WORLD HEALTH ORGANIZATION

SOUTH PACIFIC

PACIFIC HOSPITAL BASED ACTIVE SURVEILLANCE SYSTEM

(POLIO, MEASLES, RUBELLA & NEONATAL TETANUS)

INFORMATION FOLDER

Edition Two

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1. HOSPITAL BASED ACTIVE SURVEILLANCE SYSTEM

A Pacific region wide Hospital Based Active Surveillance (HBAS) system was established in 1997 by WHO under the PPHSN framework as part of the Global Polio Eradication Initiative. The objectives of the system were to prove that the Pacific was free of poliovirus and serve as the basis of certification as such; and to monitor the maintenance of polio free status. Also, the potential that an acute flaccid paralysis surveillance (AFP) system platform could play for integrated EPI surveillance was recognized, and the conditions of "suspected measles" and neonatal tetanus (NT) were included from the start.

The HBAS system has since grown to incorporate 58 hospitals in 20 Pacific island countries and areas and over 200 pediatric clinicians. In 2001, surveillance was expanded from "Suspected Measles" to Acute Fever and Rash (AFR) to better identify cases of measles and also other diseases like rubella and dengue.

The backbone of the HBAS system are the Pacific hospital based Paediatric Clinicians, who report monthly on a standard surveillance form to their HBAS Hospital Coordinator (HC) as to whether or not they have seen any cases of AFP, AFR or NT. This information is then forwarded by the Hospital Coordinator to the HBAS National Coordinator (NC), who collates reports from all HBAS reporting sites within the country. National reports are submitted to WHO on a monthly to quarterly basis.

The HBAS system is considered comprehensive for detecting all AFP cases in the Pacific, but functions primarily as a sentinel system for AFR illnesses. This is because not all AFR cases would be expected to present to a hospital or heath care setting. However, hospital based surveillance for AFR is considered sensitive enough to detect and alert when disease outbreaks occur, and this has been confirmed recently with the outbreaks of rubella in Tonga (2002) and Samoa (2003).

This Information Folder is the first major update of the original AFP/EPI Surveillance Folder developed by WHO in 1997. Key amendments are:

- An updated AFP Case Investigation Form that should be easier to follow
- A new AFR Case Investigation Form that replaces the original "suspected measles" case investigation form, and is more inclusive of similar diseases such as rubella and dengue
- A new NT Case Investigation Form
- A new AFR laboratory request form
- Updated specimen shipping guidelines that reflect new changes by the United Nations for substance classification.

2. MONTHLY HBAS FORM COMPLETION AND SUBMISSION

2.1 Obtaining Information from the Key Clinicians

At the start of every month, the Hospital Coordinators at each HBAS reporting site should check with all the "key clinicians" (usually paediatricians) at their site to ask them whether or not, in the preceding month, they have seen any:

1. Children under 15 years of age with Acute Flaccid Paralysis (AFP)
2. Any patient, regardless of age, that the clinician suspects could have polio
3. Children under 15 years of age with Acute Fever and Rash (AFR)
4. Any suspected cases of Neo Natal Tetanus (NT)

Case classification should be according to the "standard case definitions" as defined later in this manual.

Clinician should indicate whether or not they have seen any cases of the above by placing a tick mark (√) in the "Yes" or "No" column of the appropriate box on the HBAS Monthly Reporting Form (Annex A), and then should sign and date the form.

If the Hospital Coordinator is absent a designated substitute should make sure the form is completed promptly. If a listed clinician is absent, the Hospital Coordinator should write in the "signature" space an explanation for the absence (e.g. "transferred" or "on leave")

If a new "key clinician" (i.e. responsible for pediatric patients) joins the hospital staff, the Hospital Coordinator should add their name on the form and have them begin signing the form each month.

2.2 Reviewing the In-patient Registers

After obtaining reports from all the key clinicians, the Hospital Coordinator should review the hospital in-patient and out patient registers for the preceding month to ensure that any possible cases of AFP, AFR in children under the age of 15, as well as any cases of NT have not been missed.

It is important to check the in-patient registers of all wards where children up to 15 years of age could have been admitted are reviewed. For example, in some countries, the paediatric wards only admit children up to 12 years of age, with children above this age admitted to adult wards. The in-patient registers in the adult wards in this example will need to be reviewed for children presenting with AFP between 12 and 15 years.

In-patient register reviews should search for children aged less than 15 years that present with acute flaccid paralysis, including Guillain-Barré Syndrome, or with presentations suggestive of AFP such as:

- Acute inability to move a limb

- Acute onset of limb weakness, or loss of motor strength in any other muscle(s)
- Acute abnormality of gait or inability to walk

2.3 Submitting the HBAS Monthly Reporting Form

The Hospital Coordinator should send each month one copy of the completed HBAS Monthly Reporting Form to the National HBAS Coordinator. A copy of the form should also be filed in a HBAS folder at the reporting site.

The National HBAS Coordinator should send copies of the completed HBAS Monthly Reporting Forms from all reporting sites within the country to WHO Suva through either their country WHO Office or direct to the WHO South Pacific Office in Suva (WHO Office contact details listed in Annex F1).

2.4 The HBAS Monthly Reporting Form

A sample HBAS Monthly Reporting Form is provided in Annex A. This form can be used as a template for all reporting sites and used when updating the list of clinicians. An electronic copy of this form is also provided with the CD that comes with this manual, or alternatively can be obtained by contacting the WHO South Pacific Office in Suva.

A new set of HBAS Monthly Reporting Forms will need to be produced each year by the Hospital Coordinators at all reporting sites, using this template. The Hospital Coordinator should also review the list of key clinicians at this time, and if any changes are made the National Coordinator should also be informed.

2.5 Indicators used to measure HBAS system reporting performance

- Reporting site HBAS form annual submission rate = number of forms submitted from each reporting site to the NC divided by 12 (total number that are expected to be received from each reporting site)

- Reporting site HBAS reporting Timeliness rate = % of HBAS forms that are received by WHO within 1 month of the month they report for

- Country HBAS annual performance = number of HBAS reports forms received from all reporting sites within the country by WHO divided by the number of HBAS report forms expected to be received

3. ACUTE FLACCID PARALYSIS (AFP) CASE INVESTINGATION

3.1 AFP Case Definition

The WHO case definition is "Any case of acute flaccid paralysis in a child aged less than 15 years, including Guillain-Barré Syndrome, and suspected poliomyelitis in an individual of any age"

3.2 Investigating and reporting an AFP case

3.2.1 Case Investigation

If a clinician that sees a child who presents with AFP, or a patient of any age whom the clinician suspects could be polio, the clinician should:

1) Notify the Hospital Coordinator (or National Coordinator if there is currently no specified Hospital Coordinator).

2) Refer the patient to the hospital for admission and stool specimen collection. If the child is not to be admitted the clinician still must ensure that two stool samples are collected, at least 24 hours apart (see 3.3 on procedure for stool sample collection).

3) Complete a copy of the Acute Flaccid Paralysis Case Investigation Form (Annex B1), ensuring as much information is filled in as possible. Additional clinical information can be noted on the back of the form if additional space is required.

4) Send a copy of the completed case investigation form to the Hospital Coordinator

5) Make sure that the "Yes" column in that month's HBAS Monthly Reporting Form is ticked appropriately, and that relevant identifying details of the case are provided on the reverse side of the form.

6) Mark the date that the patients 60 day follow up is due and ensure that the patient is seen as soon as possible after this date and the results are forwarded to the WHO South Pacific Office in Suva.

3.2.2 Case Reporting

On notification of an AFP case, the Hospital Coordinator should:

1) Contact the National Coordinator to notify case details and arrange for necessary assistance with stool sample shipment and ensure that the correct shipping containers are available. If necessary, the National Coordinator can contact the WHO South Pacific Office for assistance with stool shipment and containers.

2) Ensure that the two (2) stool samples are taken for the child, at the correct time interval of 24 hours apart, and stored at appropriate temperatures (see 3.3) until the sample is shipped. Liaison between the HC and the ward nurses might be required for stool collection.

3) Ensure that the clinician completes the AFP case investigation form promptly; review information provided and clarify any missing information before sending.

4) Send a copy of the Case Investigation form to WHO South Pacific Office in Suva (via the National Coordinator) and file a copy of the form in the reporting sites HBAS folder

5) Ensure that the reporting site is re supplied with appropriate stool sample shipment containers from the National Coordinator.

6) Make a note of the date that the child's 60-day follow up visit is due, and after this occurs ensure that the findings are reported to the NC for onward transmittal to WHO South Pacific Office.

On notification of an AFP case, the National Coordinator should:

1) On receipt of the Case Investigation form, forward this to WHO South Pacific Office

2) Confirm that the appropriate stool collection containers and shipping packages are available for stool collection and shipment.

3) Liaise with the reporting sites laboratory, WHO South Pacific Office and the Pacific Polio Testing Laboratory at the Victorian Infectious Disease Reference Laboratory (VIDRL) in Melbourne, Australia to ensure that stool sample shipment proceeds smoothly and that required notifications of shipment are received by VIDRL.

4) Arrange for the reporting site to be promptly re supplied with stool sample collection and shipment containers

5) Note when the child's 60 day follow up is due and liaise with the Hospital Coordinator to ensure that this occurs promptly and the results are forwarded to WHO South Pacific Office

3.3 AFP stool specimen collection

1) Collect TWO (2) stool specimens from the child at least 24 hours apart, and within 14 days of onset of paralysis (or as soon as possible thereafter). An appropriate quantity of stool required for laboratory testing is about the size of an adult thumb. Glycerin suppositories can be used to assist stool collection, but either the 1st third

of the stool sample, or any stool material that was in direct contact with the suppository should be discarded.

2) If the child is not admitted, or admission is delayed, specimens should be collected as an outpatient or at an outlying health facility, and stored appropriately, and forwarded to the hospital in a cold box/cooler, ideally at the same time as the patient.

3) Seal the container with tape, wrap with absorbent material such as cotton wool, and seal in a plastic bag.

4) Keep stool specimens refrigerated at +2 to +8 ^{0}C at all times after collection and during shipment (transport using a reverse cold chain). Make sure the statement KEEP REFRIGERATED AT +2 to +8 ^{0}C AT ALL TIMES. DO NOT FREEZE is included as instructions in the airway bill, and on the outside of the shipping container.

5) If shipment is delayed more than 72 hours after collection the specimen should be frozen. If a frozen specimen should thaw, DO NOT RE-FREEZE, but keep refrigerated at +2 to +8 ^{0}C.

6) Store stool specimens apart from vaccines. If this is not possible, enclose the specimens in 3 or 4 plastic bags to avoid cross contamination.

3.4 AFP stool specimen shipment

1) The National/Hospital Coordinator should work with the hospitals laboratory department to ensure that the AFP stool specimens are shipped to the Pacific Polio Reference Laboratory at VIDRL without delay. Stool samples should be sent in special shipping containers that have been provided by WHO. Packaging and labeling instructions are provided in Annex D.

2) Stool specimen must be accompanied by an AFP Laboratory Request Form (Annex C1), and labeled with:

- Patient's name and Hospital Number
- Date of birth
- Date of onset of paralysis
- Date of specimen collection
- Name of hospital where collected
- Date of last OPV (where applicable)

3) Stool specimens shipped to VIDRL must be accompanied by 1) a valid Australian Quarantine and Inspection Service (AQIS) "Permit to Import Quarantine Material" (this can be obtained from WHO South Pacific Office or VIDRL (current version

provide in Annex E3 [note expires 10 May 2007]) and 2) a Australian Customs Declaration with the shipment (template for this is provided in Annex E1) which is needs to be filled out by the sending hospital laboratory.

4) Before shipping specimens to the VIDRL, send a pre-alert message to the Polio Laboratory at + 61 3 9342 2665 (fax) or **polio@mh.org** and follow with a telephone call if possible (+ 61 3 9342 2607) and provide details of the Airway Bill Number, Flight Number and estimated arrival time. Full contact details for Polio Laboratory at VIDRL are provide in Annex F2.

5) In addition, please ensure that copies of the case investigation form, lab request form and shipment details are provided by fax or email a copy to the WHO South Pacific office in Suva

3.5 Notification of Laboratory results

The presence or absence of poliovirus in these specimens will be determined by viral culture. This is very important to demonstrate the continued absence of wild poliovirus proving the Pacific has remained polio-free or to quickly and reliably detect a wild poliovirus imported into the region from an area where it is still circulating.

Laboratory results are normally available from VIDRL within 14 to 28 days. VIDRL will send a copy of the laboratory results to the requesting laboratory, and also a copy to the WHO South Pacific Office. On receipt of the results the laboratory should ensure that both the requesting physician and the National Coordinator is informed.

Members of the Pacific Sub regional Polio Certification Committee will make a final case classification, according to both clinical and laboratory information. This Committee is made up of paediatric and laboratory experts from the Pacific Islands, and is tasked with ensuring that the Pacific remains polio free. Once finalized, case classification results are forwarded to the National and Hospital Coordinators in the referring country.

3.6 AFP Retrospective Record Reviews

Retrospective record reviews of all HBAS reporting sites should be conducted regularly by HC and NC to ensure that no cases of AFP have been missed, and especially so for reporting sites that have lapsed in their report submissions. A summary of these reviews should be provided to WHO for review by the Pacific Sub regional Polio Certification Committee.

A protocol for conducting an AFP Retrospective Record Review is provided in Annex G.

3.7 Indicators used to measure AFP surveillance performance

The following main standard indicators are used globally by the Polio Eradication Initiative to analyse the performance of AFP surveillance systems:

% of all expected AFP monthly reports that were received	Objective: ≥ 90%
Non-polio AFP rate in children < 15 years of age	Objective: ≥ 1 / 100 000
% of AFP cases investigated within 48 hours of report	Objective: ≥ 80%
% of AFP cases with 2 stools collected ≥ 24 hours apart & less than 14 days of paralysis onset	Objective: ≥ 80%
Stool specimens arriving at the lab within 3 days of being sent	Objective: ≥ 80%
Stool specimens arriving at the laboratory in "good condition"	Objective: ≥ 90%
% AFP cases with inadequate stool specimens and 60-day follow-up	Objective: ≥ 80%
Percentage of AFP cases with poliovirus isolation for which intratypic differentiation (ITD) results (to distinguish between wild, vaccine-derived and vaccine strain polioviruses) are available within 60 days of paralysis onset	Objective: ≥ 80%

4. ACUTE FEVER AND RASH (AFR) CASE INVESTIGATION

4.1 AFR case definition

The HBAS system case definition for Acute Fever and Rash is any child under 15 years of age that presents with acute febrile illness with acute non-vesicular rash. This is used as a marker for measles, rubella and possibly dengue.

4.2 Investigating and reporting an AFR case

If a clinician that sees a child less than 15 years of age that presents with AFR, or a patient of any age whom the clinician suspects could be measles, rubella, dengue (or other diseases) the clinician should:

4.2.1 Cases Investigation and serum collection

1) For isolated AFR cases, and for the first 10-20 cases in a suspected measles/rubella outbreak, complete an AFR case investigation form (Annex B2) and collect a serum sample between days 4 to 6 and 28 (after rash onset) for IgM antibody testing.

2) Tick the "Yes" column in that month's Monthly AFP Surveillance Form under "AFR" and include relevant identifying details on the reverse side of the form (unless these have been recorded elsewhere).

3) Five (5) ml of blood should be taken at the first contact opportunity with the suspected case (IgM antibodies are best detected from the 4^{th} day (measles) to the 6^{th} day (rubella) after rash onset, peaking at 1 - 2 weeks, until about 4 weeks after rash onset.)

4) Blood should be collected by venipuncture into a sterile tube labeled with patient identification and collection date;

   - whole blood should be centrifuged at 1000 x g for 10 minutes to separate the serum;
   - blood can be stored at +4 to +8°C for up to 24 hours before the serum is separated
   - do not freeze whole blood;
   - if there is no centrifuge, blood should be kept in the refrigerator until there is complete retraction of the clot from the serum;
   - carefully remove the serum, avoiding extracting red cells, and transfer aseptically to a sterile labeled vial;
   - label vial with patient's name or identifier, date of collection and specimen type;

5) Sterile serum should be shipped on wet ice within 48 hours, or stored at +4 to +8°C for a maximum period of seven days; sera must be frozen at -20 °C for longer

periods of storage and transported to the testing laboratory on frozen ice packs. Repeated freezing and thawing can have detrimental effects on the stability of IgM antibodies.

Dried Blood Spot collection and shipment of blood samples is currently being developed as part of the HBAS Laboratory support system, and it is hope that this method will be introduced in the near future.

4.2.2 AFR Case Reporting

On notification of an AFR case, the **Hospital Coordinator should**:

1) Contact the National Coordinator to notify case details and arrange for necessary assistance with serum sample shipment and ensure that the correct shipping containers are available. If necessary, the National Coordinator can contact their WHO South Pacific Office for assistance with serum shipment and containers

2) Ensure that the serum sample is taken for the child/patient and stored at appropriate temperatures until the sample is shipped

3) Ensure that the clinician completes the AFR Case Investigation form (Annex B2) promptly; review information provided and clarify any missing information before.

4) Send a copy of the AFR Case Investigation form to WHO South Pacific Office in Suva (via the National Coordinator) and file a copy of the form in the reporting sites HBAS folder

5) Ensure that the reporting site is re supplied with specimen shipment containers from the national coordinator

On notification of an AFR case, the **National Coordinator** should:

1) On receipt of the Case Investigation form, forward this on to WHO and ensure that the appropriate serum collection containers are available.

2) Liaise with the reporting sites laboratory, WHO and the appropriate LabNet L2 Laboratory to ensure that serum sample shipment proceeds smoothly and that required notifications of shipment are received.

3) Ensure that the reporting site is re supplied with serum sample shipment containers from the national coordinator

4) Discuss with the Ministry and WHO about alerting neighboring country through PacNet Restricted.

4.3 AFR Contact investigation

Establish a time as soon as possible for a follow-up visit at the patient's home to evaluate the family/friends for evidence of AFR illness and to provide immunizations as needed. Also, conduct contact tracing to identify the source of infection and determine whether other areas have been exposed or are also experiencing a possible outbreak. Once the laboratory has confirmed the outbreak, it is not necessary to take blood from every suspected measles/rubella case. In addition, surveillance sites and surveillance coordinators in nearby areas and Pacific Islands should be informed that a suspected case has been identified through PacNet Restricted.

Further information on actions to follow if a measles or rubella outbreak is occurring can be found in the WHO Measles Field Guidelines and the PPHSN AFR Surveillance Guidelines, which can be obtained from the WHO South Pacific Office or from PPHSN.

4.4 AFR serum shipment

1) If the initial clinical suspicion/assessment is that the patient has dengue, testing should be carried out at the L1 level to confirm/rule this out, and if negative, samples should be forwarded for measles/rubella testing

2) If the initial clinical suspicion is measles/rubella, the National/Hospital Coordinator should work with the hospitals laboratory department to ensure that the serum specimens are shipped to either one of the Pacific LabNet Level 2 Laboratories in New Caledonia, Guam, Fiji and French Polynesia or the Western Pacific Measles Reference Laboratory at VIDRL without delay. Contact details for the measles lab at VIDRL and all the Pacific LabNet L2 labs are provided in Annex F2.

3) Serum samples should be sent in special shipping containers that have been provided by WHO. Packaging and labeling instructions are the same as for AFP samples and are provided in Annex D.

4) Serum specimen must be accompanied by an AFR Laboratory Form (Annex C2), and labeled with:

   - Patient's name and Hospital Number
   - Date of birth
   - Date of onset of fever and rash
   - Date of specimen collection
   - Name of hospital where collected
   - Date of last measles containing vaccine dose (where applicable)

5) Serum specimens shipped to VIDRL must be accompanied by 1) a valid Australian Quarantine and Inspection Service (AQIS) "Permit to Import Quarantine Material"

(this can be obtained from WHO South Pacific Office or VIDRL (current version provide in Annex E3 [note expires 10 May 2007]) and 2) a Customs Declaration with the shipment (template for this is provided in Annex E2) which is filled out by the hospital laboratory. For serum specimen sent to any of the Pacific LabNet L2 laboratories, please ensure appropriate forms are included as advised by the Lab.

6) Before shipping serum specimens to any laboratory, ensure that a pre-alert message is sent and provide details of the Airway Bill Number, Flight Number and estimated arrival time.

7) In addition, please ensure that copies of the case investigation form, lab request form and shipment details are provided by fax or email a copy to the WHO South Pacific office in Suva

5. NEONATAL TETANUS (NT) CASE INVESTIGATION

5.1 NT case definition

Any neonate with a normal ability to suck or cry during the first two days of life, and between 3 and 28 days of age cannot suck or cry normally, and becomes stiff or has convulsions or both

5.2 Investigating and reporting a NT case

If a clinician see a case of NT or is informed of a suspected case of NT, they should:

1) Hospitalize for appropriate supportive care.

2) Complete a NT Case Investigation Form (Annex B3). For cases outside the hospital, ensure that health workers at the local and district levels that investigate neonatal tetanus cases use a Case Investigation Form to record the case information.

3) Make sure that the "Yes" column in that month's HBAS Monthly Reporting Form is ticked appropriately, and that relevant identifying details of the case are provided on the reverse side of the form.

4) Work with Public Health staff to assess community risk, and increase immunization efforts as indicated. Identify problems with TT immunization services, delivery practices, umbilical cord care, and possibly vaccine potency (e.g. freezing of vaccine)

5) At a minimum, give 2 doses of TT to the mother of the case and other women of childbearing age who live nearby where the case occurred, according to their immunization status. Observe the 4-week interval between the 2 doses.

6) Consider adding health education about NT for women of childbearing age and pregnant women in coordination with other Maternal and Child Health Services.

5.3 Indicators used to measure NT surveillance performance

- Number of reported NT cases and NT incidence by district (per 1,000 live births)
- Existence of zero reporting
- Completeness of reporting form all reporting sites > 80%