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and Control Project*

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**Report on a Study of the Methodology
for Malaria Surveillance in Niger**

August 21 – September 17, 1990

by

Michael Olivar, M.D.

Mr. Issouf Bayard

VBC Report No. 81148

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1. Executive Summary

In January - February 1990, a VBC Project assessment team recommended conducting a study to determine the impact of malaria on morbidity and mortality in the government health departments of the different ecological regions of Niger. The study would have two phases: one during the wet season and the other during the dry season. In preparation for the study, another team of VBC consultants developed and pretested a survey form and organized a workshop to train health agents to use it. This preliminary phase of the study was done from August 21 to September 17, 1990.

Preparing the forms

Two survey forms were prepared. Health care agents are to fill out a copy of the first form for each malaria patient seen in the government health departments. This case management form describes the patient profile: age, sex, way of life (nomadic/sedentary), residence, description of disease (symptoms, signs and severity), diagnosis and financial burden to the patient.

The second form was prepared for collecting information on the total number of patients at government health departments during the study period and the three previous months. This form is designed to provide some information on the relative importance of malaria.

Pretest of workshop and survey form

Each type of government health center was represented in the pretest: the national hospital (medicine and pediatric departments), the medical center of Niamey's metropolitan area, a maternal and infant health center (Yantaia), a district dispensary (Bani Goungou), and a rural dispensary near Niamey (N'Dounga). One or two persons from each center, including three doctors, four nurses and one midwife, were selected to participate in the trial.

A three-hour training workshop was held August 29, 1990, to show participants how to fill out the forms. The next day, the VBC

consultants observed as the workshop participants filled out the first forms in the government health centers.

After one week, the forms were collected and examined. A total of 108 forms had been filled out. The average recorded time for interviewing a patient and filling out the form within each government health department varied between 3 minutes, 20 seconds and 20 minutes. It was noticed that the greater the volume of completed forms, the shorter was the recorded time. Physicians tended to spend more time filling out the forms.

The major problems identified in the pretest were incompletely answered questions and the difficulty of evaluating prescribed treatments because of the frequent lack of patient follow-up. Participants found some questions ambiguous.

Final draft form and workshop

After modification based on the pretest findings, the final form had 30 questions on the following subjects: patient age and sex, social information (profession, residence, way of life), disease description, pregnancy and chemoprophylaxis, diagnosis (thick or thin blood smear), severity, preliminary treatment, financial burden, patient follow up, and treatment outcome.

The workshop program was modified to improve comprehension of the form. A detailed discussion on each question and a role-playing exercise were added to discuss all possible problems.

Recommendations

Study site

The study will be conducted in four government health departments: Niamey, Gaya, Tessaoua and Aderbissanat. In addition to the National Hospital of Niamey and the medical center, one maternal and infant health center and one district dispensary should be chosen randomly from each government health department to participate in the study.

Personnel

All the categories of professional personnel working in the government health centers should be represented as follows: for the national hospital, the physician and medical officer responsible for each department (Medicine A, Medicine B, Pediatrics A and Pediatrics B) and gatekeeper nurses; for the medical centers, the physician and the gatekeeper nurses (casualty room); for the maternal and infant health center, the chief physician, a midwife for pregnant women, and a nurse or a midwife for sick children; and for the dispensaries, the head nurse.

Data organization and collection

For more rigorous and systematic data collection, all malaria cases should be referred to workshop participants during the study period. At least 200 forms should be distributed in each government health department.

Data treatment and analysis

Host-country staff and their consultant counterparts will use the logistical resources of the Ministry of Public Health for this phase of the study.

2. Introduction

As part of the National Program of Malaria Control (PNLP), the Ministry of Public Health (MSP) of the Niger Republic and USAID/Niamey asked the VBC Project to provide technical assistance for a malaria surveillance study during the dry and wet seasons, in accordance with one of the recommendations made by a VBC assessment team in January - February 1990.

The surveillance study has two objectives:

1. **Methodology:** to elaborate a standard methodology for collecting data that is adapted to the work conditions of the health care staff.
2. **Surveillance:** to use this methodology to collect data on malaria incidence and forms in Niger and to determine the characteristics of this vector-borne disease.

This report concerns the first objective, elaboration of the survey methodology.

3. Workshop and Pretest

Elaboration of survey forms

The data collection system already established in Niger's government health departments (National System of Sanitary Information - SNIS) does not emphasize information on the demographic characteristics of patients, the clinical forms of malaria or the financial burden it imposes. To achieve the study objectives, the VBC team developed an appropriate survey form to collect data on:

- o age and sex of patients;
- o social information (profession, residence, way of life);
- o disease description (symptoms and signs);
- o diagnosis (thick or thin blood smear, or presumptive diagnosis);
- o financial burden and follow up of patient; and
- o treatment outcome.

A complementary form also was developed to collect information on the total number of people seeking treatment at each government health department during the study period and for the three previous months. This form will help the MSP evaluate the relative importance of malaria in each department's caseload.

Preparation of the workshop

A day-long workshop was organized to present the form to all participants and train them in the survey methodology. The workshop covered the following points:

- o the study's objectives and expected results;
- o study methods;
- o explanation of the forms;
- o general instructions on filling out the forms (detailed analysis of each question); and
- o supervision of administration of the first survey forms in the different government health departments.

Pretest

Sites and staff

To ensure that all the different government health centers were represented, the pretest was run in different centers in the capitals and suburbs. The selected centers were:

- o one hospital: the Niamey National Hospital, Departments of Medicine B and Pediatrics A;
- o one maternal and infant health center: Centre de Santé Maternelle et Infantile (CSMI), Yantala;
- o one medical center: Centre Medical (CM), Niamey;
- o district dispensary: dispensaire de quartier (DQ), Bani Goungou; and
- o rural dispensary: dispensaire rurale (DR), N'Dounga.

One or two responsible health care agents from each of the participating government health centers were chosen to participate in the pretest. The eight participants represented different categories of health care agents as follows:

- o three physicians (CM of Niamey, National Hospital, CSMI Yantala);
- o four nurses (two from the CM of Niamey, DR of N'Dounga, DQ of Bani Goungou);
- o one midwife (CSMI Yantala).

Workshop pretest

The workshop took place August 29, 1990, at the National School of Public Health, and lasted two and a half hours.

Mr. Sani Zaqui, PNLN coordinator, presented the members of the MSP-VBC staff before the workshop started. Dr. Michael Olivar described the study and its methods, and Mr. Issouf Bayard explained the forms and how to administer them.

The participants examined the case management form and asked for explanations of some questions. Their main concern was that filling out the form would take too much time.

At the end of the session, participants' comprehension of the form seemed to be acceptable. Each participant was asked to write down comments at the end of the form and suggestions for improving it.

Forty copies of the form were distributed on the spot to representatives from each government health department.

The next morning, August 30, 1990, the first forms were filled out under the direct supervision of the VBC consultants and some additional explanations were given. Dr. Olivar observed the administration of the forms at National Hospital, the CM of Niamey and the CSMI Yantala, and Mr. Bayard supervised at the DQ of Bani Goungou and the DR of N'Douga.

Pretest of the form

During the one-week pretest, participating health care agents were asked to collect information on all presumed or confirmed malaria cases within the limits of available forms. At the end of this period, the forms were collected and examined by the staff.

Number of forms

Of the 200 forms distributed, 108 were filled out by the different departments, with the following distribution:

o National Hospital, Medicine B:	3 forms
o National Hospital, Pediatrics A:	8 forms
o CM of Niamey:	36 forms
o CSMI of Yantala:	11 forms
o DQ of Bani Goungou:	8 forms
o DR of N'Dounga:	42 forms

The average times for recording the data on each form, by department and professional category, were:

- o National Hospital,
Medicine B (MD): 8 minutes, 20 seconds
- o CM of Niamey (MD): 15 minutes
- o CM of Niamey (nurses): 8 minutes, 30 seconds
- o CSMI of Yantala (MD): 16 minutes
- o CSMI of Yantala (midwife): 20 minutes
- o DQ of Bani Goungou (nurse): 7 minutes
- o DR of N'Dounga (nurse): 3 minutes, 20 seconds

Some of these averages were derived from only a small number of forms (those of the physicians and the DQ of Bani Goungou).

Those who filled out the greatest number of forms also took less time to complete each form. This suggests that practice improves efficiency. On the other hand, physicians may have taken longer to fill out the forms because they were more careful.

Quality of the registration

The pretest showed that the function of the survey form was pretty well understood. Answers about symptoms were sometimes left blank. Specific pretest findings include the following:

- o Evidently if a patient did not have a symptom, some participants left that part of the form blank instead of checking "no []."
- o Because patient follow up was not always done, data on treatment efficiency are often missing. Therefore, it will be difficult to get information on the possible appearance of chloroquine resistance or on patient observance of treatment. When this information is not available, only the type of treatment prescribed by the health care agent will be considered.

- o When comments were made, they helped clarify some of the questions, particularly those about follow up and treatment. Therefore, the request for comments has been kept in the final form.
- o Some questions needed to be rewritten and others concerning pregnancy, severity and previous treatment added.
- o The complementary form concerning the total number of consultations does not seem to cause any problems.

4. Pretest Conclusions

Registration form

The original case management form had 20 questions. After revisions were made based on the pretest results, the final form (Annex A) has 30 questions on:

- o age and sex of patients;
- o social information (profession, residence, way of life);
- o disease description (symptoms and signs);
- o pregnancy and chemoprophylaxis;
- o diagnosis (thick or thin blood smear, or presumptive diagnosis);
- o severity;
- o previous treatment;
- o financial burden and follow up of patient; and
- o treatment outcome

An additional space will be added for comments of health care personnel.

Workshop

The workshop plan was also changed to address questions raised during the workshop pretest. The final workshop program is described in Annex B.

Participants comments led to the following conclusions:

- o In the presentation of the questionnaire, a more detailed analysis of each question must be made to avoid some of the confusion and incomplete answers found during the pretest
- o A supplementary practical phase consisting of a role-playing exercise should be added to allow an active discussion about the form and to improve comprehension.

- o The supervision phase must be maintained.

With these modifications, the workshop program will last about four hours.

5. Recommendations

Study sites

The surveillance study is scheduled to be made in the government health departments of Niamey, Gaya, Tessaoua and Aderbissanat. For the last three localities, the workshop program, selection of staff and data collection are not expected to present logistical problems because of the low number of government health centers. At Niamey, where the number of centers is greater, however, it will be extremely difficult to have a workshop and supervise all the health care agents (physicians, nurses and midwives) who treat malaria patients. Therefore, in addition to the national hospital and the medical center, a representative of each type of government health center in Niamey should be chosen randomly: one maternal and infant health center and one district dispensary.

Personnel selection

In every type of government health center, several categories of health professionals treat malaria patients. Each category should be represented. Also, the health care personnel selected for data collection should stay the same for all study phases. Participants should include the following:

Hospital

- o The responsible physician and medical officer in each department: Medicine A, Medicine B, Pediatrics A and Pediatrics B
- o Gatekeeper nurses

Medical centers

- o Chief physicians
- o Gatekeeper nurses (casualty room)

Maternal and infant health centers

- o chief physician
- o a midwife for pregnant women
- o a nurse or a midwife for sick children

Dispensaries

- o Responsible nurse

Organization of data collection

If possible, during the study period all malaria cases should be treated by study participants, following the usual referral system (nurse, midwife or physician). This will permit more systematic and rigorous data collection.

A minimum of 200 forms should be distributed to each government health department. Data on all patients seeking treatment for malaria during the study must be recorded. The complementary form concerning the total number of consultations will be filled out at the end of the study period by the person in charge in each department.

Data analysis and treatment

The data should be analyzed in Niamey using the equipment and programs of the Ministry of Public Health.

Annex A. Itinerary

August 1990

- 21-27** Elaboration of survey form and workshop program
- 23** Joint selection of departments participating in the study with the Coordinator of the National Program of Malaria Control
- 29** Workshop and survey form distribution
- 30** On-the-spot supervision of the administration of the first forms

September 1990

- 7** Collection of filled-out forms in the government health departments
- 8-9** Examination of each filled-out form
- 10** Form modification
- 17** Presentation of results, final form and report to the Ministry of Health and the Health Officer of USAID/Niamey

Annex B. Workshop Program for Presentation of Malaria Surveillance Methods

I. Study Objectives

- 1. To know the malaria incidence:**
 - a. in relation to seasons**
 - o dry season
 - o wet season
 - b. in relation to diverse ecological systems**
 - o Saharian: Aderbissanat
 - o Sahelian: Tessaoua
 - o Sudanian: Gaya
 - c. in relation to socio-demographic distribution**
 - o age, sex
 - o residence
 - o way of life (nomadic/sedentary)
- 2. To know the degree of severity of the conditions of patients seeking treatment for malaria**
- 3. To know the diagnostic criteria used and financial burden of therapy in diverse government health departments:**
 - o rural dispensary
 - o district dispensary
 - o medical center
 - o maternal and infant health center
 - o hospital

II. Study Methods

1. Data will be collected for one week during each season in the cited government health department. A survey form will be distributed in these departments and filled out by health care staff.
2. Data treatment and analysis will be done in Niamey.

III. Form Presentation

1. Description of the type of health care center and its personnel: Questions 1, 2, 3.
2. Socio-demographic characteristics of a patient: questions 4 to 11. Questions 9, 10 and 11 are related to the patient's way of life in order to observe any differential malaria incidence or use of health care services in the population.
3. Disease characteristics: questions 12 to 20:
 - o Questions 12-15: symptoms related to the patient
 - o Questions 16-20: clinical examination and diagnosis

These questions will be useful in determining disease characteristics in the studied areas, and eventually the coexistence of malaria and other pathologies.

4. Financial burden and follow-up of patient: questions 21 to 28. These questions concern the treatment given, its efficacy (in order to reveal the first signs of possible chloroquine resistance), and treatment outcome.
5. Specific questions about hospitalization: questions 29 and 30. These questions will also help determine mortality.

IV. General Instructions on Filling out the Form

1. In heading: each form should be numbered before distribution. Note the start and end of each session to estimate how long it takes to fill out a form.

2. Questions 6, 12, 14a or 14b, 16b and 29: record the corresponding numbered values. Fill in the answers to questions 4 and 24.

Question 19 has to be filled out only if the parasite density measurement is possible. If so, the corresponding parasite densities must be written in the space for each day they are measured.

For question 22, each space represents a medicinal dose for each daily treatment. Only spaces corresponding to a treatment actually given or prescribed should be filled out.

3. For all other questions: please check the appropriate answer.
4. Questions 13 and 14 should be presented in one of two ways, depending on whether the patient is an adult or a child. The form should be filled out as follows:
 - o 13a and 14a for adults
 - o 13b, 13c and 14b for children
5. Question 14a or 14b has to be answered only if the answer to the previous question (13a or 13c) is yes.
6. If possible, write your comments on the back of the form.
7. Complementary information form

This form has to be filled out by the medical officer of the concerned department. It gives information on the total number of malaria cases and the importance of the disease compared to other diseases. Each government health department needs to fill out this form only once.

V. Analysis and Comments on Each Question

VI. Role Play for Trial of Forms

Annex C. Survey Forms