Pan American Health Organization

World Health Organization

Ouragan Matthew réponse, Département de la Grand' Anse, Haiti

Rapport sur le renforcement de la surveillance épidémiologique et gestion des données

Jonathan Polonsky
Epidemiologist
WHO Emergencies Programme

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Background

On 4 October, Hurricane Matthew violently struck Haiti and resulted in the country's largest humanitarian emergency since the 2010 earthquake. It caused extensive flooding and mudslides, damage to road infrastructure and buildings, as well as electricity and water shortages. The latest figures from the governmental Directorate of Civil Protection (DPC) of Haiti have so far confirmed 546 deaths and 438 injured as a result of the hurricane.

Humanitarian needs are said to include access to a sufficient supply of quality water, education, shelter, child protection, health, and nutrition. Of the 1.4 million people who need humanitarian assistance, more than 40 per cent are children who are mainly in the Grand'Anse and Sud Departments

In this context, I was deployed for just over 2 weeks as a field epidemiologist to Jeremie, the departmental capital of Grand'Anse, to analyse the situation and provide support to the PAHO country office in assisting the Ministère de la Santé Publique et de la Population (MSPP) in re-establishing/strengthening epidemic-prone disease surveillance in the affected areas.

Data collection, management, analysis & reporting

An initial assessment of the ongoing data collection, management and reporting system in place for suspected cholera highlighted potential areas for rapid gains. The processes that feed into these components are described below:

Data collection & management

Every day, the PAHO field epiemiologist or the MSPP departmental epidemiologist telephone each Cholera Treatment Centre/Unit (CTC/UTC) to get aggregated information read to them: # cases seen; # cases hospitalised; # institutional deaths; # community deaths. All of these are reported for two age groups: <5 and 5+ years. These phone calls were made twice per day - the first to report overnight changes, and a follow up call made later in the day to find out any further changes during the day.

The data are entered into an excel workbook. With each new day, eight new columns must be added (representing the four variables and two age groups for each). This workbook has data going back to 1st Jan 2012, and is now very wide (> 14,500 columns) and heavy

(~ 40MB). The workbook is (sensibly) protected, but this means that analysing the data is cumbersome - the epidemiologist in place was double entering the data each day, once in this workbook and once in a seperate workbook covering just the days since the hurricane.

Analysis & reporting

IN ORDER TO ANALYSE the data since hurricane Matthew, some figures had been created within this second, unprotected excel workbook, and each day these could be updated with the new data. However, because there were a large number of figures (some for overall analyses, and one each for the 17 operational CTCs), this was yet anotehr cumbersome process as the data rnage for each needed to be manually updated.

These updated graphs were subsequently copied and pasted into a word document, along with a table of the updated data, and this was circulated each day to relevant partners.

**Changes made**

THE FOLLOWING CHANGES WERE implemented:

- Lighter reporting schedule
  - only one contact made per day to each CTC to reduce burden on both CTC staff and epidemiologist
    * this should only cover the previous day in completeness
  - a brief (1-page) report of the previous day with a table of new cases by commune & CTC
  - a longer in-depth report issued once per week covering the previous epidemic week in completeness (each epidemic week runs from Sunday to Saturday)
    * broader trends should be analysed on a weekly, not daily basis
- Automated analysis & reporting
  - As the weekly report has a standardised format, and only needs to take into account updates to the dataset each week, the analysis and reporting were perfect candidates for automation. I wrote a script in the R statistical language[1] to read in the data, analyse it, generate various tables, figures and maps, and output these into a standardised PDF report. The report takes ~20s to generate, rather than >1hr as was previously the case.

[1] The R Project for Statistical Computing

– This report, apporoved by MSPP at the departmental level,
   is shared with MSPP before the weekly surveillance meeting
   each Wednesday, and the responsibility of sharing the report is
   handed over to MSPP, as the data are of course owned by the
   country, not PAHO.

Epidemiological context

EXTRACTS OF THE AUTOMATED report are included in this report to
demonstrate the outputs and to describe the current epidemiological
situation regarding suspected cholera cases in the Département de la
Grand' Anse.
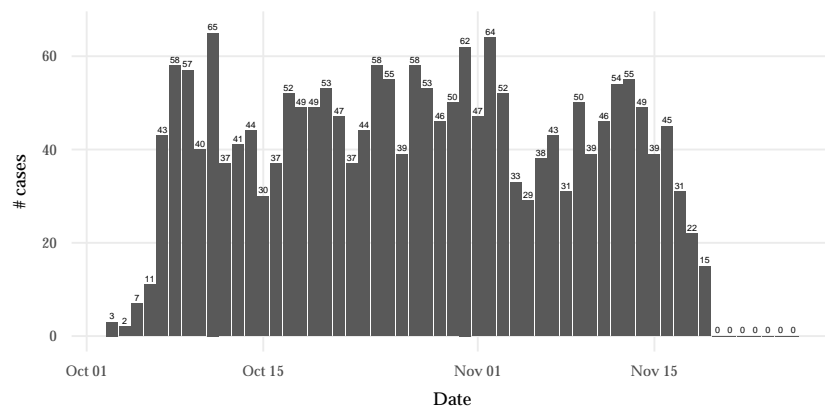
Figure 1: Tendance des cas de diarrhées aigues, 03 Oct 2016 - 26 Nov 2016 Grand'Anse
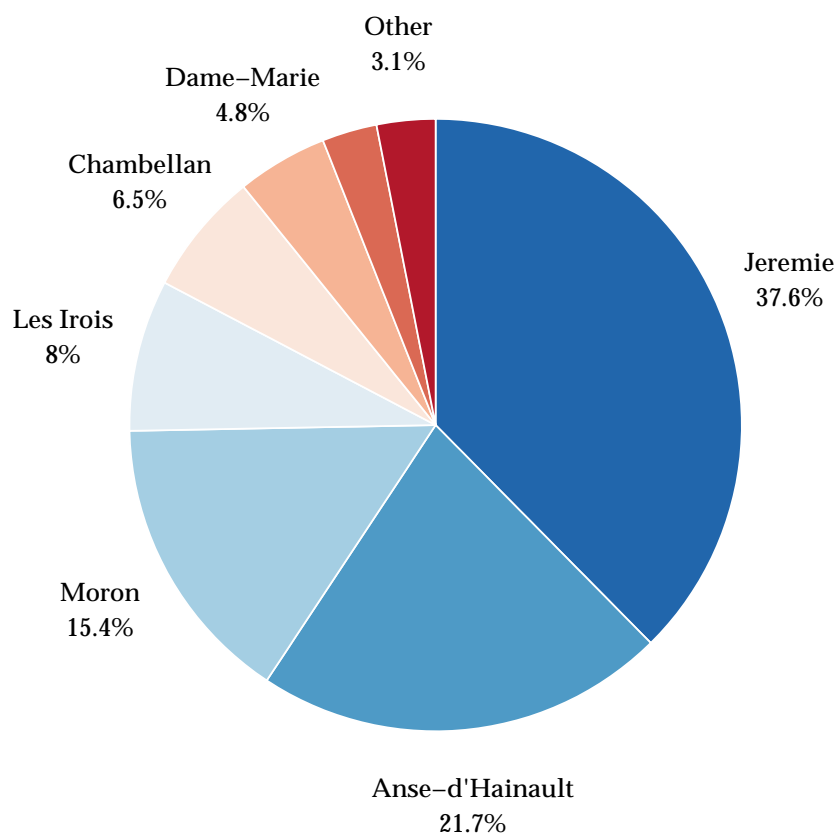
Figure 2: Répartition des cas de diarrhées aigues par commune, 03 Oct 2016 - 26 Nov 2016 Grand'Anse
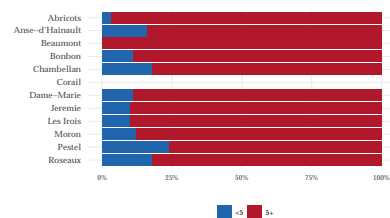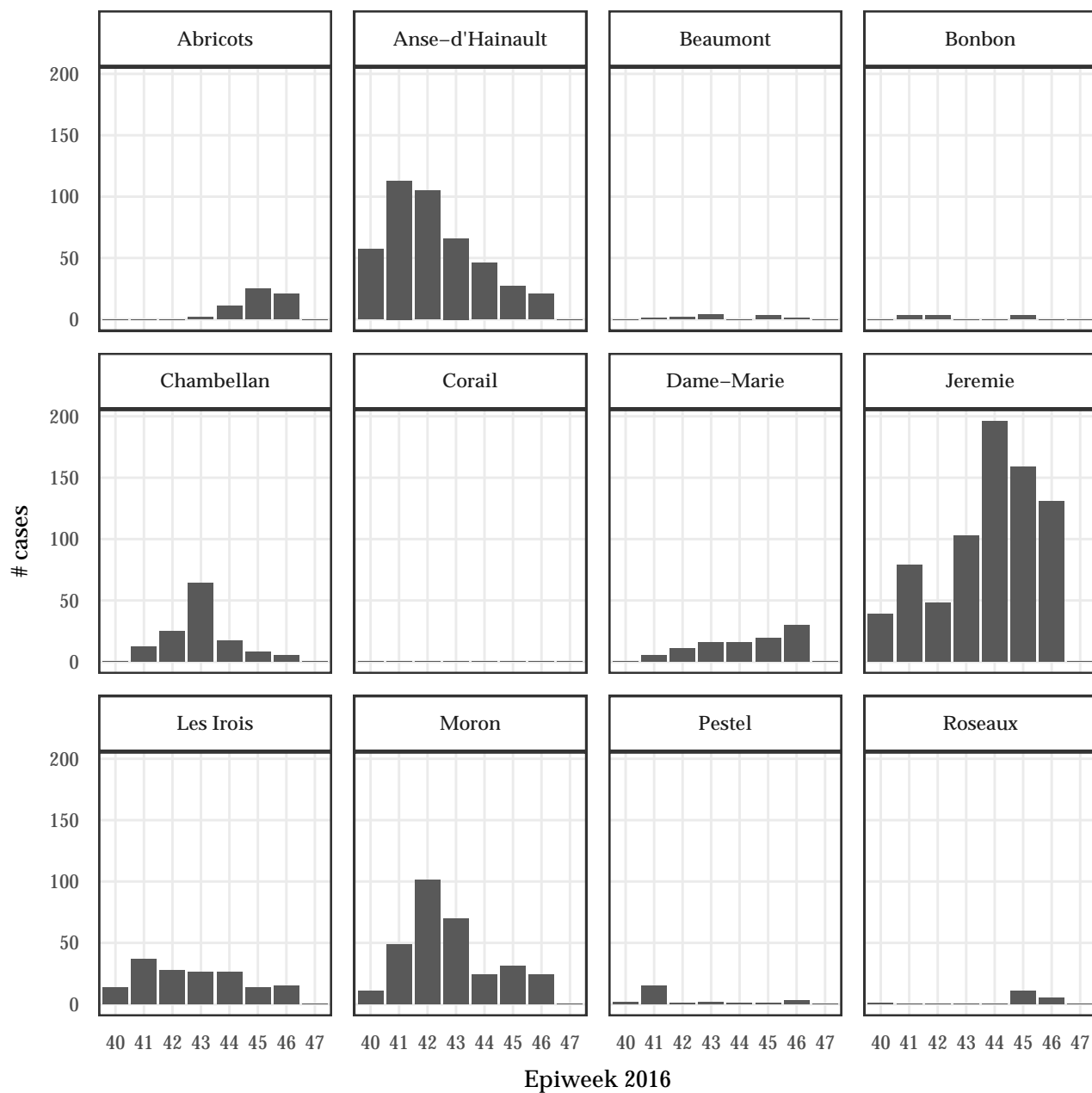
Figure 3: Répartition des cas de diarrhées aigues par tranche d'age, 03 Oct 2016 - 26 Nov 2016 par commune, Grand'Anse
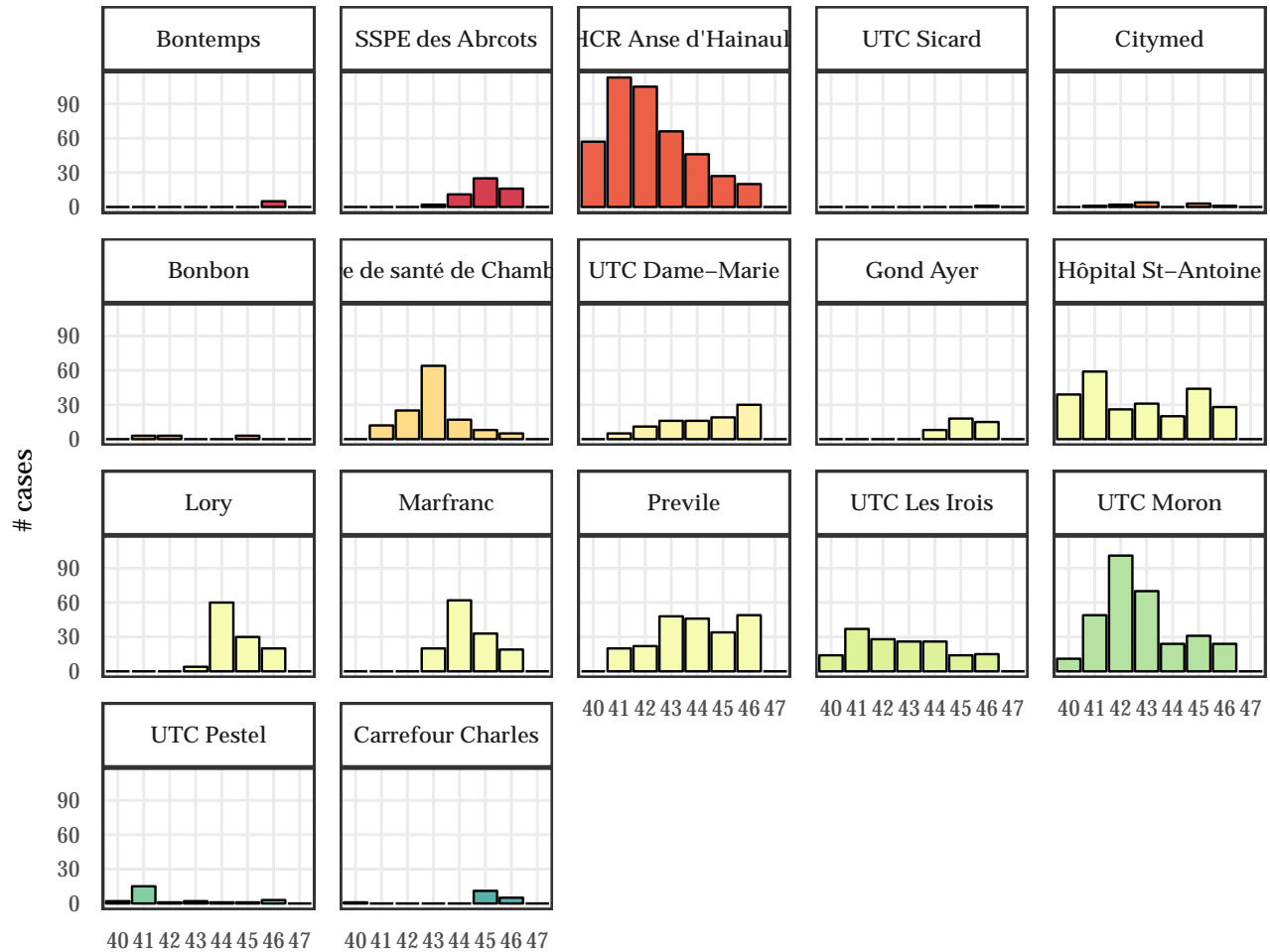
Table 1: Répartition des cas de diarrhées aigues par CTC/UTC, 03 Oct 2016 - 26 Nov 2016 Grand'Anse

| Commune	UTC/CTC	Cas (%)	Décès inst. (%)	Décès comm. (%)	Total décès
Abricots	Anse-du Clerc	0 (0)	0 (0)	0 (0)	0
Abricots	Bontemps	5 (0.2)	0 (0)	0 (0)	0
Abricots	SSPE des Abrcots	54 (2.7)	1 (2.4)	0 (0)	1
Anse-d'Hainault	HCR Anse d'Hainault	434 (21.6)	8 (19.5)	1 (11.1)	9
Anse-d'Hainault	UTC Sicard	1 (0)	0 (0)	0 (0)	0
Beaumont	Citymed	11 (0.5)	0 (0)	0 (0)	0
Beaumont	Mouline	0 (0)	0 (0)	0 (0)	0
Bonbon	Bonbon	9 (0.4)	0 (0)	2 (22.2)	2
Chambellan	Bourdon	0 (0)	0 (0)	0 (0)	0
Chambellan	Centre de santé de Chambellan	131 (6.5)	2 (4.9)	1 (11.1)	3
Chambellan	UTC Boucan	0 (0)	0 (0)	0 (0)	0
Corail	Centre de Santé de Corail	0 (0)	0 (0)	0 (0)	0
Corail	Chardonnette	0 (0)	0 (0)	0 (0)	0
Dame-Marie	UTC Dame-Marie	97 (4.8)	5 (12.2)	0 (0)	5
Jeremie	Carrefour sanon	0 (0)	0 (0)	0 (0)	0
Jeremie	Castillon	0 (0)	0 (0)	0 (0)	0
Jeremie	Dispensaire Siloé	0 (0)	0 (0)	0 (0)	0
Jeremie	Ferme Latiboliere	0 (0)	0 (0)	0 (0)	0
Jeremie	Ferme Numero deux	0 (0)	0 (0)	0 (0)	0
Jeremie	Gond Ayer	41 (2)	4 (9.8)	0 (0)	4
Jeremie	Hôpital St-Antoine	247 (12.3)	1 (2.4)	0 (0)	1
Jeremie	Lory	114 (5.7)	4 (9.8)	0 (0)	4
Jeremie	Marfranc	134 (6.7)	0 (0)	0 (0)	0
Jeremie	Painket	0 (0)	0 (0)	0 (0)	0
Jeremie	Previle	219 (10.9)	6 (14.6)	0 (0)	6
Les Irois	Carcasse	0 (0)	0 (0)	0 (0)	0
Les Irois	UTC Les Irois	160 (8)	1 (2.4)	1 (11.1)	2
Moron	UTC Chameau	0 (0)	0 (0)	0 (0)	0
Moron	UTC Moron	310 (15.4)	7 (17.1)	0 (0)	7
Moron	UTC Tiparis	0 (0)	0 (0)	0 (0)	0
Pestel	Ferme Anse-a Macon	0 (0)	0 (0)	0 (0)	0
Pestel	Ferme Duchity	0 (0)	0 (0)	0 (0)	0
Pestel	Tozia	0 (0)	0 (0)	0 (0)	0
Pestel	UTC Pestel	25 (1.2)	1 (2.4)	4 (44.4)	5
Roseaux	Annette	0 (0)	0 (0)	0 (0)	0
Roseaux	Carrefour Charles	17 (0.8)	0 (0)	0 (0)	0
Roseaux	Grand Vincent	0 (0)	1 (2.4)	0 (0)	1
Roseaux	Lopino	0 (0)	0 (0)	0 (0)	0
Roseaux	Pousline	0 (0)	0 (0)	0 (0)	0
Roseaux	UTC Roseaux	0 (0)	0 (0)	0 (0)	0
Total	-	2009 (100)	41 (100)	9 (100)	50

Figure 4: Tendance des cas de diarrhées aigues, 03 Oct 2016 - 26 Nov 2016 par commune, Grand'Anse

Figure 5: Tendance des cas de diarrhées aigues, 03 Oct 2016 - 26 Nov 2016 par CTC, Grand'Anse
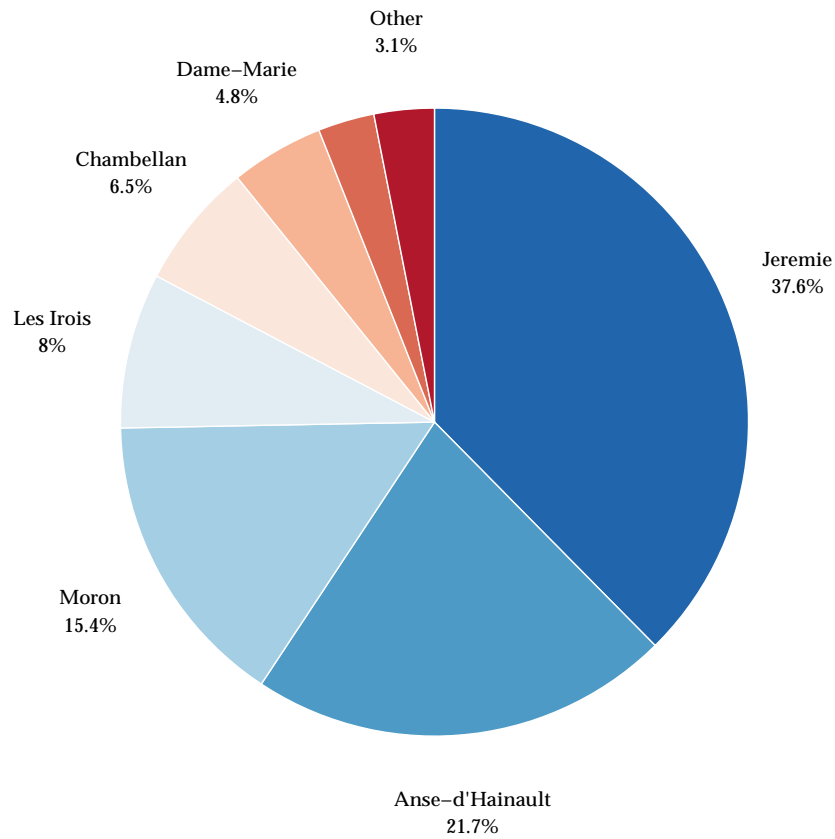
Figure 6: Répartition des cas de diarrhées aigues par commune, 03 Oct 2016 - 26 Nov 2016 Grand'Anse
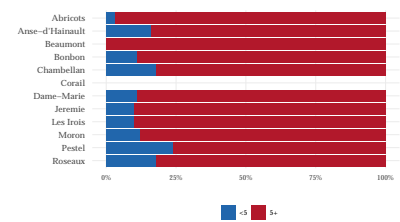
Figure 7: Répartition des cas de diarrhées aigues par tranche d'age, 03 Oct 2016 - 26 Nov 2016 par commune, Grand'Anse

- need to rebuild surveillance

- community based

- line list to capture essential variables for analysis

- ewars-like system to improve data flow

- describe weaknesses

  – 2-level sensitivity analysis
  – from community to CTC
  – from CTC to central level
  – develop methodology for this

- describe the process of calling for aggregated updates

- regular field visits for:

- investigations (alerts, community deaths, clusters of cases/deaths, etc)

- multidisciplinary visits for rationalising resources - prevents repeated trips to same locations and added burden to staff at CTCs

- collecting and comparing

Recommendations

- IM and DM/Epi should have closer collaboration
- Field epis + logs to support surveillance
- Stronger coordination required - overall surveillance, lab, epi
- Better system - exists in Angola - forms entered by WHO in morning, then DB passed to lab who enter results, which is then shared back with WHO
- Eventual plan should be for proper decentralised and disaggregated surveillance system (e.g EWARS), with single, centralised database (one source of truth from which everyone works, incl. MoH, WCO, RO and HQ)

  – plan for decentralisation only to provincial level
  – current IDSR is aggregated only

- training for staff
- reinforce surveillance on road to, and within, Kikwit
- Evaluate the sensitivity of the surveillance system (e.g. Rapid capture-recapture study)
- Somebody should bring epiinfo DB master to CC meeting and work done directly on that DB

  – or code written to compare last version of lab with what was just sent to identify those with changes

Annexes

- Weekly epidemiological bulletin