, 31st DIRES- Cruz dasAlmas, 21st DIRES-I and 7th DIRES-Itabuna with differences between 266.7% and 204.6%; 1st DIRES-Salvador, 4th DIRES-Santo Antônio de Jesus and 30th DIR-ES-Guanambi between 137.8 and 124.6% and the others with less than 100% (Table 6).

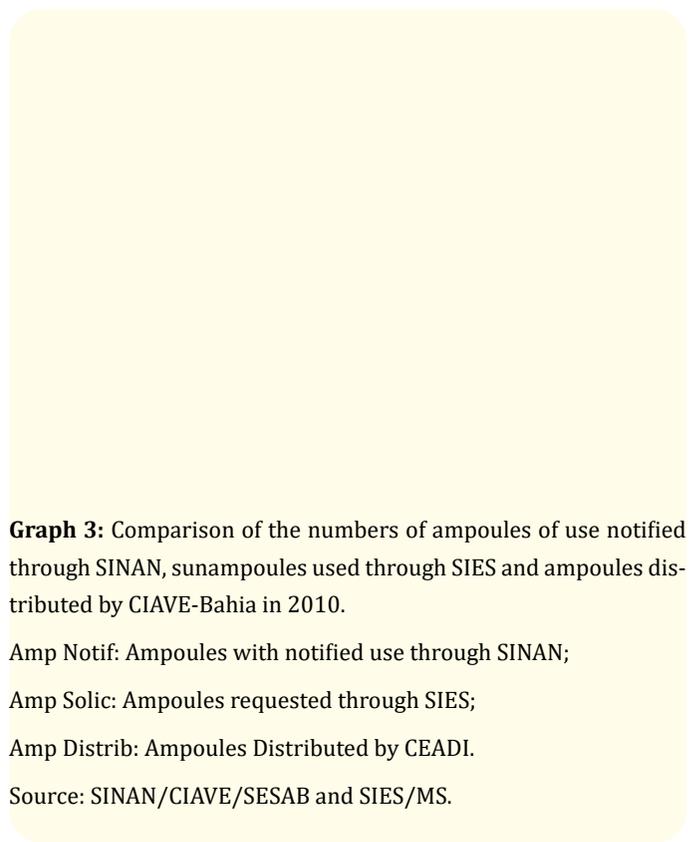
DIREs	Notified Ampoule Number	Number of Ampoule Requested	Difference Between Notified and Requested (%)
17-New World	48	690	1.337,5
14-Itapetinga	576	4.730	721,2
27-Seabra	275	2.200	700,0
26-Santa Maria da Vitória	418	2.915	597,4
15-Juazeiro	532	2.905	446,1
16-Jacobin	588	2.940	400,0
18-Itaberaba	476	2.370	397,9
28-Lord of Bonfim	420	1.875	346,4
23-Boquira	314	1.340	326,8
08-Eunápolis	610	2.550	318,0
29-Amargosa	899	3.705	312,1
11-Cicero Dantas	56	230	310,7
12-Serrinha	135	495	266,7
31-Cross of Souls	335	1.180	252,2
21-Irecê	437	1.530	250,1
07-Itabuna	1.574	4.795	204,6
01-Salvador	1.253	2.980	137,8
04-St. Anthony of Jesus	448	1.030	129,9
30-Guanambi	552	1.240	124,6
05-Gandu	767	1.490	94,3
22-Ibotirama	369	645	74,8
03-Alagoinhas	961	1.356	41,1

Table 6: Distribuição of the DIREs that showed the greatest difference between the number of ampoule scans reported and the number of ampoules requested in 2010 in the State of Bahia.

Sources: SINAN, SIES and CIAVE.

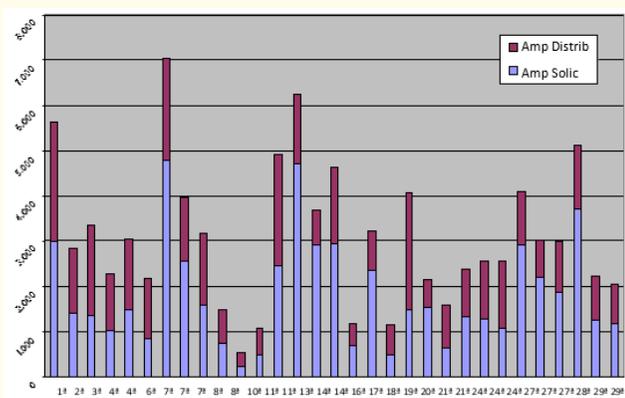
The data obtained did not allow evaluating the cause of these variations, however, it is presumed the occurrence of underreporting for the cases of orders well above (more than 20%, percentage considered as a safety margin of stock used for the calculation of pedidos) than was reported and in those cases in which the number of ampoules requested was lower than the reported, possibly there was a high stock of ampoules in the regional, and there was no need for replacement, therefore.

When analyzing the trend curves of the numbers of ampoules notified and that of ampoules requested, it is observed that they differ from each other for much of the year, contrary to what happens with the numbers of ampoules requested and that of ampoules distributed, with the exception of the months of May, November and December (Graph 3). In relation to the latter two, this fact is due to its atypicality already mentioned above.



In graph 4, when comparing the number of ampoules requested with what was distributed, it is verified that in 32% of the DIREs the request was met with an increase; in 52% of the DIREs the request was fulfilled with reduction and 16% of the DIREs sent their statements of stocks menses, not to mention quantities in the field reserved for requests. In these cases, the orders were released considering the requested quantity equal to that distributed by DIREs in the respective period.

As shown in graph 5, only in October this year the amount distributed was lower than reported, but this may have occurred due to the fact that this month regional stocks are at a satisfactory level. Only in 1 month (8.3%) the difference between notified and distributed was up to 20%; in 5 different months it was 21% to 100%; in 3 months it was 101% to 300% and in 2 months the difference was between 301% and 600%.



Graph 4: Comparison of the numbers of ampoules requested by DIRES and ampoules distributed to the regional regions in 2010 in the State of Bahia.

Amp Solic: ampoules requested through SIES;

Amp Distrib: Ampoules distributed by CEADI.

Source: SIES/MS and CIAVE/SESAB.

Graph 5: Comparison of the numbers of ampoules requested by DIRES and ampoules distributed per month in Bahia in 2010.

Amp Notif: Ampoules with notified use through SINAN;

Amp Distrib: Ampoules distributed by CEADI.

Source: SIES/MS and CIAVE/SESAB.

Table 7 shows the number of reported accidents, the numbers of cases that used sera, the quantities of ampoules reported, the numbers of ampoules requested and the numbers of ampoules distributed, the magnitude of the incongruities among the variables under study can be assessed.

Graph 6 expresses the comparative lines between the variables under study throughout 2010. As can be seen, considering

the number of accidents with the use of serum, there are large differences between the number of reported ampoules, requested ampoules and distributed ampoules. The fact that the level of ampoules used is higher than that of reported AAP is due to the average use of 5 ampoules by accident, although this does not represent a rule. Even so, these differences should not be so high.

Month	Reported accidents	Accidents with serum use	Ampoules with notified use	Requested ampoules	Distributed light bulbs
January	1,137	416	1,886	6,490	3,125
February	906	353	1,793	5,330	2,435
Framework	1.146	421	2.158	3.620	2.180
April	1.130	467	2.504	5.295	3.925
May	1.088	445	2.381	5.090	5.750
June	716	188	888	5.575	4.080
July	305	84	354	2.910	2.430
August	559	191	861	3.365	2.470
September	1.069	373	1.714	4.895	3.535
October	1.359	485	2.268	3.261	1.845
November	1.272	484	2.083	2.475	4.000
December	1.250	479	2.196	745	4.055
Total	11.937	4.386	21.086	49.051	39.830

Table 7: Monthly distribution of notifications and quantities of ampoules requested and distributed in 2010 in the State of Bahia

Source: SINAN/CIAVE/SESAB, SIES/MS and CIAVE/SESAB.

Graph 6: Comparison between number of notifications in SINAN of accidents by venomous animals, of accidents that reported the use of serotherapy, of ampoules notified, ampoules requested by DIRES and ampoules distributed by month via SIES in 2010 in the State of Bahia.

Note

AAP: Reports of accidents by venomous animal;

AAP cSerum: Accident by venomous animal with the use of Serotherapy;

Amp Notif: Ampoules with notified use through SINAN;

Amp Solic: Ampoules requested through SIES;

Amp Distrib: Ampoules distributed by CEADI.

Source: SINAN/CIAVE/SESAB and SIES/MS – 2010.

Table 8 expresses by month the magnitude of the divergences between the notification data of ampoules used and the active quantity effectively distributed.

Comparing the number of ampoules distributed and that of ampoules notified throughout the year shows that the difference between both is high in all months, despite following a trend of increase or decrease in accordance with notifications (Graph 7).

Graph 7: Comparison between the number of ampoules distributed and the number of ampoules reported in 2010 in Bahia.

Amp Notif: Ampoules with notified use through SINAN;

Amp Distrib: Ampoules distributed by CEADI.

Source: SINAN/CIAVE/SESAB and SIES/MS.

BYRES	First	Second	Third	4 th	5 th	6 th	7 th	8 th	9 th	10 th	11 th	12 th	13 th	14 th	15 th	16 th
Amp Notif	1.253	510	961	448	767	1.018	1.574	610	739	213	56	135	2.299	576	532	588
Amp Distrib	2.665	1.415	1.990	1.250	1.560	1.305	2.240	1.425	1.595	745	315	570	2.460	1.505	760	1.670
Distrib Xnotif %	112,7	177,5	107,1	179,0	103,4	28,2	42,3	133,6	115,8	249,8	462,5	322,2	7,0	161,3	42,8	184,0
DIRES	17 th	18 th	19 th	20 th	21 st	22 nd	23 rd	24 th	25 th	26 th	27 th	28 th	29 th	30 th	31 st	Total
Amp Notif	48	476	535	1.624	437	369	314	976	1.129	418	275	420	899	552	335	21.086
Amp Distrib	485	855	680	2.600	595	945	1.055	1.275	1.490	1.180	820	1.105	1.420	995	860	39.830
Distrib Xnotif %	910,4	79,6	27,1	60,1	36,2	156,1	236,0	30,6	32,0	182,3	198,2	163,1	58,0	80,2	156,7	88,9

Table 8: Distribution of DIRECTIONS with percentage differences between the notification data in sinan of ampoules used and the quantity effectively distributed in the State of Bahia in 2010.

Amp Notif: Ampoules with notified use through SINAN;

Amp Distrib: Ampoules distributed by CEADI.

Source: SINAN/CIAVE/SESAB, SIES/MS and CIAVE/SESAB.

When we analyzed the data from Bahia for the months of 2010 we observed incongruities such as those shown in graph 8.

Graph 8: Comparison of the numbers of ampoules notified in SINAN, requested by Dires and ampoules distributed per month in 2010 in the State of Bahia.

Amp Notif: Ampoules with notified use through SINAN;

Amp Solic: Ampoules requested through SIES;

Amp Distrib: Ampoules distributed by CEADI.

Source: SINAN/CIAVE/SESAB and SIES/MS – 2010.

And as shown in graph 9, when we analyze the data pertinent to each Dires in the course of the same year in this State, the same disagreements are evidenced.

Graph 9: Comparison of the numbers of ampoules notified in SINAN, requested by Dires and ampoules distributed by Dires in 2010 in the State of Bahia.

Amp Notif: Ampoules with notified use through SINAN;

Amp Solic: Ampoules requested through SIES;

Amp Distrib: Ampoules distributed by CEADI.

Source: SINAN/CIAVE/SESAB and SIES/MS - 2010.

Discussion

The fact that the number of ampoules of sera requested for the different types of accidents by venomous animals is so superior to that of ampoules reported in SINAN is mainly due to the event of underreporting of AAP. Even so, these differences should not be as high as those measured. Secondly, the lack of preparation of professionals responsible for the preparation of applications contributes greatly to the discrepancies found. In the medium term this leads to problems in the planning of aap control actions, including scheduling the acquisition of specific sera and in the supply of health units, ultimately.

Underreporting influences government decision-making. When these are supported by epidemiological data from SINAN or SIES to elaborate sera acquisition routines for the country, they may promote shortages in several regions. Therefore, based on a database that has information that underestimates the real demand for immunobiologicals may be a harbinger of severe crisis in their supply.

According to CORRÊA [9] there is a need to measure accuracy. It often happens that sectors resist working with incorrect data and this causes inventory information and control systems to become a failure. The incorrect information makes the requests for the purchase of materials not consistent with reality.

Although a harmonious agreement was expected among the variables under study, i.e. numbers of accidents by venomous animals reported in SINAN; accidents that required serotherapy; ampoules used in notified cases; ampoules requested via SIES and distributed ampoules, this was not verified by the analysis of the data obtained.

Given the lack of correspondence between the SINAN and SIES data related to the variables mentioned, it is appropriate for ciave - PNCAAP Manager within the State Department of Health to promote the equitable distribution of antivenomous sera in the State of Bahia. In accordance with what determines the DM, the distributed quantitative ones are linked to those notified in SINAN, using a margin of inventory efficiency of up to 20% more, considering the regional variables and the seasonality existing in the cases of AAP.

However, it should not be lost sight that the entire AAP is considered a medical emergency with high mortality potential and, in this form, the prompt supply of anti-venomum sera can never fail to be carried out in isolated cases under the pretext keep the database up-to-date. Even so, for CIAVE, the collection of notifications from AAP to municipal epidemiological surveillance, and the stimulus to the good management of sera at the regional level by professionals responsible for the Frios Network is a daily task.

Although no updated bibliographic data were found and that subsidiasa the discussion about the comparative analysis between the data of the two systems (SINAN and SIES), for CIAVE the under reporting are important causes of distortions in the process of con-

solidation of SINAN as a safe and effective parameter in the Work Management of the distribution of anti-venom sera through sies for the 31 DIRES of the State of Bahia.

Were it not for the underreporting, SINAN could be considered a more accurate analytical parameter for the PNCAAP manager in the different spheres of government. However, the incongruities observed in the relationship between cases that occurred and reported cases do not allow it.

Although this study does not stop to identify the determinant causes of underreporting in SINAN. As reported by the GVE/MS (2009), underreporting occurs due to ignorance of its importance and also due to discredit in the actions that should result from it. The development of continuing education programs that include encouraging notification and raising awareness about its importance should be a constant one.

Final Considerations

It is explicit, therefore, that the under notifications disrupt the flow of information that guide strategic planning in SVS/MS, breaking the acquisition/distribution link, which is dependent notification, increasing the risk of shortage of antivenovetous sera, since the demands are virtually growing, thus causing a potential increase in the risk of morbidity and mortality from APS.

Due to the large discrepancies observed in Bahia between the number of cases that actually occurred and the number of reported cases, the information that comms from the SINAN database does not provide the necessary security for the effective management of antivenovetous sera stocks. The processes of management of these insums by the SIES are hampered by the such lack of reliability between the effective cases and the notified cases. The lack of synchronism between epidemiological data of AAP cases and the quantitative of specific sera ampoules requested makes it impossible to establish a logical correlation between number of accidents by more venomous ani notified, accidents that required serotherapy, ampoules used in notified cases, ampoules requested by the 31 DIRES of Bahia and ampoules distributed in 2010.

Therefore, the composition of a National Plan for The Management of Antipeçonhentos Sera that would tie the notification flows to the distribution of supplies, would certainly bring better results in order to keep up-to-date the data of SINAN, making work man-

agement in SIES for Bahia and Brazil. The proposal to create a logistics that effectively conditioned the distribution of sera quantitative to the proportional and corresponding notification of the AAP would bring relevant benefits, minimizing costs and expanding the health care of the victims of AAP.

However, as Lagardia [10] reports, a health information system is not supported without Information Management Policies and without the training of its workers [11-14].

Bibliography

1. Bochner Rosany, *et al.* "Accidents by venomous animals and national information systems". *Public Health Notebook* 18.3 (2012): 735746.
2. BRAZIL, Ordinance GM/MS, of January 25, 2011. "Define-tune the terminologies adopted in national legislation, in accordance with the provisions of the International Health Regulations 2005 (RSI 2005), the list of diseases, injuries and public health events of compulsory notification throughout the national territory and establishes flow, criteria, responsibilities and attributions to health professionals and services (2011).
3. Brazil. Ministry of Health. Health Surveillance Secretariat. Department of Epidemiological Surveillance. *Epidemiological Surveillance Guide/Ministry of Health, Health Surveillance Secretariat, Department of Epidemiological Surveillance*. 7. ed. Brasília: Ministry of Health (2009).
4. Fizon Judith Tiomny, *et al.* "Underreporting of accidents by venomous animals registered by SINAN in the State of Rio de Janeiro from 2001 to 2005". *Revista Brasileira de Epidemiologia* 11.1 (2008): 114-127.
5. Laudon Kenneth C and Laudon Jane P. "Management Information Systems". 5th edition Berence, ed. Pearson (2004): 54-55.
6. Oliveira Djalma de Pinho Rebouças de. *Management information systems: strategic operational tactics* 6. Ed. São Paulo: Atlas (2004): 23-24.
7. Moura Alice Medeiros, *et al.* "Analysis of Exogenous Poisoning Data from the municipality of Montes Claros, Minas Gerais". Paper presented at the 18th International Symposium on Scientific Initiation of the University of São Paulo, not paged. São Paulo, SP (2010).
8. Cazola Luiza Helena de Oliveira, *et al.* "The importance of Notification of Accidents by Venomous Animals in Campo Grande – MS". *Revista Nursing*, January 2008, São Paulo, SP (2008).

9. Corrêa Henrique L. "Planning, programming and production control". 4. Ed. São Paulo: Atlas (2001): 49-52;417-420.
10. Lagardia Joshua, *et al.* "Notifiable Diseases Information System (SINAN): challenges in the development of a health information system". *Epidemiologia e Serviços de Saúde* 13.13 (2004): 135-147.
11. Ballou Ronald H. "Supply chain management: planning, organization and business logistics". 4. Ed. Porto Alegre: Bookman (2001): 249-252.
12. Cassarro AC. "Information systems for decision making". 3.ed. São Paulo: pioneer (2001): 26.
13. Brazil. Ministry of Saude. Health Surveillance Secretariat. Department of Epidemiological Surveillance. Notificação Diseases Information System - SINAN: standards and routines/ Ministry of Health, Department of Health Surveillance, Department of Surveillance Epidemiological. 2. ed. - Brasília : Editor of the Ministry of Health (2007).
14. Epidemiological Surveillance Guide | Notebook 14, Health Surveillance Secretariat/MS, Accidents by Venomous Animals.

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