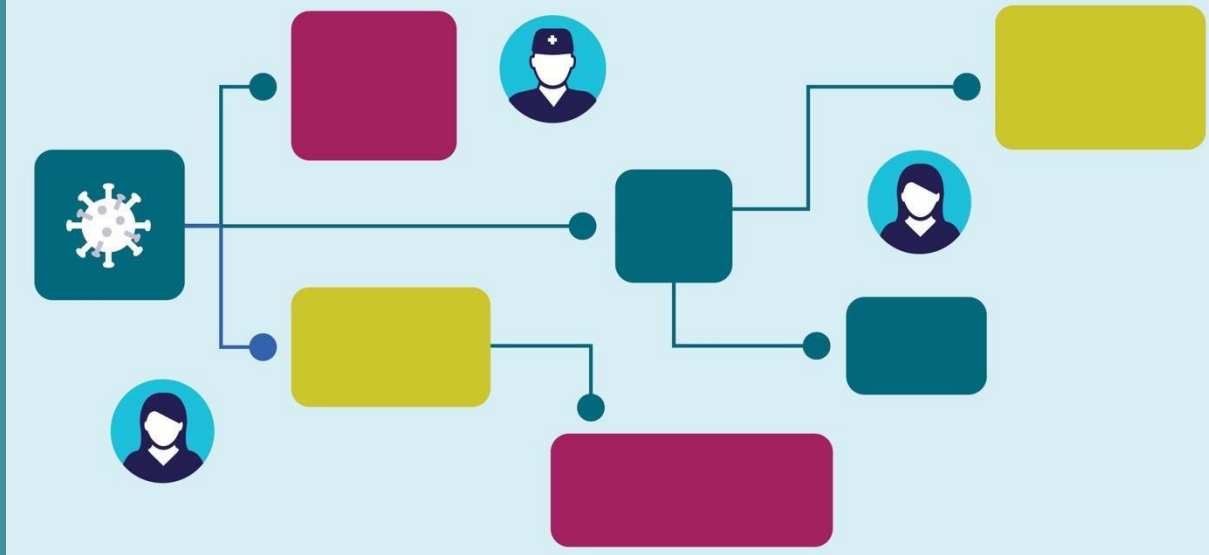

DATA.FI TECHNICAL

Analysis of COVID-19 Processes and Information Management Systems

Secretariat of Health Honduras

FEBRUARY 2023

USAID FROM THE AMERICAN PEOPLE
Data.FI Data for Implementation

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Content

ILLUSTRATIONS

TABLES

Abbreviations

AGI	Information Management Area
IDB	Inter-American Development Bank
CDC	U.S. Centers for Disease Control and Prevention
COMISCA	Council of Ministers of Health of Central America
Data.FI	Data for Implementation
DHIS2	District Health Information Software Version 2 (District Health Information Software, Version 2)
GTT	technical working group
HP+	Health Policy Plus Project
LNV	National Virology Laboratory
MyVaccinesHN	Vaccine digital certificate platform
OPS	Pan American Health Organization
PAI	Expanded Program on Immunization
RNP	National registry of persons
SALMI	Information System for the Logistic Management of Medicines and Supplies
SESAL	Secretariat of Health of Honduras
SIVAC	Information System of Vaccines Applied in Campaigns
SVS	Health Surveillance System
UGI	Information Management Unit
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
UVS	Health Surveillance Unit

Executive Summary

The United States Agency for International Development (USAID)/Honduras has requested support from the Data for Implementation (Data.FI) project to strengthen the governance of the information system for the COVID-19 approach.

Initial discussions between USAID/Honduras and Data.FI identified priority areas of support to improve data quality; train health workers to improve data collection and reporting; and build the capacity of government staff, especially within the Honduran Ministry of Health (SESAL). These activities are aligned with the Comprehensive Plan for COVID-19 response and recovery in Honduras. Data.FI has conducted meetings with senior staff from the Health Surveillance Unit (UVS), the National Virology Laboratory (LNV) and the Pan American Health Organization (PAHO) in August and September 2021 to better understand the highest priority needs for this work plan.

Data.FI activities also integrate the regional health level and, to some extent, the health facility level. To date, priority has been given to technical assistance to build the capacity of regional teams.

Data.FI will continue to work closely with SESAL's strategic Units supporting coordination to strengthen technical work aimed at improving data use which will require strong engagement with various Units, Directorates and Divisions within SESAL, as well as with other donors such as the U.S. Centers for Disease Control and Prevention (CDC), the Global Fund to Fight AIDS, Tuberculosis and Malaria.

SESAL, with support from the Inter-American Development Bank (IDB), prepared a digital [roadmap1] , the implementation of which is led by the Information Management Unit (UGI); implementation phases and the prioritization of each of the actions have been defined. In addition, the United Nations Children's Fund (UNICEF) has supported the identification of IT tools for processes involving vaccination issues within SESAL.

The IGU has a strategic plan for the implementation of an integrated health information system, which is being updated in terms of interoperability with the systems that have been developed and managed within the internal sector of the IGU, as well as those that have served as support for external cooperation in the area of information systems.

This report details the methodology used for the elaboration of an information flow diagram related to COVID-19, which includes a bibliographic review, working meetings for the establishment of working groups, review and validation workshops with these groups, who detailed tasks, normative bases and IT tools that interact in the process. Based on this work and validation interviews, the owners of the processes, their revisions and the coordinated work with the different SESAL agencies that interact in these processes were identified.

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1 Secretariat of Health; IDB; Honduras, Roadmap for the digital health agenda 2020-2026, Tegucigalpa, M.D.C.

In each section of the Process Analysis, the findings of each identified process are detailed, describing the information systems that interact in the processes, as well as the key actors in the operation of the processes and subsystems or tools involved. In this same section, the opportunities for improvement of these processes in their regulatory and operational areas are defined, specifically in terms of data quality.

In the Process Analysis section, recommendations are proposed to advance in the issues raised in the objectives of this report, such as the improvement of governance structures and the integration of health information systems. The working groups, made up of different SESAL units, are involved in the implementation of the processes.

The opportunities for improvement and recommendations set forth in this document seek to advance in the definition of a route that allows the interoperability of the systems that currently manage data in each of the processes and that provide information for the development of analyses and visualizations.

This is achieved by having a capacity building plan in each of the areas involved in the regulatory, documentary and training areas that allow the information, which is transversal to the organization, to be compiled and can be accessed in a timely manner for their respective analysis.

Information systems governance seeks the proper alignment between processes, people and information systems. To this end, specific recommendations have been identified in terms of regulations, guidelines and standard operating processes that support the effective collection and analysis of data in information flows, such recommendations are aimed at data integration through the interoperability of multiple systems.

Introduction

This paper presents a series of activities that were carried out in the framework of the Data.FI project's support to the Ministry of Health to strengthen its governance structures, documenting the processes linked to the activities carried out in relation to COVID-19 together with the work teams formed for this purpose, identifying the IT tools that interact in these processes and generating a series of recommendations aimed at optimizing these operational structures in their functions as defined in the internal regulations of operations and functions of the SESAL at the central level.

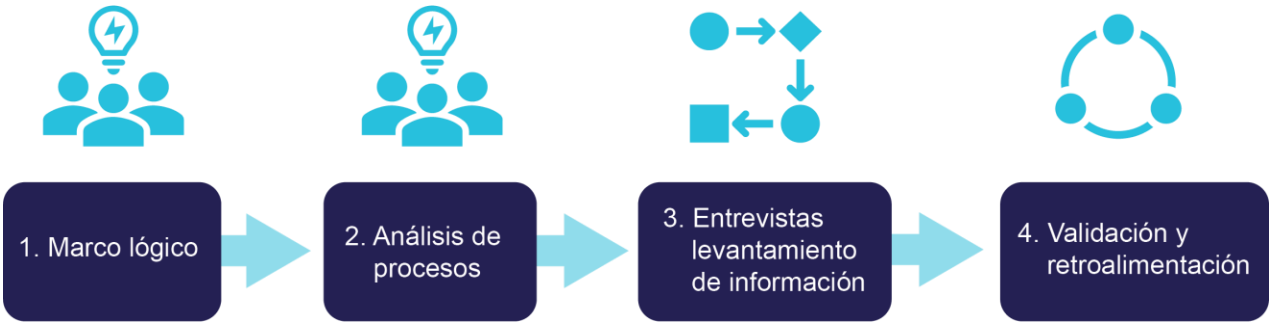
Objectives

- Identify processes to improve governance structures and integration of the health information system.
- Document the processes linked to the performance of activities and provision of services related to COVID-19.
- Build consensus among stakeholders on identified regulatory gaps, guidelines, standard operating plans, information management guidelines and digital solutions.

Methodology

Based on the identification of priority indicators in response to COVID-19, four stages were carried out to identify the findings and propose recommendations for strengthening the processes related to the response to COVID-19.

Diagram 1. Method used for the identification and definition of processes that contribute data to information flows



1. **Logical framework:** with the purpose of identifying the working groups for the conformation of these to focus on the efforts of the priorities for data analysis.
2. **Process analysis:** to identify the processes that contribute to the indicators prioritized in the logical framework.
3. **Interviews for the collection of information:** with the purpose of describing the processes that contribute data to the indicators prioritized in the logical framework.
4. **Validation and feedback:** processes described to identify gaps in data generation, consolidation and reporting, as well as for the information subsystems involved in the processes.

1. Logical Framework

In order to carry out the process survey and the mapping of the IT tools involved in these processes, the following activities were carried out:

- Identification of the processes involved in the activities related to COVID-19
- Identification of SESAL agencies involved in these activities
- Formation of technical working groups
- Creation of terms of reference that delimit their functions and activities.
- Holding of workshops for presentation and validation of identified and diagrammed processes and flows.
- Interviews with technical operational stakeholders to validate adjustments and review the performance of the identified IT tools
- Workshop to present the results of previous activities to working groups and higher levels of SESAL to define the articulation of the working groups.

2. Process Analysis

Table 1. Identified processes that contribute data to the information flows.

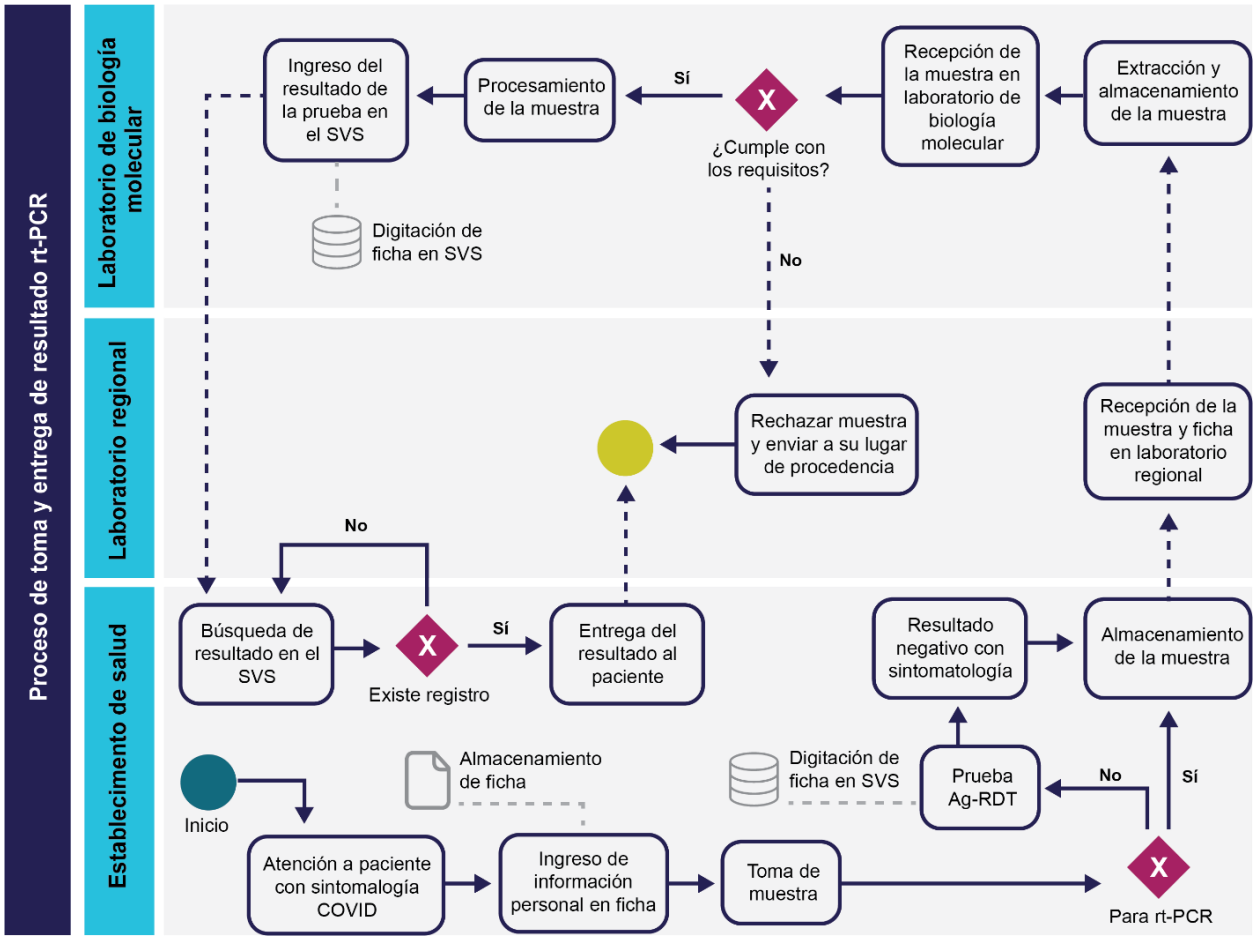
Work teams	Process	Interviewees
Epidemiology	Notification of deceased cases	Technical Working Group (GTT) of the Health Surveillance Unit; National Laboratory; Standardization Unit; Directorate of First Level of Care and Second Level of Care Networks; Information Management Unit (UGI).
	Testing and delivery of results.	GTT of the Health Surveillance Unit; National Laboratory; Standardization Unit; Directorate of first level of care and second level of care networks; UGI.
	Case follow-up	Expanded Program on Immunization (EPI) TWG; Standardization Unit; Directorate of first level of care and second level of care networks; IGU; external cooperation.
Vaccination record	4.Vaccine application record	EPI TWG; Standardization Unit; Directorate of first level of care and second level of care networks; IGU; external cooperation.
Laboratory	5.Testing and supply logistics	GTT of the Health Surveillance Unit; National Laboratory; Standardization Unit; Directorate of first level of care and second level of care networks; UGI.
Logistics	Vaccine logistics management	GTT of the Health Surveillance Unit; National Laboratory; Standardization Unit; Directorate of first level of care and second level of care networks; UGI.

Each of the six processes identified in the process analysis and validation workshops is presented below. It is important to note that the diagrams focus on recording the data generated in each of the processes and not necessarily whether it is available in the existing regulations.

WORK TEAM: EPIDEMIOLOGY

Testing and delivery of results

Diagram 2. Performing tests and delivering results



General objective of the process

Record of sample collection and delivery of results to the user who attends the health facility for diagnosis.

Specific objectives of the process

- Record the patient's personal, sociodemographic and clinical information.
- Record sample collection information
- Enter the test result
- Deliver results to users of the health facility
- Report positive and negative test information for planning mitigation strategies.

Actors in the process

- Laboratory technician, health services personnel at different levels of care
- Epidemiologists and UVS technicians

Subsystem/system involved

- SVS
  - Epidemiological record for Ag-RDT and rt-PCR tests.
  - Entry of Ag-RDT and rt-PCR test results
  - Report the results to the user to whom the test was performed.
  - The application is being developed and updated by PAHO according to the needs of the UVS. At the time of writing this report, there is no plan in place for the transfer of technical support for the system to SESAL.

More information on these systems can be found in the report "Documentation and Technical Proposals for Computer Systems."

Findings

- Normative
  - WVS works in conjunction with the national laboratory to record results in a timely manner based on operational instructions.
  - There are still no surveillance regulations for COVID-19, which are in the process of being created by the Standardization Unit and the UVS, and consideration is being given to incorporating other Units that are involved in this process.
- Installed capacity
  - The UVS coordinates the results delivery process with the national laboratory and involves instances such as the Integrated Health Services Networks (RISS) in health facilities that have technological capabilities developed for this purpose.
- Data quality
  - The information collected from the patient is transcribed on the printed form that collects the information from the sample taken, which is then entered into the Health Surveillance System (SVS) computer tool.

Recommendations to the process

- Normative
  - Create or update regulations, guidelines or directives as appropriate that integrate the considerations of key stakeholders such as the Network Management, Laboratory and Quality Unit.
  - Widely disseminate the official guidelines for the operation of the process, so that at the time of its execution, it is widely known by all the instances involved.

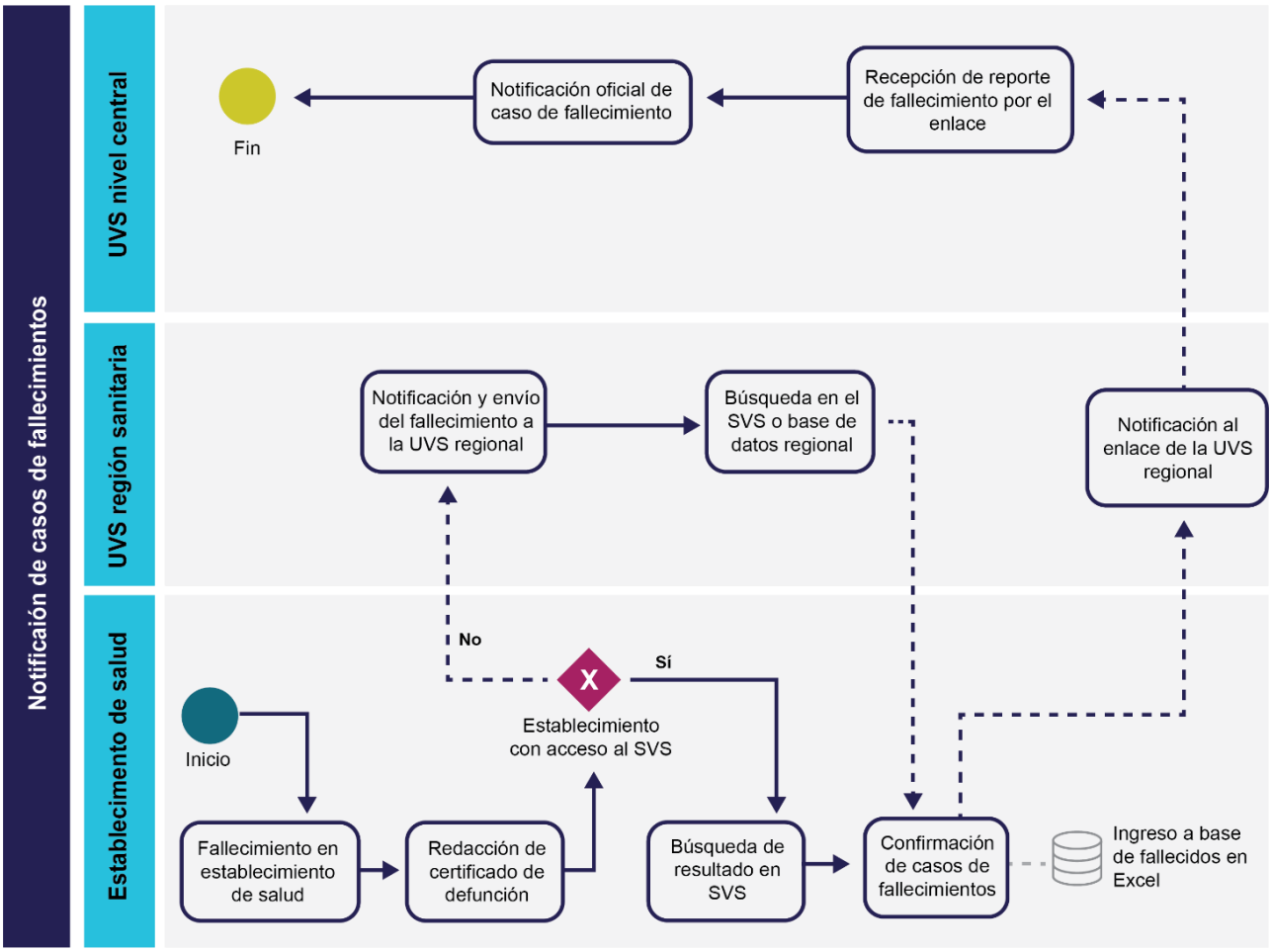
- Implement and document the good practices of the process so that they can eventually be adopted in other surveillance tasks of the Unit.

- Data quality
  - Strengthen the capacities of the UGI for a migration of the IT tool to the SESAL work environment.
  - Create a capacity transfer plan between UVS and the IGU for the maintenance, administration and implementation of the system in each of its phases at both the infrastructure and software levels.
  - The UVS must socialize data collection flows among all stakeholders by defining work roles within the IT tool defined for this purpose.

WORK TEAM: EPIDEMIOLOGY

Notification of deceased

Diagram 3. Notification of cases of deceased persons



General objective of the process

Report of cases of COVID-19 deaths diagnosed by the national laboratory through the rt-PCR test.

Specific objectives of the process

- Registration of deaths by COVID-19
- Report COVID-19 deaths at the central level.

Actors in the process

- Laboratory technician, health services personnel at different levels of care
- Regional technicians in charge of death information management

- Forensic team, hospital doctors and nurses in charge of filling out the death certificate
- Epidemiologists of the health region
- Epidemiologists and technicians of the UVS

Subsystem/system involved

- SVS
  - Identify whether the case of the deceased was previously reported as a positive case

The SVS is a fundamental part in the confirmation of cases of COVID-19 deaths. However, the information on deaths in the regions and at the SVS/central level is managed using Excel databases and files, and the report form is sent by means of a photograph of the certificate sent by mail or social networks, as there is no system or process defined for this purpose.

Findings

- Normative
  - SESAL does not have a regulation for COVID-19 monitoring that serves as a guideline for the registration, follow-up and implementation of the process at all levels involved in this work led by the UVS, making it difficult to align all the actors involved in the process in a coordinated manner.
  - Update the definition of death by COVID-19 indicating this as the primary or secondary cause of death, since the death could have been caused by the patient's own comorbidities and not directly related by COVID-19.
  - It is necessary to form a committee to investigate deaths from COVID-19 without a confirmatory test. In addition to investigating the timing of the deaths with this committee, it would define in a timely manner whether the death was caused by the virus or was only present at the time of death.

Installed capacity

- The technical staff of the Surveillance Unit is familiar with the process at the operational level of death notification and is the one who issues the instructions for the development of the computer tool that supports this task.
- There is no standardized instruction for the reporting of deceased cases from the local, regional or national levels.
- Data quality
  - The registration of the national identification document (DNI) data is validated through the information provided by an agreement between SESAL and the national registry of persons (RNP). However, this agreement is annual.

Recommendations to the process

- Normative
  - Prioritize the creation of official surveillance regulations or guidelines for COVID-19.

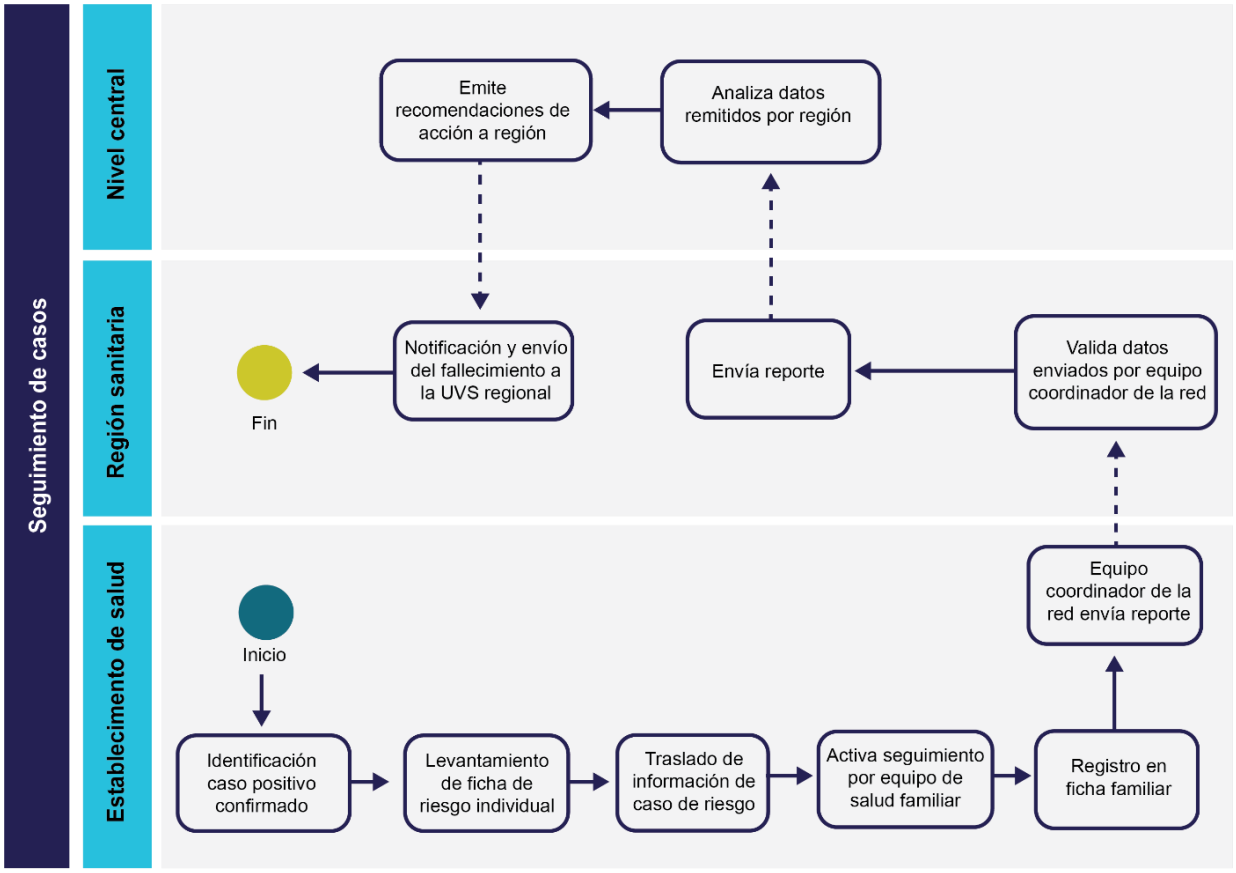
- Socialize the regulations to be implemented by the technical surveillance bodies and to meet the expectations of quality, availability and timeliness of the data of interest to SESAL.
- Coordination of a COVID-19 mortality investigation committee.

- Data quality
  - Reviewing and updating that the data collection forms are aligned according to the indications of the UVS, which is the one who performs the registration of deaths by COVID-19 together with the Quality Unit, would allow the records to be transferred from the printed forms to a computer tool to be uniform regardless of the time of entry into that tool.
  - Develop analysis and/or recording capacities at local levels to strengthen the capacity for data collection and analysis in conjunction with the agencies involved in this task.
  - SESAL must establish a macro agreement defining the interactions between SESAL and RNP, to strengthen the data validation processes on a permanent basis.

WORK TEAM: EPIDEMIOLOGY

Case tracking

Diagram 4. Case follow-up



General objective of the process

Timely follow-up and registration of cases in the population with comorbidities detected through family health teams.

Specific objectives of the process

- Register cases of population with comorbidities.
- Follow up the person confirmed positive through the family health teams.

Actors in the process

- Family health teams composed of health services personnel at the first level of care.
- Epidemiologists and surveillance team of the sanitary region

Subsystem/system involved

There is no IT tool involved in the data recording of this process.

Findings

- Normative
  - At the first level of care, there is a printed family health record that makes it possible to identify populations and communities on an individualized basis. However, the analysis work is manual.
  - There is no computerized tool to support this activity of monitoring the cases identified.
  - Some family health teams record information in Excel formats, but this is not an officially standardized task on the part of the body that coordinates the actions of the family health teams.
- Installed capacity
  - Family health teams, an activity that has been established as an official guideline but has not yet been implemented in all primary health care facilities.
  - Some health facilities were able to form teams and reconfigure the action of these teams to actively search for COVID-19 symptomatic patients, given some relocation conditions as part of the SESAL dynamics at this time.

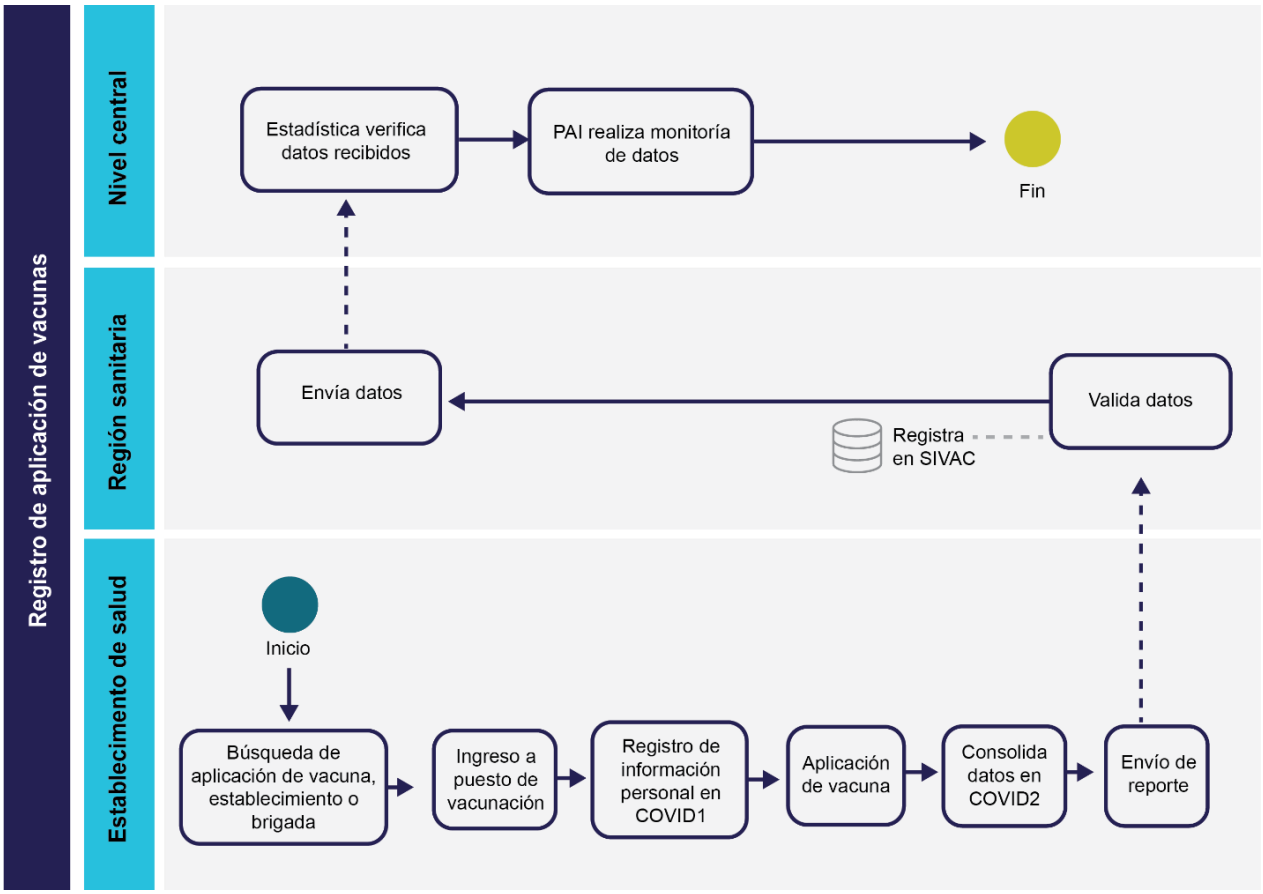
Recommendations to the process

- Normative
  - Integrate into family health teams the regulations that contemplate actions for the active search for cases of COVID-19.
- Data quality
  - Update the health surveillance tool for family health teams to record information on symptomatic patients with confirmed positive results from all units.
  - Develop technical support capacities in SESAL to implement the tool at the local level of health facilities that have family health teams.

WORK TEAM: VACCINATION REGISTRY

Vaccination record

Diagram 5. Vaccination record



General objective of the process

To register the application of vaccines in the eligible population.

Specific objectives of the process

- Record vaccination
- Record the first, second, third, first reinforcement, or second reinforcement applied.
- Report vaccination
- Creation of a bulletin of vaccination status in the country.

Actors in the process

- EPI technicians
- EPI liaison at regional level
- Health personnel at the first level of care

- Technicians from the different regions that use the Vaccines Applied in Campaigns Information System (SIVAC).

Subsystem/system involved

- SIVAC
  - Aggregate vaccination registry at the level of health facility, municipality and department.
  - Report on vaccination and population coverage according to regional and municipal estimates.
  - SIVAC collects numerical data that are recorded in COVID2 formats, which are prepared by each health facility and reviewed by the health region. There is normative documentation that controls the flow of information to the central level. There are standardized formats that are approved by the Standardization Unit in each of their versions, and these are managed and implemented by the health statistics area.
- DHIS2
  - Nominal record of vaccine doses administered to each user of the system.
  - Report on vaccination at each geographic level and georeferenced in the cases where information is available.
  - The District Health Information Software Version 2 (DHIS2) according to the guidelines for the introduction of COVID-19 vaccination is the system in which vaccination should be recorded. According to the regulations, some facilities use it for nominal vaccination registration. It was developed by the University of Oslo and is administered by the IGU. It has been implemented in health facilities that have the necessary technological capabilities.
- MisvaccinesHN
  - Nominal vaccination record.
  - Generation of digital vaccination card according to the indications of the SESAL authorities.
  - This system is being developed by the UGI and is currently in the pilot phase, which will allow to adequately identify the optimal hardware and software requirements of the system for a nationwide implementation in the establishments that meet the necessary technological capabilities.

More information on these systems can be found in the "Computer Systems Technical Documentation and Proposals" report.

Findings

- Normative
  - Currently, vaccination information continues to be recorded in the DHIS2 module in accordance with the regulations.
  - The information in this tool is not fully updated because not all health facilities enter the information in the module.
  - There is no standard instruction for the continuity of the recording of vaccination data in the system.

- The official source of vaccination data available to the PAI is the information received through the SIVAC tool, which processes numerical data.
- The UGI is in the process of developing and implementing the MisVacunasHN web application to unify everything related to vaccination.
- MisVacunasHN has the capability to produce a vaccination card for COVID-19 as well as for other vaccines if needed.

- Installed capacity
  - Information registered in DHIS2 is available for the migration of this information to the MisVacunasHN application, and the possibility of migrating this data to the new tool is being analyzed after a feasibility analysis.
  - The SIVAC tool has official guidelines, files and instructions for reporting the data recorded.
  - The output reports for consultation are limited, not allowing technicians to generate the required analyses, but only the predefined ones.
  - The database update flow is delayed, as it depends on the mailing of regional repositories.
- Data quality
  - Nominal data are processed in DHIS2 and aggregate data in SIVAC. In order to have this information, and for it to be consistent, a double effort must be made in the review of the information to be reported, due to the type of data recorded in both tools.
  - Double registration brings the risk of incorrect information for analysis.

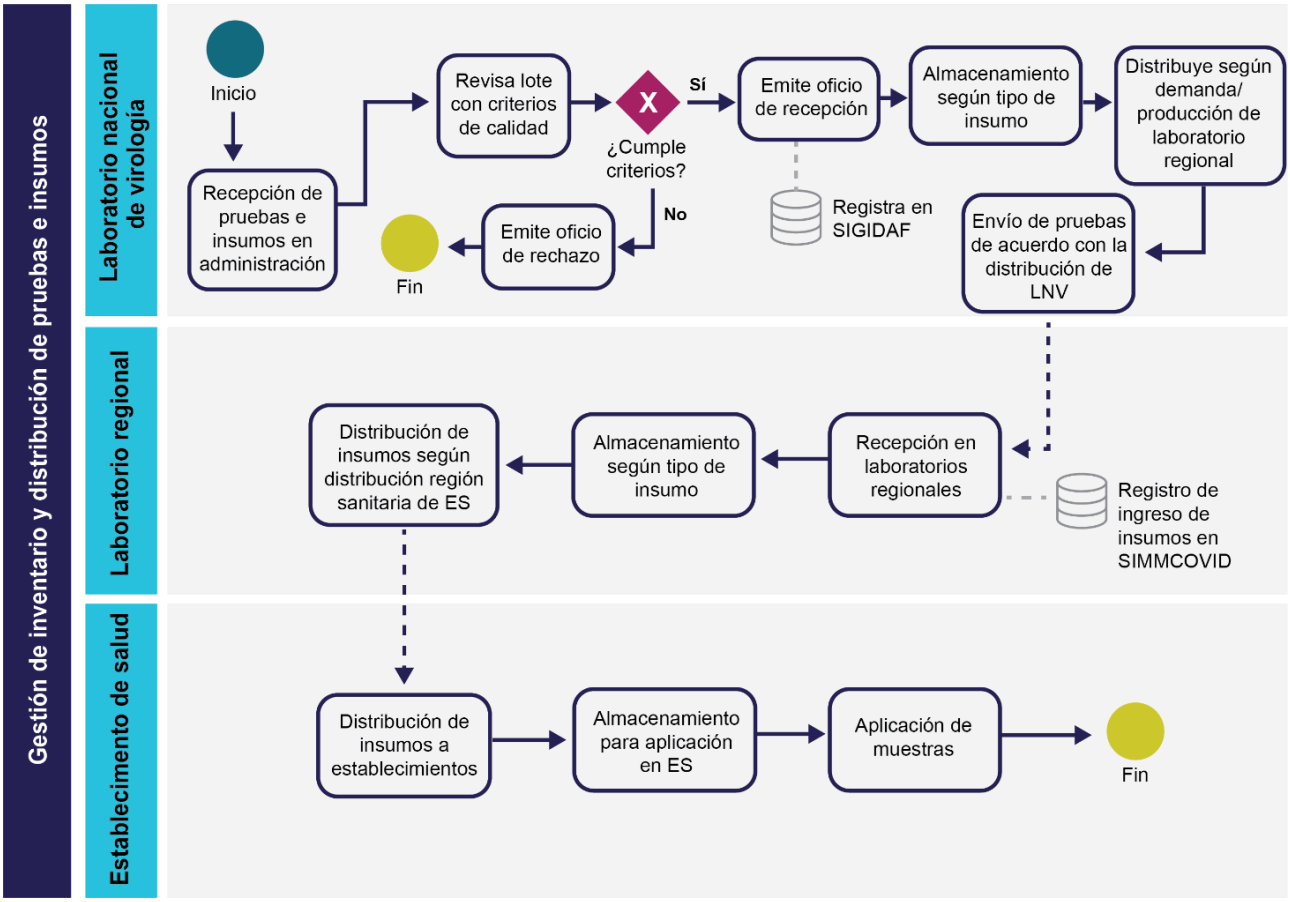
Recommendations to the process

- Normative
  - Updating of the standards for recording information in the different instances necessary for SESAL, in which the different tools used for each purpose must be identified.
  - Unify the information from the different systems to enhance the analysis and generation of reports or, failing that, the issuance of the vaccination card for COVID-19.
  - Coordinate the use of the new tool to be used for the issuance of the digital ID card.
- Data quality
  - Systematize the nominal information recording processes to streamline data flows and optimize the reporting of vaccination data.
  - The content of other information systems, such as the Information System for the Logistic Administration of Medicines and Supplies (SALMI), should be considered to enrich the analyses.
  - Certify the optimal functioning of the MisVacunasHN application in areas such as information security and vulnerability correction if necessary.

WORK TEAM: LABORATORY

Supply logistics

Diagram 6. Logistics of laboratory supplies



General objective of the process

Provide the laboratories that process rt-PCR tests with the necessary supplies, as well as supplies for sample collection at health facilities and triage.

Specific objectives of the process

- Record sample drawing production
- Record the supplies that are distributed from the national laboratory to the regional laboratories.
- Record the inventory assigned to personnel at the national laboratory.

Actors in the process

- Laboratory technician, health services personnel at different levels of care
- Laboratory administrative staff
- Equipment in charge of sampling in establishments
- Administrative area in establishments

Subsystem/system involved

- SIGIDAF
  - Report of registration of supplies and equipment assigned to the national laboratory.
  - The instruction from the national laboratory is to register the supplies and equipment received by the regional laboratories in the system, and in cases where there is an inventory number for national goods, this should also be registered in the sections provided for this purpose. To this end, work is being done using the form agreed upon with the SESAL Quality Unit.
  - The application is being developed by the Executive Secretariat of the Council of Ministers of Health of Central America (SE-COMISCA), which is currently in the analysis stage for the transfer of capabilities to SESAL.
- SIMMCOVID
  - This application was developed by the HP+/USAID project and updated by Data.FI as a short-term solution for recording input information in the three regional molecular biology laboratories (Copán, Atlántida and Cortés) supported by USAID.
  - Currently, the maintenance required is at the level of data dictionary elaboration, which is generated in each laboratory when required, and the personnel has been trained for this purpose.

Trained personnel have technical information on these systems, this can be found in: "Documentation and technical proposals for computer systems."

Findings

- Normative
  - It was identified that the national laboratory works with guidelines and formats developed jointly with the Quality Unit of SESAL.
  - The logistics operation of the LNV has not yet been standardized through the Directorate of Standardization.
- Installed capacity

The national laboratory has been strengthened in the work of logistical distribution of inputs. However, SESAL has a unit with specific functions for this work.

- Data quality
  - The national laboratory is working on standards supported by the SESAL Quality Unit to have standardized formats and procedures.

- The SIGIDAF computer tool for registering or unloading supplies, reagents and equipment requires a lot of effort to be entered in each instance involved, since this solution is not implemented at the national level.
- The registration of supplies, reagents and equipment that are transferred to a regional level are registered in another tool provided for this purpose at the regional level.
- The regional laboratories rely on Kardex national goods standards for the registration or release of goods or inputs that may not necessarily be registered in the national laboratory system.

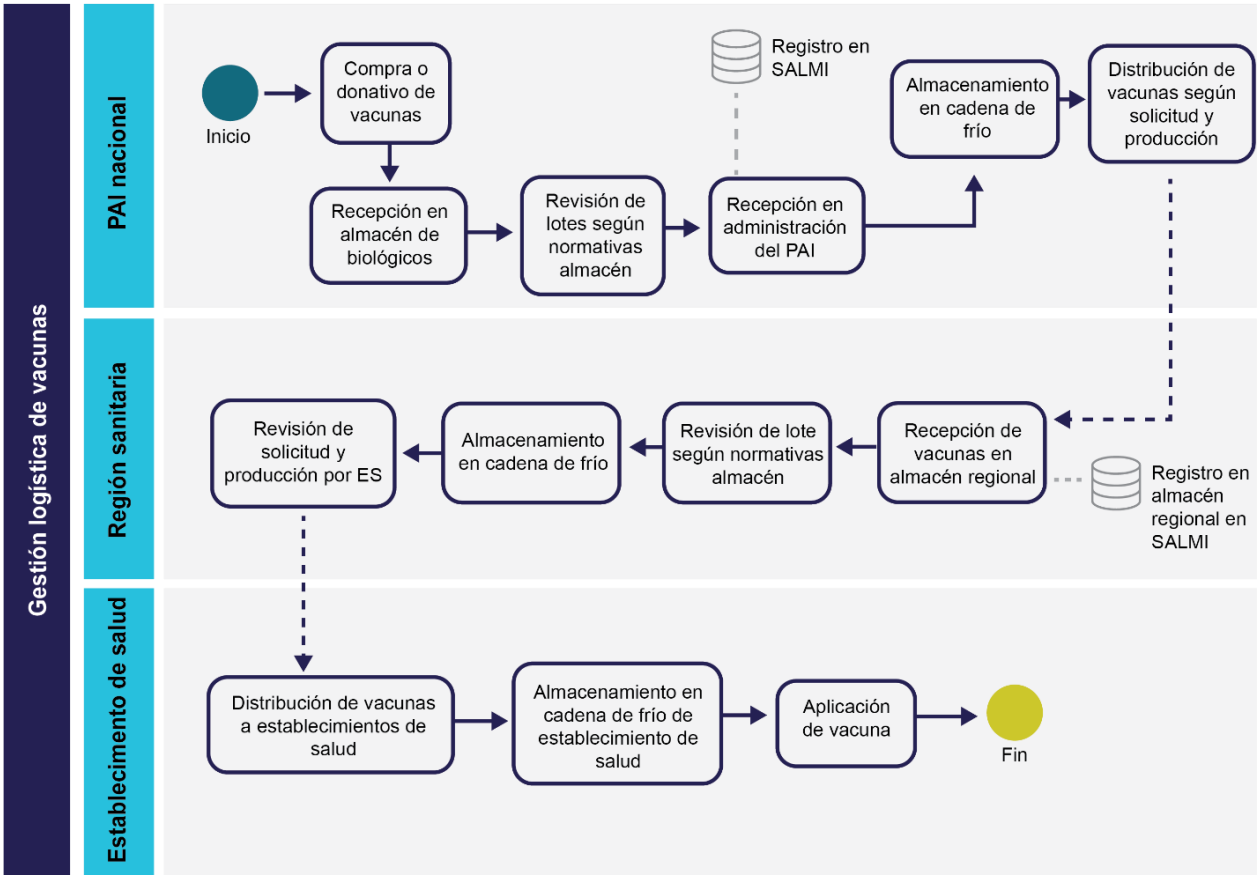
Recommendations to the process

- Normative
  - Integrate the General Directorate of Standardization into the joint work of the Quality Unit in order to have official guidelines and instructions for general use in the laboratories and to train the personnel involved in these tasks.
  - To have documentation in the internal section of the laboratory duly socialized for consultation in case of requiring reinforcement to achieve a desirable operability in the optimal development of the process.
  - Conduct an internal coordination analysis between the National Laboratory and the Medicine, Supplies and Equipment Logistics Unit (ULMIE) to guide efforts for an integral strengthening of these SESAL entities.
- Data quality
  - Identify a tool that is operational within SESAL to be integrated as a logistical data recording solution for the laboratory.
  - Define the implementation route for this tool, as well as the strengthening of the technical and operational capacities of the personnel and the improvement of the technological infrastructure in the necessary cases identified.

WORK TEAM: LOGISTICS

Vaccine logistics management

Diagram 7. Vaccine logistics management



General objective of the process

Registration and distribution of vaccines received by the PAI in the national warehouse of biologicals to supply the regional warehouses with vaccines against COVID-19.

Specific objectives of the process

- Register COVID-19 vaccines and immunization supplies in the national stockpile of biologicals.
- Distribute vaccines to the regional warehouse, according to production/demand.
- Report the status of stored lots.

Actors in the process

- EPI technicians and national biologicals warehouse
- National Biological Warehouse Technicians
- Cold chain technicians

Subsystem/system involved

- SALMI ANB
  - Registration of batches of supplies/vaccines entering the national biologicals warehouse
  - Registration of batches of supplies/vaccines leaving the national biological warehouse.
  - Registration of batches of supplies/vaccines entering regional warehouses
  - Registration of batches of supplies/vaccines leaving regional warehouses
  - Status report of supplies/vaccines in national and regional warehouse
  - The application is being developed and updated according to the needs of SESAL by the United Nations Population Fund (UNFPA), and the UGI is in charge of its implementation in the different health facilities, taking into account the development of their technological capacities.

More information on these systems can be found in the "Computer Systems Technical Documentation and Proposals" report.

Findings

- Normative
  - The logistics process of vaccine distribution is based on the available features/properties of the SALMI ANB system that have been implemented for that system.
  - The development and implementation of this system was based on the best practices identified or implemented by the technical staff of the warehouse that responds to the needs of information and analysis to achieve the timely recording of data.
  - The execution of the process is based on instructions issued through official letters or e-mails.
- Installed capacity
  - The technical personnel in the warehouses are trained in the use of SALMI ANB for manual loading and unloading of supplies and vaccines. However, it was not possible to obtain access to a user's manual for the system.
  - The desktop computers that are used were updated with software for the implementation and use of the system; they are also used for daily work tasks such as writing documents or surfing the Internet where connectivity is available.
  - The use of commodity codes to record inputs and outputs is not always standardized among the national biological warehouse, nor among the regional warehouses.

Recommendations to the process

- Normative
  - Prepare or update regulations, guidelines and logistic process guides, as well as prepare user manuals for the SALMI ANB tool to improve its implementation and registration in national and regional warehouses.

- Develop a formal standard operating process to achieve optimal process and system implementation to meet the information needs of decision makers.

- Data quality
  - Train personnel involved in data recording to use a standardized coding system that allows interoperability between the different information subsystems.

Results

The following is a summary of the opportunities for improvement and recommendations for each of the identified processes

Table 2. Summary of opportunities for improvement and recommendations

Process	Identified subsystems	Finding	Recommendations	Type
1. Laboratory supplies logistics	* SIGIDAF * SIMM-COVID	The National Laboratory works with guidelines and formats developed in conjunction with the SESAL Quality Unit	Integrate the Standardization Department for the issuance of regulations, guidelines or instructions involved in the logistic process of the laboratory.	Guidelines
		The logistics operation of the LNV has not yet been regulated by the Directorate of Standardization.	Strengthen, through training, the development of personnel involved in the logistics of laboratory supplies and inventories.	Guidelines
		SESAL has a unit with specific functions and logistical functions.	Promote the single use of the SIGIDAF platform for input and inventory management. The migration of information stored in SIMM-COVID should be managed.	Promote the improvement of the information
2. Delivery of results	* SVS	There are no regulations for the delivery of COVID-19 results at the creation stage.	Create or update regulations, guidelines, or guides, as appropriate	Guidelines
		Recording of results in a timely manner based on operational instructions	Widely disseminate the official guidelines for the operation of the process so that, at the time of its execution, it is widely known by all the instances involved.	Promote the improvement of the information

Process	Identified subsystems	Finding	Recommendations	Type
Notification of deceased	* SVS	Development of a monitoring standard for COVID-19	Prioritize the creation of official surveillance regulations or guidelines for COVID-19.	Guidelines
		Update the definition of deceased by COVID-19 indicating this as the primary or secondary cause of death.	Socialize the standards to be implemented by the technical oversight bodies and to meet quality expectations.	Committee and guidelines
		Formation of a committee to investigate COVID-19 deaths without a confirmatory test.	Develop analysis and/or registry capacities at local levels to strengthen data collection and analysis capacity in conjunction with the agencies involved in this task.	To drive improvement to the system
4. Case follow-up	*ND	A printed family health card is available to identify populations and communities on an individualized basis. However, the analysis work is manual.	Integrate the guidelines of the family health teams to the actions for active case finding by COVID-19	Guidelines
		There is no IT tool to support this activity of monitoring identified cases.	Update health surveillance tool for family health teams to record information on symptomatic patients with confirmed positive results from all units.	Integration of the data collection tool

Process	Identified subsystems	Finding	Recommendations	Type
*Logistic distribution of vaccines	*SALMI ANB	The development and implementation of this system was based on the best practices identified or implemented by the warehouse technical staff.	Prepare or update regulations, guidelines and logistic process guides, as well as prepare user manuals for the SALMI ANB tool.	Guidelines, manuals
		The execution of the process is based on instructions issued by means of official letters or e-mails.	Train personnel involved in data recording to use standardized coding.	Training
*Vaccine application record	*DHIS2 *SIVAC *MisVaccinesHN	At present, vaccination information continues to be recorded in the DHIS2 module in accordance with the regulations.	Updating of the standards for the registration of information in the different instances necessary for SESAL, in which the different tools used for each purpose must be identified.	Guidelines
		The official source of vaccination data available to the PAI is the information received through the SIVAC tool. This tool processes the numerical data	Systematize nominal information recording processes to streamline data flows and optimize the reporting of vaccination data.	Guidelines

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