

## COMSA/ SIS-COVE Mozambique:

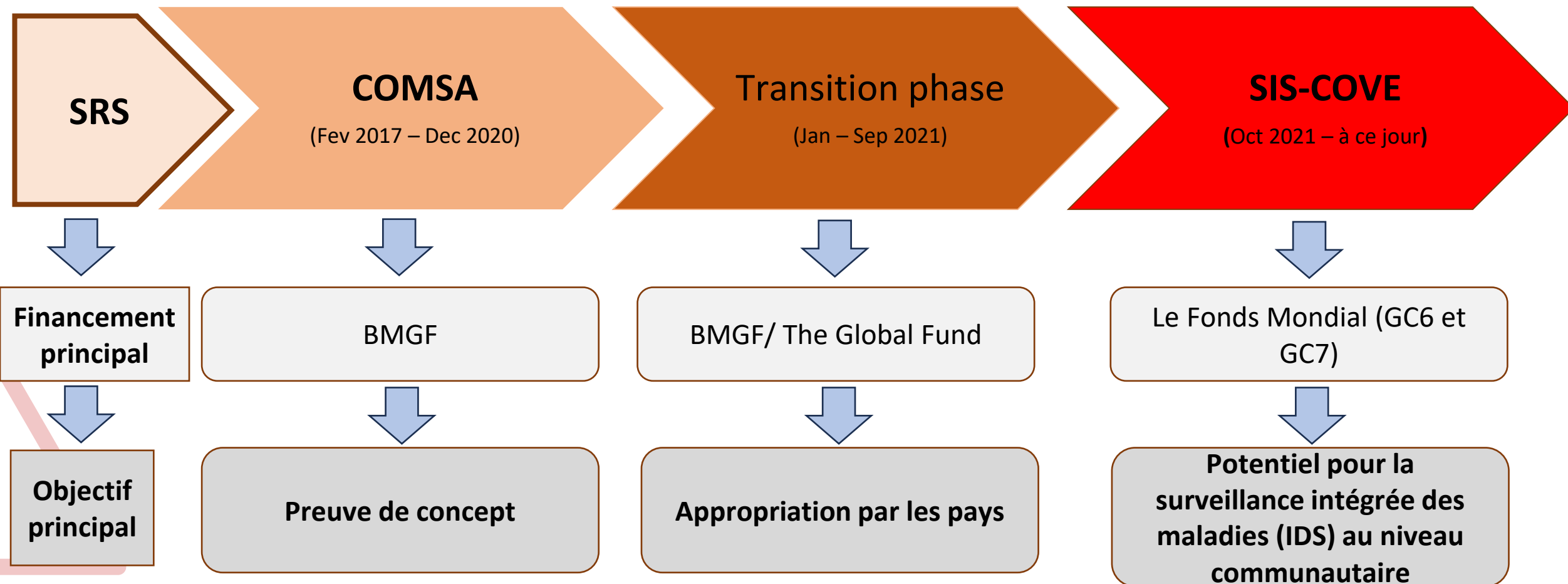
Phase-précoce      projet      mise en oeuvre : leçons  
appprises

*Ivalda Macicame, MD PhD*

*COMSA PI pour le Mozambique*

Decembre 2025

# Le Mozambique a reconnu le SRS comme une stratégie permettant d'obtenir immédiatement et à long terme des données représentatives sur l'état civil et les causes de décès.



# Leçon 1 : Définir l'objectif principal du SRS.

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## Objectifs de COMSA Mozambique

Générer des données continues sur la mortalité et les causes de décès représentatives aux niveaux provincial et national.

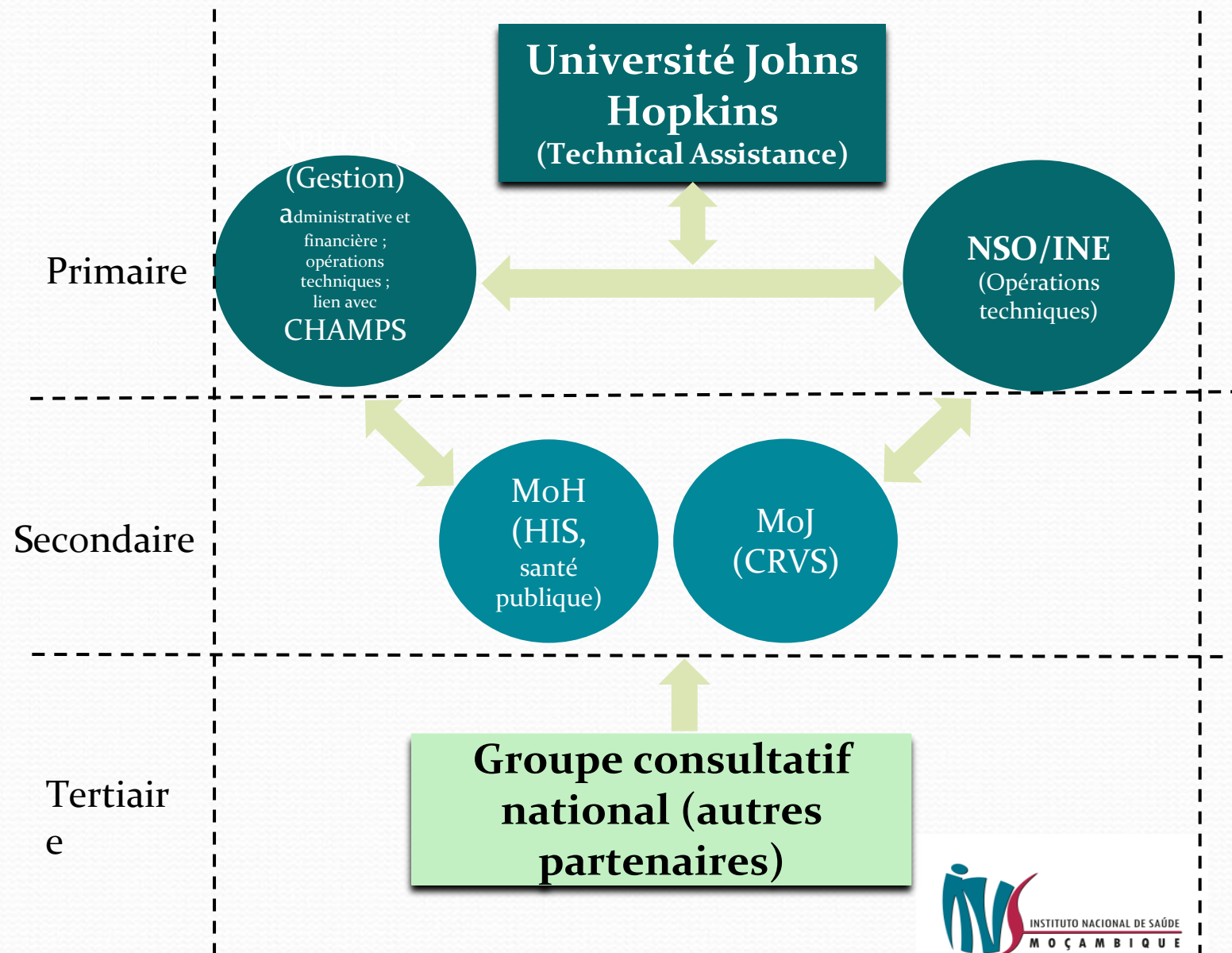
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Établir un lien avec CHAMPS afin de créer un site de collecte des données MITS sur les décès d'enfants de moins de cinq ans pour l'évaluation des causes de décès, et utiliser ces données pour améliorer les causes de décès basées sur les AV au Mozambique.

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## Leçon 2 : Impliquer les principales parties prenantes dès la phase de conceptualisation et identifier les besoins et les lacunes.

### Rôle de gouvernance par niveau, COMSA-Mozambique





# Leçon 3 : Définir/ajuster les rôles des principales parties prenantes du SRS si nécessaire.

## Institut national de santé publique(INS) \*

- Institut national des statistiques sanitaires et de la recherche en santé.
- Principale institution chargée de la mise en œuvre du SIS-COVE.
- Interaction avec d'autres institutions.

## Bureau national des statistiques (INE)

- Cartographie.
- Procédures d'échantillonnage.

## Ministère de la Santé (MISAU)

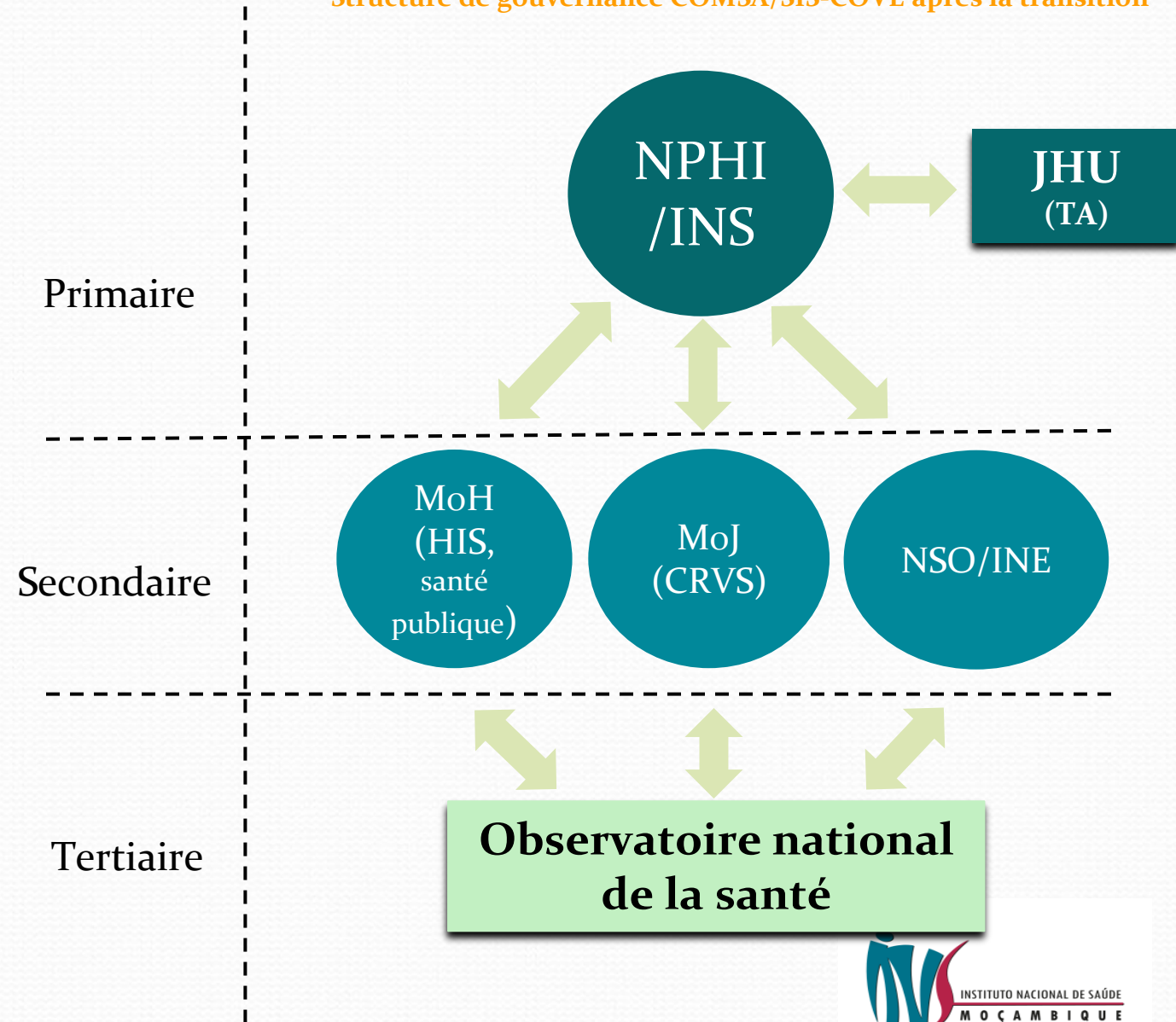
- Agents de santé communautaires déclarant les événements d'état civil.
- Soutenir la mise en œuvre de la sérosurveillance.
- Interopérabilité avec dHIS-2.

## Ministère de la Justice (MJCR)

- Relier les naissances et les décès dans la communauté au CRVS afin d'augmenter la couverture du CRVS.
- Interopérabilité avec l'e-CRVS.

\* Avec l'assistance technique de l'université Johns Hopkins depuis 2017

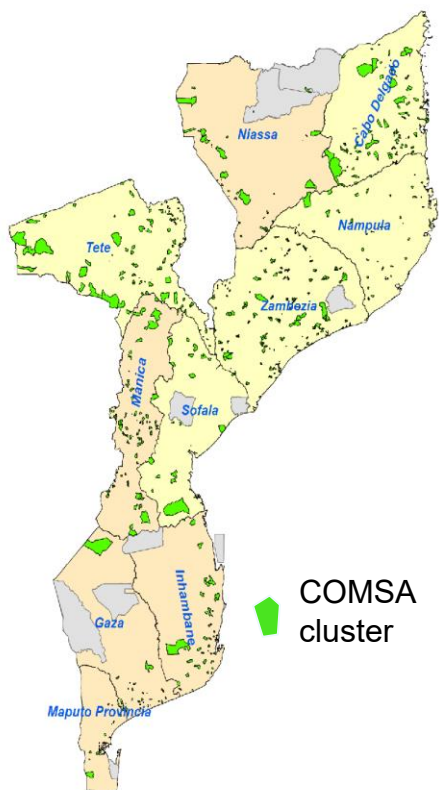
## Structure de gouvernance COMSA/SIS-COVE après la transition



# Leçon 4: Définir l'échantillonnage idéal et la représentativité du SRS.

Comparaison de l'échantillon COMSA avec l'enquête existante (PHIA 2015)

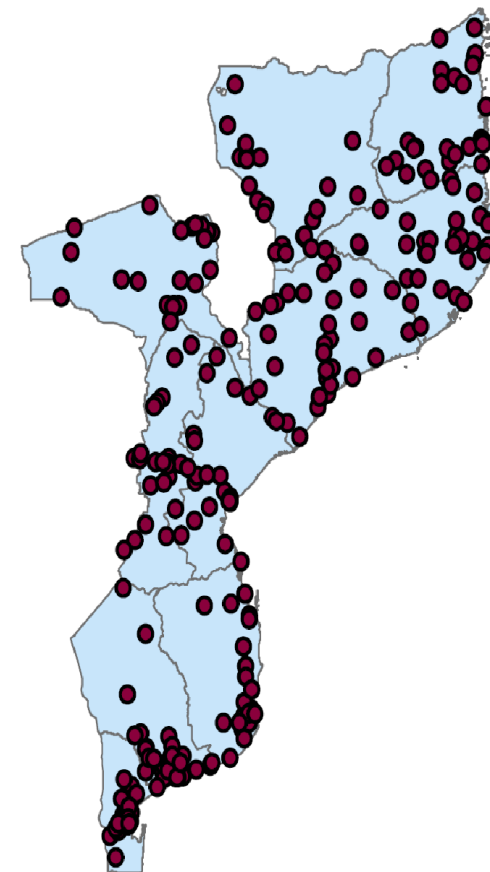
## COMSA/ SIS-COVE



1. Sélection aléatoire de grappes.
2. Représentant aux niveaux national et provincial.
3. 700 grappes.
4. Grand groupe (~300 ménages).
5. Surveillance de la population totale de chaque groupe.
6. 180 000 foyers.
7. Possibilité de sélectionner un sous-échantillon pour la collecte de données spécifiques (par exemple, MNCH).
8. En continu.

## IMASIDA (PHIA) - 2015

1. Sélection aléatoire de grappes.
2. Représentant aux niveaux national et infranational.
3. 307 grappes.
4. Petit groupe (~120 ménages).
5. Sélection de 24 ménages par grappe.
6. 7 169 ménages.
7. Pas possible pour le sous-échantillon.
8. Enquête ponctuelle.





# Leçon 5 : Définir les principaux outils de collecte et d'analyse des données SRS.

**SIS-COVE s'appuie sur des travailleurs communautaires formés, utilisant des outils de reporting et d'analyse de données en temps réel.**

## Surveillance Communautaire

Formulaire d'inscription des ménages

Liste des événements dans la communauté :

- Grossesses.
- Issues de grossesse.
- Décès, y compris 3 questions visant à recenser les décès maternels chez les femmes âgées de 12 à 54 ans.

## Autopsie verbale et sociale (VASA)

Questionnaires d'autopsie verbale (OMS 2016) :

- Néonatal (moins de 28 jours, y compris les mort-nés).
- Enfants (28 jours à 11 ans).
- Adultes (12 ans et plus).

Questionnaires d'autopsie sociale :

- Caractéristiques des ménages, des logements et des communautés.
- Comportement en matière de recours aux soins / Chemin vers la survie.

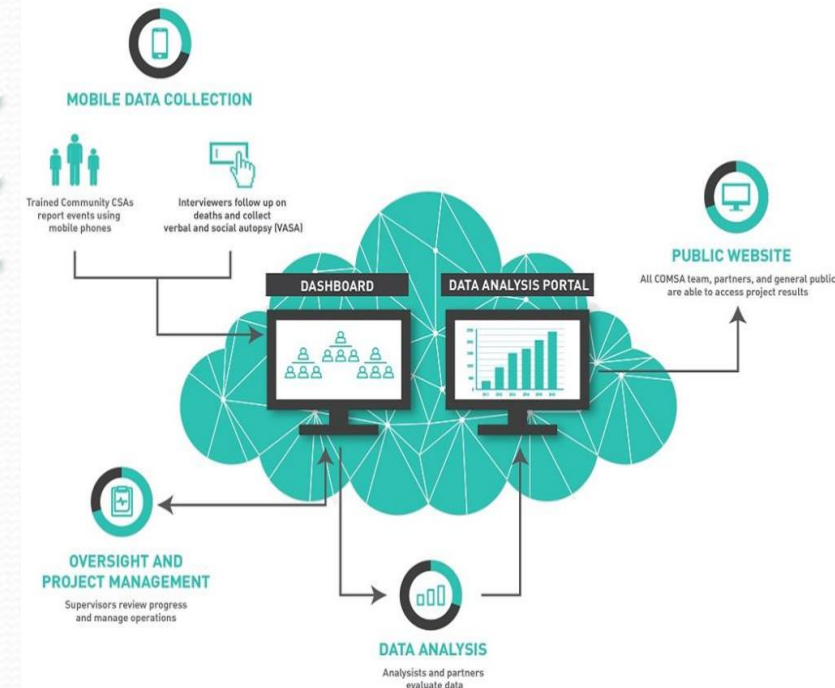
## Méthodes automatisées pour déterminer les causes de décès

Inter-AV 5

In Silico AV

EAAV

AV Calibrage avec les données CHAMPS



## Leçon 6: Envisager une infrastructure informatique et de systèmes de données susceptible de permettre l'interopérabilité et d'autres solutions innovantes.



Interopérabilité entre  
COMSA/SIS-COVE et e-  
CRVS



Module SIS-COVE  
développé à l'aide de dHIS-2  
pour le HMIS dans le  
secteur de la santé



# Leçon 7 : Définir les principaux résultats du SRS

## Principaux résultats de SIS-COVE en matière d'événements vitaux



### CONSTATAÇÕES-CHAVE



Em 2019, os colectores de dados em 700 conglomerados em todas as 11 províncias de Moçambique enumeraram 855.479 pessoas, identificaram 13.975 nascimentos e 3.898 mortes e realizaram 3.437 autópsias verbais e sociais, usando tecnologia móvel.



65% dos nascimentos ocorreram em média numa unidade sanitária, com menos de metade dos partos em unidades sanitárias de Cabo Delgado e Zambézia e com cobertura quase universal em Maputo cidade e Maputo província.



A nível nacional, 30% dos nascimentos e 15% das mortes foram registados no sistema de registo civil, com grande variação: 42% dos nascimentos e 92% das mortes registadas em Maputo cidade e apenas 2% dos nascimentos e 27% das mortes em Cabo Delgado.



A taxa de mortalidade neonatal foi de 29,4 mortes por 1.000 nascidos vivos e a prematuridade causou 54% das mortes neonatais. A taxa de mortalidade infantil foi de 53,6 por 1.000 e a taxa de mortalidade de menores de cinco anos foi de 81,7 por 1.000. A taxa de mortalidade de menores de cinco anos de idade foi estimada em 103 por 1.000 em conglomerados nas zonas rurais e 51,3 por 1.000 em conglomerados nas zonas urbanas. As principais causas de morte entre crianças de 1 a 59 meses foram malária (23%), diarreia (12%) e HIV (12%), com 34% atribuídas a outras infecções. Para crianças de 5 a 14 anos, os ferimentos causaram 18% das mortes, a malária cerca de 13% e o HIV cerca de 11%, com 27% atribuídos a outras infecções.



Para pessoas de 15 a 49 anos, o HIV causou 28% das mortes, os ferimentos 15% e as causas maternas fizeram 11%, sendo 13% devido a outras infecções e 22% a outras causas. Entre os adultos com 50 anos ou mais, as principais causas foram TB (23%), cancro (17%) e HIV (11%), com 24% atribuídos a outras causas.



# Leçon 8 : Il est essentiel de comprendre les coûts liés à la SRS à ses différentes phases pour planifier, impliquer les parties prenantes et mener des actions de sensibilisation.

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doi:10.4269/ajtmh.22-0438  
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## Mise en œuvre du programme national de surveillance de la mortalité au Mozambique : Combien cela a-t-il coûté ?

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**Abstract.** Complete sample registration systems are almost inexistent in sub-Saharan Africa. The Countrywide Mortality Surveillance in Action (COMSA) project in Mozambique, a national mortality and cause of death surveillance system, was launched in January 2017, began data collection in March 2018, and covers over 800,000 population. The objectives of this analysis are to quantify the costs of establishing and maintaining the project between 2017 and 2020 and to assess the cost per output of the surveillance system using data from financial reports produced by the National Institute of Health in Mozambique. The program cost analysis consists of start-up (fixed) costs and average annual operating costs covering the period of maximum implementation in 700 clusters. The cost per output analysis quantifies the annual operating cost of surveillance outputs during the same period. Approximately two million dollars were spent on setting up the system, with infrastructure, technological investments, and training making up over 80% of these start-up costs. The average annual operating costs of maintaining COMSA was \$984,771 per year, of which 66% were spent on wages and data collection incentives. The cost per output analysis indicates costs of \$37–\$42 per vital event captured in the surveillance system (deaths, pregnancies, pregnancy outcomes), \$303–\$340 per verbal and social autopsy conducted on a reported death, and a per capita cost of \$1–\$1.3. In conclusion, establishing COMSA required large costs associated with infrastructure and technological investments. However, the system offers long-term benefits for real-time data generation and informing government decision-making for health.

Design and initiation phases: start-up fixed COMSA costs at central and cluster levels			
Category	Description	Cost (US\$)	Percentage
Design phase			
Central-level costs			
Formative research	Formative research study	29,400.0	1.5
Cluster-level costs			
Baseline population and cluster mapping	Household listing and delineating cluster boundaries, data collection and training materials	250,078.7	12.4
Initiation phase			
Central-level costs			
Infrastructure	Vehicles	800,000.0	39.5
Training	Training of trainers for CSA surveillance and VASA	143,245.0	7.1
Technology	Smartphones, tablets, laptops, desktops, monitors, printers, transformers, solar chargers, statistical software, international shipping	259,308.8	12.8
Cluster-level costs			
Field materials	T-shirts, hats, backpacks, household labels, banners, etc.	37,179.7	1.8
Training	Training of interviewers for CSA surveillance and VASA (travels, lodging, per diems, etc.)	503,787.8	24.9
Total		2,023,000.0	100.0

COMSA = Countrywide Mortality Surveillance in Action; CSA = community surveillance agent; VASA = verbal and social autopsy.

Maintenance phase: average annual operating costs at central and cluster levels (2019–2020)			
Category	Description	Cost (US\$)	Percentage
Central-level costs			
Personnel and incentives	Wages (INS, INE staff)	196,905.0	20.0
Infrastructure	Vehicle maintenance, fuel, cloud servers, printing, emergency infrastructure, etc.	202,766.9	20.6
Administration and logistics	Banking fees, tender announcements	10,025.1	1.0
Field supervision	Supervision of data collection and travels	26,839.6	2.7
Communication	Telephone, Internet	20,626.1	2.1
Dissemination	Stakeholder meetings, conferences, dissemination workshops, etc.	1,322.4	0.1
Cluster-level costs			
Personnel and incentives	Wages (Delegados, administrative/finance staff, coordinators, supervisors, VASA data collectors, CSA, drivers), incentives, health insurance, data collection per diems)	452,770.2	46.0
Communication	Staff communication plans	46,767.4	4.7
Refresher trainings	CSA and VASA refresher trainings	26,747.2	2.7
Total		\$984,771.0	100.0

CSA = community surveillance agent; INE = Instituto Nacional de Estatísticas; INS = Instituto Nacional de Saúde; VASA = verbal and social autopsy.



## Leçon 9 : Cartographier les bailleurs de fonds potentiels du SRS en fonction de leur intérêt et de leur champ d'action.

# Note d'information

## Système Résilient et Durable

### pour la Santé (RSSH)

Période d'allocation (2023-2025)

Date de publication : juillet 2022

Date de mise à jour : juillet 2022

- **Civil registration and vital statistics:** Applicants are encouraged to include funding to strengthen civil registration and vital statistics (CRVS) systems. Focus should be on strengthening mortality and causes of death reporting in health facilities and to the extent possible, from community registers. These efforts should be linked with continuous support for analysis and use of mortality data to inform policy decisions and program implementation. Applicants should refer to the [Information Note on Global Fund Investments in Mortality Data Systems, Analysis and Use](#) for details.



Table 2: Mortality data system strengthening & analysis: where the Global Fund support fits best

Item	Support?
1. Analysis and use of mortality data from surveys, surveillance, routine reports and vital registers	Yes
2. Integration of mortality reporting into HMIS/DHIS 2	Yes
3. Reporting and analysis of mortality data from community vital registers	Yes
4. Assessment of the health sector components of CRVS system	Yes
5. Assessment of death registration and reporting coverage in CRVS	Yes
6. Partnerships and TA facilitation for mortality analyses	Yes
7. Training pool of TA providers	Yes
8. ICD-10 implementation & cause of death reporting in clinical settings	Yes
9. Sample registration systems (SRS) and SAVVY	Partly
10. Establishment of vital registers in health facilities	Partly
11. Establishment of vital registers at community level	Maybe
12. Establishing national CRVS systems	No



# Leçon 10 : Assurer la diffusion et l'utilisation des données SRS à tous les niveaux.

## COMSA/ SISCOVE Niveaux de diffusion et d'utilisation des données au Mozambique

### Au niveau national

Conseil des ministres

Événement officiel de diffusion

### Au niveau provincial

Tables rondes multi sectorielles

Réunions programmatiques

### Au niveau Communautaire

Les ASC lors des réunions provinciales

Distribution de dépliants pendant les activités sur le terrain



### Réunions



### Journaux



### Radio



### Interviews en direct



# Leçon 11 : Veiller à ce que les données du SRS soient utilisées pour la prise de décisions politiques fondées sur des données probantes aux niveaux local, national et international.

SIS-COVE et DHS comme principales sources de données pour éclairer l'élaboration du 2025-2029

Plan stratégique du secteur de la santé

COMSA/SIS-COVE utilisé pour les estimations de mortalité par les agences internationales

Levels & Trends in Child Mortality

Report 2021

Estimates developed by the United Nations Inter-agency Group for Child Mortality Estimation

unicef | World Health Organization | WORLD BANK GROUP | United Nations

at this time. First, direct is the age groups estimated in 2020, while some previous have assigned a large at under-five deaths could a of excess mortality using leads to 2020 from more than 100 countries. The 19 countries registration data available for countries from data from their st Information System (HMIS) mortality records, along with DHS system in 2019, provided an estimate of excess mortality in 2020 – perhaps, for a suggesting an earlier found that anticipated in one of these interventions of pandemic mitigation, distancing, handwashing and

all-cause mortality (also denoted as mortality) in 2020. The timeline was obtained by fitting a generalized Li with quasi-Poisson distribution to observed mortality between 2015 and 2019 in a group and sex. The model is derived where  $death_{i,j}$  and  $pop_{i,j}$  indicate, the death count and population at age group  $i$ , sex  $s$ , and country  $j$ , the reference years 2015 and 2019,  $\beta_0$  is the intercept and  $\beta_1$  for the secular mortality trends, along with DHS system in 2019, provided an estimate of excess mortality in 2020 – perhaps, for a suggesting an earlier found that anticipated in one of these interventions of pandemic mitigation, distancing, handwashing and

estimates were supplemented with an

Levels & Trends in Child Mortality

Report 2022

Estimates developed by the United Nations Inter-agency Group for Child Mortality Estimation

IGME | unicef | World Health Organization | WORLD BANK GROUP | United Nations

COVID-19

The 2022 UN IGME estimates do not include any adjustment in the years 2020 and 2021 for COVID-19-related mortality as the evidence is insufficient to support an adjustment at this time. First, direct COVID-19 deaths in the age groups estimated in this report are rare, and thus unlikely to impact national-level estimates. Second, a UN IGME analysis of excess mortality using empirical data on deaths in 2020 from more than 110 countries or areas and in 2021 from more than 70 countries or areas (including from 15 countries' Health Management Information System (HMIS) and data from the COMSA system in Mozambique) found evidence of systematic excess mortality among children or youth in 2020 or 2021.

Levels & Trends in Child Mortality

Report 2023

Estimates developed by the United Nations Inter-agency Group for Child Mortality Estimation

IGME | unicef | World Health Organization | WORLD BANK GROUP | United Nations

the UN IGME during the country process). Additionally, data from 17 countries' HMIS (Afghanistan, Burkina Faso, Burundi, Eswatini, Kenya, Lesotho, Liberia, Malawi, Mozambique, Namibia and Zimbabwe) and from the Mozambique.

Levels & Trends in Child Mortality

Report 2024

Estimates developed by the United Nations Inter-agency Group for Child Mortality Estimation

IGME | unicef | World Health Organization | WORLD BANK GROUP | United Nations

anex II: Excess mortality analysis

children and youth, especially in low-income countries, and have used data on deaths from COVID-19, a one-week health-care system or other data, or other data, to estimate the excess mortality in 2020. First, in some direct, excess mortality in 2020 was estimated using empirical data on deaths in 2020 from more than 110 countries or areas and in 2021 from more than 70 countries or areas (including from 15 countries' Health Management Information System (HMIS) and data from the COMSA system in Mozambique) found evidence of systematic excess mortality among children or youth in 2020 or 2021.

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REPÚBLICA DE MOÇAMBIQUE

MINISTÉRIO DA SAÚDE

Direcção de Planificação e Cooperação

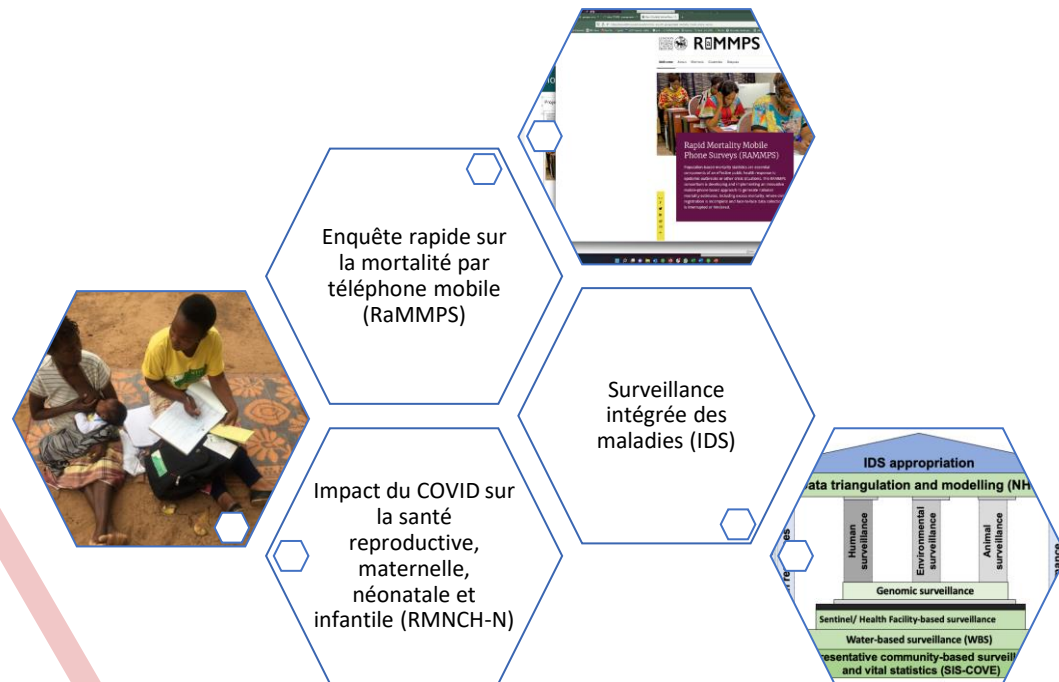
Plan Estratégico do Sector de la Santé

PESS 2014-2019

Prolongation (2020-2024)

maputo, agosto 2024

## Leçon 12 : Tirer parti du SRS pour mettre en œuvre d'autres initiatives liées à la santé publique.



nature communications



Article

<https://doi.org/10.1038/s41467-025-62305-9>

### Les tests multiplexes à billes permettent une surveillance sérologique intégrée et révèlent la vulnérabilité croisée aux agents pathogènes de la Province de Zambie et du Mozambique.

Check for updates

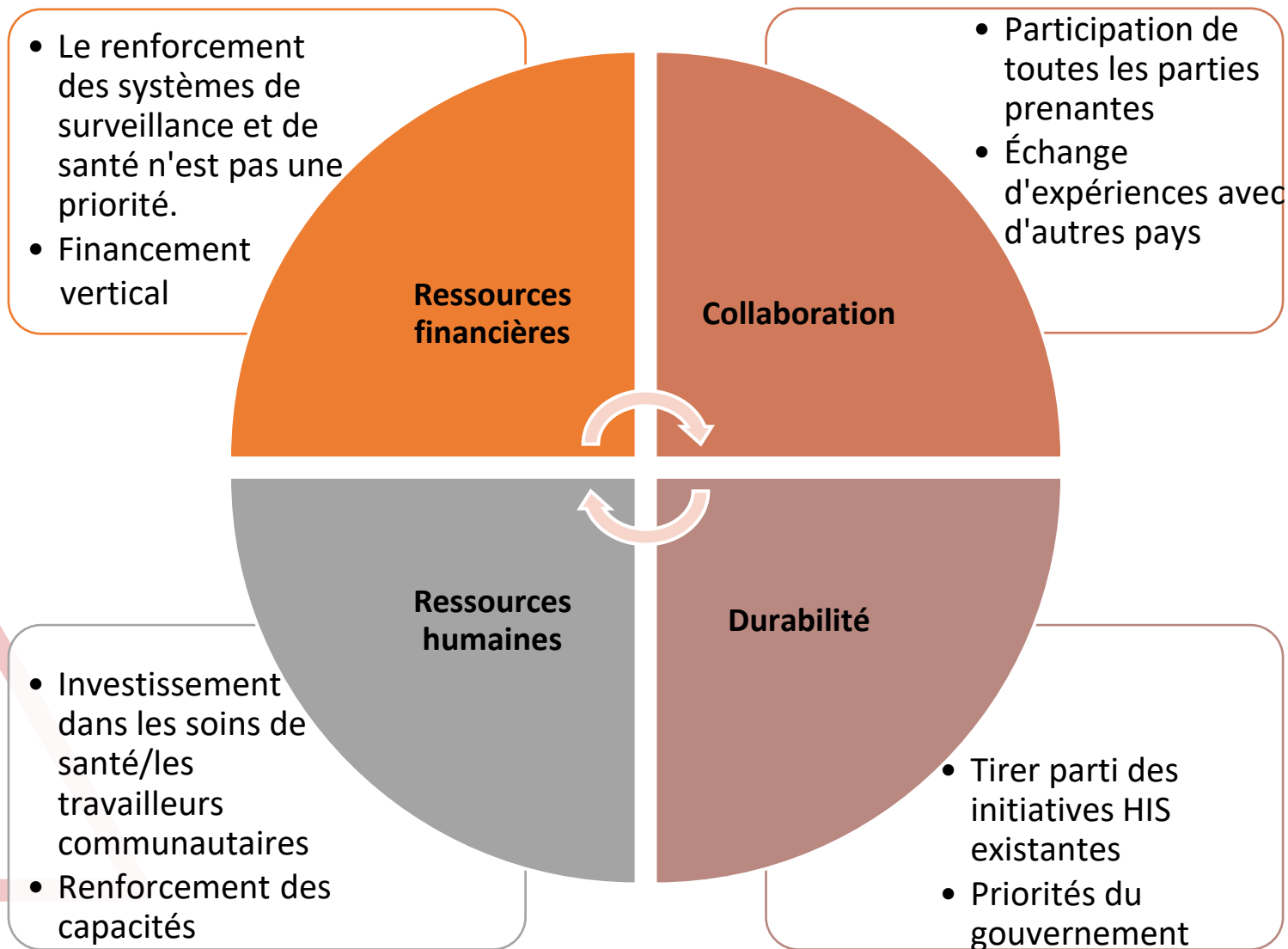
Christopher Drakeley<sup>6</sup>, William J. Moss<sup>1,4</sup> & Ivalda Macicame<sup>2</sup>

Multiplex serological assays simultaneously measure antibodies to multiple antigens, furnishing insights into exposure and susceptibility to several pathogens and cross-pathogen vulnerabilities. Our serosurvey tests dried blood spots from 1292 individuals for IgG antibodies to 35 antigens from 18 pathogens using a multiplex bead assay for vaccine preventable diseases, malaria, SARS-CoV-2, neglected tropical diseases, and enteric pathogens in Mozambique. We produce pathogen-specific seroprevalence estimates and age-seroprevalence curves and identify spatial differences in seroprevalence. Rural clusters have higher odds of seropositivity to most NTDs neglected tropical diseases, *Plasmodium falciparum* malaria, and enteric pathogens, but lower odds of seropositivity to SARS-CoV-2 and vaccine preventable diseases compared to urban clusters. This co-occurrence identifies clusters with high vulnerability to multiple pathogens. We identify a candidate group of antigens that are correlated with high overall vulnerability. Our results demonstrate a role for multiplex serology in integrated disease surveillance to guide control strategies for individual and co-endemic pathogens.

[https://pmc.ncbi.nlm.nih.gov/articles/PMC12381283/pdf/41467\\_2025\\_Article\\_62305.pdf](https://pmc.ncbi.nlm.nih.gov/articles/PMC12381283/pdf/41467_2025_Article_62305.pdf)



# Leçons générales tirées/défis/opportunités lors de la mise en œuvre du COMSA/SIS-COVE au Mozambique.



# Réseau Régional Africain de l'IANPHI : reconnaissance des succès en 2024



**Merci!**  
**Bonne Journée!**

