

# Improving the Utility of Influenza Sentinel Surveillance in Africa



**An Evaluation Process & Methodology**

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# What's the value?

Part of improving the usefulness of sentinel surveillance systems lies in being able to clearly articulate **how well** the system functions and **how helpful it is in meeting objectives ...**



# Articulating Value & Performance

## Monitoring

Routine collection and analysis of indicators to measure how well the surveillance system is functioning

## Evaluation

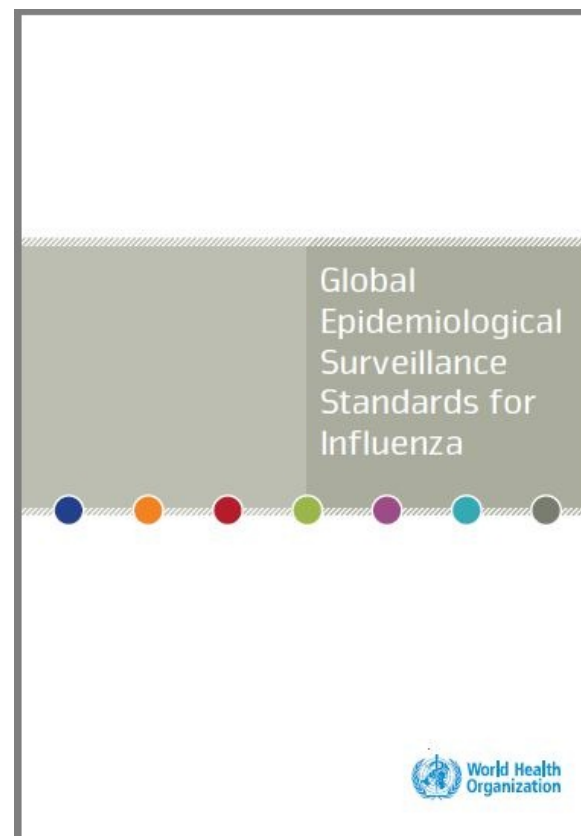
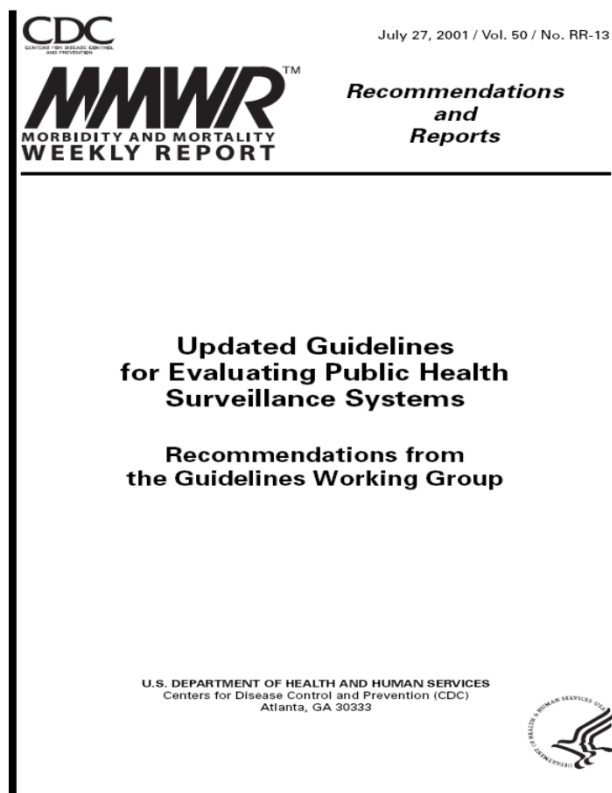
Periodically assess the relevance, effectiveness, and the impact of the surveillance system

The World Health Organization (WHO) recommends that established influenza surveillance systems undergo a comprehensive **evaluation** periodically, beginning 1-2 years after implementation

# Evaluation Steps

1. Engage system stakeholders in the evaluation
2. Describe the surveillance system being evaluated & specify the surveillance objective(s)
3. Focus the evaluation design
4. Gather credible evidence regarding surveillance system performance & objectives
5. Justify and state conclusions and recommendations
6. Ensure the use of evaluation findings

# 2001 CDC Guidelines for Surveillance Evaluation and WHO Standards for Influenza Surveillance



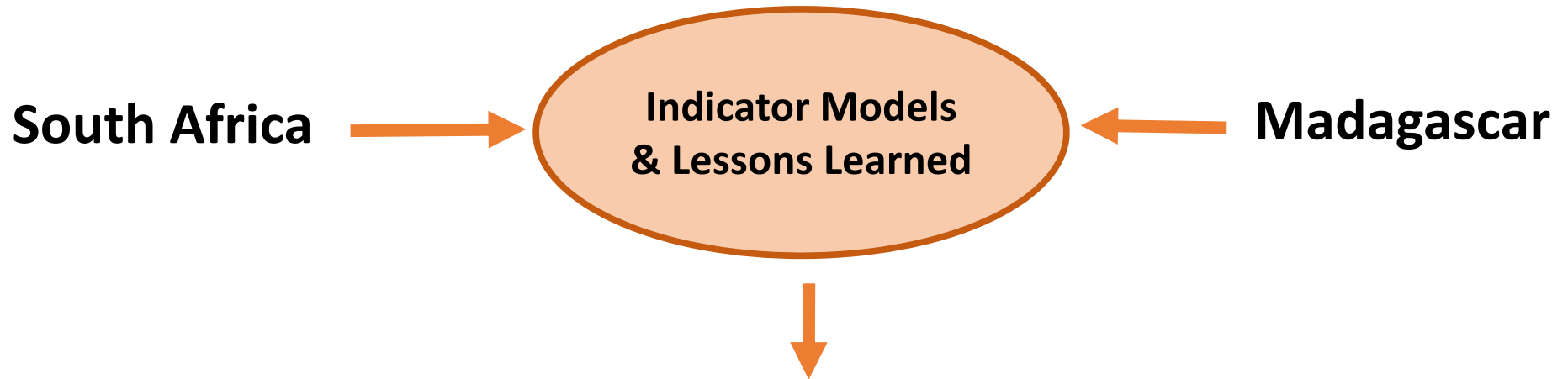
# Key Attributes Outlined in the Guidelines for Surveillance Evaluation

1. Data quality
2. Timeliness
3. Representativeness
4. Simplicity
5. Acceptability
6. Flexibility
7. Stability
8. Utility
9. **Sustainability**



**Development of measurable  
Indicators for each attribute**

# Application of Evaluation Methodology



**5-Day Training** on Evaluation of Surveillance System  
Methods & Protocol Development in Abidjan, Cote D'Ivoire,  
October 12-16<sup>th</sup>, 2016



# Training on Evaluation Methodology

## Technical mentorship and results oriented

At least **2 representatives of the national influenza program** participated from each country + **technical mentor**

Dr. Soatiana Rajatonirina, WHO AFRO  
Dr. Katelijn Vandemaele & Dr. Quanle Li, WHO HQ

Ms. Meg McCarron, Dr. Tracie Gardner, Ms. Ann Moen, and Ms. Lauren Polansky, CDC Atlanta

Dr. Stefano Tempia, CDC-NICD  
Dr. Joseph Rukelibuga, CDC Rwanda  
Dr. Talla Nzussouo

Dr. Daudi Coulibaly, Dr. Hervé Kadjo,	Cote D'Ivoire
Dr. Michael Adjabeng, Mr. Joseph Asamoah Frimpong	Ghana
Professor Afif Ben Salah, Professor Nissaf Ben Alaya,	Tunisia
Dr. Amal Barakat, Dr. Soumia Triki	Morocco
Dr. Julius Lutwama, Dr. Barnabas Bakamutumaho	Uganda
Dr. Adedeji Adebayo, Dr. Sikiru Olanrewaju	Nigeria
Dr. Jose Nyamusore, Dr. Emmanuel Nshimiyimana	Rwanda
Dr. Pélagie Babakazo, Dr. Léonie Kitoto Manyá	Dem. Rep. Congo
Dr. Paul Simusika, Dr. Wamunyima Lubinda	Zambia

## **9 More Programs Embarking on Evaluation of Key Attributes of Influenza Sentinel Surveillance Systems ...**

**+Cote D'Ivoire**

**+Nigeria**

**+Democratic Republic of Congo**

**+Ghana**

**+Morocco**

**+Rwanda**

**+Uganda**

**+Tunisia**

**+Zambia**

# Common Evaluation Questions in Protocols

**Phase 1:** The extent to which sentinel surveillance platforms perform adequately across different attributes

**Phase 2:** The extent to which influenza sentinel surveillance systems help to answer important public health questions in the country (start of the influenza season, disease burden in the general population, risk factors, and informing influenza prevention & control)

# Examples of common indicators & data sources for evaluation

## Data Quality and Completeness

Indicator	Calculation	Data source
<b>Proportion of data-collection forms with at least one missing or inconsistent value for key selected variables.</b>	Number of data-collection forms with at least one missing or inconsistent value / Total number of data-collection forms received.	SARI/ILI database

- **Proposed key variables:**

- Demographic: Site, Age, Sex, Admission/Consultation Date (or a proxy for it).
- Clinical: Duration of symptoms, Temperature, History of Fever, Cough, Sore Throat, Shortness of Breath/Difficulty Breathing, Danger sign in Children.
- Underlying Medical Conditions (those collected).

# Examples of common indicators & data sources for evaluation

## Representativeness and Timeliness

Indicator	Calculation	Data source
<b>Inclusion of all age groups</b>	N/A	Syndromic surveillance database.
<b>Proportion of data-collection forms received within 7 days from collection</b>	Number of data-collection forms received within 7 days from collection / Number of data-collection forms received.	Syndromic surveillance database.
<b>Proportion of samples received with 48 hours of collection</b>	Number of samples received with 48 hours of collection / Number of samples received	Laboratory-based surveillance database.

# Examples of common indicators & data sources for evaluation

## Simplicity

Indicator	Calculation	Data source
<p><b>Relative perception of surveillance staff on the following surveillance activities (measured over the following scale: very difficult, difficult, easy, very easy):</b></p> <ul style="list-style-type: none"> <li>• Completion of data in case-based questionnaire</li> <li>• Collection of data in laboratory slip</li> <li>• Collection of samples from cases</li> </ul>	<p>Number of surveillance staff within each reported category (very difficult, difficult, easy, very easy) /</p> <p>Number of surveillance staff.</p>	<p>Questionnaire for surveillance staff at sentinel sites (or laboratory sites)</p>
<p><b>Qualitative “reasons” for relative perception given, particularly if difficult or very difficult</b></p>	<p>Descriptive categorization of themes and relative frequency per sentinel site</p>	<p>Questionnaire for surveillance staff at sentinel sites (or laboratory sites)</p>

# Examples of common indicators & data sources for evaluation

## Acceptability

Indicator	Calculation	Data source
<p>Proportion of surveillance staff that is satisfied of the following reports/follow-ups (measured over the following scale: not satisfied, poorly satisfied, satisfied, very satisfied):</p> <ul style="list-style-type: none"><li>• Virological surveillance report</li><li>• Influenza bulletin</li><li>• Telephone follow-up on site requests</li></ul>	Number of surveillance staff within each reported category (not satisfied, poorly satisfied, satisfied, very satisfied) / Number of surveillance staff.	Questionnaire for surveillance staff at sentinel sites (or laboratory sites).
Percentage of time devoted to weekly surveillance activities.	Number of hours devoted to surveillance activities per week / Number of weekly working hours.	Questionnaire for surveillance staff at sentinel sites (or laboratory sites).

# Examples of common indicators & data sources for evaluation

## Flexibility & Stability

Indicator	Calculation	Data Source
<b>Number/type of pathogens tested for along with influenza under ILI/SARI syndromes of the surveillance system</b>		Surveillance protocols
<b>Capacity for surge capacity in the event of large outbreak/cluster</b>	Estimate number of samples that can be diagnosed at full capacity/number of samples routinely run during influenza season	Reports from pandemic and cluster investigations
<b>Description of instances of use of surveillance system to assist other surveillance programs</b>		Reports from investigations, interviews, questionnaires
<b>Rupture of stock for the following supplies (measured over the following scale: never, once per year, 2-3 times per year, &gt;= 4 times per year)</b>	Number of sites within each reported category (never, once per year, 2-3 times per year, >=4 times per year)/Number of sites	Questionnaire for surveillance staff at sentinel sites



# Examples of common indicators & data sources for evaluation

## Sustainability & Utility

Indicator	Calculation	Data source
Percentage of budget that relies on external funding vs. national funding	Average expenditure from external sources over study period/Total expenditure over study period	Administrative database
Perceived value of influenza surveillance by stakeholders	Number of stakeholders questioned within each reported category (no value, low value, high value, don't know)/total number of stakeholders interviewed)	Interview Guide
Proportion of weeks with data reported to FluNet	Number of weeks data reported/number weeks per year	Virologic surveillance database; FluNet
Number of important public health measures/objectives published using influenza sentinel surveillance system data		Published literature

# Progress

- **Evaluation plan/protocols** in **8/9 countries**
- **Data collection and analysis** (database review & field collection) **ongoing**
- Goal is to finish evaluation and write up findings for publication by **June, 2016**
- **Potential meta-review of published findings:** Pooled reflection of evaluation findings in the region and what it means for regional policy engagement and capacity-strengthening going forward

## **Next Steps**

**Applying what's learned to address policy and data quality gaps/needs within countries..**

5<sup>th</sup> ANISE Meeting, Kigali, 9-11 March 2016



## Proposed Future Directions for Technical Collaboration: Data Quality and Policy Focus Area

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For the Center for Respiratory Diseases and Meningitis

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## Policy Opportunities for Influenza Immunization

- Recent expansion of epidemiologic data on flu increased understanding of disease burden, risk groups – better appreciation of value of influenza prevention.
  - Seasonality of influenza now well-defined – so choosing vaccine formulation and timing of vaccine program is possible.
  - Increase in influenza virus surveillance – give confidence that current SH and NH vaccine formulations are appropriate for circulating African strains.
  - More vaccine doses and manufacturers – promise of less expensive vaccines.
  - Local manufacturing (Biovac) – opportunity for African focus for vaccine doses.
  - 2012 SAGE recommendations add leverage to discussions with policy makers in countries.
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## Main Data Gaps That Can Be Addressed Through “Improved” Influenza Surveillance

- Data on progression of illness among hospitalized patients with SARI:
    - More systematic collection of mortality data across countries.
    - Opportunities for pooled analysis as influenza associated mortality is a “rare event”.
    - Important to assess the more severe spectrum of illness.
  - Data on risk-factors for influenza associated severe illness:
    - More systematic and accurate collection of “risk factors” data among ILI and SARI cases (including deaths)
    - Opportunities for pooled analysis to increase power (especially for risk factors for mortality).
    - Important to guide targeted immunization interventions.
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## Main Data Gaps That Can Be Addressed Through “Improved” Influenza Surveillance

- Aggregated data on total number of hospitalization/consultations and SARI/ILI cases:
    - Important to assess the relative contribution of a syndrome.
    - Can potentially be used to estimate burden of diseases (e.g. rates) if other secondary data are available (possibly to be implemented in selected countries)
  - Right-Sizing influenza surveillance within Sub-Regions:
    - Important for the detection of novel viruses
    - Assure that adequate number of specimens are available for annual selection of vaccine strains.
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## What is Needed

- Revision and ideally “standardization” of data collection tools/procedures for pooled analysis.
  - Routine data quality checks
  - Inter-country collaboration may be need to obtain sufficient power for selected analysis.
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Thank you!!!

(Questions?)

