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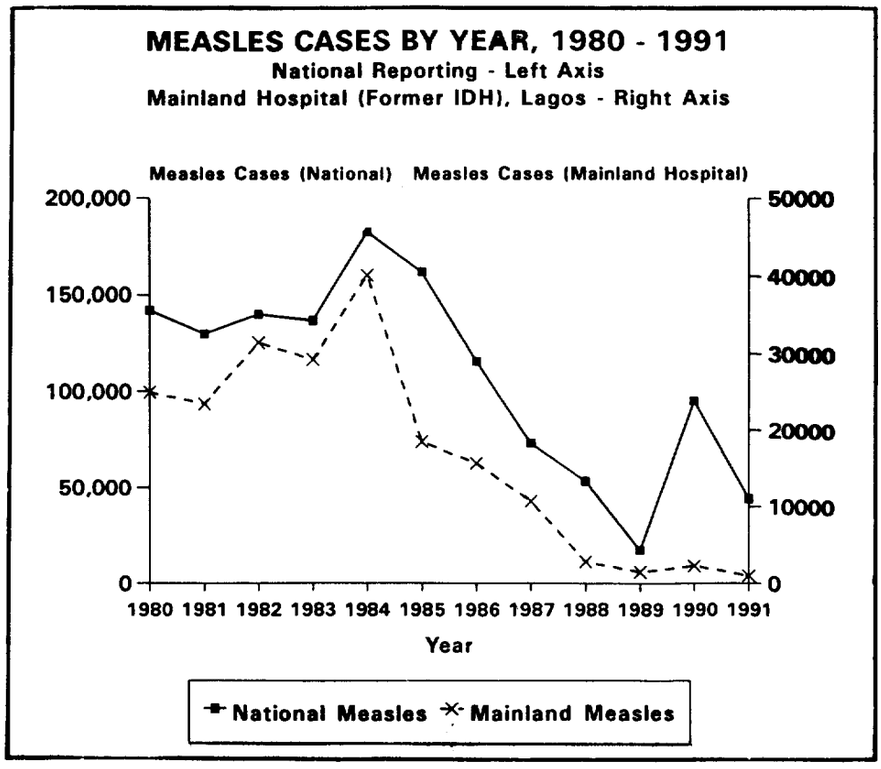
AFRICAN CHILD SURVIVAL INITIATIVE

COMBATTING CHILDHOOD COMMUNICABLE DISEASES

ANNUAL REPORT

NIGERIA 1991-92



FEDERAL MINISTRY OF HEALTH AND HUMAN SERVICES

CDC CENTERS FOR DISEASE CONTROL

USAID USAID

Annual Report 1991-92
Nigeria

COUNTRY DESCRIPTION

COUNTRY: Nigeria CALENDAR YEAR: 1991

POPULATION: 88,514,501[1]

ESTIMATED NUMBER OF LIVE BIRTHS: 4,248,696[2]

PROJECT AGREEMENT DATE: December 15, 1986 (memo of understanding)

PROJECT ASSISTANCE COMPLETION DATE: September 30, 1993

FIRST EVALUATION: April 1991

PROJECT FINANCING

SOURCE	CUMULATIVE FINANCING TO DATE
USAID	$14.5 million

FEDERAL MINISTRY OF HEALTH COUNTERPARTS

DEPT. OF PRIMARY HEALTH CARE:	Dr. A.A.O. Sorungbe, Director
EPI/CDD/ARI:	Dr. (Mrs.) M.D. Adedeji
EPIDEMIOLOGY:	Dr. (Mrs.) A.O. Asagba
MONITORING AND EVALUATION:	Dr. (Mrs.) O.O.K. Dokunmu
MALARIA & VECTOR CONTROL:	Dr. O.J. Ekanem
HEALTH EDUCATION BUREAU:	Mr. J. Ola

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[1] Source: National Census Bureau, Feb. 1992.

[2] ibid.

CCCD PROJECT STAFF

Centers for Disease Control:

Mr. James Herrington, Project Coordinator
Dr. Barbara Maciak, Technical Officer/Kaduna
Dr. Richard Spiegel, Epidemiologist

CCCD Nigerian Senior Staff:

Dr. Hezekiah Adesina, Medical Geographer/Osun & Oyo States
Mr. Henry Akinsulire, Finance Officer/Lagos
Dr. Olu Babaniyi, Epidemiologist/Kaduna
Dr. Doyin Fagbule, Epidemiologist/Lagos State
Mrs. Helen Nwabuoku, Project Assistant/Lagos
Mr. Gerald Ochuko, Computer Specialist/Lagos
Dr. Peter Olise, Epidemiologist/Enugu & Anambra States
Dr. D.B. Parakoyi, Epidemiologist/Plateau State
Dr. Zakari Wambai, Epidemiologist/Niger State

CCCD Offices:	Base of Operations:	Lagos
	Field Office:	Kaduna

SELECTED HEALTH AND DEMOGRAPHIC INDICATORS[3]

	Nigeria	Côte d'Ivoire
Total population million[5]	88,514,501[4]	12.4
Population growth rate percent/yr.	3.4 percent/yr.	3.8
Contraceptive Prev.	5%	3%
Infant mortality rate	85/1000	93/1000
Child mortality rate	145/1000	139/100
Life expectancy	54 years	53 year
Access to safe water	58% urban	30% urb
	22% rural	10% rur
Gov. health expend.	1.5%	14%
Gov. educat. expend.	3.1%	21%
Physician : pop. ratio	1:6126	1:13942
GNP per capita	$290	$770

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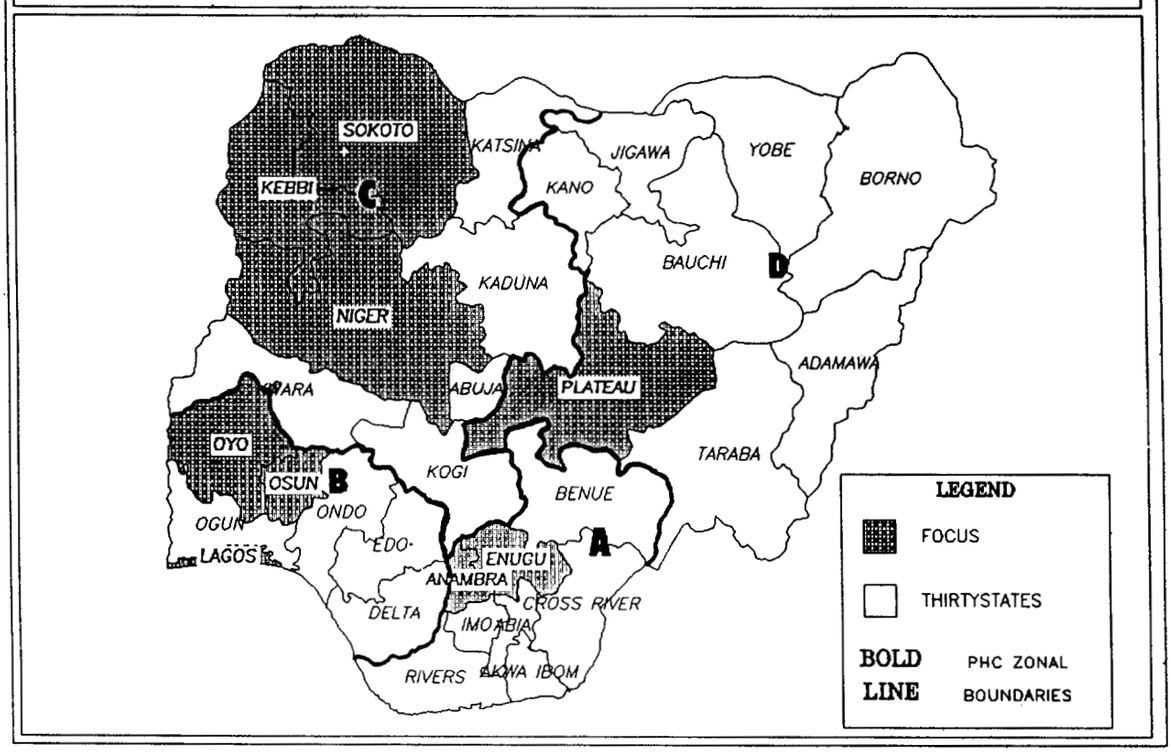
[3] Source: FMOH, Division of Epidemiology.
"State of the World's Children", Unicef, 1991

[4] 1991 National Population Census

[5] Sources: "Situation des Enfants dans le Monde", Unic 1990. Prespectives de la Population Mondiale, Bureau des Nati Unies pour la Population, 1988. "Entrevue avec M. le Ministre la Santé et de la Protection Sociale en Côte d'Ivoire", Je Afrique Economie, No. 138, Dec. 1990.

CCCD PROJECT FOCUS STATES AND FEDERAL PHC ZONES
1991



ACCOMPLISHMENTS IN 1991

1. EXPANDED PROGRAMME ON IMMUNIZATION (EPI)

♦ Data from the 1990 National EPI Coverage Survey reveals that greater numbers within target groups are receiving vaccine services. Survey results published by the FMOH in April 1991 are presented in Table 1.

TABLE 1. COVERAGE BY ANTIGEN AND COHORT[6]

ANTIGEN/ITEM[7]	< 12 MONTH COHORT	12-23 MONTH COHORT
BCG	95.5%	95.5%
DPT3	65.2%	81.1%
OPV3	65.2%	81.1%
Measles	70.0%	84.7%
Fully Immunized	56.2%	76.6%
Card Retention	87.1%	90.6%

♦ The drop-out rate between the first and last DPT was down to 14.7 percent. Missed opportunities at the national level was 10 percent.

♦ 1991 EPI Work Plans for the six CCCD focus states (Anambra, Lagos, Niger, Oyo, Plateau, and Sokoto) and Model LGAs were completed and approved by FMOH, State and LGA officials. These plans were based upon individual state and LGA Needs Assessments, designed and conducted by CCCD staff. Budgets for activities are included in the work plans.

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[6] Source: "The National Coverage Survey", FMOH, April 18, 1991.

[7] Card plus history.

♦ Logistics support was provided to Focus States and Model LGAs to improve cold chain capability (EPI Cold Store generator repaired in Sokoto, kerosene stoves provided to health facilities in Kaura Namoda, etc.) and improve transportation capacity for carrying out routine program activities and supervisory responsibilities.

♦ Assisted the FMOH to revise posters detailing EPI policy on Polio and Tetanus Toxoid. New EPI policy, effective January 1991, recommends a first oral polio immunization dose given at birth and five doses of tetanus toxoid for women of childbearing age (15-44). Posters were distributed to all LGAs in the Federation.

♦ Assisted states to monitor their program activities, based upon state specific plans, targeting the eradication of polio and the elimination of neonatal tetanus.

♦ Conducted EPI supervisory/management skills training for LGA managers as part of Continuing Education Program in Plateau, Enugu and Niger States.

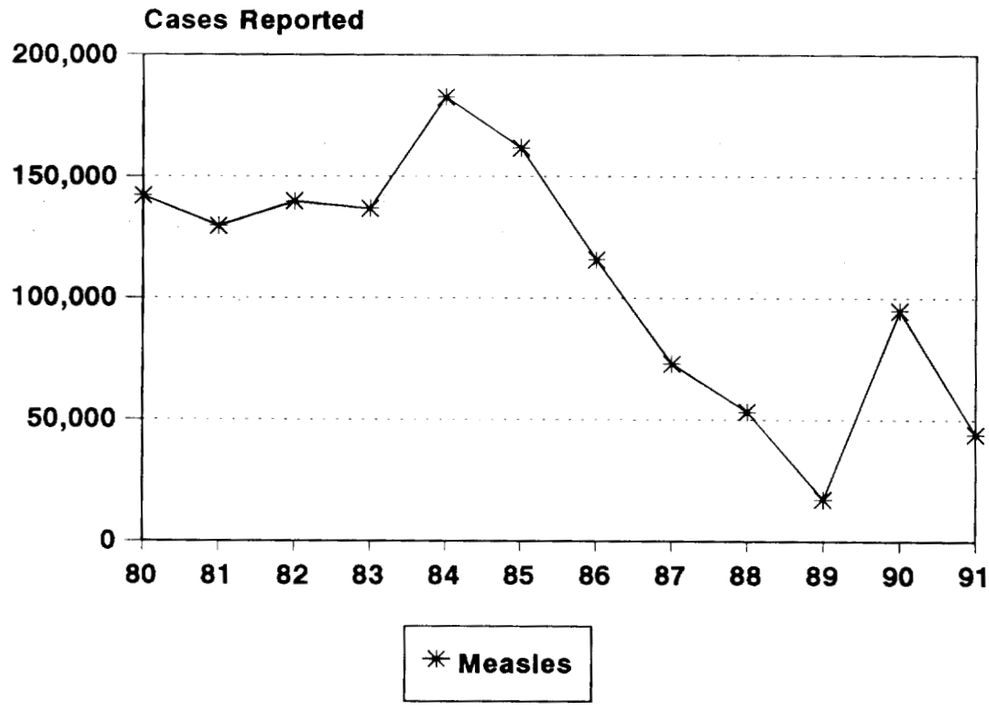
♦ Assisted the FMOH to carry out a detailed analysis of the 1990 National EPI Coverage Survey data set, considering specific criteria such as age at immunization, eligibility, history and card. Administrative coverage has decreased dramatically to below 1988 levels. The Unicef sponsored Universal Child Immunization campaign of 1990 achieved significant results. Sustainability of coverage will be the major challenge to EPI in 1992.

♦ Preliminary results from the Demographic Health Survey (DHS) were released during 1991. Immunization coverage rates (ages up to 2 years, card + history) were BCG 61 percent, DPT3 and OPV3 33 percent, Measles 46 percent, and Fully Vaccinated Child 29 percent. Differences were evident between DHS rates and those reported by the FMOH/UNICEF. The reason for these differences may be attributable to survey design and methodology.

♦ Designed and began implementation of a nationwide PHC Sentinel Surveillance System. EPI indicators are included as component of Sentinel System.

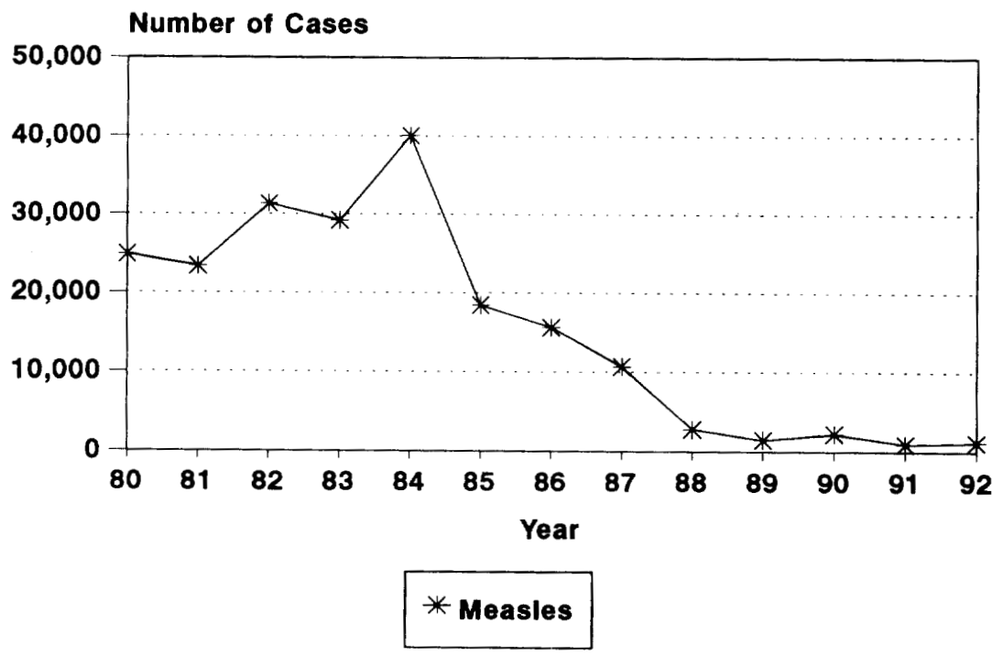
♦ Following Federal Ministry of Health guidelines for LGA-level PHC implementation, assisted CCCD Focus LGA's in Niger, Plateau, Enugu, and Sokoto States carry out the following activities: 1) establish District and Village Health Committees, 2) orient LGA, District, and Village Health Committee members on basic PHC principals, 3) complete PHC house numbering, 4) train and equip Village Health Workers and Traditional Birth Attendants.

MEASLES CASES REPORTED BY YEAR, ALL AGES, 1980-1991, NIGERIA



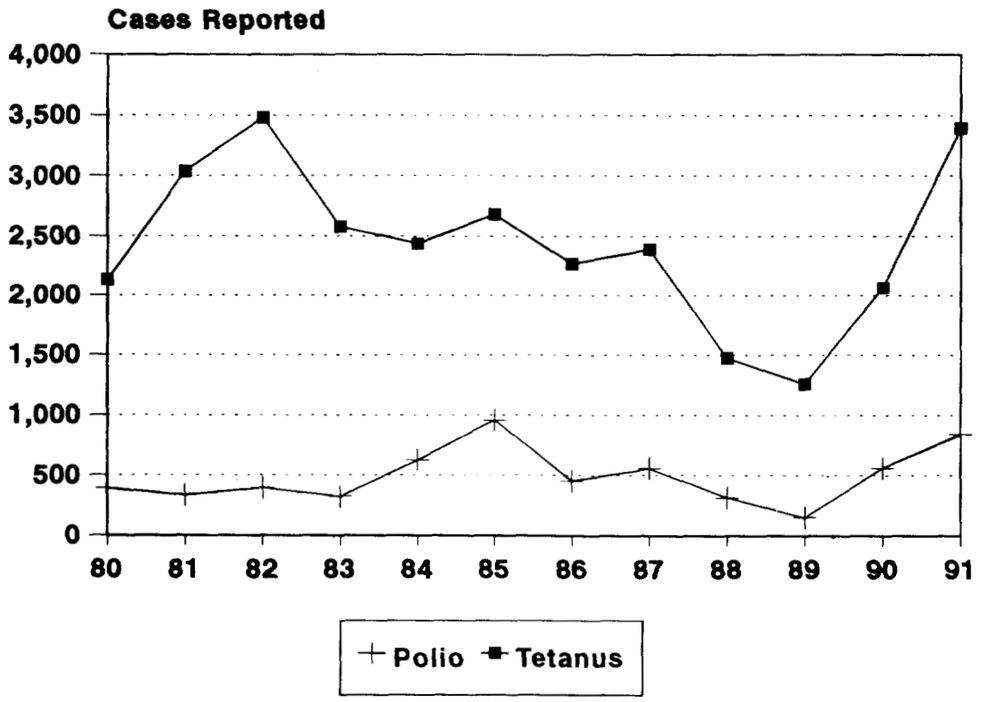
Source: Federal Epidemiological Division, FMOH

MEASLES CASES AT LAGOS MAINLAND HOSPITAL, INPATIENT AND OUTPATIENT, 1980 - 1992, NIGERIA



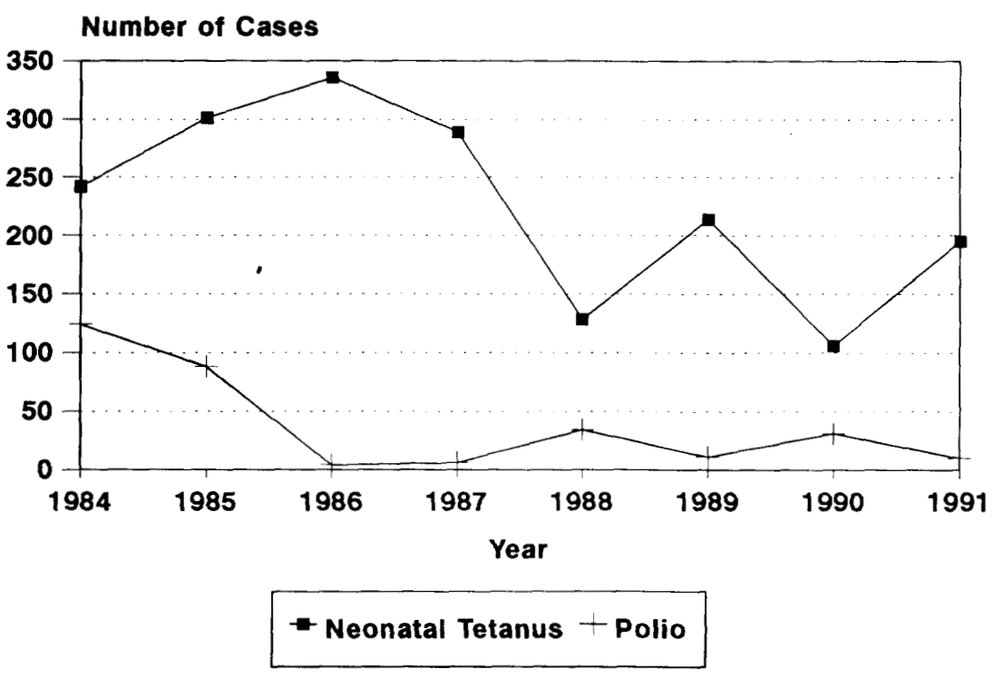
* Mainland Hospital is the former Infectious Diseases Hospital (IDH)
1992 data is for five months ended May.

POLIO AND TETANUS CASES REPORTED BY YEAR, ALL AGES, 1980-1991, NIGERIA



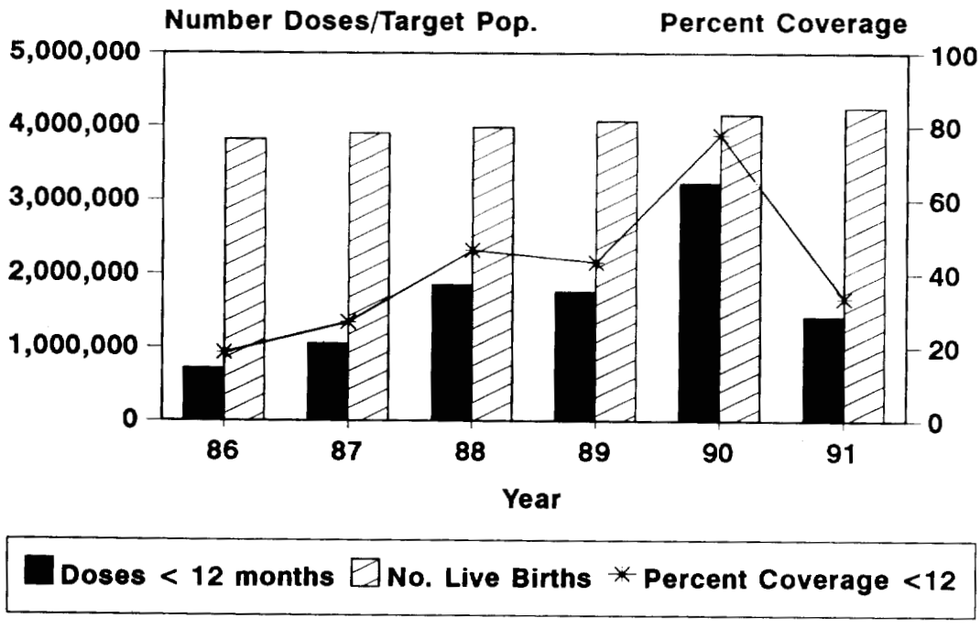
Source: Federal Epidemiological Division, FMOH

Neonatal Tetanus and Polio Cases Inpatient and Emergency Room Combined Massey Street Childrens Hospital, 1984 - 1991, Lagos



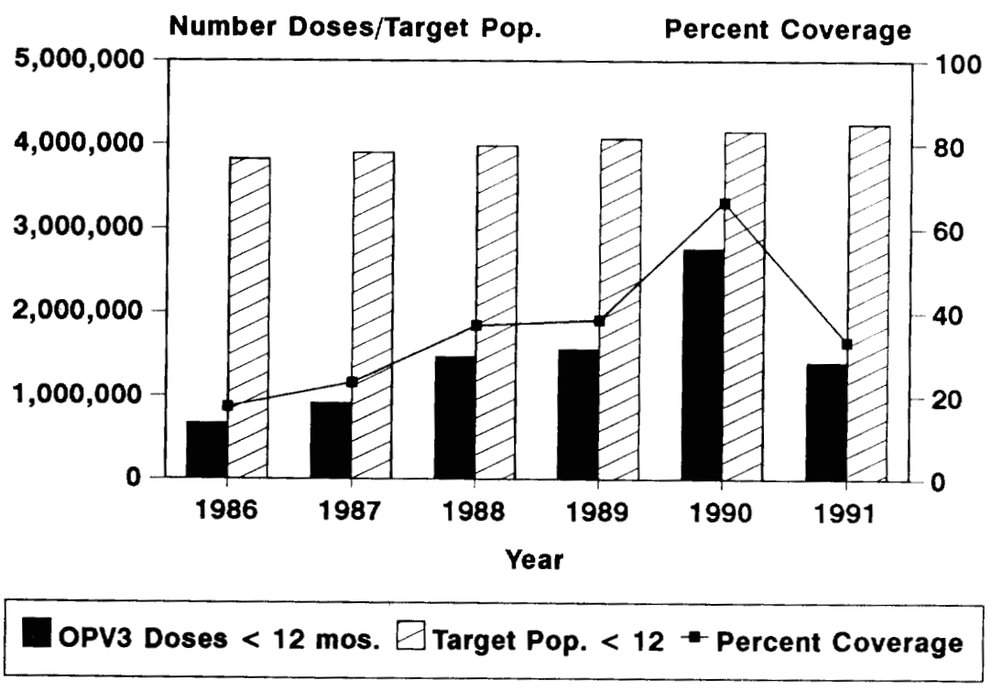
Source: Massey Street Medical Records Department

MEASLES VACCINATIONS: TARGET POPULATION, DOSES < 12 MONTHS AND PERCENT COVERAGE, 1986 - 1991, NIGERIA



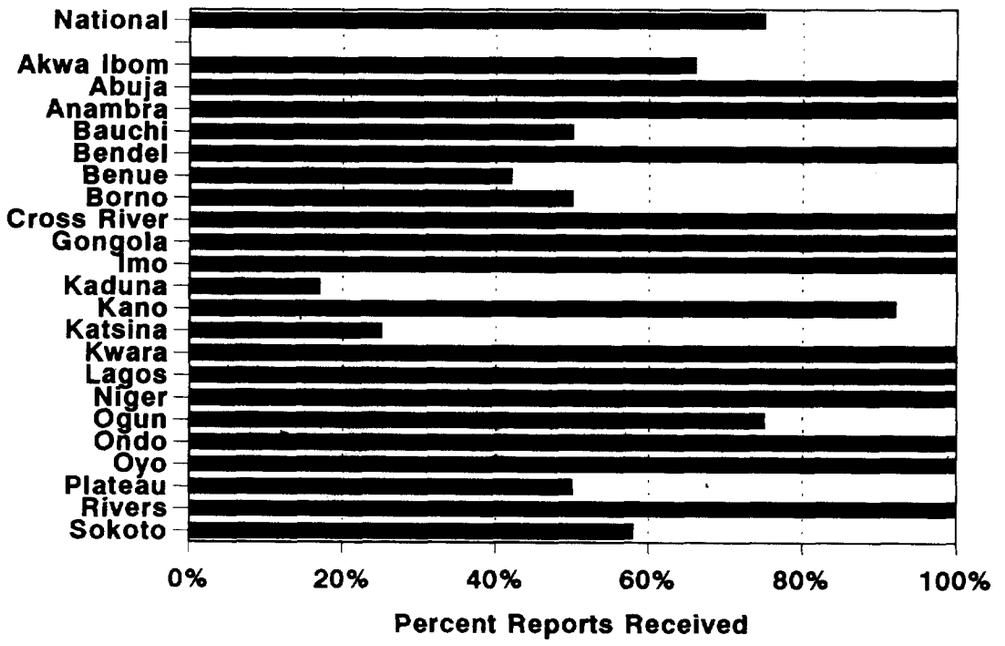
Source: EPI/CDD Division, FMOH;
Est. target population based on
1991 National Population Census.

ORAL POLIO VACCINE (OPV3) ADMINISTRED BY TARGET POPULATION, PERCENT COVERAGE, 1986 - 1991, NIGERIA



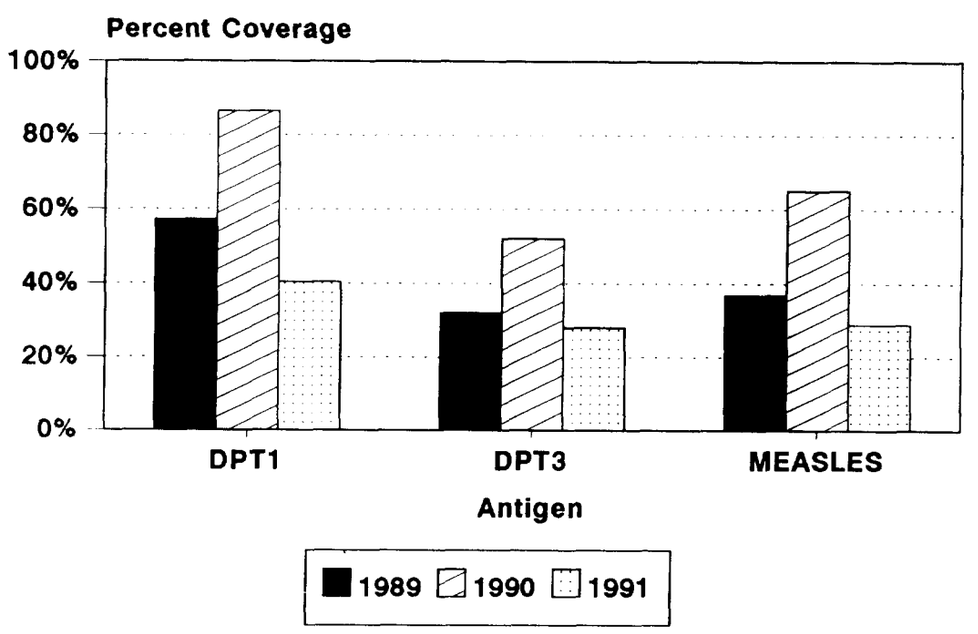
Source: EPI/CDD Division, FMOH;
Est. target population based on
1991 National Population Census.

PERCENT OF MONTHLY STATE IMMUNIZATION RETURNS RECEIVED BY FMOH, 1991, NIGERIA



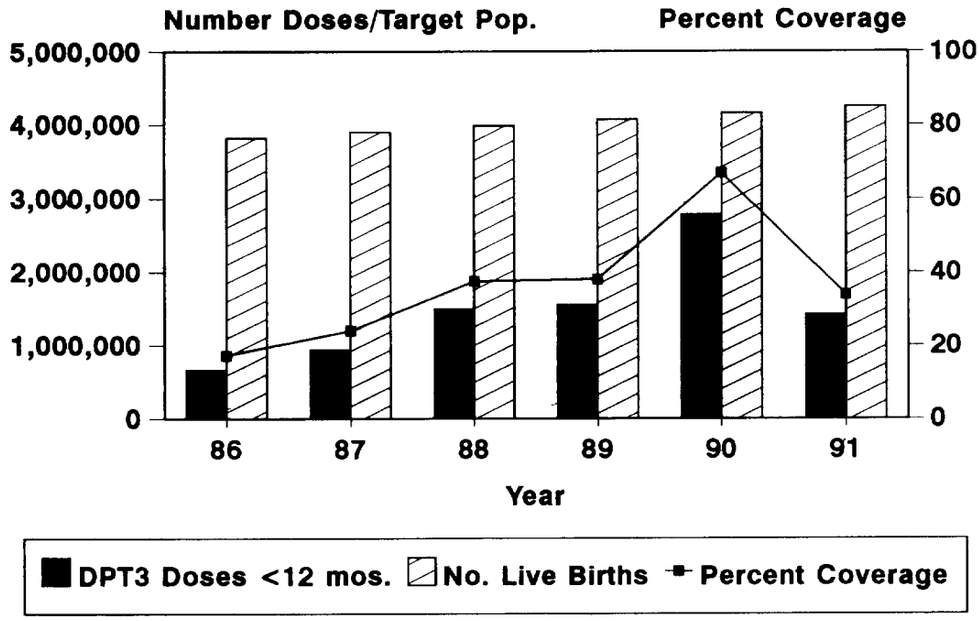
Sources: EPI/CDD Division, FMOH; M&E Division, FMOH;
21 States

EPI COVERAGE RATES BY ANTIGEN, CHILDREN < 12 MONTHS, NIGER STATE, 1989 - 1991, NIGERIA



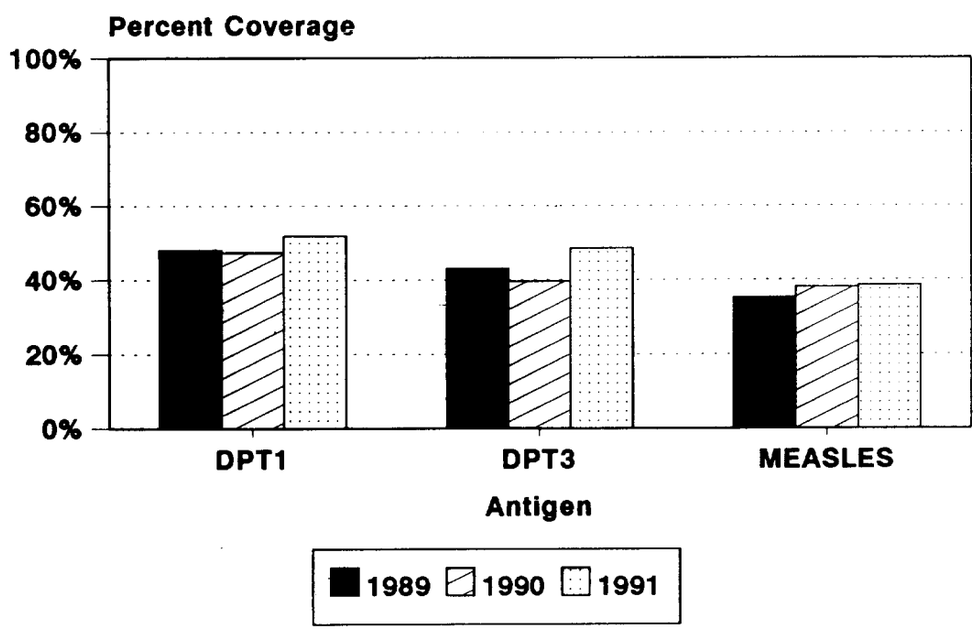
Source: EPI/CDD Division, FMOH
Est. target population based on
1991 National Population Census

DPT3 VACCINATIONS: DOSES < 12 MONTHS, TARGET POPULATION AND PERCENT COVERAGE, 1986-91, Nigeria



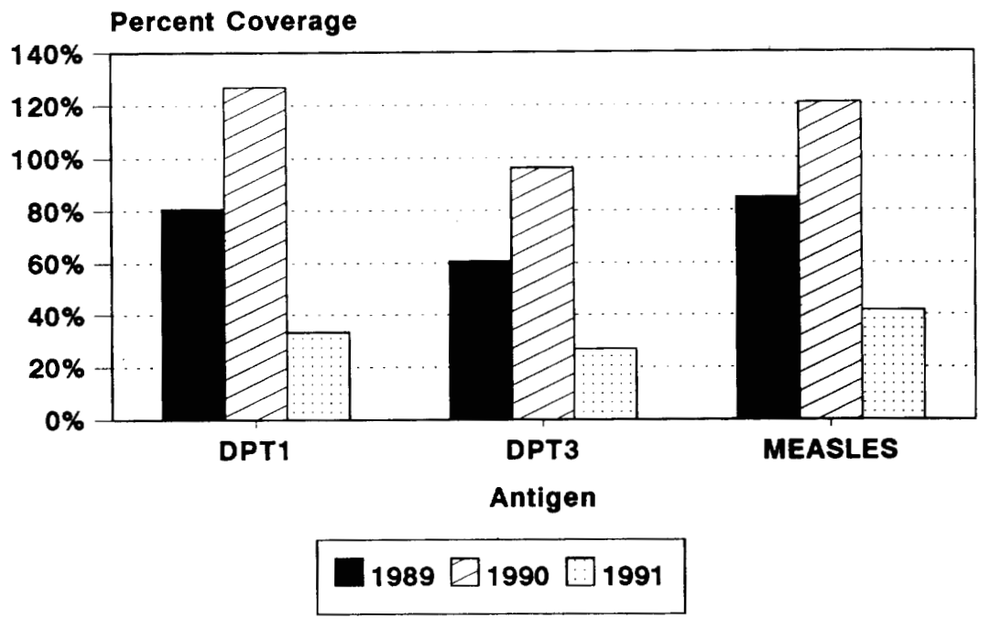
Source: EPI/CDD Division, FMOH;
Est. target population based on
1991 National Population Census.

EPI COVERAGE RATES BY ANTIGEN, CHILDREN < 12 MONTHS, LAGOS STATE, 1989 - 1991, NIGERIA



Source: EPI/CDD Division, FMOH;
Est. target population based on
1991 National Population Census.

EPI COVERAGE RATES BY ANTIGEN, CHILDREN < 12 MONTHS, PLATEAU STATE, 1989 - 1991, NIGERIA



Source: EPI/CDD Division, FMOH;
Est. target population based on
1991 National Population Census.

2. CONTROL OF DIARRHEAL DISEASES (CDD)

♦ In 1991, there were 37 health staff in Nigeria that received CDD training in clinical management of cases, overall program management, and improving skills as core facilitators. This brings the total number of professionals who have received similar training in Nigeria to 386 since 1987.

♦ During 1991, cholera epidemics were reported in 14 states. Though the outbreaks were probably under reported, data received indicate that between January - June 1991 there were approximately 10,000 cases and 1,300 deaths reported. Case fatality rate was 13 percent.

♦ Participated as member of National Cholera Task Force to review data from reports provided through surveillance system on severity of the cholera outbreak in several states of Nigeria.

♦ Disseminated 50,000 copies of "Cholera Guidelines" to health facilities nationwide.

♦ Published number one volume two of "Nigerian Bulletin of Epidemiology" which focussed on cholera.

♦ Ordered and received 650,000 packets of oral rehydration salts in response to a request by the FMOH concerning the cholera epidemic.

♦ An international planning team met in Lagos during April to review/revise the 1991 - 1992 National CDD Workplan. Participants came from WHO/Geneva, UNICEF/New York, and CCCD/Atlanta.

♦ 1991 CDD Workplans for the six CCCD focus states have been completed and approved by FMOH, State and LGA officials. Budgets for activities are included in the work plans.

♦ The 1990 DHS indicated that an unacceptably low percentage of mothers are using home fluids (24%) or ORS (12%) to treat diarrheal episodes.

♦ The Zone C Diarrhea Training Unit (DTU) will be based at the General Hospital in Kaduna. All four health zones now have a Diarrhea Training Unit. The DTUs will be upgraded and serve as training sites for teaching health workers practical skills in the treatment of dehydration due to diarrhea illness.

♦ Promulgated with the FMOH a clear policy statement regarding diarrhea case management and the approval of that statement by the National Council on Health. Guidance was distributed to all States and LGAs.

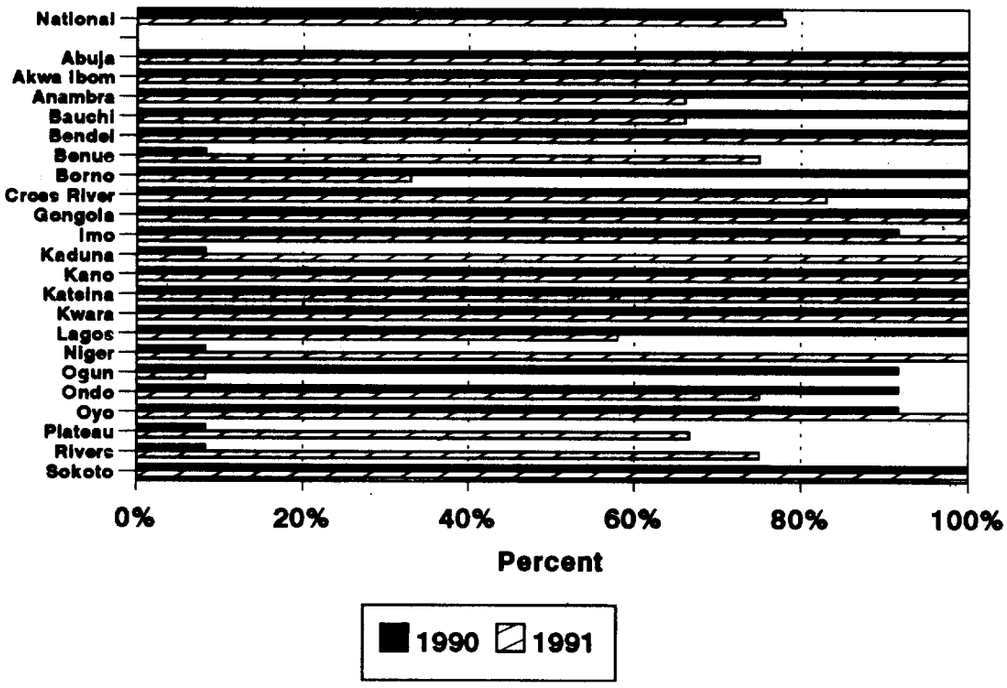
♦ Began studying the national ORS supply and distribution system, leading to the development of an effective national ORS monitoring program.

♦ Supported CDD supervisory/management skills training for LGA managers as part of Continuing Education Program in Plateau, Enugu and Niger States.

♦ Upgraded/equipped ORT Units at General Hospitals in Niger, Plateau, and Sokoto States.

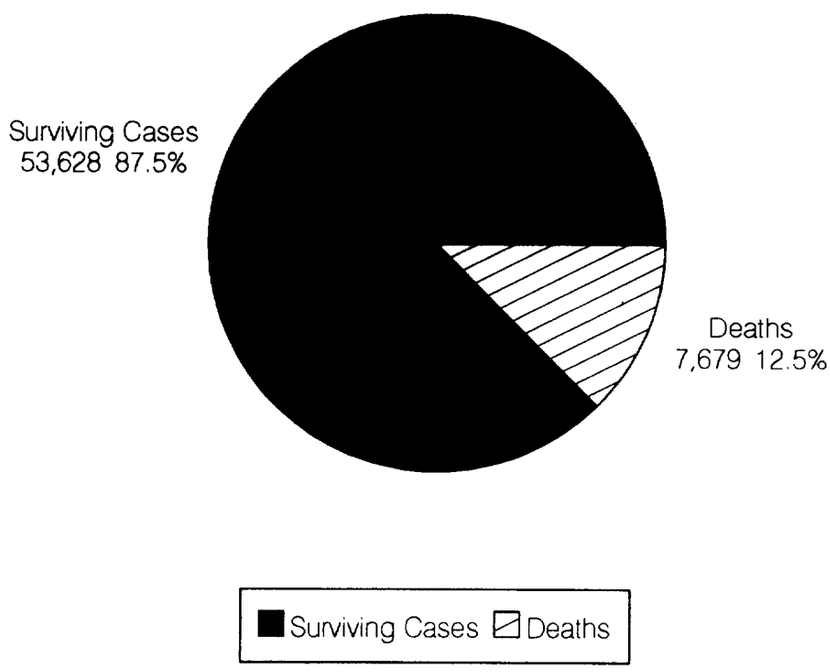
♦ Discussed with FMOH 1992-3 strategy for CCCD assistance with the development of pre-service training materials for medical schools and schools of health technology.

PERCENT OF MONTHLY STATE NOTIFIABLE DISEASE REPORTS RECEIVED BY FMOH, 1990 AND 1991, NIGERIA



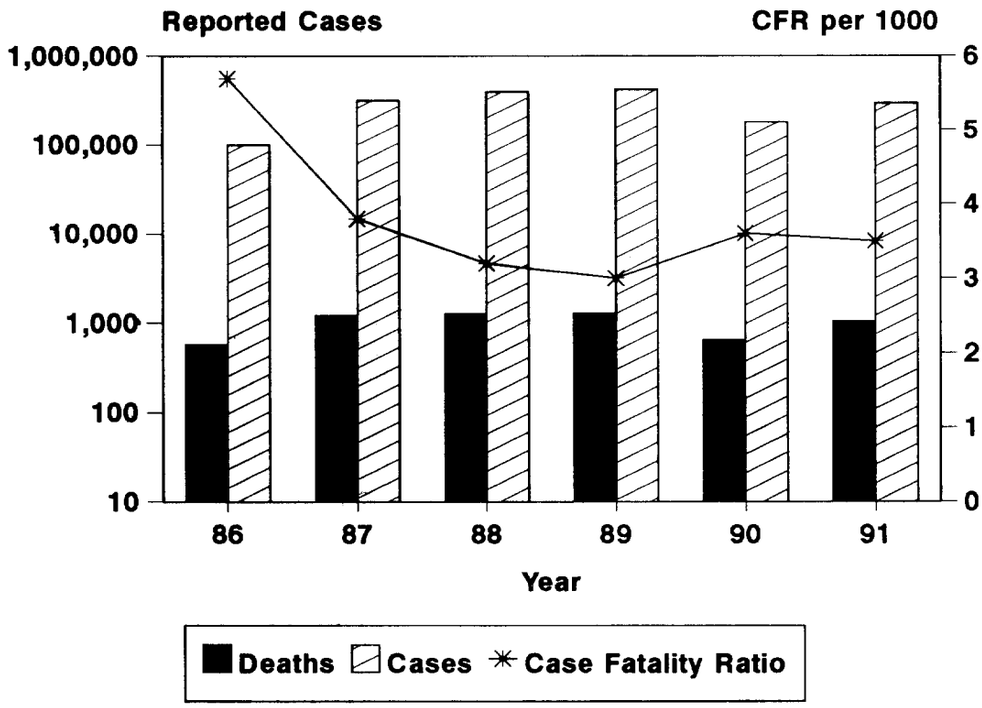
Source: Epidemiology Division, FMOH.
21 States

Reported Cholera Cases and Deaths All Ages, Jan.- Dec. 1991, Nigeria



Source: Epidemiology Division, FMOH

Reported Cases and Deaths due to Diarrhea, Hospitalized Children < 5 years, 1986 - 1991, Nigeria



Source: EPI/CDD Division, FMOH.

3. MALARIA

♦ Invivostudies, conducted as part of the National Malaria Surveillance Network in 1990, compared therapies using chloroquine, sulfadoxine/pyrimethamine (Fansidar) or sulfalene/pyrimethamine (Metakelfin). Study results, updated for 1990 in two PHC Zones, show no significant change in the overall parasitological failure rates up to day 14 with standard chloroquine therapy. As such, cholorquine remains the drug of choice for treatment of non-severe malaria in children.

♦ 1991 Malaria Workplans for the six CCCD focus states have been completed and approved by FMOH, State and LGA officials. In the case of malaria intervention activities, plans have been finalized for planning the expansion of LGA initiatives in two states through assistance of the National Malaria and Vector Control Division of the FMOH. Budgets for activities are included in the work plans.

♦ A three-month plan was developed (in late 1991) to collect baseline information for two LGAs (Suleja, Barkin-Ladi) which have been designated as areas for intensification of malaria control activities. The workplan addresses all aspects of malaria control including: 1) equipment and supplies, 2) diagnostic capabilities, 3) drug quality control, 4) training needs, 5) health education, 6) surveillance, and 7) operational research. Information on each of these program elements will form the basis for development of a two-year malaria plan of action.

♦ Reviewed proposals submitted to the National Malaria and Vector Control Division for quality assurance in pharmaceuticals. Awarded contract to Jos University Teaching Hospital Department of Medicine. This activity involves a logistics review in Plateau and Niger States to examine supply/distribution systems for antimalarials and antibiotics. Assays of drug quality also are planned.

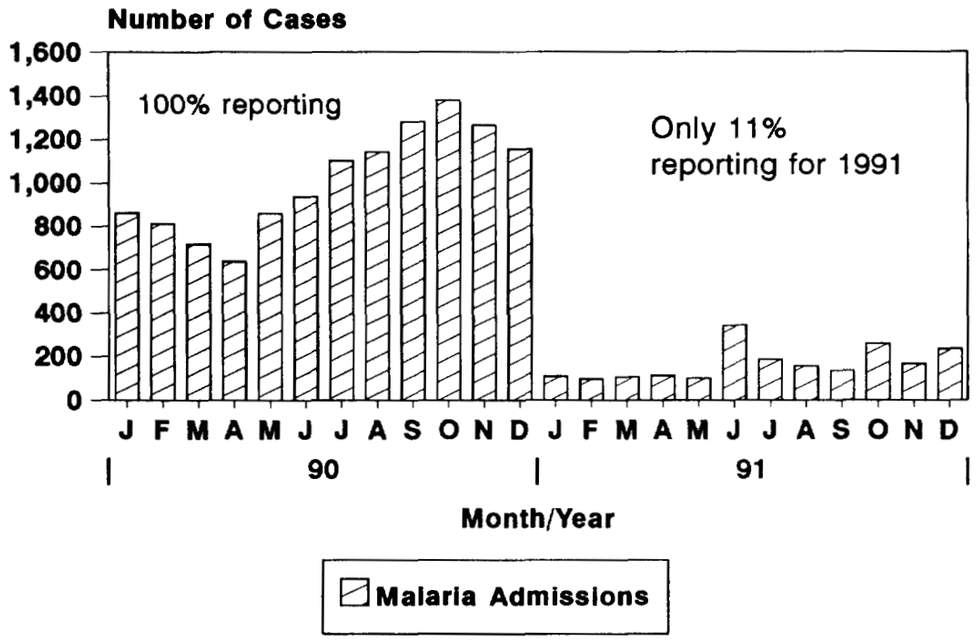
♦ Supported CDC consultant to analyze and interpret malaria-specific data from facility assessment surveys, community surveys, and logistics reviews as the basis for development of a two-year malaria plan of action.

Annual Report 1991-92
Nigeria

♦ The National Malaria Technical Committee Meeting met twice during 1991 to review malaria strategies and surveillance data collected by member institutions. The Committee was active in the review of plans for LGA-level malaria intensification activities and discussions regarding the future role of the National Malaria Sentinel Surveillance Network.

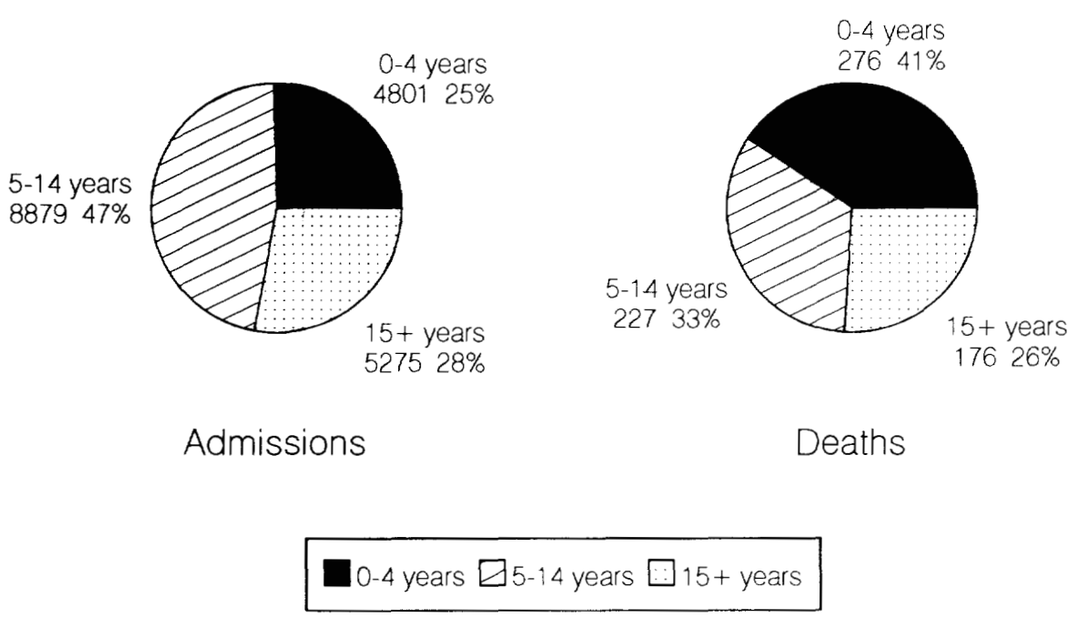
♦ The National Malaria and Vector Control Division, in collaboration with the CDC Malaria Branch, presented a protocol to conduct a major operations research study on the utilization and effectiveness of pesticide impregnated bednets and curtains and house spraying when compared with a control group. The 2 year study was approved by the Federal Ministry of Health. The study site is in Nsukka LGA, Enugu State.

MALARIA CASES BY MONTH, INPATIENT ADMISSIONS, HOSPITAL SENTINEL SITES, JAN. 1990 - DEC. 1991 NIGERIA



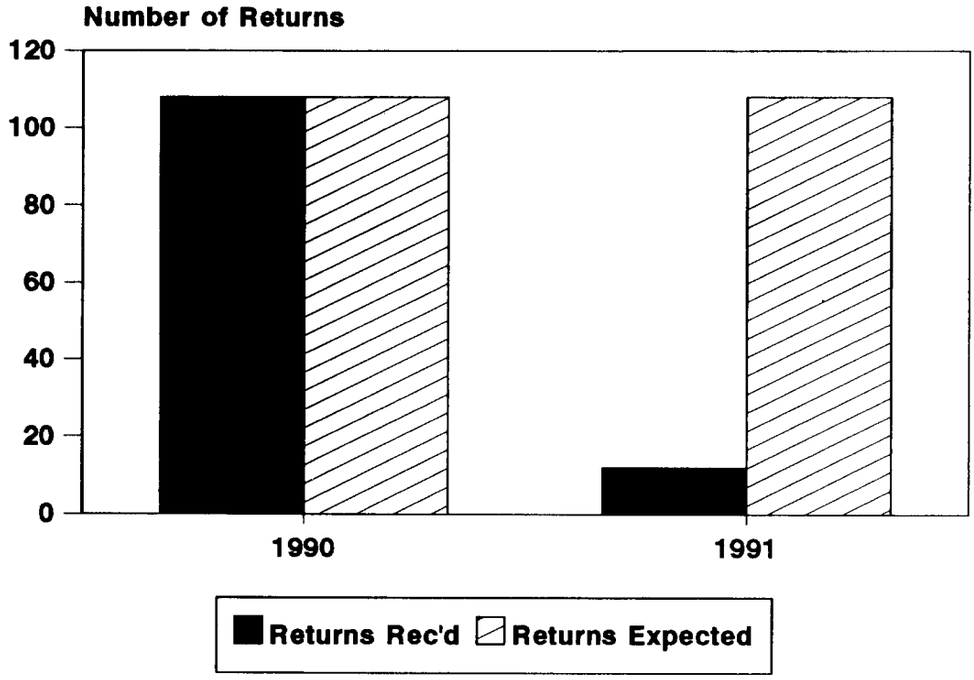
SOURCE: National Malaria and Vector Control Division, FMOH Nine Sentinel Sites.

AGE DISTRIBUTION OF MALARIA INPATIENT ADMISSIONS AND DEATHS, HOSPITAL SENTINEL SITES, JAN. 1990 - DEC. 1991, NIGERIA



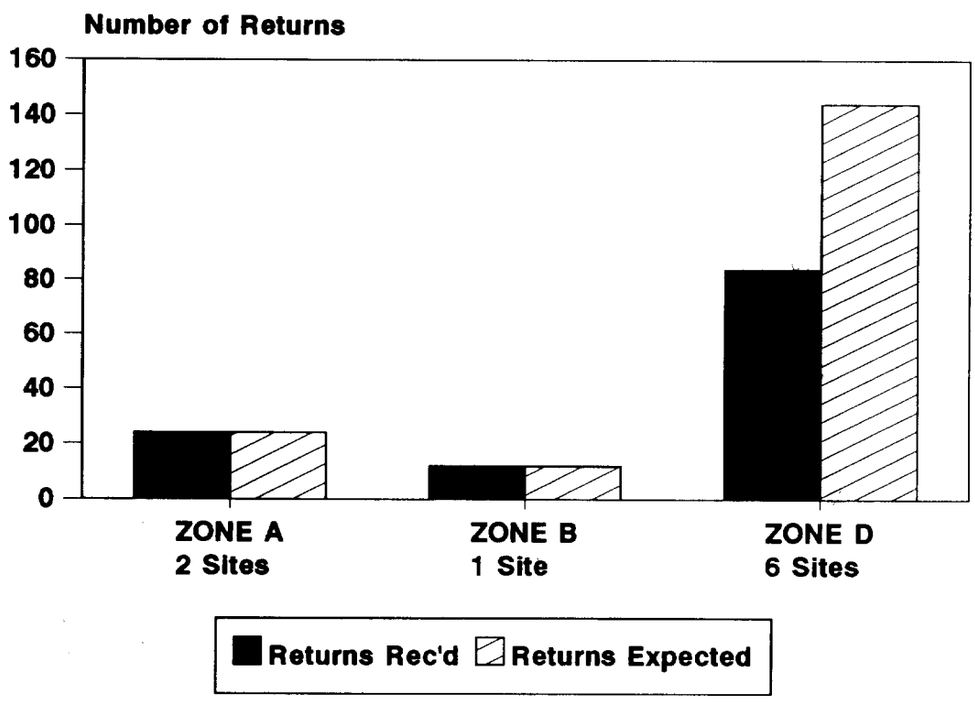
SOURCE: National Malaria and Vector Control Division, FMOH Nine Sentinel Sites.

MALARIA SENTINEL SURVEILLANCE RETURNS RECEIVED BY YEAR, JAN. 1990 - DEC. 1991, NIGERIA



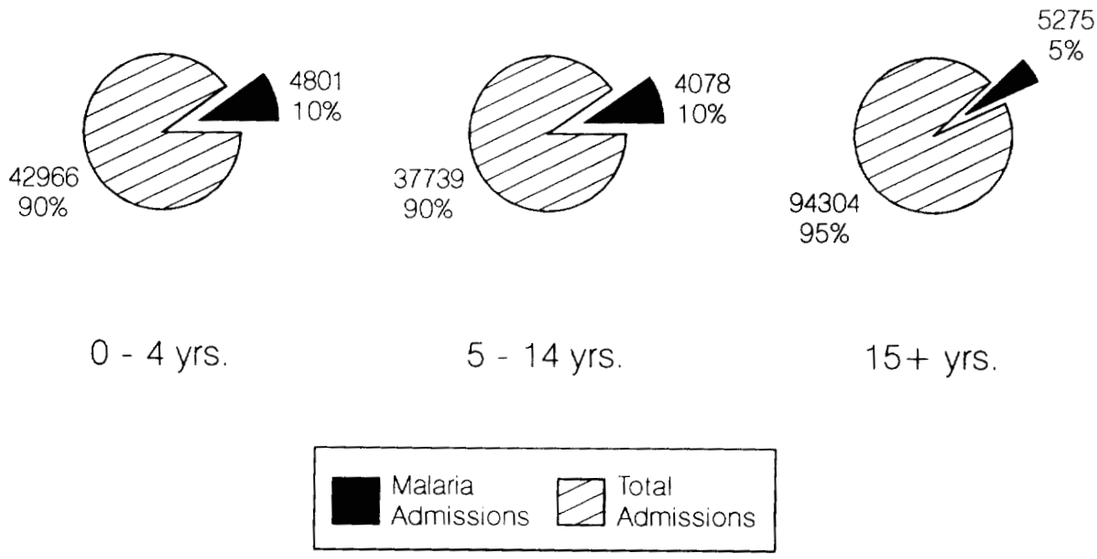
SOURCE: National Malaria and Vector Control Division, FMOH
Nine Sentinel Sites.

MALARIA SENTINEL SURVEILLANCE MONTHLY RETURNS BY ZONE RECEIVED BY FMOH, JAN. 1990 - DEC. 1991, NIGERIA



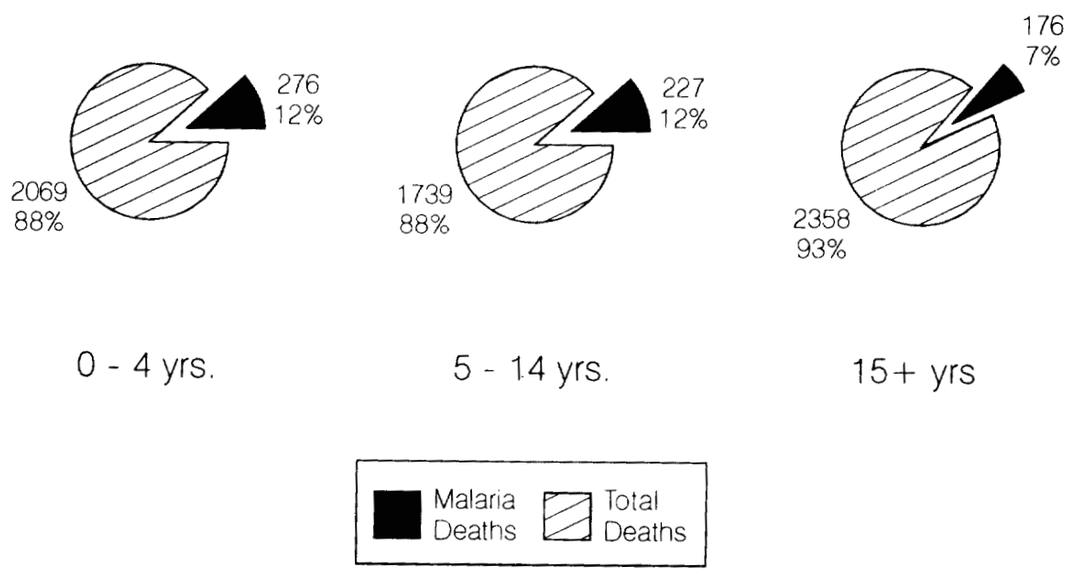
SOURCE: National Malaria and Vector Control Division, FMOH
Nine Sentinel Sites.

MALARIA ADMISSIONS AS PERCENT OF TOTAL ADMISSIONS, BY AGE, HOSPITAL SENTINEL SITES, JAN. 1990 - DEC. 1991, NIGERIA



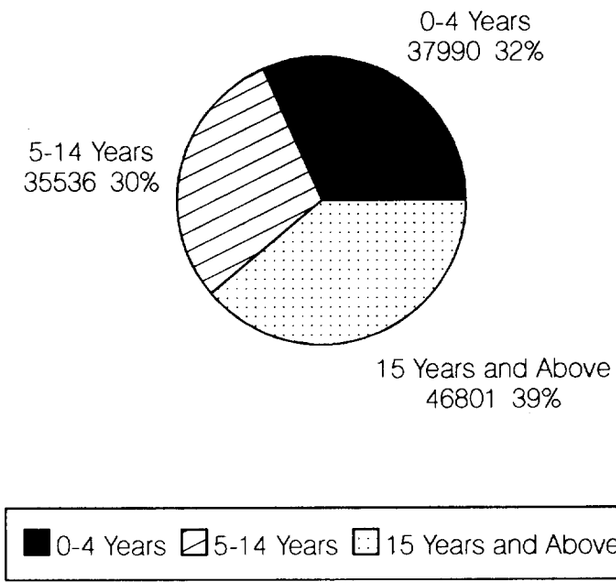
SOURCE: National Malaria and Vector Control Division, FMOH
Nine Sentinel Sites; inpatient admissions.

MALARIA DEATHS AS PERCENT OF TOTAL DEATHS, BY AGE, HOSPITAL SENTINEL SITES, JAN. 1990 - DEC. 1991, NIGERIA



SOURCE: National Malaria and Vector Control Division, FMOH
Nine Sentinel Sites; inpatient admissions.

AGE DISTRIBUTION OF 120,327 MALARIA OUTPATIENT VISITS, HOSPITAL SENTINEL SITES JAN. 1990 - DEC. 1991, NIGERIA



SOURCE: National Malaria and Vector Control Division, FMOH
Nine Sentinel Sites

4. TRAINING

♦ A State Continuing Education Program, modeled after the Niger State program, was initiated in Jos (Plateau State) and Oji River (Enugu State). CCCD retained the services of ANAD, Inc., a local Nigerian training consultant firm, to assist with the development of the Continuing Education Units. Site inspections were conducted at the Schools of Health Technology in both these states. Discussions were held with state officials involved with health and training to review the concepts of continuing education and agree upon an implementation plan for the future.

♦ State Continuing Education Unit (CEU) Policies have been developed in Anambra and Plateau States. Staff for both Units has been selected and received intensive training of trainers, technical and supervisory skills.

♦ Staff from the Continuing Education Units (CEU) in Plateau and Enugu States attended a week long orientation at Minna School of Health Technology, Niger State. CEU staff from all three states attended a two week Training of Trainers Workshop designed to develop training skills and familiarize staff with FMOH training materials on immunization, diarrhea and malaria.

♦ Equipment and supplies were ordered for CEUs at the Jos and the Oji River School of Health Technology. Support was provided to repair vehicles for use by CEU staff in carrying out training/supervisory activities. CEU library reference books were ordered through CHAN Bookstore in Jos and delivered to the new CEUs.

♦ Dr. O.J. Ekanem, Chief of the National Malaria and Vector Control Division, FMOH, received training in London on world malaria control activities.

♦ Conducted facility assessment surveys in the following model LGA's: Barkin-Ladi and Pankshin (Plateau State), Nsukka (Enugu State) and Suleja and Lapai (Niger State). The surveys collected baseline data from observations of health worker performance, exit interviews with mothers, equipment/supply inventories, and health worker/supervisor interviews. The data collected will help to guide the continuing education programs in these focus States and LGAs.

♦ Provided equipment, furniture, and PHC library reference materials for State Continuing Education Units in Plateau and Enugu.

♦ Conducted first round of in-service training on EPI/CDD Supervisory and Management Skills for LGA Managers in Plateau and Enugu. Results from the State Facility Assessment Surveys was presented at this training.

♦ Held an annual Continuing Education meeting for LGA Managers in Niger State.

♦ Conducted Supervisory Skills Building Workshop for CEU staff from Niger, Plateau, and Enugu States. Funded local management contractor to conduct week long supervisory visits to each state for hands-on supervisory assistance following the workshop.

♦ Drafted in-service EPI/CDD/Malaria training materials for LGA level facility health workers.

TRAINING CONDUCTED BY CATEGORY
JANUARY - DECEMBER 1991

UNIT	DATE	COURSE	PERSONNEL	NO. OF PARTICIPANTS	DURATION OF COURSE IN DAYS
CEU	15-Jan-91	TECHNICAL AND SUPERVISORY SKILLS	TRAINERS	25	10
CEU	05-Feb-92	GUIDELINES FOR CONTROL AND MGMT MALARIA	TRAINERS	20	2
CEU	30-Mar-92	CEU WORKSHOP	TRAINERS	25	16
CEU	15-Apr-91	ORIENTATION FOR CEU STAFF	CEU STAFF	10	5
CEU	20-Jul-91	TRAINING FOR FACILITY BASED ASSESSMENT	INTERVIEWERS	78	10
CEU	01-Aug-91	TRAINING OF TRAINERS FOR CEU	FACILITATORS	19	10
CEU	15-Nov-91	TRAINING OF TRAINERS WORKSHOP	TRAINERS	19	10
CEU	15-Dec-91	CEU WORKSHOP FOR LGA TRAINERS	TRAINERS	22	3
CEU	06-Dec-91	SUPERVISORY SKILLS BUILDING	TRAINERS AND SUPERVISORS	13	5
CEU	10-Dec-91	ANNUAL CEU WORKSHOPS	LGA TRAINERS	20	3
CEU	05-Dec-91	TRAINING OF TRAINERS	LGA TRAINERS	25	2
CDD	14-Jan-91	CLINICAL MGMT OF ACUTE DIARHOEA	MEDICAL DOCTORS & SENIOR NURSES	24	5
CDD	18-Mar-91	CLINICAL MGMT OF ACUTE DIARHOEA	MEDICAL DOCTORS & SENIOR NURSES	13	6
CDD	08-Jul-91	NATIONAL TOT ON CONTROL OF DIARHOEA	CDD CORDINATORS	23	5
CDD	13-Oct-91	ZONAL TOT	SELECTED LGA DOCTORS	15	7
CDD	03-Nov-91	ZONAL TOT	SELECTED LGA DOCTORS	22	6
HIS	15-Mar-91	INTRODUCTION TO COMPUTER APPLICATIONS	NIGER STATE MINISTRY STAFF	4	5
HIS	07-Nov-91	INTRODUCTION TO COMPUTER APPLICATIONS	FEDERAL AND STATE MINISTRY STAFF	21	13
HIS	09-Dec-91	COMPUTER AND SOFTWARE APPLICATIONS	PEACE CORPS VOLUNTEERS	3	5
			TOTAL	401	128

SOURCES : FMOH, EPI/CDD Unit
CCCD, HIS SECTION

5. HEALTH INFORMATION SYSTEMS (HIS)

♦ A primary health care monitoring and evaluation (M&E) system is coordinated by the Division of Monitoring and Evaluation, FMOH. NICARE (a computer software package) is being developed jointly with the Family Health Services Project and CCCD through the technical collaboration of Management Sciences for Health. This system allows for the collection of routine PHC program related data from the nation's 589 LGAs. Eight forms completed by LGA health facilities are sent to their respective SMOH which forwards them to the FMOH M&E Division each month. The forms collect data on the following PHC areas:

- village health worker performance
- outpatient and tracer diseases
- maternal and child health
- family planning
- EPI antigens administered
- inpatient admissions
- environmental health
- growth monitoring

♦ The M&E Division enters the M&E data into this system and aggregates it for use at the state and federal levels. Trend analysis on diseases and health facility activities is prepared monthly, quarterly and annually. The PHC M&E system will be fully operational by mid-1992. The CCCD goal is 80 percent reporting from the LGAs in the nine CCCD focus states.

♦ A notifiable diseases reporting computer software system, called EPID, is coordinated by the Epidemiology Division, FMOH. The program is designed and written by CCCD/Nigeria with the assistance of local consultants. EPID allows for data entry and analysis of routine monthly reports on 40 diseases of specific interest to the FMOH. The 40 diseases are: AIDS, anthrax (human), brucellosis (human), cerebrospinal meningitis (CSM), chickenpox, cholera, diarrhea (simple without blood), diarrhea with blood (dysentery), diphtheria, dracunculiasis (guinea worm), filariasis, food poisoning, gonorrhea, hepatitis, lassa fever, leprosy, louse-borne relapsing fever, louse-borne typhus fever, malaria, measles, onchocerciasis (river blindness), ophthalmia neonatorum, pertussis (whooping cough), plague, pneumonia, poliomyelitis, rabies (human), schistosomiasis, smallpox, syphilis, other sexually transmitted diseases, tetanus (neonatal), tetanus (other), trachoma, trypanosomiasis (sleeping sickness), tuberculosis, typhoid and paratyphoid fevers, viral influenza, yaws, and yellow fever.

♦ Notifiable disease data are collected from 589 LGAs each month. The Epidemiology Division aggregates these data on a monthly, quarterly and annual basis for use by the states and FMOH. The system became operational at the Federal level in September 1991. The CCCD goal is 80 percent reporting from the LGAs in the nine CCCD focus states. The program has been installed in four CCCD focus states for use at the State level and will be expanded to all nine focus states by December 1992.

♦ A sentinel surveillance system, comprised of 150 sentinel sites, was developed and is coordinated by the EPI/CDD/ARI Division, FMOH. The purpose of the sentinel system is to collect, on a routine basis, reliable data on EPI and CDD from selected health facilities. The system will be fully operational by late 1992. The CCCD goal is 80 percent reporting from the 150 sentinel sites by the first quarter 1993.

♦ A medical records reporting systems constitutes the 4th HIS system. CCCD has enlisted the following eight hospitals as part of the hospital surveillance project (see Table 2).

TABLE 2. NAME, LOCATION AND STATUS OF MEDICAL RECORDS SYSTEMS

NAME	LOCATION	COMPUTER STATUS
Ogun State Teaching Hospital	Sagamu	Installed
Massey Street Children's Hospital	Lagos Island	Installed
Jos University Teaching Hospital	Jos	Installed
University College Hospital	Ibadan	Installed
Amadu Bello University	Zaria	Installed
University of Nigeria Teaching Hospital	Enugu	Installed
Lagos University Teaching Hospital	Lagos	Pending
University of Sokoto Teaching Hospital	Sokoto	Pending

♦ CCCD provides computer equipment and accessories for the installation of a medical records system at each teaching hospital. The system tracks morbidity and mortality by international classification of disease (ICD) codes. Data items collected include age, sex, length of hospitalization, diagnosis and outcome. High quality data from six institutions is being entered, with installation scheduled at two institutions in the first half of 1992. CCCD anticipates 100,000 admissions entered into the database by Dec. 1992. Most of the nine medical records sites are also referral sites for HIV/AIDS cases. Hence, reliable data on HIV infection at these institutions will be available through the medical records system.

♦ Published three issues of the "Nigeria Bulletin of Epidemiology." 10,000 copies of each issue were printed for distribution nationwide to all health facilities, Local Governments, State Ministries of Health and the Federal Ministry of Health. This new quarterly document was greeted with enthusiasm by the Minister of Health and key department and division chiefs within the FMOH.

♦ The "Nigeria Bulletin of Epidemiology" disseminates information on disease trends in Nigeria, reports on public health issues and policies, and attempts to increase awareness among public health decision makers of the importance of disease surveillance. An editorial board, composed of FMOH, CCCD, and public health experts, oversees the content of each issue. The production of the "Nigeria Bulletin of Epidemiology" is funded by the CCCD Project. The Division of Epidemiology, FMOH, is responsible for coordinating production and distribution.

♦ The quarterly issues of the "Nigeria Bulletin of Epidemiology" focussed on the following themes:

Issue 1:	Disease Surveillance
Issue 2:	Cholera and yellow fever.
Issue 3:	Malaria

♦ During 1991, CCCD staff provided 2816 person-hours of technical assistance in computer training and support to CCCD focus states, Zonal PHC staff, Universities, and FMOH staff. Eight computers were installed at a total of eight locations.

♦ The Monitoring and Evaluation (M&E) Division, FMOH, received technical assistance from CCCD to improve its capacity to enter, edit and analyze data sets. Areas of concentration by M&E included planning and implementing a survey of the 52 1986 Model LGAs, data entry and analysis of a Survey of Non-Communicable Diseases, and data entry of the National Guinea Worm Case Search Program.

♦ Issued the "National Guidelines to Control Cholera" for use at state, LGA and facility levels. 50,000 copies were printed and distributed to all 31 SMOHs and 589 LGAs.

♦ Conducted two-week computer training for personnel from the Planning, Research and Statistics (PRS) Divisions of CCCD Focus States (Plateau, Enugu, Sokoto) as well as Abuja FCT and Kaduna SMOH (CCCD/Kaduna, Oct 14-25). Newly arrived Peace Corps Volunteers assigned to the SMOH HIS Sections also participated. Training included a review of Federal HIS initiatives, LGA Local Area Monitoring, and development of State 1992-93 HIS workplans.

♦ Conducted one-week computer training for senior level managers from State Ministries of Health and Zonal Primary Health Care Offices. (CCCD/Kaduna, Nov 25-29).

♦ Installed "Medline" at FMOH Central Library. Medline is computer software that allows easy access to bibliographic citations and abstracts from biomedical literature from 1975 to present. Computer and CD-ROM (read only memory) equipment furnished to Central Library.

6. HEALTH EDUCATION/PROMOTION ACTIVITIES

♦ Participated in a multi-donor planning meeting to discuss approaches to health education activities in the six CCCD focus states and Model LGAs. Representatives from the FMOH, Healthcom, ARHEC, Johns Hopkins University, CCCD/Nigeria and CDC were present. Roles for various organizations providing services was suggested and coordinating mechanisms between organizations were identified.

♦ Health education activities were developed by each of the six CCCD Focus States and eight model LGAs and included in the 1991 work plans.

♦ The African Regional Health Education Centre (ARHEC) continued support to LGAs that participated in the 1991 "Health Education for Malaria Control" course.

♦ Continued work with FMOH to develop a rational health education strategy for use at State and LGA levels. Focus will be on patient education and provider communication.

♦ Developed Scope of Work for Health Education Program Assessment. Purpose of review is to describe health education needs and existing resources (personnel, logistics, etc.) at various levels including federal, state, LGA, facility and community. Recommendations made for current CCCD Project and follow on Project in FY93.

♦ Conducted a 40 cluster Community Survey in Suleja, Niger State. The survey was conducted by SMOH/LGA health personnel. Information collected on immunization coverage, and knowledge and treatment practices about diarrhea and fever. A total of 1160 mothers of children under 5 years old interviewed. Information collected will be useful for planning strategies to improve community health education.

♦ Met with staff from the ARHEC/University of Ibadan to assess impact of 1991 "Health Education for Malaria Control" course and review plans for possible 1992 course.

7. OPERATIONAL RESEARCH

♦ The National Operations Research Committee met quarterly in 1991. Ten protocols were received for consideration. Four were accepted without revision. Five were accepted after resubmission and one was rejected. During 1991 the following research proposals were funded:

1. Protocol 89/019 - Title: Evaluation of the Efficacy and Acceptability of Akamu-Cowpea Mixture in the Management of Persistent Diarrhoea in Children Presenting at the University of Nigeria Teaching Hospital, Enugu.

2. Protocol 90/010 - Title: Malarial Chemoprophylaxis in Children with Sickle Cell Anaemia.

3. Protocol 90/012 - Title: Acute Respiratory Tract Infections in the Sudan Savannah - An Outpatient and Inpatient Study in Kano (Nigeria) Metropolis.

4. Protocol 91/001 - Title: Assessment of the cold chain system and storage condition of live attenuated measles and polio vaccines in authorized vaccination centers.

5. Protocol 91/003 - Title: Sexuality, Contraception and Reproductive Health among Secondary School Children in Ilorin LGA, Kwara State.

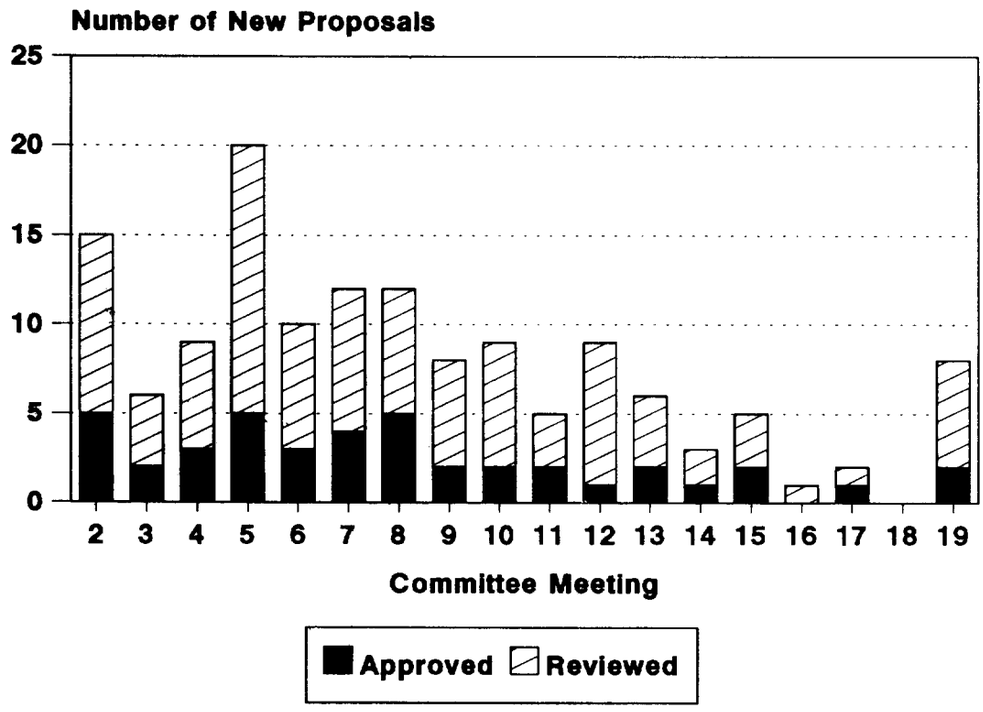
6. Protocol 91/004 - Title: Study of knowledge, attitude and practice about Neonatal tetanus toxoid immunization among nomadic Fulani women around Ilorin, Kwara State.

7. Protocol 91/005 - Title: Determination of Appropriate Community Based Nutrition Intervention for a Fishing and Farming Community in Nigeria.

8. Protocol 91/006 - Title: Effectiveness of Health Education campaign in malaria control in the Sapade community, Remo LGA of Ogun State.

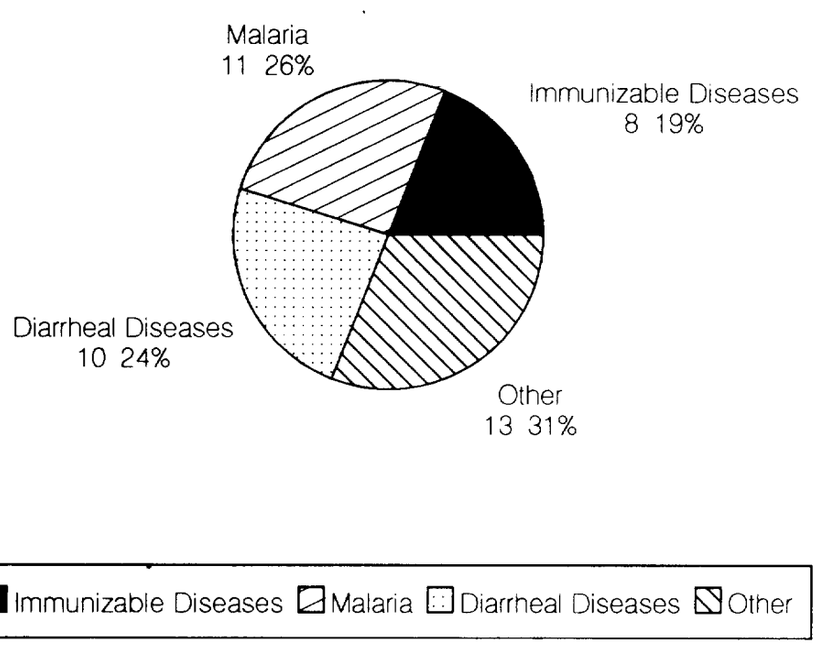
9. Protocol 91/007 - Title: Vitamin A Status of Pre-School Children with Acute Lower Respiratory Tract Infection.

Approved Operational Research Proposals, by Committee Meeting, Jan. 1987 - May 1992, Nigeria



Source: Operational Research Committee Minutes, FMOH

Approved Operational Research Proposals, by Intervention, Jan. 1987 - May 1992, Nigeria



Source: Operational Research Committee Meeting Minutes, FMOH
Other includes acute respiratory infections, training, evaluation.

8. OTHER

♦ Assisted in hosting a visit to Nigeria by Dr. Louis W. Sullivan, Secretary of Health and Human Services, Dr. Ronald W. Roskens, Administrator of USAID, and an entourage of officials from the Department of Health and Human Services and USAID.

♦ Prepared for and hosted an external program evaluation team from Washington D.C. Results included ten priority recommendations to improve the CCCD in Nigeria.

♦ Assisted representatives of the American Peace Corps in meeting FMOH officials, visiting field sites, and preparing a preliminary proposal for reintroducing volunteers into Nigeria.

♦ Preliminary data from the 1990 Demographic Health Survey indicate a total fertility for Nigeria (nationwide) of 6.0 children per woman. This is a modest decline from a total fertility rate of 6.3 calculated from data collected in the 1981 Nigerian Fertility Survey.

♦ The Federal Military Government of Nigeria (FMGN) created nine new states in October 1991 for a total of 30 states plus the Federal Capital Territory (FCT). This expansion resulted in three additional states being added to the CCCD Project portfolio. Sokoto state is now Sokoto and Kebbi States. Anambra State is now Enugu and Anambra States. Oyo State is now Oyo and Osun States. The CCCD Project now supports nine states and 12 local government areas (LGAs).

TABLE 3. NEW CCCD FOCUS STATES AND LGAS

OLD CCCD FOCUS STATE	NEW CCCD FOCUS STATE	NEW CCCD FOCUS LGAS
Anambra	Enugu Anambra	Nsukka Oyi
Lagos	Lagos	Ojo
Niger	Niger	Suleja Lapai Garara
Oyo	Oyo Osun	Ife Central Egbeda

Plateau	Plateau	Barkin-Ladi Pankshin
Sokoto	Kebbi Sokoto	(not yet named) Kaura Namoda

♦ Collected baseline data on ARI incidence and mother's behavior for a trial intervention in Ife-Central, Oyo State.

♦ Developed protocols and began preparations for Community Surveys in at least 2 CCCD Model LGAs. These surveys are will provide baseline information on primary health care knowledge, attitudes and practices (KAP) related to EPI, CDD, Malaria, etc.

♦ In June, Mr. Warren Jones retired from service at CDC while serving as the CCCD Project Coordinator. Mr. James Herrington was appointed to succeed Mr. Jones as CCCD Project Coordinator. Mr. Herrington arrived in Lagos in late-August 1991.

♦ Assistance was provided to support the visit of Mrs. Dan Quayle, wife of the Vice President of the United States, to the Basic Health Center at Dikko Village in Suleja LGA.

♦ The U.S. Peace Corps has re-entered Nigeria. A national office is established in Kaduna. 11 new PCV's (4 CCCD, 7 Guinea Worm) were sworn in December 1991. CCCD/Kaduna is provided technical support for pre-service training to the volunteers. Of the four CCCD affiliated PCV's, three are assigned to Niger, Plateau and Enugu States to assist with Health Information Systems. One PCV is based at Jos School of Health Technology to assist with the Continuing Education Program.

♦ The new Project Coordinator, James Herrington, and AID Program Officer, Rudolph Thomas, visited the CCCD Kaduna Office in September shortly after the Project Coordinator arrived in-country. During their visit, several outstanding administrative and program support issues were resolved. Regular monthly CCCD Coordination Meetings are now planned and will be held alternately in Lagos and Kaduna.

♦ Dr. Spiegel spearheaded an outbreak investigation of apparent yellow fever epidemic in Bendel (new Delta State). A team of FMOH and CCCD investigators were assisted by two CDC/Ft. Collins staff to identify foci of epidemic, vectors, and reported cases and deaths. Yellow fever has been recurring in Nigeria on annually for the last 5 years. It normally has a 10 year epidemic cycle.

♦ In accordance with Federal Ministry of Health guidelines for Primary Health Care implementation, the following activities were supported in Model Local Government Areas in Niger, Plateau, Enugu and Sokoto States: 1) PHC house numbering and placement of home-based records, 2) training of Village Health Workers and Traditional Birth Attendants, 3) establishment of village and district health committees, and 4) PHC orientation for LGA officials and members of district and village health committees.

♦ Began development of 1992-93 Workplans for CCCD Focus States and Model LGAs.

♦ Informed the States and LGAs of necessary financial procedures governing use of CCCD bilateral funds as specified by USAID. Defined the routine system for monitoring CCCD funds provided to States/LGAs.

♦ Completed recruitment of additional CCCD/Kaduna administrative personnel. Recruited an additional Financial Assistant for CCCD/Lagos operations. Advertised for additional field-based epidemiologists for Lagos, Niger, and Plateau States to be hired in Jan./Feb. 1992.

♦ Requested a financial audit of the CCCD suballocation account for the 12 month period ending September 30, 1991. Price Waterhouse was contracted to conduct the audit.

♦ Assisted with development of a scope of work for the Project Identification Document (PID) team due to began activities in early 1992.

9. SPECIAL SECTION: FACILITY-BASED ASSESSMENT SURVEYS AND COMMUNITY SURVEYS

♦ During 1991, a Monitoring & Evaluation Plan was developed to assist Primary Health Care (PHC) program managers and health officials from CCCD Focus LGAs obtain baseline information and monitor PHC program activities within the LGA. Data on disease prevalence, health worker performance, caretaker knowledge and use of health services, and other management-related issues are collected using the following methods:

(1) Facility-Based Assessment Surveys
(2) Community KAP Surveys
(3) Logistics and Quality-Assurance Reviews
(4) 100 Household Surveys (i.e. surveys of 100 households nearest a health facility)
(5) Routine HIS reporting systems

♦ Information collected will be used by LGA health officials to: 1) establish priority areas for action, 2) develop short- and long-term objectives/targets for improving LGA health services, and 3) monitor progress towards meeting these objectives.

♦ **FACILITY-BASED ASSESSMENT (FBA) SURVEYS** have been conducted at government health facilities in Barkin-Ladi and Pankshin (Plateau State) and Nsukka (Enugu State). Progress towards PHC implementation varies among the LGAs, from a well developed PHC/Essential Drugs program in Barkin-Ladi (a rural LGA), to programs at the beginning stages of PHC implementation in Pankshin and Nsukka (rural and semi-urban, respectively).

The primary objectives of the FBA Surveys are to obtain baseline information on health worker performance and caretaker's knowledge related to immunization, diarrhea and malaria/fever, and to determine the availability of equipment and supplies. Data is collected using standardized observation checklists, exit interviews with mothers, supply/equipment inventories, and health worker/supervisor interviews.

FBA Survey results from three Focus LGAs indicate significant improvements in technical skills related to immunization (Fig. 1). The majority of health workers now use sterile needles/syringes and administer the correct dose of vaccine at the correct site. At the same time, however, assuring the routine availability of vaccines at health facilities and maintaining the cold chain remain problem areas.

Health worker skills related to the assessment and case management of children with diarrhea/fever require further improvement. Despite the availability of weighing scales and thermometers in most facilities surveyed, the majority of health workers neither weigh children with diarrhea nor take the temperature of those with fever (Figs. 2-3). While most health workers prescribe chloroquine for fever, overuse of chloroquine injection remains a problem.

Patient education practices by health workers also require improvement. Less than 10% of mothers exiting health facilities understand the three-day chloroquine treatment regimen (Fig. 4). Only 50% of health workers explain illnesses prevented by immunization, how to treat side effects, and when to return for follow-up immunizations (Fig. 4). While the majority of health workers explain the importance of giving fluids to children with diarrhea, few emphasize the importance of continued breastfeeding and food intake (Fig. 5). Substantial variation exists between LGAs in the home use of Sugar-Salt-Solution (SSS), and in mothers' understanding of how to prepare SSS prior to leaving the health facility (Fig. 6).

Lack of availability of basic supplies and equipment such as needles/syringes, ORS packets, thermometers, essential drugs, and other laboratory supplies/reagents, remains a consistent problem (Figs. 7-8).

♦ **LOGISTICS REVIEWS** and **QUALITY ASSURANCE STUDIES** planned for Barkin-Ladi and Suleja (Niger State), will address the areas of commodity management (i.e. supply/distribution/record keeping systems for antimalarials and other essential PHC drugs) and drug quality. Continuing Education Programs for LGA managers and facility-based health workers, established with CCCD assistance in Plateau and Enugu States, provide in-service training to upgrade case management and patient education skills among health workers, and supervisory skills among LGA managers.

While Facility-Based Assessment Surveys examine health practices at the facility level, **COMMUNITY SURVEYS** provide information on mothers' knowledge and treatment practices at home. Immunization coverage data, as well as population-based estimates of diarrhea/fever prevalence and treatment practices, generalizable to the entire LGA, are obtainable. During 1991, a 40-cluster Community

Survey was conducted in Suleja, Niger State, a semi-urban LGA (pop. 171,000) in the early stages of PHC implementation. Information was collected from 1160 mothers of 1638 children under five years of age about topics related to immunization, diarrhea, and fever/malaria.

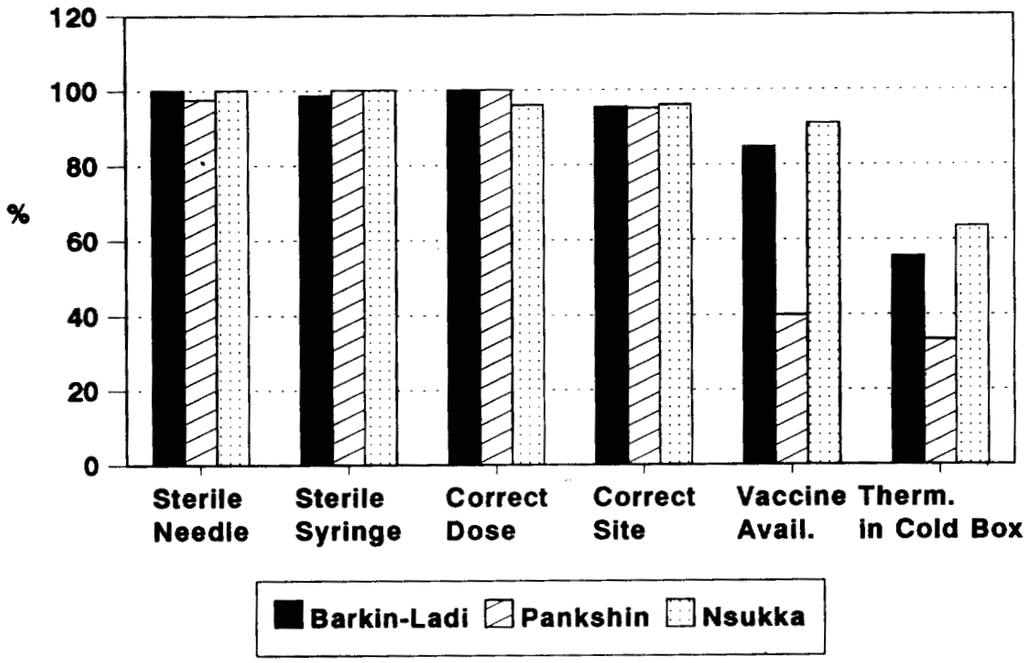
Since 1985, acceleration of EPI activities has resulted in improved immunization coverage among 12-23 month olds in Suleja. Despite this improvement, corrected coverage rates for BCG, DPT1, and measles remain low (66%, 50%, and 24%, respectively) and drop out rates for follow-up DPT/OPV vaccines remain high (Fig. 9). Availability of immunization cards among children has improved but remains low at 56% overall for <5 year olds.

During the two week period before the survey, 342 children (20.9%) had at least one episode of diarrhea, with the majority of episodes occurring among children aged 6-23 months (Fig. 10). When asked what they did "first" and "next" (second) to treat the diarrhea, the majority of mothers reported taking the child to a health facility, administering SSS, or giving drugs (Fig. 11). While approximately 40% of mothers reported administering SSS to treat diarrhea, only half of these mothers knew how to prepare SSS correctly. Lack of knowledge among mothers about the causes and correct treatment of diarrhea remains a problem (Figs. 11-12).

424 children (25.9%) had an episode of fever during the two weeks prior to the survey, with the majority of episodes occurring among children one year of age or younger (Fig. 13). While the most commonly reported "first" line treatment for fever was taking the child to a health facility or giving paracetamol, 65% of mothers also reported giving an antimalarial (chloroquine) (Fig. 14). Among mothers who treat with chloroquine, more than half administer the drug over a three-day period. Of these mothers, about one-third administer the correct dose for age each day, as specified in the FMOH National Malaria Guidelines (Fig. 15). Further research is planned to examine the extent of chloroquine under/over-dosing. Most antimalarial medicine used by mothers was obtained from a clinic/hospital (Fig. 16).

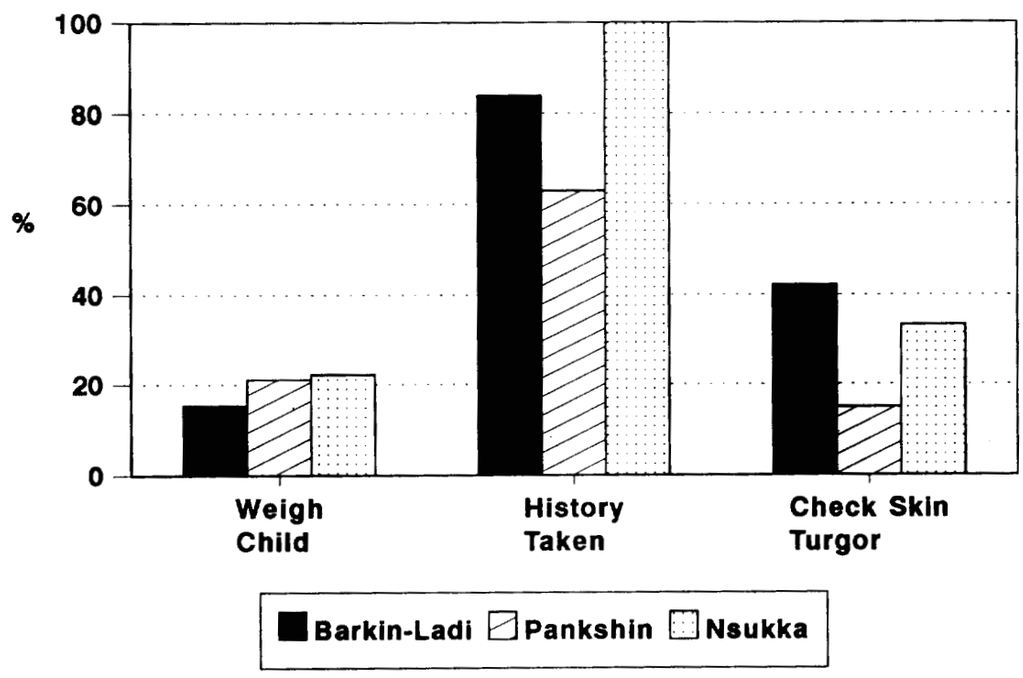
As with diarrhea, nearly 50% of mothers receive information on fever/malaria from a health facility (Fig. 17). Improved patient education practices among health workers (through Continuing Education and quality supervision) should contribute to improved mothers' understanding. Knowledge of prevention practices among mothers varied from awareness about insect repellents and bednets, to the importance of protective clothing and staying indoors (Fig. 17).

FIG. 1 IMMUNIZATION: HEALTH WORKER PRACTICES
Barkin-Ladi, Pankshin, and Nsukka LGAs, 1991, Nigeria



BL 13 Fac, 194 Obs
PS 8 Fac, 57 Obs
NK 11 Fac, 49 Obs

FIG. 2 DIARRHEA: HEALTH WORKER PRACTICES
Barkin-Ladi, Pankshin, and Nsukka LGAs, 1991, Nigeria



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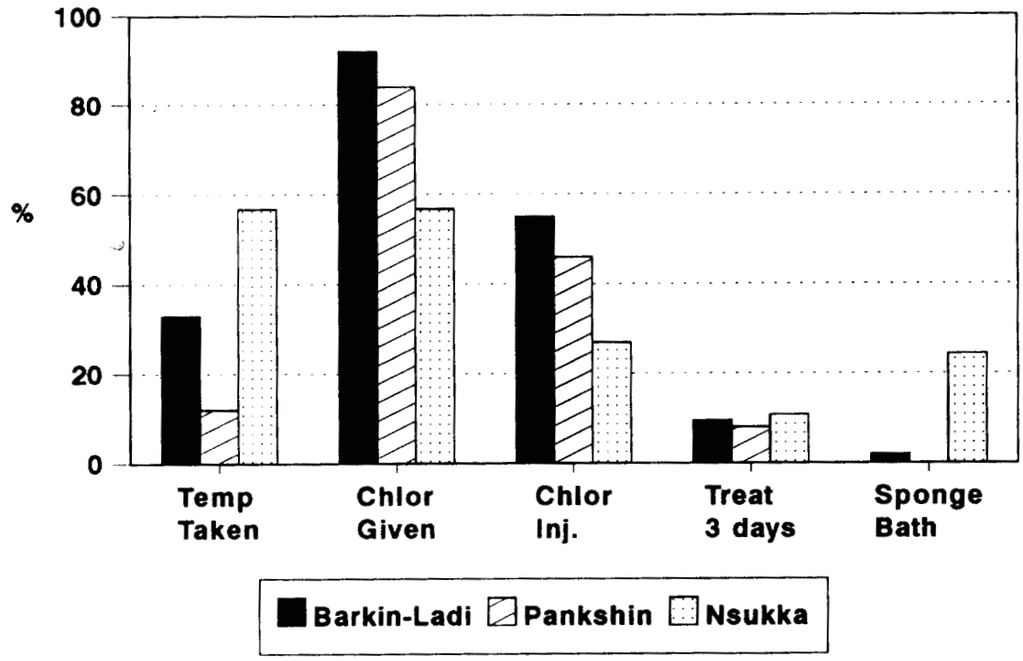
PS 20 Obs
NSK 9 Obs

FIG. 3 FEVER: HEALTH WORKER PRACTICES
Barkin-Ladi, Pankshin, and Nsukka, 1991



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PS 25 Obs
NK 37 Obs

Fig. 4 IMMUNIZATION: EDUCATION PRACTICES BY HEALTH WORKERS
Barkin-Ladi, Pankshin, and Nsukka, 1991

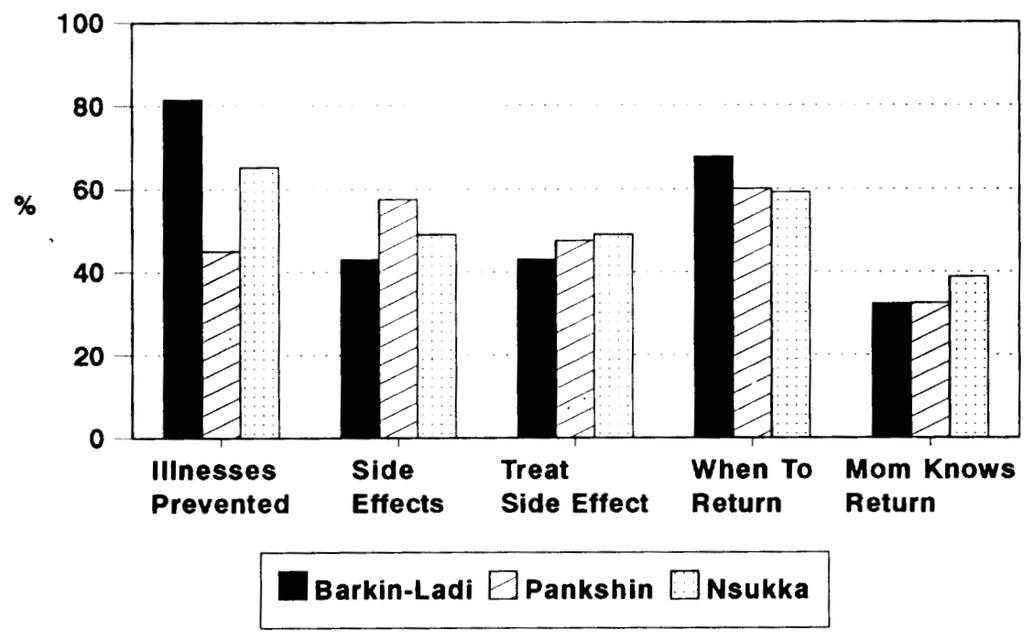

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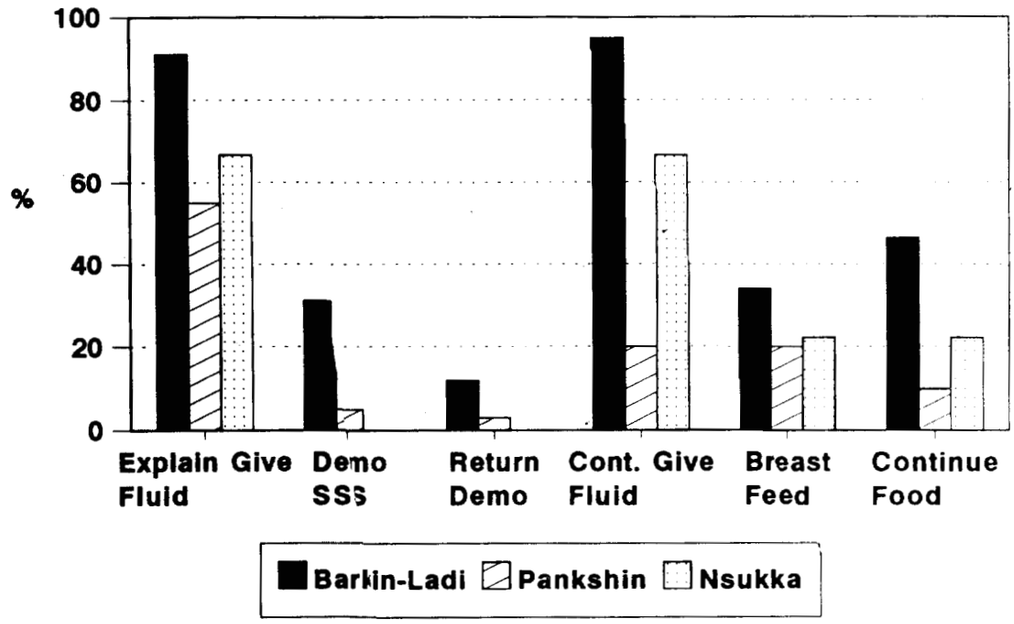
FIG. 5 DIARRHEA: EDUCATION PRACTICES BY HEALTH WORKERS
Barkin-Ladi, Pankshin, and Nsukka LGAs, 1991, Nigeria



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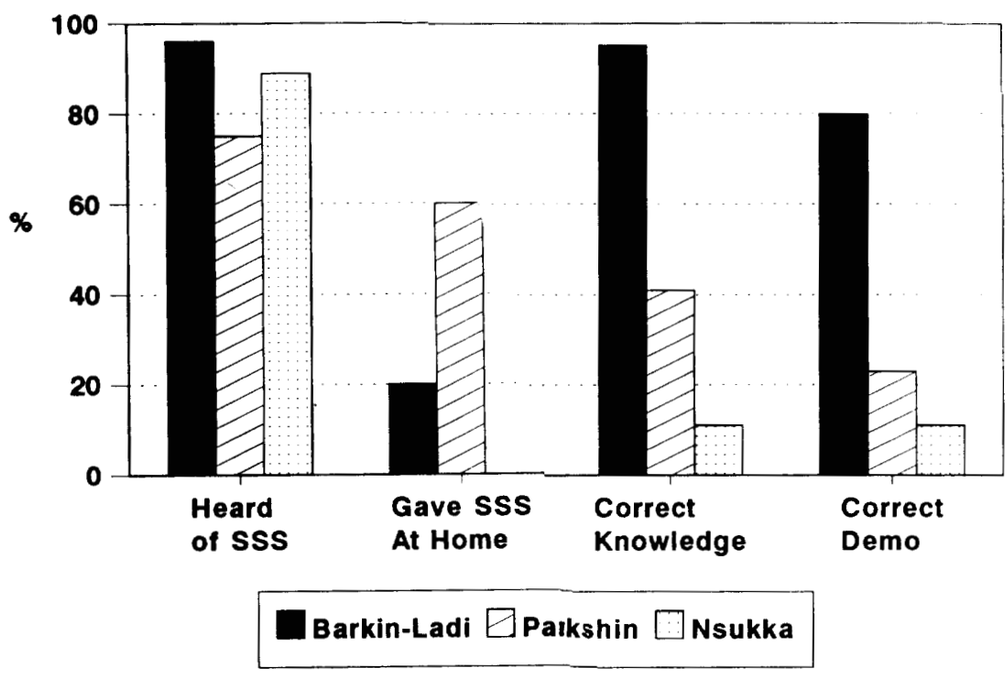
PS 20 Obs
NK 9 Obs

Fig. 6 MOTHER'S KNOWLEDGE OF SSS
Barkin-Ladi, Pankshin, and Nsukka, 1991



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PS 20 Obs
NK 9 Obs

Fig. 7 TREATMENT OF DEHYDRATION: EQUIPMENT AND SUPPLIES
Barkin-Ladi, Pankshin, and Nsukka, 1991

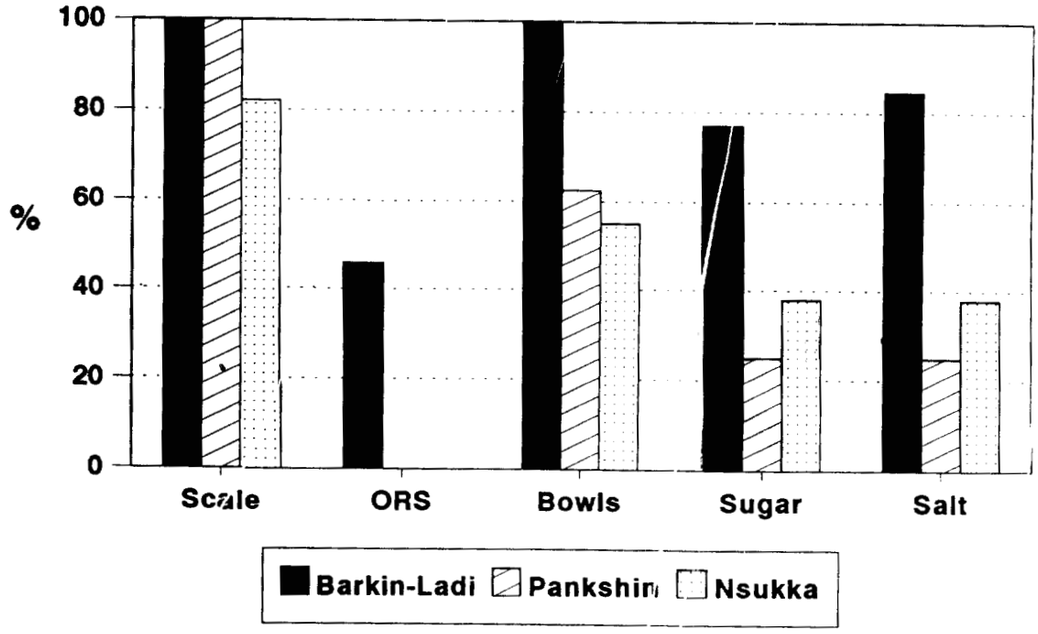

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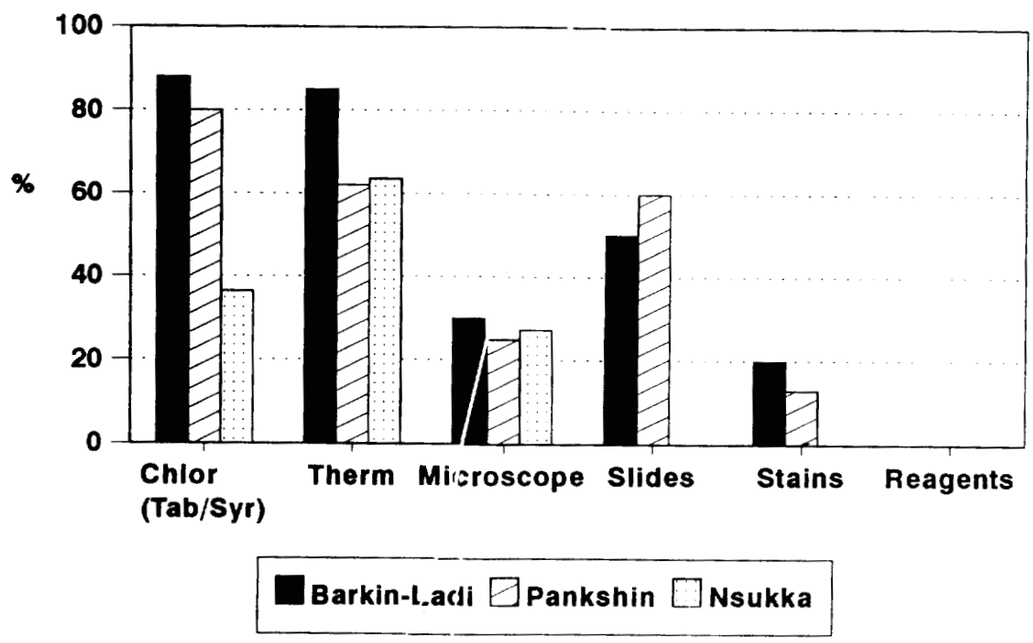
Fig. 8 TREATMENT OF FEVER: EQUIPMENT AND SUPPLIES
Barkin-Ladi, Pankshin, and Nsukka, 1991



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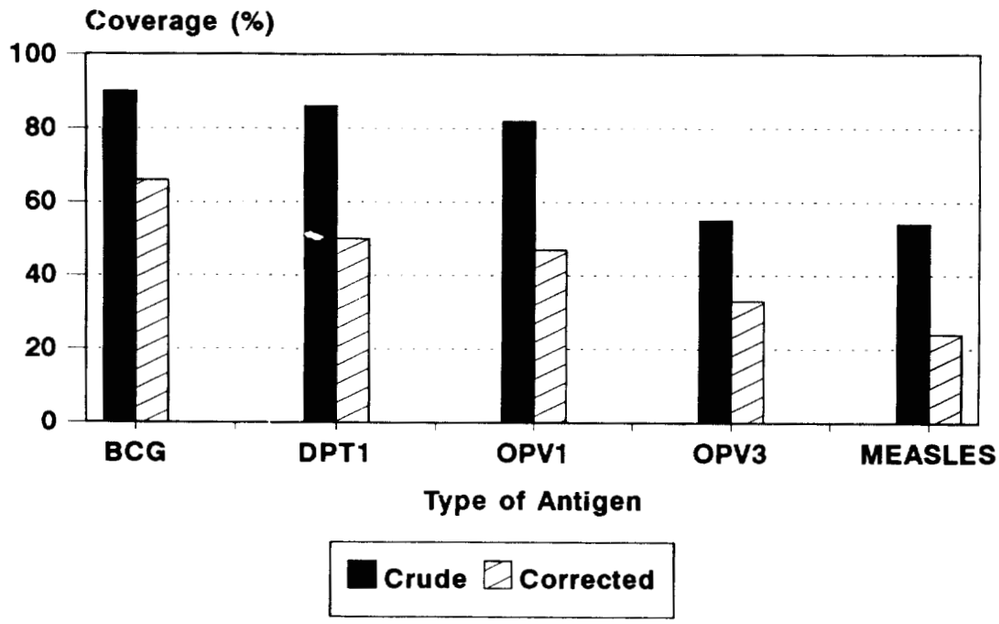
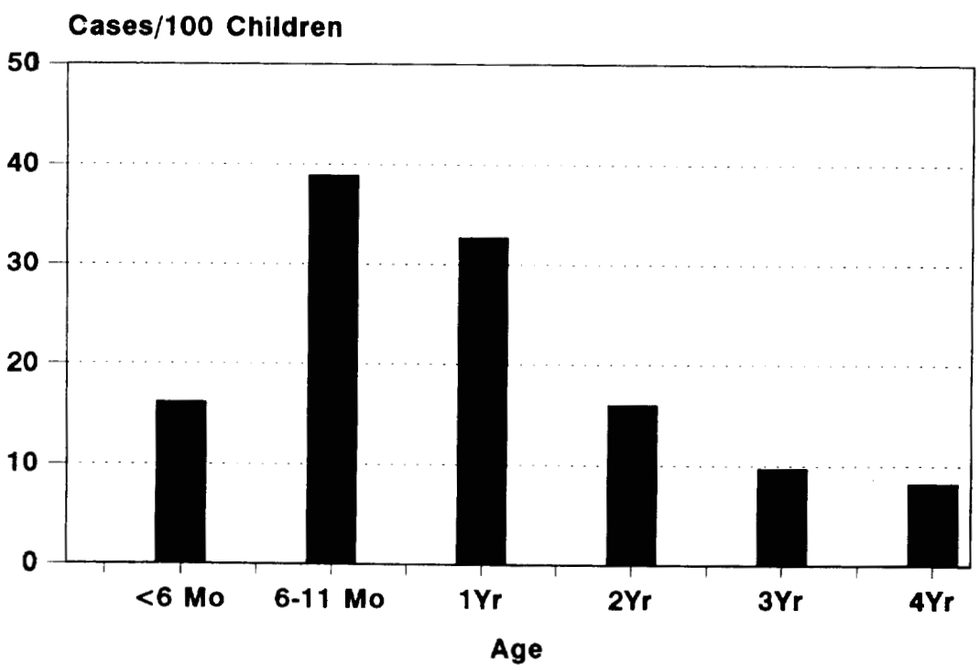
NK 11 Fac

Fig. 9 VACCINATION COVERAGE
AGES 12-23 MONTHS
Suleja, Niger State, 1991



N = 382 Children 12-23 mos
Crude = age at immunization, dose interval not considered, DOB by card or history
Corrected = card only, DOB by card, DPT1, OPV1>=6 wks, 28 days between doses, Measles>=39 wks

Fig. 10 AGE SPECIFIC DIARRHEA INCIDENCE
Suleja, Niger State, 1991



* 342 Children (20.9%)
Diarrhea during 2 wks prior to Survey

Fig. 11 Diarrhea. Mothers' Treatment Practices
Suleja, Niger State, November 1991, Nigeria

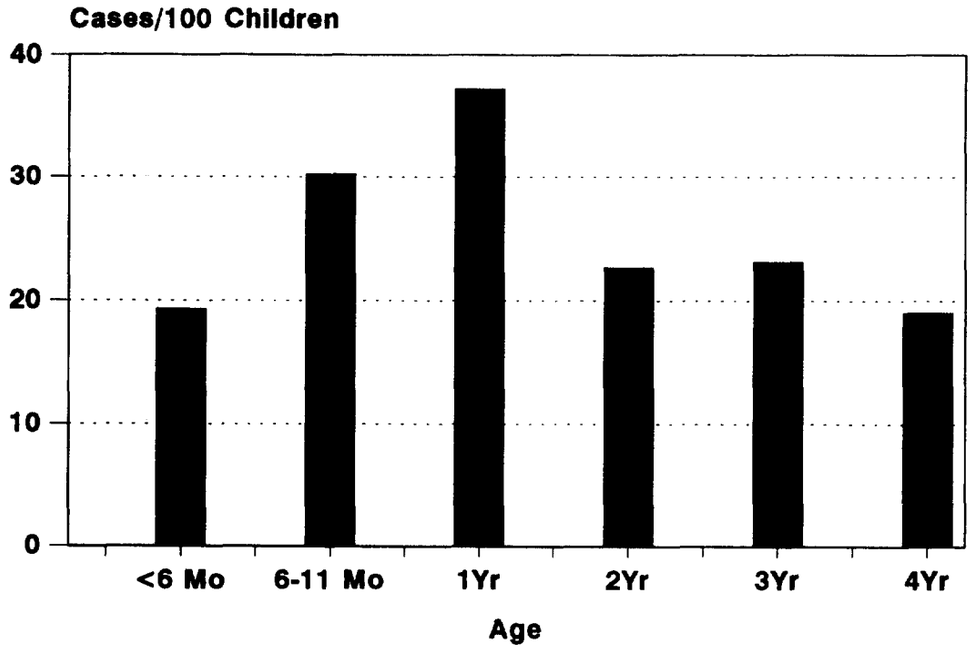
	Mothers' Treatment (%)		
	First (270)	Next (148)	All* (338)
Gave drugs	17.2	30.4	53.8
Gave SSS**	24.3	18.9	43.5
Stopped solid food	1.2	2.0	42.6
Took to clinic/hospital	27.2	12.9	50.6
Gave herbs	6.5	8.1	33.1
Decreased fluids	0.3	0.7	22.5
Increased fluids	0.6	2.7	21.9
Traditional healer	3.4	6.1	18.0
Gave enema	1.2	1.4	14.2

* Includes all treatment for latest diarrhea episode
** Correct SSS preparation = 54.7%

Fig. 12 Diarrhea: Mothers' Knowledge
Suleja, Niger State, November 1991, Nigeria

	Mothers' (%)
Reason for child's diarrhea (293)	
Teething	57.7
Contaminated water	7.2
Don't know	31.7
Source of information (224)	
Clinic	45.5
Radio/TV	34.8
Friend	10.7
Village Health Worker	7.1
Educational Poster	0.4

Fig. 13 AGE SPECIFIC FEVER INCIDENCE
Suleja, Niger State, 1991



* 424 children (25.9%)
Fever during 2 wks prior to Survey

Fig. 14 Fever: Mothers' Treatment Practices
Suleja, Niger State, November 1991, Nigeria

	Mothers' Treatment (%)		
Practice	First (373)	Next (238)	All* (425)
Gave plenty fluids	1.3	7.1	73.9
Gave sponge bath	10.2	10.9	73.9
Gave paracetamol	21.4	17.6	68.9
Gave antimalarial	15.3	34.9	65.2
Took to clinic/hospital	40.5	19.3	60.2
Gave herbs	7.8	7.1	27.8
Gave antibiotic	1.6	1.3	25.9
Traditional healer	1.9	1.7	15.8

* Includes all treatment for latest fever episode

Fig. 15 Chloroquine Dosage among Children with Fever
Suleja, Niger State, November 1991, Nigeria

	Children with Fever (%)	
Antimalarial Given	Any Dose	Correct Dose*
Day 1	71.1	35.1
Day 2	69.6	36.4
Day 3	67.8	28.4

ct dose by age per FMOH Malaria Guidelines

Fig. 16 FEVER: SOURCE OF ANTIMALARIALS
Suleja, Niger State, 1991

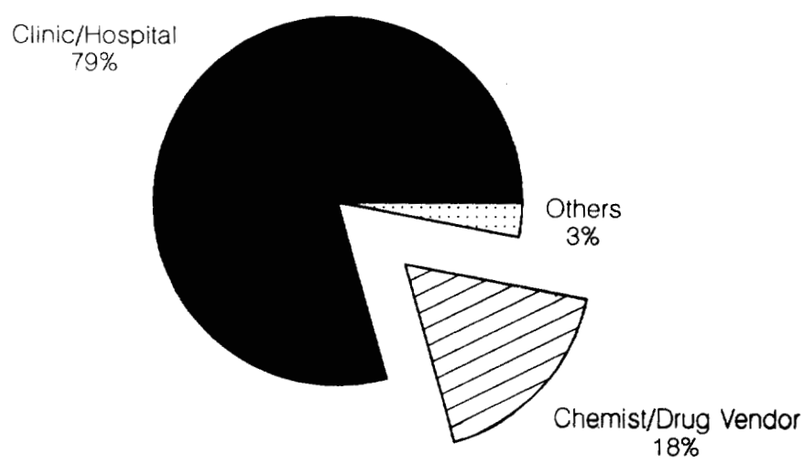


Fig. 17 Fever: Mothers' Knowledge
Suleja, Niger State, November 1991, Nigeria

	Mothers' (%)
Prevention Practices (707)	
Insect Repellant	57.7
Remove standing water	7.2
Bednets	31.7
Protective Clothing	29.7
Spray	24.2
Stay indoors	22.3
Drug prophylaxis	12.5
Source of information (242)	
Clinic	47.5
Radio/TV	32.2
Friend	11.2
Village Health Worker	2.9

GOALS AND OBJECTIVES FOR 1992

EPI

- Begin initiative to address urban EPI problems in Lagos State. This Urban EPI Project will be implemented in conjunction with the REACH Project. Funding is provided by REACH.

- Strengthen the capability of the FMOH EPI/CDD/ARI Division to operationalize the sentinel surveillance system for EPI diseases.

- Strengthen the reliability and timeliness of the routine reporting and analysis of immunizations administered by State.

- Develop an inventory control system for the EPI cold stores in Oshodi and Kano (e.g., CEIS). Computerized system will permit, at a minimum, tracking of antigens by lot number, expiration date, minimum stock level, supplier, cost, and recipient State or institution by quantity received/required (population-based targets) and delivery dates.

- Assist with design, funding and implementation of EPI activities in the context of SMOH and FMOH 1992-93 work plans.

- Coordinate CCCD EPI assistance with other donors (e.g., Unicef).

- Assist states to finalize implementation plans for the eradication of polio (in coordination with local Rotary Clubs) and the elimination of neonatal tetanus.

- Utilize facility and community survey results to assist local LGA managers to identify weak EPI performance areas and develop appropriate response strategies.

CDD

- Strengthen the capability of the EPI/CDD/ARI Division to determine stock needs for ORS packets based on anticipated cholera outbreaks and routine needs at DTUs and other health facilities.

- Order additional ORS packets as required to address cholera outbreak needs as well as routine health facility requirements; coordination with Unicef.

- Assist SMOHs to monitor diarrhea disease trends using the EPID and NICARE reporting systems. Sharp increases in incidence should prompt immediate action on the part of State and Federal health officials.

- Assist with design, funding and implementation of CDD activities in the context of SMOH and FMOH 1992-93 work plans.

- Assure that the Zone C Diarrhea Treatment and Training Unit (DTU) in Kaduna is operational by PACD.

MALARIA

- Assure nationwide dissemination of Malaria Control Guidelines to all SMOHs, LGAs and health workers.

- Conduct operational study on logistics and quality of antimalarials and antibiotics at the health facility, LGA, State and Federal levels.

- Hold semi-annual meeting of the National Malaria Technical Committee.

- Begin major operational research study of pesticide impregnated bednets and curtains at Nsukka, LGA.

- Assist with design, funding and implementation of malaria activities in the context of SMOH and FMOH 1992-93 work plans.

- Utilize facility and community survey results to assist local LGA managers to identify weak fever/malaria performance area among health workers and develop appropriate response strategies.

- Continue implementation of pesticide impregnated bednet research study in Enugu State; produce preliminary report by July 1993.

TRAINING

- Assure a fully functional Continuing Education Unit (CEU) at each of the Schools of Health Technology in the CCCD Focus States.

- Provide TOT and supervisory skills training to CEU staff and LGA managers.

- Assess impact of CEU strategy on health worker performance; assistance of CDC/IHPO anticipated.

- Develop policy statement for FMOH consideration for federal support of a CEU in non-CCCD Focus States.

HEALTH INFORMATION SYSTEMS

- Assure a fully functional 40 notifiable diseases system at the Federal level and at each of the CCCD Focus States.

- Assure a fully functional primary health care Monitoring and Evaluation (M&E) System at the Federal level and at each of the CCCD Focus States.

- Assure a fully functional 150 Sentinel Site Surveillance System at the Federal level and at each of the sentinel sites located in the CCCD Focus States.

- Assure a fully functional Medical Records Reporting System at each of the eight (8) participating hospital sites.

- Assist the Division of Epidemiology to publish four issues of the Nigeria Bulletin of Epidemiology during 1992.

HEALTH EDUCATION/PROMOTION

- Conduct an assessment of health education in Nigeria. Assessment will provide needed guidance and focus on specific areas in health education that should be addressed by the current CCCD Project as well as the follow- on child survival project.

- Strengthen the FMOH Health Education Bureau through a series of exercises in organizational develop; to be conducted in concert with ARHEC officials.

- Fund FMOH Health Education Bureau to research and prepare a paper that documents, to the extent possible, successful health education activities in Nigeria. Paper will be distributed to all SMOH and LGA health education officials.

- Assess possible interest and capacity for Federal Office of Statistics to undertake a pilot study of a Modifiable Risk Factor Tracking System (MRFTS) for Nigeria. This system is based on current the U.S. model, but targets infectious and communicable diseases. Assistance of ARHEC is anticipated.

- Form planning committee for a national conference on health education to be held in 1993. Assistance of ARHEC is anticipated.

- Coordinate with Family Health Services Project the design and distribution of mass media health promotion materials (IEC) for the CCCD interventions (EPI, CDD and malaria).

OPERATIONAL RESEARCH

- Hold quarterly meetings of the National Operations Research Committee in order to review progress on proposals funded as well as new proposals submitted with requests for support.

- Abstract and compile all CCCD funded operational research study reports in one volume for distribution to libraries of all major teaching hospitals and universities.

OTHER

- Assist USAID with the design of "Nigeria CCCD" which will be the Mission funded follow on to ACSI-CCCD Project, currently slated for completion in September 1993.

- Cause a smooth and transparent transition between the end of ACSI-CCCD and the beginning of Nigeria CCCD.

- Develop strategies for integrating family planning services within the context of the CCCD Project, particularly at the LGA level. Focus might be on in-service training of health workers in clinical practice and patient counseling, family planning information dissemination and awareness building, and tracking couple years of protection through the local health information system.

- Deliver commodities ordered in 1991 to FMOH Divisions, SMOHs, LGAs, and Continuing Education Units (e.g., vehicles, motorcycles, microscopes, EPI equipment, etc.)

ANNEXES

A. CCCD MIS Data.

B. 1991 Population Census Listing.

C. Operational Research Studies Listing.

D. Issues 1, 2, and 3 of the Nigeria Bulletin of Epidemiology.

E. National Guidelines on Management of Cholera.

ANNEX A:CCCD Management Information Systems Data

Estimated Number of Live Births Derived from the Population and Birth Rate

Year	Population	Birth Rate per 1000	Number of Live Births
1980	70,084,832	45.0	3,153,817
1981	71,588,184	45.0	3,221,468
1982	73,123,783	45.0	3,290,570
1983	74,692,322	45.0	3,361,154
1984	76,294,506	45.0	3,433,253
1985	77,931,059	45.0	3,506,898
1986	79,602,716	48.0	3,820,930
1987	81,310,231	48.0	3,902,891
1988	83,054,372	48.0	3,986,610
1989	84,835,927	48.0	4,072,124
1990	86,655,696	48.0	4,159,473
1991	88,514,501	48.0	4,248,696

Doses of Diphtheria-Pertussis-Tetanus (DPT) Vaccine Administered by Year

Year	First Doses (all ages)	Third Doses (all ages)	Total Doses (all ages)	First Doses (<12 mo.)	Third Doses (<12 mo.)	Total Doses (<12 mo.)
1980						
1981						
1982						
1983						
1984						
1985						
1986	1,730,683	922,239	3,849,547	1,146,501	662,786	2,658,084
1987	2,205,888	1,273,228	5,072,790	1,504,516	936,672	3,512,479
1988	4,094,847	2,362,608	9,468,204	2,471,977	1,495,853	6,021,549
1989	3,258,826	2,411,985	8,318,043	2,181,458	1,551,563	4,875,288
1990	5,575,233	4,672,591	14,922,021	3,532,840	2,785,737	8,844,688
1991	2,128,123	2,052,449	6,117,671	1,592,326	1,440,563	5,313,773

Doses of Measles Vaccine Administered by Year

Year	Total Doses	Doses (<12 mo.)
1980		
1981		
1982		
1983		
1984		
1985		
1986	1,329,176	710,200
1987	1,697,801	1,051,055
1988	3,742,724	1,848,991
1989	3,237,243	1,758,771
1990	6,163,051	3,228,159
1991	2,249,112	1,420,869

Doses of Tetanus Toxoid Administered by Year

Year	First Doses	Total Doses	First Doses
1980			0
1981			0
1982			0
1983			0
1984			0
1985			0
1986	886,849	1,536,101	886,849
1987	1,204,743	2,030,599	2,091,592
1988	1,794,501	3,057,534	3,886,093
1989	1,767,511	3,071,430	5,653,604
1990	2,707,439	4,771,995	8,361,043
1991	1,384,813	2,478,028	9,745,856

Surveillance for Vaccine-Preventable Disease
Number of Reported Cases of Measles, Polio, Pertussis and Tetanus

Year	Number of Reporting Units	Cases of Measles	Cases of Polio	Cases of Pertussis	Cases of Neonatal Tetanus	Total Cases of Tetanus
1980		142,106	393	48,696		2,129
1981		129,671	335	56,913		3,035
1982		139,785	395	77,830		3,479
1983		136,778	323	70,024		2,577
1984		182,591	625	62,751		2,437
1985		161,768	959	92,266		2,679
1986		115,743	453	42,193		2,269
1987		72,966	558	46,669		2,389
1988		53,152	317	18,810		1,473
1989		17,217	151	0		1,260
1990		94,927	561	587		2,065
1991		44,026	842	18,685	1,103	3,392

Packets of Oral Rehydration Salts Imported and Produced Locally

Year	Packets Produced Locally	Packets Imported	Total Packets
1980			0
1981			0
1982			0
1983			0
1984			0
1985	900,000		900,000
1986	900,000	2,500,000	3,400,000
1987	900,000	0	900,000
1988	900,000	500,000	1,400,000
1989	500,000	500,000	1,000,000
1990	200,000	0	200,000
1991	150,000	1,615,000	1,765,000

Estimated Number of Women of Childbearing Age

Year	Population	% Pop. of Childbearing Age	Number of Women of Childbearing Age
1980	70,084,832	20	14,016,966
1981	71,588,184	20	14,317,637
1982	73,123,783	20	14,624,757
1983	74,692,322	20	14,938,464
1984	76,294,506	20	15,258,901
1985	77,931,059	20	15,586,212
1986	79,602,716	20	15,920,543
1987	81,310,231	20	16,262,046
1988	83,054,372	20	16,610,874
1989	84,835,927	20	16,967,185
1990	86,655,696	20	17,331,139
1991	88,514,501	20	17,702,900

Cases and Deaths Due to Diarrhea in Hospitalized Children under Five Years of Age

Year	Number Hospitals Reporting	Cases of Diarrhea (< 5 yrs)	Deaths due to Diarrhea (< 5 yrs)
1980			
1981			
1982			
1983			
1984			
1985			
1986		100,285	572
1987		317,804	1,201
1988		397,290	1,270
1989		422,074	1,287
1990		181,143	645
1991		294,036	1,040

ANNEX B:1991 Population Census listing

NATIONAL POPULATION BY LGA.

STATE	L G AREA	POPULATION
ABIA	Aba North (1)	494,152
	Afikpo	103,674
	Afikpo South	71,114
	Arochukwu	91,617
	Bende	128,227
	Ikwuano	59,968
	Isiala-Ngwa	93,899
	Isiala-Ngwa South	100,796
	Isuikwuato	148,054
	Obioma Ngwa	325,406
	Ohafia	140,211
	Obaozara	133,968
	Onicha	112,417
	Ukwa	48,884
	Ukwa East	31,961
	Umuahia	213,030
	TOTAL	2,297,378
(1) Comprising Aba North and South		
ABUJA F.C.T	Abaji	23,647
	Abuja Municipal	212,854
	Gwagwalada	80,841
	Kuje	61,329
	TOTAL	378,671
ADAMAWA	Fufore	153,778
	Ganye	171,149
	Gombi	88,425
	Guyuk	69,604
	Hong	126,272
	Jada	124,186
	Madagali	92,105
	Maiba	92,599
	Mayo Belwa	121,026
	Michika	117,712
	Mubi	243,414
	Numan (1)	228,411
	Shuleng	56,208
	Song	193,092
	Yola	246,068
	TOTAL	2,124,049
(1) Including Demsa		

STATE	L G AREA	POPULATION
AKWA IBOM	Abak	103,962
	Eket	77,509
	Ekpe-Atai	63,329
	Essien-Udim	130,738
	Etim Ekpo	119,728
	Etinan	84,046
	Ikono	90,664
	Ikot-Abasi	69,960
	Ikot-Ekpene	156,304
	Ini	72,121
	Itu	182,719
	Mbo	57,601
	Mkpat-Enin	100,426
	Nsit-Ibom	64,209
	Nsit-Ubium	75,950
	Okobo	64,420
	Onna	132,914
	Oron	80,048
	Oruk-Anam	126,556
	Uguo-Ibeno	76,938
	Ukanafun	84,263
	Uruan	79,868
	Urue Offong/Oruko	30,848
	Uyo	234,615
	TOTAL	2,359,736
ANAMBRA	Aguata	289,049
	Akwa North	63,332
	Akwa South	121,570
	Anambra	150,357
	Anaocha	199,093
	Idemili	400,604
	Ihiala	199,729
	Njikoka	134,101
	Nnewi North	201,263
	Nnewi South	159,233
	Ogbaru	178,056
	Onitsha (1)	256,941
	Orumba North	127,798
	Orumba South	96,116
	Oyi	190,661
	TOTAL	2,767,903
(1) Comprising Onitsha North and South		

STATE	L G AREA	POPULATION
BAUCHI	Akko	235,325
	Alkaleri	254,477
	Balanga	133,384
	Bauchi	341,758
	Billiri	85,219
	Darazo	163,849
	Dass	53,213
	Dukku	158,431
	Gamawa	181,004
	Ganjuwa	143,139
	Gombe	283,189
	Itas/Gadau	127,652
	Jama'are	60,343
	Kaltungo	165,515
	Katagum	188,127
	Misau	219,185
	Nafada	186,131
	Ningi	290,118
	Shira	243,292
	Tafawa-balewa	188,485
	Toro	215,455
	Yamitu/Deba	220,775
	Zaki	156,347
	TOTAL	4,294,413
BENUE	Ado	103,228
	Apa	129,307
	Bukuru	130,863
	Gboko	298,387
	Guma	115,750
	Gwer East	115,118
	Gwer West	73,396
	Katsina-Ala	237,585
	Konshisha	143,045
	Kwande	191,067
	Makurdi	226,198
	Ogbadibo	90,890
	Oju	177,270
	Okpokwu	87,009
	Oturkpo	190,457
	Ukum	183,422
	Ushongo	123,951
	Vandeikya	163,655
	TOTAL	2,780,398
BORNO	Askira-Uba	158,893
	Bama	195,124
	Biu (1)	216,670
	Damboa	140,409
	Dikwa	71,602
	Gwoza	161,354
	Kaga (2)	105,369
	Konduga (3)	173,856
	Kukawa (4)	150,203
	Mobbar (5)	150,577
	Monguno (6)	125,481
	Ngala	126,453
	Shani (7)	191,115
	Maiduguri	629,486
	TOTAL	2,596,592

(1) Including Kwaya-Kusar
(2) Including Magumeri
(3) Including Mafa
(4) Including Nganzai
(5) Including Gubio
(6) Including Marte
(7) Including Hawul

STATE	L G AREA	POPULATION
CROSS RIVER	Akampa	114,924
	Akpabuyo	96,192
	Biase	93,362
	Boni	137,618
	Calabar	320,862
	Ikom	175,624
	Obanliku	50,001
	Obubra	138,429
	Obudu	89,822
	Odukpani	110,903
	Ogoja	168,889
	Ugep North	72,618
	Ugep South	140,956
	Yala	155,404
	TOTAL	1,865,604
DELTA	Aniocha Nouth	55,395
	Aniocha South	112,398
	Bomadi	140,436
	Burutu	160,445
	Ethiope West	101,585
	Ethiope East	108,703
	Ika North East	110,516
	Ika South	129,935
	Isoko North	133,732
	Isoko South	142,663
	Ndokwa East	72,681
	Ndokwa West	183,250
	Okpe	261,430
	Oshimili	122,603
	Sapele	141,241
	Ugheli North	161,157
	Ugheli South	131,291
	Warri North	87,444
	Warri South	213,276
	TOTAL	2,570,181
EDO	Akok-Edo	124,366
	Esan Central	128,511
	Esan West	91,748
	Esan-North East	88,358
	Esan-South East	89,486
	Etsako East	143,903
	Etsako West	130,926
	Oredo	780,976
	Orhionmowon (1)	227,348
	Ovia North East	122,107
	Ovia South West	81,020
	Owan (2)	151,099
	TOTAL	2,159,848

(1) Including Uhunniwonde
(2) Comprising Owan East and Owan West

STATE	L G AREA	POPULATION
ENUGU	Abakaliki	225,752
	Awgu	222,638
	Enugu (1)	465,072
	Ezeagu	108,129
	Ezza	188,535
	Igbo-Etiti	131,669
	Igbo-Eze (2)	226,442
	Ikwo	166,269
	Ishielu	132,552
	Isi-Uzo	209,725
	Izzi	166,239
	Nkanu	208,118
	Nsukka	218,180
	Ohaukwu	180,932
	Oji-River	82,105
	Udi	146,910
	Uzo-Uwani	82,028
	TOTAL	3,161,295

(1) Comprising Enugu North and South
(2) Comprising Igbo-Eze North and South

IMO	Aboh-Mbaise	115,128
	Ahiazu-Mbaise	97,291
	Ehime-Mbano	95,280
	Ezinihitte	91,919
	Ideato North	128,683
	Ideato South	84,645
	Ihitte/Uboma	70,767
	Ikeduru	106,950
	Isiala-Mbano	104,863
	Isu	140,569
	Mbaitoli	148,250
	Ngor-Okpala	136,102
	Nkwerre	125,638
	Obowo	64,212
	Oguta	86,565
	Ohaji/Egbema	118,790
	Okigwe	128,059
	Orlu	116,776
	Orsu	91,085
	Oru	148,996
	Owerri	248,931
	TOTAL	2,449,499
JIGAWA	Babura	135,104
	Biriniwa	114,107
	Birnin Kudu	292,838
	Dutse	148,374
	Garki	102,849
	Gumel (1)	121,278
	Gwaram	195,618
	Hadeja	183,527
	Jahun	249,815
	Kafin Hausa	149,713
	Kazaure	121,516
	Kiri Kasama	177,608
	Kiyawa	108,044
	Maigatari (2)	179,006
	Malam Maduri (3)	192,937
	Ringim (4)	247,553
	Roni (5)	110,042
	TOTAL	2,829,929

(1) Including part of Sule-Tankarkar
(2) Including part of Sule-Tankarkar
(3) Including Kaugama
(4) Including Taura
(5) Including Gwiwa

STATE	L G AREA	POPULATION
KADUNA	Birnin Gwari	140,410
	Chikun	298,131
	Giwa	170,253
	Igabi	298,027
	Ikara	344,257
	Jaba	67,384
	Jama'a	215,749
	Kachia	216,261
	Kaduna	337,639
	Kaura	120,765
	Kauru	127,937
	Lere	221,058
	Markafi	211,246
	Sabon-Gari	212,671
	Soba	187,277
	Tudun Wada/Makera	373,516
	Zangon-Kataf	149,484
	Zaria	277,187
	TOTAL	3,969,252
KANO	Albasu	111,504
	Bebeje (1)	264,768
	Bagwai	100,824
	Bichi	172,050
	Bunkure	118,851
	Dala	496,397
	Dambatta	204,732
	Dawakin Tofa	147,808
	Dawakin-Kudu (2)	237,536
	Gabasawa	147,377
	Gaya	227,432
	Gezawa	149,192
	Gwarzo	121,413
	Kabo	86,199
	Kano	403,678
	Karaye	231,242
	Kumbotso	163,279
	Kura (3)	227,548
	Minjibir	139,906
	Nassarawa	464,225
	Rano	154,332
	Rimin-Gado (4)	121,339
	Shanono	83,272
	Sumaila	159,648
	Takai	136,959
	Tsanyawa	154,662
	Tundun-Wada (5)	223,620
	Ungogo	162,587
	Wudil	220,657
	TOTAL	5,633,037

(1) Including Kiru
(2) Including Warawa
(3) Including Madobi
(4) Including Tofa
(5) Including Doguwa

STATE	L G AREA	POPULATION
KATSINA	Bakori	252,514
	Batsari	144,716
	Bindawa	115,461
	Daura	339,775
	Dutsin-Ma	195,410
	Faskari	192,658
	Funtua	260,687
	Ingawa	109,744
	Jibia	127,878
	Kaita	99,537
	Kankara	165,704
	Kankia	174,322
	Katsina	306,450
	Malunfashi	312,940
	Mani	119,900
	Mashi	188,471
	Musawa	160,564
	Rimi	192,828
	Safana	204,499
	Zango	214,286
	TOTAL	3,878,344

(1) Including Danja
(2) Including Mariaduwa
(3) Including Kurfi
(4) Including Batagarawa
(5) Including Kafur
(6) Including Matazu

KEBBI	Arewa (1)	132,196
	Argungu	208,438
	Bagudo	154,487
	Birni-Kebbi	151,459
	Bunza	121,437
	Dandi	99,218
	Gwandu	107,425
	Jega	154,006
	Koko/Besse	106,779
	Maiyama	109,718
	Ngaski	73,361
	Sakaba (2)	202,234
	Suru	114,028
	Yauri	155,477
	Zuru	171,963
	TOTAL	2,062,226

(1) Including Dandi
(2) Including Wasagu

KOGI	Adavi	195,100
	Ajaokuta	80,336
	Ankpa	240,281
	Bassa	85,620
	Dekina	201,682
	Idah	214,765
	Ijumu	61,895
	Kogi	77,516
	Kontokarfe	53,976
	Ofu	112,697
	Okehi	137,289
	Okene	309,307
	Olamaboro	114,231
	Oyi	66,253
	Yagba East	75,522
	Yagba West	64,576
	TOTAL	2,026,470

STATE	L G AREA	POPULATION
KWARA	Asa	81,773
	Baruten	115,576
	Ifelodun	156,022
	Ilorin (1)	572,178
	Irepodun (2)	231,034
	Kaiama	45,051
	Moro	85,586
	Oyun	62,601
	Edu	139,652
	Offa	76,996
	TOTAL	1,566,469

(1) Comprising Ilorin East and West
(2) Including Ekiti

LAGOS	Agege	650,274
	Badagry	118,704
	Epe	99,567
	Eti Osa	170,948
	Ijebu/Lekki	24,825
	Ikeja	639,762
	Ikorodu	181,914
	Lagos Island	164,352
	Lagos Mainland	869,601
	Mushin	986,847
	Ojo	1,011,808
	Shomolu	767,179
	TOTAL	5,685,781

(1) Including Alimosho
(2) Including Surulere
(1) Including Oshodi/Isolo

NIGER	Agaie	85,280
	Agwara	41,652
	Bida	170,725
	Borgu	109,904
	Bosso	92,263
	Chanchaga	157,159
	Gbako	104,447
	Gurara	45,938
	Lapai	88,172
	Lavun	238,312
	Magama	134,390
	Mariga	238,010
	Mokwa	103,885
	Paikoro	107,691
	Rafi	106,160
	Rijau	124,862
	Shiroro	212,839
	Suleja	125,259
	Wushishi	195,420
	TOTAL	2,482,366

STATE	L G AREA	POPULATION
OGUN	Abeokuta (1)	374,842
	Ado-Odo/Ota	239,665
	Egbado North	234,747
	Egbado South	271,700
	Ifo	213,439
	Ijebu-East	63,040
	Ijebu-North	142,429
	Ijebu-Ode (2)	244,783
	Obafemi Owode	134,772
	Odeda	88,000
	Ogun Water Side	66,396
	Remo (3)	265,787
	TOTAL	2,339,600
(1) Comprising Abeokuta North and South		
ONDO	Ado-Ekiti	149,472
	Akoko North	103,501
	Akoko North West	148,017
	Akoko South	185,595
	Akure	316,925
	Ehure/Ise/Orun	131,638
	Ekiti East	136,519
	Ekiti South-West	134,271
	Ekiti West	247,373
	Idanre	81,654
	Ido/Osi	107,990
	Ifedore	102,138
	Ijero	93,286
	Ikere	59,257
	Ikole	142,657
	Ilaje/Ese-Odo	275,337
	Ile Oluji-Okeigbo	123,397
	Irele	105,277
	Irepodun/Ifelodun	124,088
	Moba	165,805
	Odigbo	150,968
	Okitipupa	169,046
	Ondo	247,214
	Ose	91,648
	Owo	155,006
	Oye	136,405
	TOTAL	3,884,484
OSUN	Atakunmosa	99,263
	Ayedade	90,996
	Ayedire	40,427
	Boripe	116,222
	Ede	147,164
	Egbedore	44,552
	Ejigbo	71,535
	Ife Central	185,256
	Ife North	129,996
	Ife South	88,030
	Ifelodun	84,504
	Ila (1)	88,530
	Ilesha	138,321
	Irepodun	177,105
	Irewole	133,019
	Iwo	105,981
	Obokun	61,099
	Odo-Otin	89,813
	Ola-Oluwa	43,287
	Olorunda	79,012
	Oriade	80,242
	Oshogbo	108,692
	TOTAL	2,203,046
(1) Including Isadayo		

STATE	L G AREA	POPULATION
OYO	Afijo	70,315
	Akinyele	139,587
	Egbeda	128,998
	Ibadan North	300,939
	Ibadan North East	272,979
	Ibadan North West	146,759
	Ibadan South East	227,865
	Ibadan South West	274,028
	Ibarapa	57,014
	Ido	55,893
	Ifedapo	230,713
	Ifeloju	105,166
	Irepo	132,492
	Iseyin	170,589
	Kajola	172,288
	Lagelu	68,732
	Ogbomosho (1)	166,034
	Ogo-Oluwa	36,255
	Oluyole	91,020
	Ona-Ara	122,387
	Orelope	82,555
	Orire	93,438
	Oyo	275,034
	Surulere	67,709
	TOTAL	3,488,789
(1) Comprising Ogmosho North and South		
PLATEAU	Akwanga (1)	183,499
	Awe	133,510
	Barinkin Ladi	152,808
	Bassa	112,793
	Doma	98,803
	Jos (2)	622,873
	Kanam	117,019
	Keffi (3)	242,768
	Lafia (4)	340,865
	Langtang North	101,336
	Langtang South	48,014
	Mangu (5)	273,121
	Nassarawa (6)	224,671
	Pankshin	168,718
	Quanpan	141,739
	Shedam	217,170
	Wase	103,997
	TOTAL	3,283,704
(1) Including Nasarawa-Egon		
(2) Comprising Jos South and North		
(3) Including Karu		
(4) Including Obi		
(5) Including Bokkos		
(6) Including Toto		

STATE	L G AREA	POPULATION
RIVERS	Abual/Odual	130,859
	Adono/Opobo	202,813
	Ahoada	178,179
	Akukutoru	89,594
	Asari-Toru	142,776
	Bonny	62,481
	Brass (1)	383,031
	Degema	84,290
	Ekeremor	123,556
	Emuoha	153,231
	Etche	211,285
	Gokana	141,685
	Ikwere	114,882
	Khana (2)	254,159
	Obio/Akpor	239,145
	Ogba/Egbema/Ndoni	175,244
	Okrika	248,356
	Port-Harcourt	406,738
	Sagbama	113,962
	Southern Ijaw	246,708
	Tai/Eleme	119,249
	Yenagoa (3)	161,634
	TOTAL	3,983,857

(1) Including Ogbia
(2) Including Oyibo
(3) Comprising Northern and Southern Ijaw

STATE	L G AREA	POPULATION
SOKOTO	Anka	272,352
	Dakura	119,515
	Binji	50,914
	Bodinga	113,467
	Bungudu	194,109
	Dange-Shuni	148,196
	Gada	152,975
	Goronyo	104,737
	Gunmi	332,787
	Gusau	260,446
	Gwadabawa	139,959
	Illela	131,987
	Isa	182,683
	Kaura Namoda	261,800
	Kware	112,406
	Maradun	130,536
	Rabah	87,972
	Sabon Birni	139,353
	Silema	60,284
	Sokoto	269,525
	Talata marafa	139,526
	Tambawal	143,838
	Tangaza	125,997
	Tasfe	164,410
	Wammako	127,654
	Wurno	95,933
	Yoba	155,722
	Zurmi	173,308
	TOTAL	4,392,391

STATE	L G AREA	POPULATION
TARABA	Bali	312,817
	Donga	89,225
	Gashaka	44,638
	Ibi	108,149
	Jalingo	137,797
	Karim-Lamido	143,027
	Lau	60,702
	Sardauna	215,336
	Takum	148,294
	Wukari	90,375
	Yorro	54,487
	Zing	75,743
	TOTAL	1,480,590
YOBE	Bade (1)	184,726
	Damaturu/Dapchi (2)	162,064
	Fika	130,353
	Fune	135,567
	Geidam	85,158
	Gujba	144,470
	Mangere	251,001
	Nguru	137,403
	Yunusari	73,769
	Yusufari/Machina (3)	106,971
	TOTAL	1,411,482

(1) Including Jarusko
(2) Including Borsari
(3) Including Machina

ESTIMATED GRAND TOTAL 88,514,501

Source: National Population Commission Preliminary Figures, April 1992.

ANNEX C:Operations Research Studies listing

CCCD/NIGERIA OPERATIONAL RESEARCH STUDIES

PROTOCOL NUMBER	TITLE	PRINCIPAL INVESTIGATOR(S)	INSTITUTION(S)	PRECEPTOR	APPROVED LOCAL FUNDS	LOCAL FUNDS ISSUED	DATE APPROVED	STATUS
87/001	Evaluation of Relative Efficacy of Antimalarial Drugs in Children Under Five Years of Age	Dr. A. Sowunmi	University of Ibadan	Mrs. O. Desalu	N. 18,700	N. 18,700	11/87	Report submitted
87/004	Studies on Cerebral Malaria in Nigeria: Risk Factors and Evaluation of Different Treatment Regimens	Dr. O. Walker	University of Ibadan	Mrs. O. Desalu	N. 19,000	N. 19,000	11/87	Report submitted
87/007	Trends in Drug Utilization Pattern for Various Causes of Childhood Morbidity in a General Outpatient Department	Dr. C.O. Oyejide	University of Ibadan	Dr. M.O. Ogundeji	N. 9,030	N. 9,030	11/87	Completed 03/89
87/009	In Vivo and In Vitro Sensitivity of Plamodium Falciparum to Pyrimethamine in Pregnant Women in Ilorin	Prof. O. Ogunbode Dr. B.L. Nahlen	University of Ilorin Centers for Disease Control, Atlanta	Prof. L.A. Salako	N. 37,000	N. 37,000	11/87	Completed 06/88
87/010	Incidence of Poliomyelitis and Neonatal Tetanus in Ilorin	Dr. O.A. Babaniyi	Kwara State Ministry of Health	Alhaji Y.M. Anka	N. 16,185	N. 16,185	11/87	Completed 03/88
88/004	Acute Respiratory Infections in Childhood	Dr. D. Fagbule	University of Ilorin	Dr. M.O. Ogundeji	N. 42,882	N. 42,882	02/88	Report submitted
88/006	Estimation of Infant and Under Five Year-Old Mortality Rates by Indirect Method	Dr. E.A. Bamgboye	University of Ibadan	Dr. M.O. Ogundeji	N. 22,000	N. 22,000	05/88	Report submitted
88/008	Effect of Malaria Chemoprophylaxis on the Outcome of Pregnancy in Zaria	Prof. Lege-Oguntoye Dr. J.O. Emembolu	Ahmadu Bello University	Prof. L.A. Salako	N. 45,230*	N. 18,367	05/88	Completed
88/009	Loss of Maternal Measles Antibody During Infancy in Ilorin	Dr. O.A. Babaniyi	Kwara State Ministry of Health	Alhaji Y.M. Anka	N. 37,086	N. 37,086	05/88	Report being written
88/010	Determination of the Plasmodial Rates in Two Communities in Plateau State	Dr. J.K. Ikwueke	University of Jos	Prof. L.A. Salako	N. 19,065	N. 19,065	05/88	Completed 03/90

PROTOCOL NUMBER	TITLE	PRINCIPAL INVESTIGATOR(S)	INSTITUTION(S)	PRECEPTOR	APPROVED LOCAL FUNDS	LOCAL FUNDS ISSUED	DATE APPROVED	STATUS
88/016	Evaluation of Home Capacity to Mix and Use Sugar and Salt Solution in a Rural Area, Oyo State	Mr. M.K. Jinadu	Obafemi Awolowo University, Ile-Ife	Dr. M.O. Ogundeji	N. 16,900	N. 16,900	11/88	Completed 10/89
88/017	Studies of the Effectiveness, Safety, and Acceptability of Fluids Derived from Local Foodstuff in the Prevention and Management of Dehydration Caused by Diarrhoea in Children, Ogun State	Dr. O. Olusanya	Ogun State Teaching Hospital, Sagumu	Dr. M.O. Ogundeji	N. 35,000	N. 35,000	11/88	In progress
88/023	Otitis Media in Children 0-5 Years of Age in Zaria	Dr. U. Yusuf	Ahmadu Bello University	Alhaji Y.M. Anka	N. 23,100	N. 23,100	11/88	Report submitted
88/025	Malaria Morbidity and Mortality Pattern in Children 0-5 Years Old in Dutsin-ma LGA, Katsina State	Mr. D. Abubakar	Katsina State Ministry of Health	Dr. A.M. Yakubu	N. 20,250	N. 20,250	11/88	In progress
88/026	Assessment of the Knowledge and Practices Concerning Management of Fevers in Childre 0-5 Years Amongst Parents and Drug Sellers in Edu LGA, Kwara State	Dr. A.C. Oyeyipo	Kwara State Ministry of Health	Alhaji Y.M. Anka	N. 25,300	N. 25,300	11/88	Completed 05/90
88/027	Quality Assurance Testing of Chloroquine in Eastern Nigeria	Dr. J.E. Ogbuokiri	University of Nigeria Teaching Hospital,	Prof. L.A. Salako	N. 83,270	N. 83,270	11/88	Report submitted
89/002	Community-Based Research on Knowledge, Attitudes, Practices and Media Habits of the People of Ogun State About the Expanded Programme on Immunization	Dr. M.O. Shoremi	Ogun State University, Ago-Iwoye	Mrs. O. Desalu	N. 17,798	N. 17,798	02/89	Report submitted
89/004	Audience Knowledge, Attitudes and Practices Research for EPI Communication Strategy Development, Ondo State	Dr. A.A. Ojomo	Ondo State University, Ado-Ekiti	Dr. M.O. Ogundeji	N. 21,485	N. 21,485	02/89	Report being written
89/006	KAP Study for ORT Promotion, Bendel State	Dr. O. Ogbeide	University of Benin	Mrs. O. Desalu	N. 15,004	N. 15,004	02/89	Completed 12/89

PROTOCOL NUMBER	TITLE	PRINCIPAL INVESTIGATOR(S)	INSTITUTION(S)	PRECEPTOR	APPROVED LOCAL FUNDS	LOCAL FUNDS ISSUED	DATE APPROVED	STATUS
89/007	Formative Research on the Knowledge, Attitudes, Practices and Media Habits About EPI of Those Who Have Responsibility for the Care of Children Under 5 Years, Oyo State	Dr. I.O. Adigun	Oyo State Ministry of Health	Dr. M.O. Ogundeji	N. 15,000	N. 15,000	02/89	Completed 10/89
89/010	Anemia in Under Five Children: A Community-Based Survey in Rural Nigeria (Idere, Oyo State)	Dr. E.A.O. Alikor	University College Hospital, Ibadan	Dr. M.O. Ogundeji	N. 19,745	N. 19,745	05/89	In progress
89/011	A Community-Based Survey of the Factors Influencing the Acceptability and Utilization of ORT in the Management of Diarrhoea in Children in Lagos	Dr. E.E. Ekanem	University of Lagos	Dr. A.O. Sorungbe	N. 21,070	N. 21,070	05/89	Report being written
89/015	A Comparison of Two Health Education Methods for Improving Mothers' Ability to Prepare and Administer SSS, Anambra State	Dr. O.C. Nwaorgu	Anambra State University of Technology, Enugu	Dr. Utuk	N. 33,594	N. 33,594	05/89	In progress
89/003	Community Knowledge, Attitude, and Practices of ORT in Lagos State	Dr. R.A. Akinfeleye	Lagos State Ministry of Health	Mrs. O. Desalu	N. 15,004	N. 15,004	09/89	Completed 02/90
89/008	Identifying the Parental and Childhood Factors that Tend to Militate Against Effective Chemotherapy with Antimalarial Agents, Kano State	Prof. A. Olatunde	Bayero University, Kano	Dr. S. Mahdi	N. 33,000	N. 33,000	09/89	Suspended funds being returned
89/018	In Vivo Study of the Sensitivity of Plasmodium falciparum to Pyrimethamine in Pregnant Women in Enugu	Dr. G.C. Iloabachie	University of Nigeria Teaching Hospital, Enugu	Dr. Utuk	N. 35,000	N. 35,000	09/89	In progress
89/019	Evaluation of the Efficacy and Acceptability of Akamu/Cowpea Mixture in the Management of Persistant Diarrhoea in Children Admitted at the University of Nigeria Teaching Hospital, Enugu	Mrs. C.I. Ndiokwelu	University of Nigeria Teaching Hospital, Enugu	Mrs. O. Ossai	N. 35,000*	N. 35,000	09/89	Awaiting funds

PROTOCOL NUMBER	TITLE	PRINCIPAL INVESTIGATOR(S)	INSTITUTION(S)	PRECEPTOR	APPROVED LOCAL FUNDS	LOCAL FUNDS ISSUED	DATE APPROVED	STATUS
89/020	Incidence of Neonatal Tetanus and the Impact of Preventive Measures on Neonatal Tetanus in Ife Central Local Government Area, Oyo State	Dr. J.A. Owa	Obafemi Awolowo University, Ile-Ife	Dr. M.O. Ogundeji	N. 35,000	N. 35,000	11/89	Completed awaiting analysis
89/024	Incidence of Acute Lower Respiratory Infections in 0-5 Year Old Children at ABU Teaching Hospital, Zaria	Dr. P.D.B. Inusa	ABU Teaching Hospital, Zaria	Alhaji Y.M. Anka	N. 32,810	N. 32,810	11/89	In progress
90/003	Community-Based Research to Improve Coverage of Tetanus Toxoid Immunization in Kaduna Local Government	Mrs. R. K. Binchan	ABU Teaching Hospital, Kaduna	Dr. A.O. Sorungbe	N. 29,590	N. 29,590	02/90	In progress
90/004	Quality Assurance Testing of Chloroquine Tablets in Northern Nigeria	Mr. T.A.S. Midala	Ahmadu Bello University, Zaria	Prof. L.A. Salako	N. 35,000	N. 35,000	02/90	Being revised
90/007	Cluster Survey on Neonatal Tetanus: The Magnitude and Epidemiology in Kano Metropolis, Northern Nigeria	Dr. C. O. Eregie	Bayero University	Dr. S. Mahdi	N. 27,886	N. 27,886	05/90	Report submitted
90/009	Evaluation of Factors Affecting the Adoption and Use of Sugar Salt Solution in the Home in Ibadan	Dr. O. Oladepo	University of Ibadan	D.M.D Ogundeji	N. 17,077*	N. 0	05/90	Being revised
90/010	Malaria Chemoprophylaxis in Children with Sickle Cell Anaemia, Port Harcourt	Dr. F. Eke	University of Port Harcourt	Prof. Salako	N. 30,000*	N. 30,000	12/91	Awaiting funds
90/018	Persistence Diarrhoae in children 2-35 months ABU Zaria	Dr. J.G. Kefas	ABU Zaria	Prof. Yakubu	N.20,405	N. 0	8/90	In Progress
90/021	Medical and Socio-Cultural aspects of treatment of diarrhoea in under-fives in Oyo state A Kapp study	Dr. B. Falashade Iyun	University of Ibadan	Dr. Ogundeji	N.39,100	N.39,100	5/91	In Progress

PROTOCOL NUMBER	TITLE	PRINCIPAL INVESTIGATOR(S)	INSTITUTION(S)	PRECEPTOR	APPROVED LOCAL FUNDS	LOCAL FUNDS ISSUED	DATE APPROVED	STATUS
90/012	Acute Respiratory Tract Infection	Dr. F.S. Bondi	Bayero University Kano	A.M. Yakubu	N.31,100	N. 0	5/91	In Progress
91/003	Sexuality contraception and Reproductive Health among secondary school children in Ilorin LGA	Dr(Mrs Araoye	University of Ilorin	Alhaji Anka	N.41,371	N. 0	12/91	Awaiting Funds
91/005	Determination of Appropriate Community Based nutrition intervention for a fishing and farming community in Nigeria	Dr. O.A. Abosede	University of Lagos	P. Ogunye	N.50,000	N. 0	12/91	Awaiting Funds
91/007	Vitamin A status of Pre school children with acute lower respiratory tract infection	Dr. K. Osinusi	University of Ibadan	Dr. Ogundeji	N.50,000	N. 0	12/91	Awaiting Funds

STUDIES APPROVED	FUNDED TO DATE	STUDIES COMPLETED	OF FUNDED COMPLETED
40	33	8	24%

ANNEX D: Issues 1, 2, and 3 of the Nigeria Bulletin of Epidemiology

NIGERIA BULLETIN OF EPIDEMIOLOGY

Volume 1 Number 1 | *Maiden Issue* | *February 1991*

A Quarterly Publication of the Epidemiological Division, Disease Control and International Health Department, Federal Ministry of Health, Lagos, Nigeria

Introduction

By the Honourable Minister of Health - Professor O. Ransome-Kuti

This is the inaugural issue of the *Nigeria Bulletin of Epidemiology*, prepared by the Epidemiological Division of the Department of Disease Control and International Health of the Federal Ministry of Health.

The *Bulletin* will provide data and situation reports on selected diseases, compiled from information received from health institutions and organizations. It will also report on issues of public health significance. This issue, for example, reports on the paracetamol syrup poisoning outbreak, on the new Immunization Policies and on highlights of the International Primary Health Care Conference held in Abuja in 1990.

Nigeria's health programmes are geared toward the attainment of Health for All by the Year 2000. To reach this goal, we must be able to control communicable and non-communicable diseases in appropriate and affordable ways.

Several factors limit progress - lack of awareness, inadequate information on the problems posed by communicable and non-communicable diseases, and constraints on human and material resources.

Disease control programmes will only be effective when reliable mechanisms of data collection, analysis and retrieval are in place, and when information on disease trends is exchanged among all health institutions in the Federation.

With full cooperation of all persons and organizations concerned, the objectives of the *Bulletin*, and indeed, the overall objective of providing Health For All will be achieved.

Editorial

A reliable system of disease surveillance is a *sine qua non* for planning, implementing and evaluating disease control programmes. Surveillance data help determine the priorities which guide the effective and efficient use of scarce resources.

The consequences of inadequate surveillance can be grave. Outbreaks of Yellow Fever in Nigeria in 1986 and 1987 were not recognized until three to five months after they began. Hundreds of preventable deaths occurred, and a greater number

TABLE OF CONTENTS

1 Introduction by Honourable Minister

3 Editorial

3 Epidemic Disease Control

5 Paracetamol Syrup Poisoning

7 A New System for Disease Surveillance and Notification

13 Immunization Schedule

[illegible] New Immunization [illegible]

[illegible] The Indices of [illegible]

[illegible] Guinea Worm Programme

of persons fell ill. More money, time and scarce resources were needed to control the epidemics than would have been necessary had the outbreaks been detected earlier.

Nigeria is improving disease surveillance systems. In particular, a new system for disease notification came into operation in January 1990. Full benefits of this system will not be realised until it is complemented by the analysis and interpretation of the data gathered, and the dissemination of the interpreted data to appropriate authorities, agencies and individuals.

GOALS OF THE BULLETIN

The *Nigeria Bulletin of Epidemiology* is a part of this effort, and will:

- disseminate information on disease trends in Nigeria
- report on public health issues and policy
- facilitate exchange of health information among people and organizations delivering health care in Nigeria
- increase awareness of the importance of disease surveillance

The *Bulletin* will provide technical information and evaluation of disease control programmes. It will present summaries and analyses of disease notification data received from the States and the Federal Capital Territory, Abuja. It will feature reviews of diseases of public health importance in Nigeria, including yellow fever, cerebro-spinal meningitis, cholera, Guinea Worm, AIDS, tuberculosis, Hansen's Disease (leprosy), tetanus, measles, polio, onchocerciasis and schistosomiasis. Other diseases will be covered as required.

The *Nigeria Bulletin of Epidemiology* will be distributed free to institutions at the Federal, State and Local Government levels, to Medical Schools and Teaching Hospitals, to Schools of Health Technology, Nursing Schools and Voluntary Health Agencies.

Health Information System development differs throughout Nigeria - the amount and the quality of data available vary a great deal. This *Bulletin* hopes to stimulate continual improvement of the Health Information System in Nigeria. A good Health Information System is useful, simple, flexible, complete, accurate and timely - these criteria are further elaborated in the Figure entitled *"Health Information System"*.

The editors hope the *Bulletin* will reflect the changing disease patterns and perceived health problems in Nigeria, and that the *Bulletin* will respond to the epidemiologic information needs of our national strategies for achieving Health For All Nigerians by the Year 2000.

The Bulletin welcomes the views of its readers, though letters may be edited for clarity and space. The Editor invites readers to submit articles for consideration for publication. Articles longer than 500 words may be edited for space.

HEALTH INFORMATION SYSTEM

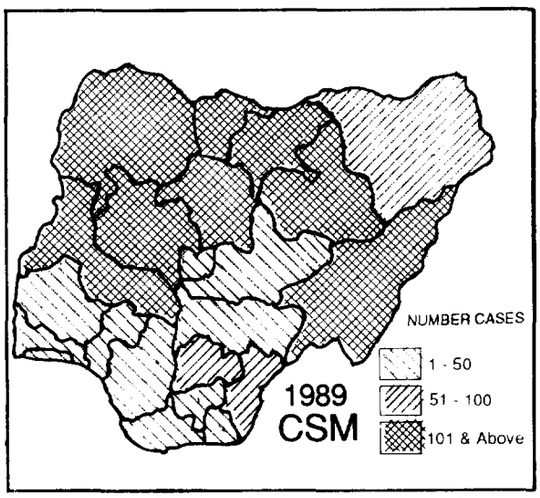
USEFUL	Information helps to assess and to improve efforts to control diseases
SIMPLE	Reporting methods are appropriately detailed, functional and clear
FLEXIBLE	Reporting responds to changing disease patterns and priorities
COMPLETE	Data collection is complete, or when appropriate, representative
ACCURATE	Sensitivity and specificity are high
TIMELY	Forms are promptly submitted at all levels, promptly analysed, and feedback provided

Epidemic Disease Control

Dr. Gabi Williams

An epidemic can be simply defined as *"the unusual occurrence of cases of a particular disease in a given place and given time"*. Outbreaks of communicable diseases have been increasing world-wide. Reasons for this include faster travel and greater distances covered, urbanization, overcrowding, poor nutrition, and lack of safe water and sanitation. Poverty increases the risk of acquiring a disease, and its consequences.

Between 1986 and 1989, Cerebro-spinal meningitis (CSM) ravaged the northern states of the Federation resulting in many cases and deaths.



States Reporting Cerebro-Spinal Meningitis, 1989

(See the Figure entitled *"States Reporting Cerebro-Spinal Meningitis, 1989"*.)

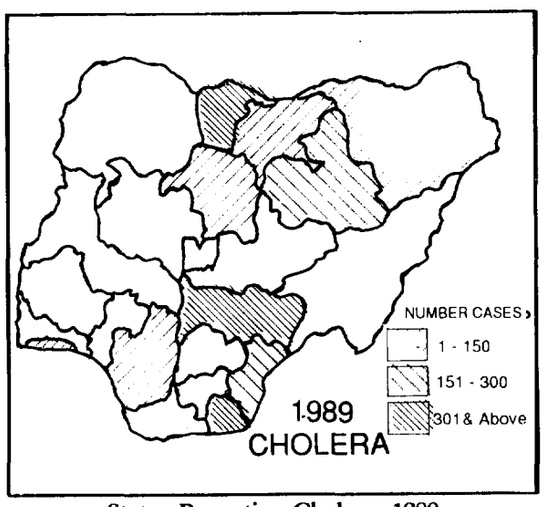
The Bendel state experience of Lassa Fever epidemics in 1989 will for long be remembered. We have also experienced sporadic outbreaks of cholera. (See the Figure entitled *"States Reporting Cholera, 1989)*.

In the last five years three serious Yellow Fever epidemics have occurred in Nigeria. In Oyo State alone, hundreds of lives were lost during the 1986/87 Yellow Fever epidemic before it spread to other states in the country. See the Figure entitled *"States Reporting at Least One Case of Yellow Fever, 1987 - 1990"* (next page). The 1990 map reflects reports received up to 5th February, 1991.

The Figure entitled *Vaccine Distribution* (page 5) shows the doses of Yellow Fever and CSM Vaccine supplied to the States in 1990.

Each epidemic outbreak obeys its own dynamics, governed by the nature of the disease, the mode of transmission and the environment. But all epidemics are expensive in terms of human and material resources. An epidemic places an additional burden on health facilities, it threatens people's health and lives and disrupts the socio-economic fabric of the affected community and the nation.

To minimize these effects there must be quick intervention aimed at providing medical care for the affected persons and containing the outbreak. Available infrastructures must be improved so that any outbreaks will be quickly recognized and

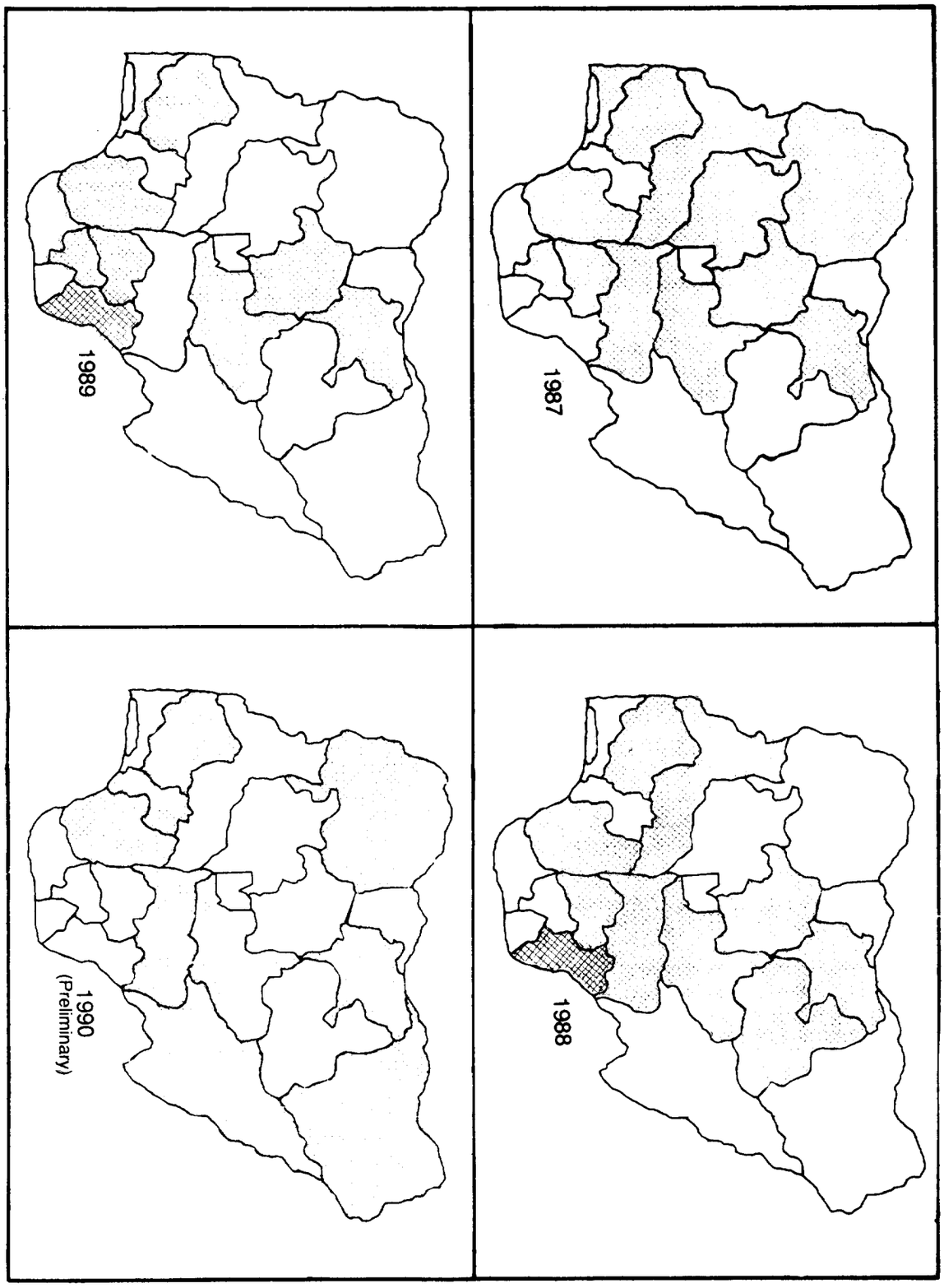


States Reporting Cholera, 1989

controlled. The role of an effective surveillance system backed by adequate laboratory facilities must constantly be emphasized.

Epidemics often occur suddenly. We must have surveillance systems and control measures in place. We have put into operation the guidelines provided by the National Council on Health, but success depends largely on the alertness, commitment and dedication of people entrusted with making the system work. Health personnel in the state epidemiological units and in the LGAs have a very important role to play.

78



States reporting at least one case of Yellow Fever, 1987 - 1990

79

STATE	Doses YF Vaccine Supplied	Doses CSM Vaccine Supplied
Abuja	130,000	0
Akwa-Ibom	120,000	0
Anambra	250,000	35,000
Bauchi	310,000	50,000
Bendel	250,000	0
Benue	50,000	0
Borno	550,000	130,000
Cross River	110,000	0
Gongola	300,000	0
Imo	450,000	90,000
Kaduna	200,000	0
Katsina	150,000	0
Kano	120,000	110,000
Kwara	100,000	0
Lagos	180,000	75,500
Niger	80,000	138,000
Ogun	0	2,000
Ondo	100,000	0
Oyo	150,000	75,000
Plateau	210,000	0
Rivers	100,000	0
Sokoto	270,000	150,000
Other-Armed Forces, etc	78,950	0
TOTAL	4,258,950	855,500

Vaccine Distribution to the States

Acute Renal Failure Secondary to Ingestion of Adulterated Paracetamol Syrup, Plateau and Oyo States, June - September 1990

Between June and September 1990, at least 111 children died of acute renal failure after ingesting paracetamol syrup, containing the potent toxin, diethylene glycol. Diethylene glycol was used as a solvent in the preparation of the paracetamol syrup, rather than the proper ingredient, propylene glycol. Cases of renal failure occurred in Oyo and Plateau States, involving children between six months and six years of age (See *Epidemic Curve* on page 6).

Acute renal failure occurred in children who had been given paracetamol syrup prepared at two hospital pharmacies, under the supervision of qualified pharmacists.

All affected children had a history of a previous minor illness which was treated with paracetamol syrup. In both Plateau and Oyo states, cases of renal failure were seen soon after the involved hospital pharmacies began to dispense newly prepared paracetamol syrup.

The "propylene glycol" was obtained from local chemist shops, which had got their supply from shops in Onitsha, Anambra State. The substance sold by the Onitsha traders as "propylene glycol" was in fact diethylene glycol, which had been diverted from oil drilling sites, run by multi-national companies. These companies had legally imported diethylene glycol for their legitimate drilling operations.

Laboratory analysis showed that diethylene glycol was present in the syrup remaining in bottles given to children who died, in samples of "propylene glycol" from the hospital pharmacies, and in material seized from traders in Onitsha by the Task Force on Fake and Counterfeit Drugs, Food and Drug Administration and Control, FMOH.

Response to the Outbreak:

The FMOH acted to control the outbreak by:

- banning the use of paracetamol syrups
- surveillance to identify new cases
- community outreach to remove unused medications from homes
- investigating and tracing the source of the toxin
- seizure of 348 gallons of diethylene glycol, which could have been used for future batches of the paracetamol syrup.
- arrest of persons in Onitsha and Port Harcourt for involvement in the sale of diethylene glycol

requiring that manufacturers demonstrate that propylene glycol used by them is genuine

Discussion

It is clear that in Nigeria the sale of chemicals, including poisons, is not adequately monitored or controlled. Nor is there adequate control and supervision of personnel in some of the places where pharmaceutical products are prepared, and are sold.

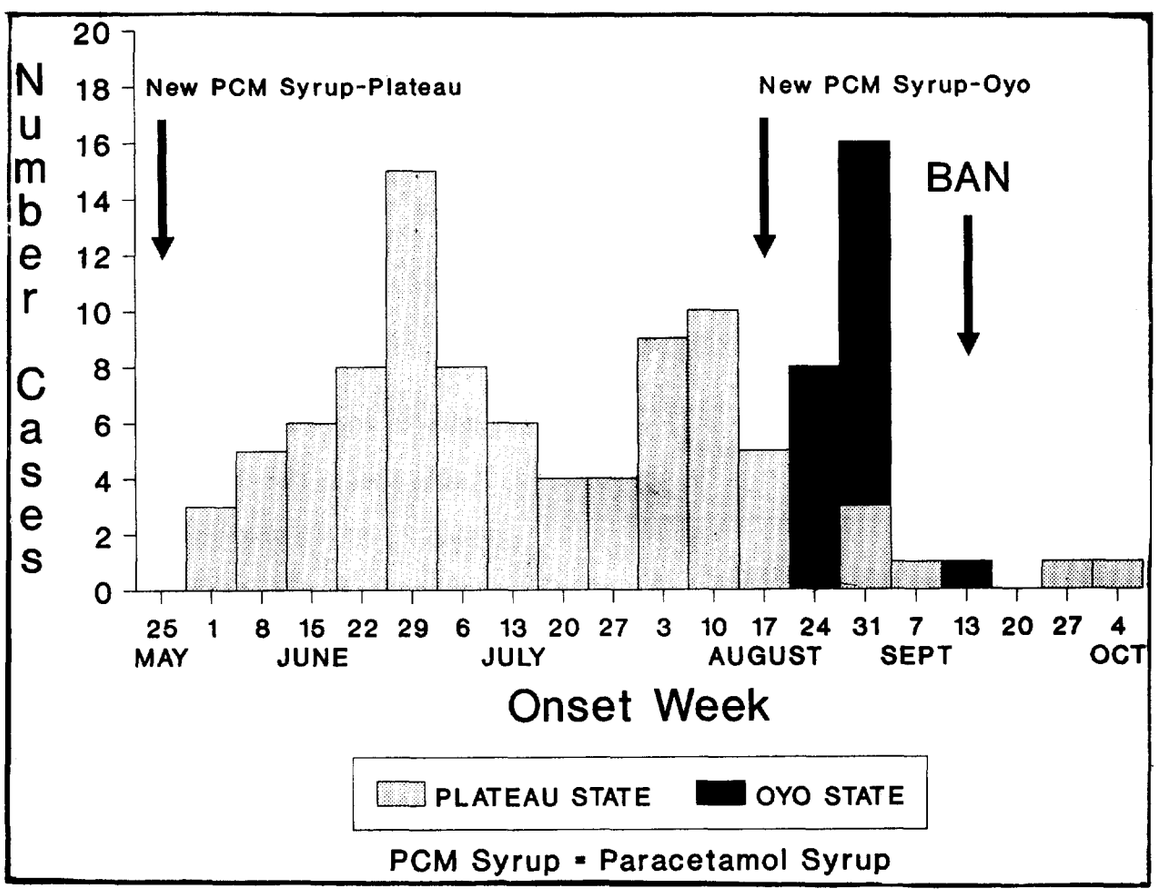
Because fake drugs are easily available, and are invariably cheaper than genuine ones, they appeal to the public.

Furthermore, the oil companies apparently do not have adequate security on their premises to ensure dangerous chemicals do not get into the wrong hands. In fact, there is presently nothing to prevent incidents like this occurring in the future.

The only other large outbreak of diethylene glycol poisoning occurred in 1937 in the United States, when it was also used to prepare a commonly used medicine.

Geiling and Cannon, investigators of that outbreak, wrote:

"There is no short cut from the chemical laboratory to clinic, except one that passes too close to the morgue. Human lives have been sacrificed by the failure to meet standards of preliminary tests and many more lives will be sacrificed if such standards are not put into effect."



Cases of Acute Renal Failure, by Week of Onset of Anuria
Plateau and Oyo States, May to September 1990

61

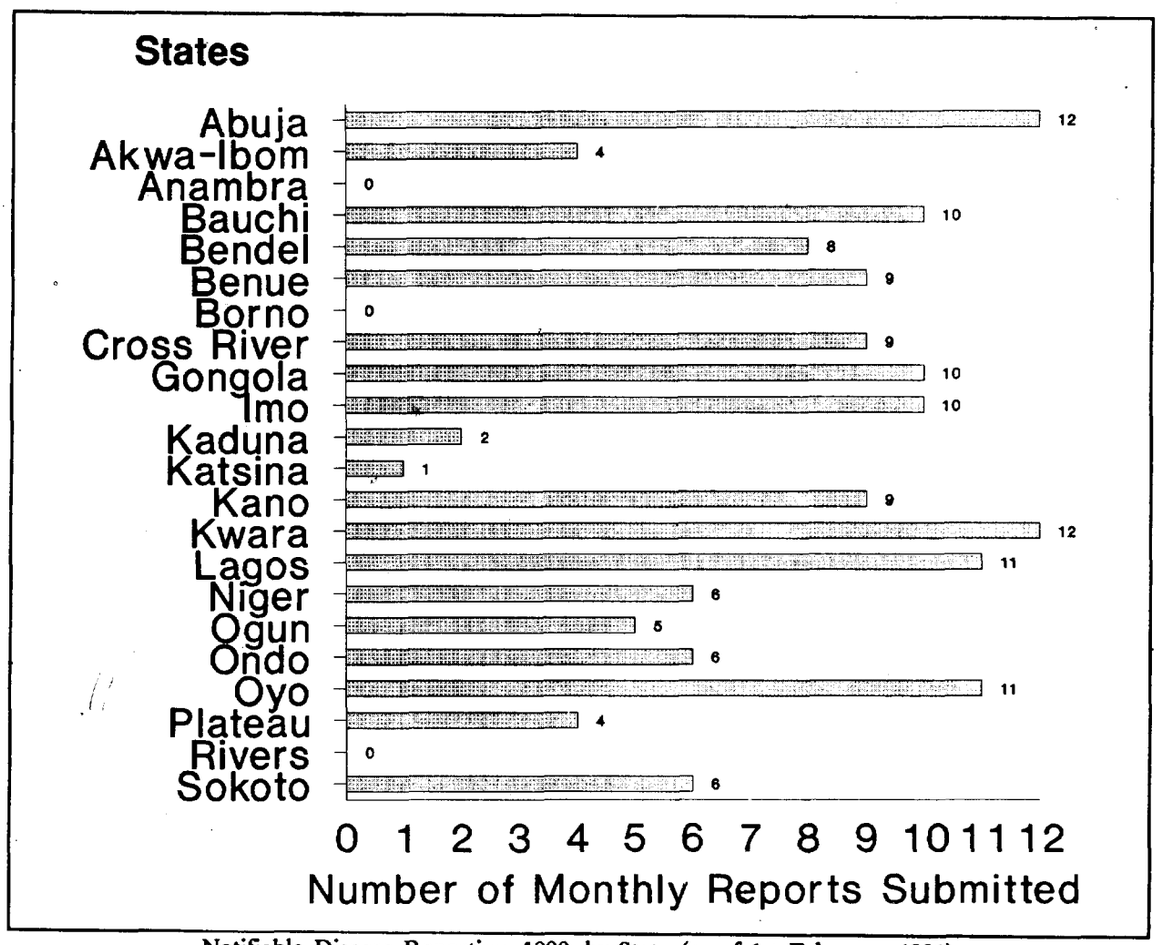
Geiling, E.M.K.; Cannon, P.R. "Pathologic Effect of Elixir of Sulfonamide (diethylene glycol) Poisoning: A Clinical and Experimental Correlation" Journal of the American Medical Association 111 (919-926) 1938.

Reported by Epidemiological Division, Disease Control and International Health Department and the Task Force on Fake and Counterfeit Drugs, Food and Drug and Administration and Control, FMOH; Departments of Virology and Preventive and Social Medicine, University of Ibadan; Combatting Childhood Communicable Diseases Project (CCCD/USAID), University of Jos Teaching Hospital and Plateau State Ministry of Health, Jos.

Disease Surveillance and Notification

In the wake of the 1986/87 outbreak of Yellow Fever, and in pursuance of the Federal Government's determination to combat the spread of all communicable diseases, the Honourable Minister of Health, Professor Olikoye Ransome-Kuti set up a National Task Force on Epidemic Diseases.

Early on, the Task Force realized that poor disease surveillance and notification hinder efforts to control epidemics. In the past, routine reporting by some States has not been complete, or timely. The Figure *"Notifiable Disease Reporting, 1990"* shows the number of reports submitted by each state in the Federation in 1990.



Notifiable Disease Reporting, 1990, by State (as of 1st February, 1991)

A National Workshop on Disease Surveillance was held in January 1988. Top professionals from the Ministries of Health and State Hospitals/ Health Management Boards from the 21 States of the Federation and the Federal Capital Territory, Abuja, representatives of Teaching Hospitals, of the Army, the Police, the Navy, the Air Force, international agencies and the Federal Ministry of Health met in Lagos in 1989 and recommended a new system of disease notification. The National Council on Health approved the system in 1989.

Selected Federal, State and Local Government officials were trained at zonal workshops on the philosophy and operation of the new system. The training of responsible officers in each State and Local Government Area is ongoing.

New System for Disease Notification

The new system relies on routine reports which are sent in every month, using Form DSN-002 (*See Figure entitled Form DSN-002*) and on emergency notification, in the case of epidemics, using Form DSN-001 *(See Figure entitled Form DSN-001)*. The flow of information from health facility to the Federal level is seen in the Figure entitled *Flow of Information from Health Facility to Federal Level.*

Routine or Regular Monthly Notification

There are forty "Notifiable Diseases". Some of these diseases were selected because they can pose an immediate threat to the health of the population. Others were selected because they are being addressed by Control Programmes and their incidence needs to be monitored to evaluate the impact of the Control Programme. Cases and deaths from these diseases should be reported every month using the notification form DSN-002. This replaces the previous weekly reports.

All health institutions should have completed this form by the end of the first week of the month after the month being reported on. That is, the report of cases from January should be completed by the first week of February.

The Local Government Area (LGA) Health office is responsible for collecting the completed form each month, if it has not already been sent by the health facilities and institutions.

Each LGA Health Office will collate data from all health institutions in that LGA using DSN-002. The LGA makes two copies. One remains at the LGA and the second is sent to the State Ministry of Health (Epidemiological Unit) before or by the end of the 4th week after the month being reported on. Thus, the report of January cases should arrive at the State level by the last week of February.

In turn, the Epidemiological Unit of the State Ministry of Health prepares returns for the state as a whole. Four copies are made - two should reach the Federal Ministry of Health (Epidemiological Division) by the end of the sixth week after the month being reported on (e.g. mid-March for January data); the third copy is sent to the Statistics Division of the State Ministry of Health. The State Epidemiological Unit retains the fourth copy.

At the national level, the Epidemiological Department keeps one copy of each state's report for its own records, for analysis, and any needed action. The second copy goes to the Planning Research and Statistics Division of the Federal Ministry of Health.

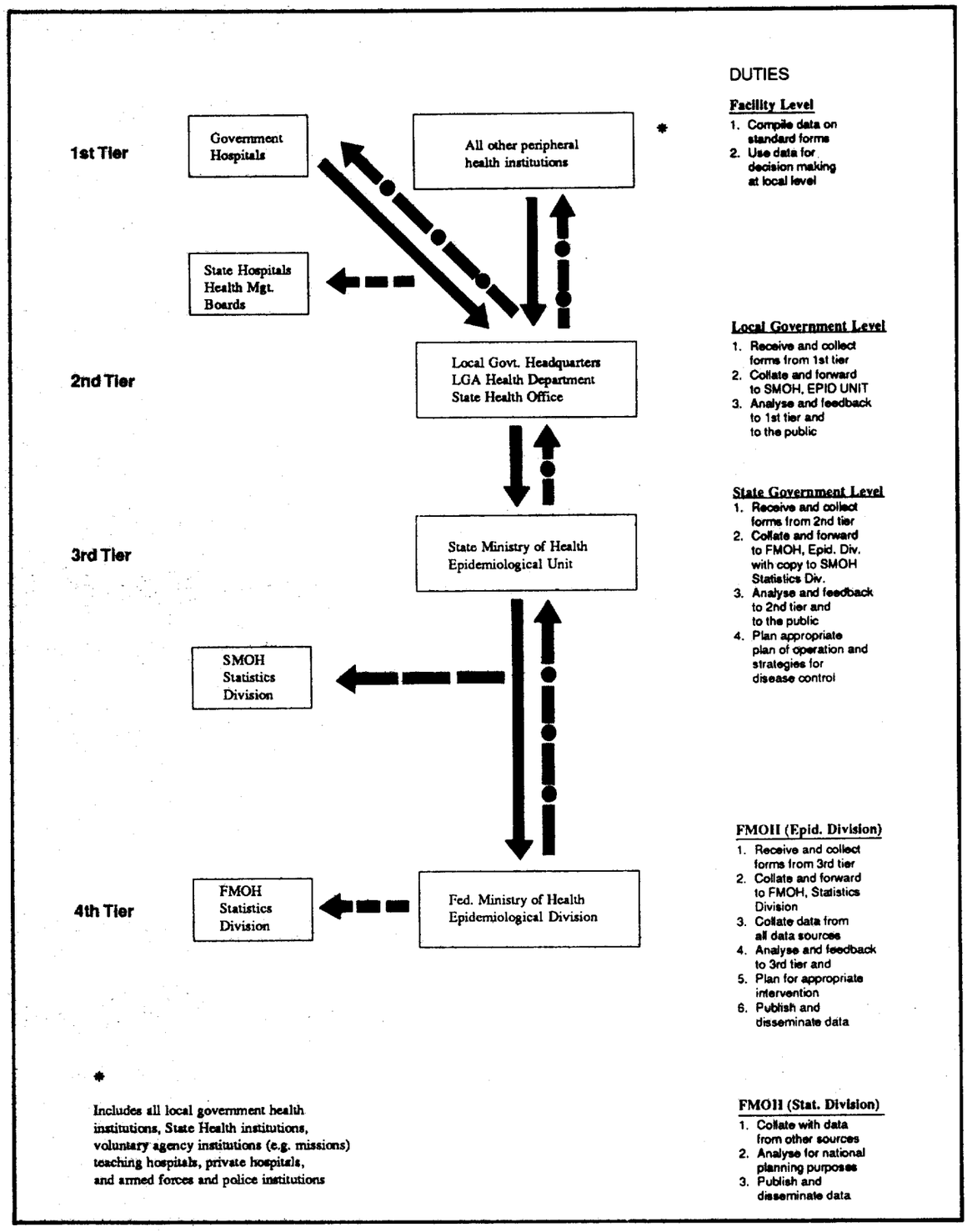
Routine notification data from health facilities should reach the Federal level in six weeks. For example, returns in respect of the month of June 1990 should have reached the LGA Health office by mid-July 1990, the State Ministry by the end of July 1990 and the Federal Ministry by mid-August 1990.

Emergency Notification

Immediate or Emergency Notification is required in two situations:

1. when any case or death due to any one of the following nine diseases is suspected: AIDS, Human Anthrax, Cerebro-spinal Meningitis, Cholera, Plague, Human Rabies, "Smallpox", Typhoid and Paratyphoid Fevers, and Yellow Fever.

FLOW OF INFORMATION FOR DISEASE NOTIFICATION



2. when an epidemic of any disease or condition occurs. An epidemic is defined as:

"the occurrence of a number of cases of the disease or condition that is unusually large or unexpected for the given place and/or time."

REPORT IMMEDIATELY

(1) Suspected cases or deaths from:

- AIDS
- CSM
- Plague
- Yellow Fever
- Typhoid & Paratyphoid
- "Smallpox"
- Anthrax
- Cholera
- Human Rabies

(2) An unusually large number of cases of a disease or condition.

Use Form DSN-001 for emergency notification, and send the information by the fastest means available. This might be by telephone, telex, radiophone, courier and so forth. Send in Form DSN-001 as well. Sending the information in by telephone, telex or courier is not a substitute for filling and sending in Form DSN-001.

Then send weekly follow-up reports on the progress of epidemic (or diseases listed above) until there have been three consecutive weeks with "nil" cases reported.

PROGRESS

The Federal Ministry of Health printed and distributed forms DSN-001 and DSN-002 to States, to LGAs and to Federal health institutions. It is proposed that the FMOH continue print these forms, and to review and modify them when and as necessary. The system became operational in January 1990.

Disease notification has already improved. Routine returns have increased from about 30% to over 80% by the first half of 1990, and reports being received by the Federal Ministry of Health are more comprehensive than before. Immediate notification has improved even more significantly.

This has helped the FMOH take quicker action to monitor and control epidemics. Monthly Disease Notification Reports from the States, for January through December 1989 are seen on page 14.

PROBLEMS

- Not using the new system. Some States like Imo, Benue, Ogun and Ondo do not use the new forms, although their representatives attended the National Workshop and collected the new forms.
- Late reporting. States like Cross Rivers, Kaduna, Akwa Ibom, Katsina and Rivers did not forward the reports for January - December, 1989 until July 1990. A delay of four months is common - e.g. report for January not sent until April.
- Reports not properly compiled. States like Sokoto, Kano, and Cross River send one report from each and every Local Government in their States instead of collating all reports from LGAs before forwarding them.
- Not including outbreak figures in routine monthly reporting. Imo and Bendel States, for example, did not report cases of Lassa Fever in their monthly notification forms.

The confident hope is that these and other problems will be surmounted with time as the benefits of the new system become increasingly clear, and as more health staff, particularly at LGA level, acquire proficiency in its operation. Regular training workshops for staff at health institution and LGA levels should facilitate this process.

Reported by Epidemiological Division, FMOH, Lagos

FORM DSN - 001

IMMEDIATE NOTIFICATION FORM

1. Name of Reporting Institution _____

2. Location _____ Town _____ LGA _____ State

3. Name of Disease _____

4. Symptoms and Signs _____

5. Date and place of onset _____

6. Age and Sex Distribution of cases and deaths

AGE	CASES		DEATHS		TOTAL	
	MALE	FEMALE	MALE	FEMALE	CASES	DEATH
Less than 1 year						
1–4 years						
5-14 years						
15 years and Above						

7. Weekly incidence since index case was seen

Week Beginning (date)	Location (name of town or village)	Cases	Deaths

8. Have samples been collected for laboratory studies? ☐ YES ☐ NO

9. To which institution(s) were they sent? Specify _____

10. Results (if available) — specify _____

11. What measures have been taken so far for investigation, treatment and control? Briefly specify _____

12. Any other relevant information? Specify _____

Name of person reporting _____ Signature _____

Designation _____ Date _____

Address _____

Telephone No. _____

86

19. Malaria																							
20. Measles																							
21. Onchocerciasis(River Blindness)																							
22. Ophthalmia neonatorum																							
23. Pertussis (Whooping cough)																							
* 24. Plague																							
25. Pneumonia																							
26. Poliomyelitis																							
* 27. Rabies (human)																							
28. Schistosomiasis																							
✓ 29. Smallpox																							
(30 Syphilis																							
31. Other Sexually Transmitted Diseases (STD)																							
32. Tetanus (Neonatal)																							
33. Tetanus (other)																							
34. Trachoma																							
35. Trypanosomiasis (Sleeping sickness)																							
36. Tuberculosis																							
* 37. Typhoid and Paratyphoid Fevers																							
38. Viral Influenza																							
39. Yaws																							
* 40. Yellow Fever																							

* These are the Immediate Notifiable diseases
✓ Small-Pox has been globally eradicated

OFFICER i/c OF HEALTH INSTITUTION _____

NAME _____

DESIGNATION _____

SIGNATURE: _____

DATE: _____

LOCAL GOVT. OFFICER i/c _____

NAME _____

DESIGNATION _____

SIGNATURE _____

DATE: _____

STATE OFFICER i/c _____

NAME: _____

DESIGNATION: _____

SIGNATURE: _____

DATE: _____

Comment (if any) _____

Nigeria Bulletin of Epidemiology Vol. 1 No. 1 February 1991

FORM DSN-002

ROUTINE MONTHLY DISEASE NOTIFICATION FORM

Mark x in approp. box to show origin of this form

	Health Institution
	Local Govt.
	State Ministry

MONTH: _____

YEAR: _____

NAME OF HEALTH INSTITUTION: _____

LOCAL GOVERNMENT AREA: _____

STATE: _____

DISEASE	NUMBER OF CASES										GRAND TOTAL	LABORATORY CONFIRMED CASES	NUMBER OF DEATHS										GRAND TOTAL
	MALE					FEMALE							MALE					FEMALE					
	UNDER 1 YR	1–4 YRS	5–14 YRS	15 & Above	TOTAL	UNDER 1 YR	1–4 YRS	5–14 YRS	15 & Above	TOTAL			UNDER 1 YR	1–4 YRS	5–14 YRS	15 & Above	TOTAL	UNDER 1 YR	1–4 YRS	5–14 YRS	15 & Above	TOTAL	
* 1. AIDS																							
* 2. Anthrax (Human)																							
3. Brucellosis (human)																							
* (4) Cerebrospinal meningitis (CSM)																							
5: Chickenpox																							
* 6. Cholera																							
7. Diarrhoea (simple without blood)																							
8. Diarrhoea with blood (dysentry)																							
9. Diphtheria																							
10. Dracunculiasis (Guinea Worm)																							
11. Filariasis																							
12. Food Poisoning																							
13. Gonorrhoea																							
14. Hepatitis																							
15. Lassa Fever																							
16. Leprosy																							
17. Louse-borne Relapsing Fever																							

MONTHLY DISEASE NOTIFICATION REPORTS FROM STATES JANUARY - DECEMBER 1989.

DISEASES	Cases	Deaths	CFR-*	DISEASE	Cases	Deaths	CFR-*
AIDS	38	14	36.8%	ONCHOCERCIASIS (RB)	3,687	12	0.3%
ANTHRAX (HUMAN)	1	0	0.0%	OPHTHALMIA NEONATORUM	6,546	30	0.5%
BRUCELLOSIS (HUMAN)	0	0	0.0%	PERTUSIS Whooping Cough	21,789	39	0.2%
CEREBRO-SPINAL MENINGITIS	6,842	968	14.1%	PLAGUE	0	0	0.0%
CHICKEN POX	13,429	61	0.5%	PNEUMONIA	111,713	359	0.3%
CHOLERA	1,059	60	5.7%	POLIO	455	9	2.0%
DIARRHOEA (SIMPLE)	65,588	132	0.2%	RABIES (HUMAN)	198	N/A	
DIARRHOEA (WITH BLOOD)	148,050	723	0.5%	SCHISTOSOMIASIS	11,830	7	0.1%
DIPHTHERIA	5,039	5	0.1%	SMALL POX	0	0	0.0%
DRACUNCULIASIS Guinea Worm	244	0	0.0%	SYPHILIS	1,579	0	0.0%
FILARIASIS	6,020	3	0.0%	STD (Not syphilis)	1,111	0	0.0%
FOOD POISONING	3,920	26	0.7%	TETANUS (NEONATAL)	498	91	18.3%
GONORRHOEA	30,749	10	0.0%	TETANUS (OTHER)	2,015	121	6.0%
HEPATITIS	2,911	21	0.7%	TRACHOMA	3,324	3	0.1%
LASSA FEVER	56	22	39.3%	TRYPANOSOMIASIS	1,482	7	0.5%
LEPROSY	11,353	27	0.2%	TUBERCULOSIS	13,342	324	2.4%
LOUSE BORNE Relapsing Fever	13,758	20	0.1%	TYPHOID AND PARATYPHOID	4,280	49	1.1%
LOUSE BORNE Typhus Fever	218	4	1.8%	VIRAL INFLUENZA	2,675	4	0.1%
MALARIA	984,983	1,423	0.1%	YAWS	478	0	0.0%
MEASLES	33,678	331	1.0%	YELLOW FEVER	2,092	406	19.4%

N/A - Not Available

CFR-* = Case Fatality Ratio

IMMUNIZATION SCHEDULE

TYPES OF VACCINE	AGAINST WHAT DISEASES	AGE GIVEN	DOSAGE	No. OF DOSES REQUIRED	MINIMUM INTERVAL	HOW GIVEN
BCG	TUBERCULOSIS	AT BIRTH 0-11 MONTHS	0.05 ML	1 DOSE	.....	INTRADERMAL
DPT	DIPHTHERIA WHOOPING COUGH TETANUS	6 WEEKS 10 WEEKS 14 WEEKS	0.5 ML PER DOSE	3 DOSES	4 WEEKS	INTRAMUSCULAR
ORAL POLIO	POLIOMYELITIS	AT BIRTH 6 WEEKS 10 WEEKS 14 WEEKS	2 OR 3 DROPS PER DOSE	4 DOSES	4 WEEKS	ORAL
MEASLES	MEASLES	9 MONTHS	0.5 ML	1 DOSE	.....	SUBCUTANEOUS
TETANUS TOXOID	TETANUS	TT–1 At first contact or as early possible. TT–2 At least four weeks after TT–1 TT–3 At least 6 months after TT–2 or during subsequent pregnancy. TT–4 At least one year after TT–3 or during subsequent pregnancy. TT–5 At least one year after TT–4 or during subsequent pregnancy.	0.5 ML PER DOSE	5 DOSES	4 WEEKS	INTRAMUSCULAR

New Immunization Policy

The National Council of Health adopted new immunization policies for Polio and Tetanus Toxoid, following the National In-Depth Review of EPI/CDD Programmes in November 1989. The policies are consistent with those of other countries in the WHO AFRO Region.

Polio at Birth

Give a dose of Oral Polio Vaccine at birth, at the same time as BCG. This dose, designated OPV 0 ("Polio-zero"), will be monitored as OPV 0. Record OPV 0 on the infant's Road to Health Card or vaccine card, and in the vaccine register.

Continue the present three doses of OPV as before: namely, OPV 1 at six weeks, OPV 2 at ten weeks and OPV 3 at fourteen weeks of age.

ORAL POLIO

OPV 0 - at birth
OPV 1 - at six weeks
OPV 2 - at ten weeks
OPV 3 - at fourteen weeks

Tetanus Toxoid Five Dose Schedule

The tetanus toxoid immunization schedule for pregnant women and women of child bearing age was modified to include five doses in women of child bearing age, as opposed to two doses for pregnant women.

Immunization posters with the changes are available from the EPI Programme Office, Primary Health Care Department, Onikan Health Centre, Lagos.

The Nigeria Immunization Coverage Survey took place in February 1991 and the results will be reported in a future of the *Nigeria Bulletin of Epidemiology.*

TETANUS TOXOID FIVE DOSE SCHEDULE

TT 1 = at 1st contact and as early as possible in pregnancy

TT 2 = at least 4 weeks after TT 1

TT 3 = at least 6 months after TT 2

TT 4 = at least 1 year after TT 3

TT 5 = at least 1 year after TT 4

Reported by EPI Programme, PHC Department, FMOH, Lagos

Primary Health Care Conference Highlights

International Conference on Primary Health Care, Abuja, Nigeria 19-25 August 1990

An **International Conference on Primary Health Care** was held in Abuja in August 1990. Over 400 invited experts and practitioners of Primary Health Care (PHC) attended.

The Conference commended the government for adopting a National Health Policy based on PHC and for its commitment to the pursuit of Health for All by the Year 2000.

The Conference called on all countries to implement PHC, using appropriate political and administrative means to direct resources to areas of greatest need.

KEY ISSUES AND RECOMMENDATIONS

Key issues brought out during the Conference included the need to:

Establish a National Commission for PHC in order to guarantee the position of PHC in the

health system and to assure adequate financial resources.

- Work toward equity and social justice in the organization of health care services. Achieve them through participatory, bottom-up community-based health planning, and equitable resource allocation.
- Re-orientate the existing health system according to principles of PHC.
- Use surveillance to identify families in greatest need and target services to meet their needs.
- Promote horizontal and vertical integration of services. Encourage integration by strong leadership, team spirit, and cooperation among decision makers, sectoral heads and donor agencies.
- Include knowledge and skills for PHC in the training of all cadres of health workers.
- Train key LGA staff in supervisory and management skills.
- Establish sound management so PHC services will respond to needs and make the best use of resources. LGAs will be responsible for Primary Health Care in their areas, and will need financial and technical assistance. Better logistic support for PHC at Village, District, Local Government headquarter level is vital.
- Emphasize that a country must define its own health needs and priorities in order to coor-

TOPIC	INDICATOR
EPI Coverage	Percent of Children Fully Immunized at One Year of Age
Ante-Natal Care	Percent of Pregnant Women fully Immunized with Tetanus Toxoid by 8th Month of Pregnancy
Nutrition - Pregnant Women	Percent of Newborns weighing more than 2500 grammes
Nutrition - Children 0-3 Years Old	Percent of Children 0-3 Years Old, weighing above the Third Percentile
Health Care Coverage Pregnant Women	Percent of Deliveries Attended by a trained Health Worker or TBA
Family Planning	Percent of Women of Reproductive Age Using a Modern Method of Family Planning
Access to Health Services	Percent of the Population living within 5 kms or 1/2 Hour of a Health Facility or Village Health Worker
Potable Water	Percent of the Population living within 200 meters of a Source of Potable Water
Latrines	Percent of the Population living within 50 meters of a pit latrine or toilet
Essential Drugs	Percent of Village Health Workers / Health Facilities with Drugs Continuously Available

Priority PHC Topics and National Indicators

dinate the activities of international organizations and bilateral agencies.

Focus on PHC Information System

A Health Information System (HIS) is an indispensable tool for monitoring the implementation of PHC. Information collected must be clearly stated and be relevant to PHC objectives and indicators.

Information needed to monitor PHC has been adapted to the level of Local Health Workers, and it is a priority to train LGA (and other) staff to collect and use the information. Decisions at all levels should be based on data. (Priority Primary Health Care Topics and Indicators are seen in the Figure *"Priority PHC Topics and National Indicators"*.

Reported by Department of Primary Health Care, FMOH, Lagos

Guinea Worm Eradication Target: 1995

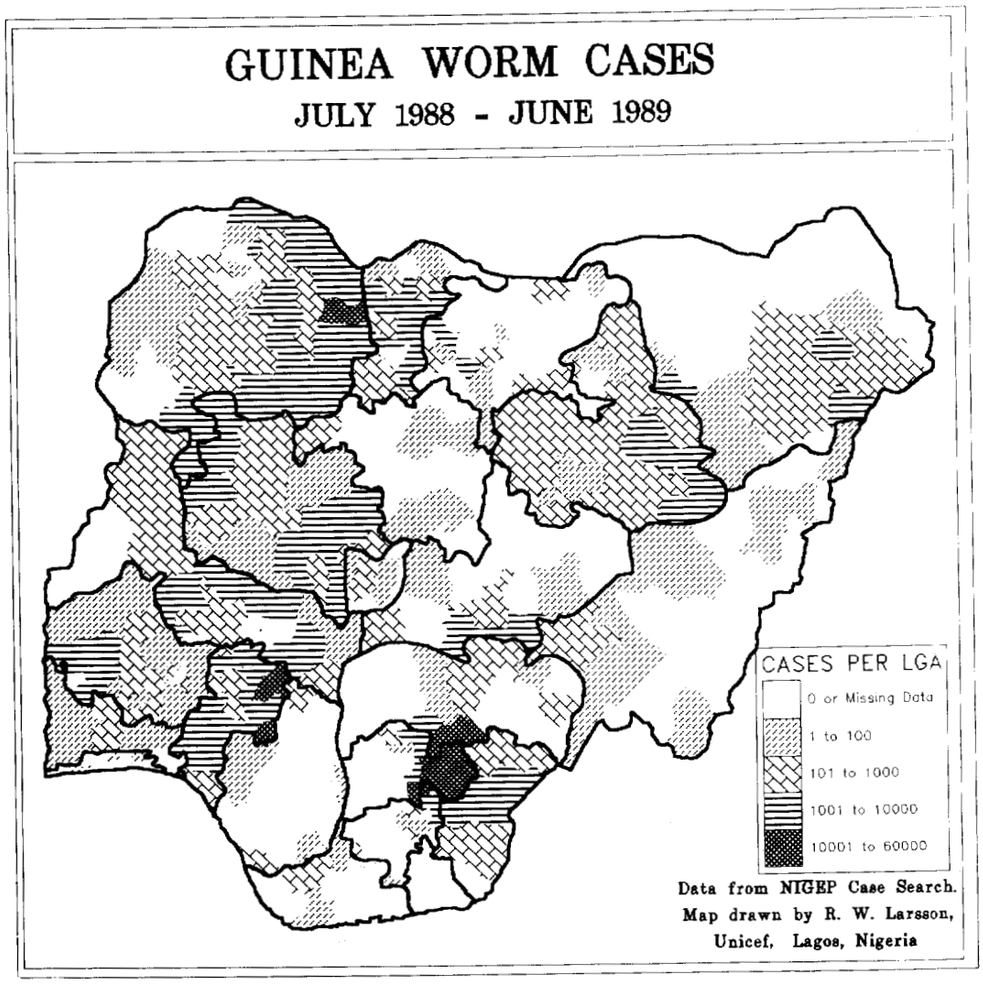
Guinea Worm disease (Dracunculiasis) is a painful, debilitating disease. It can incapacitate an affected person for up to twelve weeks, with serious consequences for agricultural productivity, school attendance, and a mother's ability to care for her children.

The Nigerian Federal Ministry of Health and Global 2000 established a Federal Secretariat in 1988 to coordinate the Nigeria Guinea Worm Eradication Programme (NIGEP). The goal of the programme is to eradicate Guinea Worm disease by 1995. Initial efforts have included establishing a National Task force and coordinating national activities with State and Local Government Areas (LGA) task forces and coordinators.

NIGEP has conducted two nationwide surveys to search for active dracunculiasis cases, to identify all villages affected, and to define the extent of the problems in these villages. These searches were

STATE	No of Endemic LGA's	Total No of LGA's Surveyed	No of Infected Villages 87-88	No of Infected Villages 88-89	No of Cases 87-88	No of Cases 88-89
Abuja	6	9	36	21	1,405	779
Akwa Ibom	0	20	0	1	0	6
Anambra	10	29	872	1,185	175,432	233,278
Bauchi	20	20	537	440	13,197	27,131
Bendel	6	20	19	31	218	572
Benue	8	19	146	245	38,317	41,337
Borno	12	24	188	162	5,246	9,374
Cross River	6	8	71	76	10,959	6,700
Gongola	12	21	59	37	319	269
Imo	10	31	262	190	53,668	31,726
Kaduna	7	13	76	60	211	352
Kano	34	46	338	84	12,987	5,630
Katsina	20	20	182	373	12,018	24,716
Kwara	14	14	1,005	558	50,356	15,798
Lagos	9	12	14	9	41	35
Niger	10	10	336	274	16,812	18,050
Ogun	11	12	226	140	2,993	1,238
Ondo	22	22	308	610	197,391	148,730
Oyo	38	42	632	538	16,576	14,169
Plateau	5	16	67	40	11,813	5,627
Rivers	4	10	23	23	295	295
Sokoto	35	37	482	673	33,366	57,953
TOTAL	299	455	5,879	5,770	653,620	643,765

Cases of Active Guinea Worm Disease & Endemic Villages, by State
July 1987 - June 1988 and July 1988 - June 1989



Guinea Worm Disease Cases July 1988 - June 1989

done in late 1988 and in 1989. A third is now being completed. These surveys also address the data needs of the various water projects. This was in support of the national directive that all water projects should make endemic villages a priority for water supply.

Results of Active Case Search

The survey identified villages with active dracunculiasis cases between July 1987 and June 1988, and between July 1988 and June 1989. Results from the 1989 search show more than 640,000 Guinea Worm cases in about 6,000 villages (See Table).

The disease is present in every state. Ten States showed a decrease in the numbers of cases, and six States showed increases of greater than 3,000 cases compared to a year earlier.

Ondo and Anambra States remain hyperendemic. Eleven other states report some LGAs with greater than 1,000 cases of Guinea Worm disease (See Figure above). Akwa Ibom and Lagos reported fewer than 100 cases.

Intervention Activities

The main interventions used to eliminate Guinea Worm disease are:

- health education to encourage use of safe drinking water
- non-pollution of water supplies
- use of water filters
- provision of safe drinking water on a priority basis for affected villages.

The Guinea Worm Programme works closely with the Primary Health Care Programme in the LGAs to ensure that active cases receive treatment and that an integrated approach to village based interventions is used.

The Nigerian government has directed all water supply agencies to give priority to Guinea Worm endemic villages. All States are complying with this directive, assisted by national and international agencies such as Directorate of Food, Roads and Rural Infrastucture (DFRRI), the United Nations Children's Fund (UNICEF), Japanese International Cooperation Agency (JICA), World Bank / United Nations Development Programme and the Canadian University Service Overseas (CUSO).

Many States are distributing locally manufactured filter cloths and Du Pont, an American company, has donated 130,000 square meters of nylon cloth for distribution in 1991. American Cyanamid has donated 11,000 liters of temephos (Abate), a larvicide used for the treatment of village ponds.

Health Education is an integral part of every intervention and many States have developed their own materials. The Sub-Committee on Health Education of the national Task Force is developing health education materials, such as a flipchart for village health workers, a comic book for primary school children and posters for use in the villages.

1991 NIGEP Activities

The third national case search will be completed in February 1991. A new surveillance system for Guinea Worm should be phased-in beginning in April 1991. Data will be gathered from affected villages every month and specific intervention plans and activities will be initiated at the village level. Data from these village level reports will be compiled to generate an LGA level report for each State to assist planners and health program personnel to implement interventions.

Focused village based efforts may include:

- Treatment (cleaning and bandaging) for infected persons
- Health education for infected persons
- Health education for communities to support:
  - use of safe drinking water
  - non-pollution of drinking water
  - use of water filters
- Provision of new, safe drinking water sources
- Provision of materials for water filters
- Chemical treatment of water supplies when appropriate

Results from the third case search will be published as they become available together with information on intervention activities.

Reported by: Dr. (Mrs) L.K. Sadiq, Nigeria Guinea Worm Eradication Programme (NIGEP); T. Alakija and P.J.McConnon, Prof. O.O. Kale; Prof. L.D. Edungbola; Dr E.I. Braide; B. Nwobi, Global 2000; R.Larsson, UNICEF

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NIGERIA BULLETIN OF EPIDEMIOLOGY

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EDITORIAL

This second issue of the *Nigeria Bulletin of Epidemiology* focuses on two diseases of great importance in Nigeria, cholera and yellow fever .

The Seventh Pandemic of cholera continues to spread throughout the world. As the disease spreads, it may become endemic in areas where poverty, low levels of hygiene and lack of potable water favour its survival. Cholera still threatens Nigerians. In 1991, more than 36,000 cases have been reported, and nearly one person in eight of those has died. This case fatality rate is "unacceptably high", according to the Honourable Minister of Health, Professor O. Ransome-Kuti.

In the past three decades, research on the epidemiology and clinical management of cholera worldwide has made it clear that prompt and well organized treatment can reduce case fatality rates to as little as 1%. More than 200,000 cases have been reported in Peru this year, with a case fatality rate (CFR) of only 0.86% - fewer than one cholera patient in 100 died.

It is also now clear that mass vaccination and mass chemoprophylaxis are ineffective in preventing or controlling outbreaks. This issue of the *Bulletin* outlines recommendations for the management of the patient with cholera, and measures to limit the spread of the disease. It also features an article on Yellow Fever which details the 1986-1990 epidemic in Nigeria. Yellow Fever is a preventable disease, yet it continues to kill.

Yellow Fever vaccine is going to be added to the six vaccines given to children in the EPI Programme, but it will be many years until the whole population is protected. As the authors of the article make clear, laboratory capacity must be strengthened, and delays in notification and recognition of the disease have hampered control efforts in the past. Several interesting features of the outbreaks, including the young age of victims, reinforce the call for further research to clarify the epidemiology of the disease in Nigeria.

The Yellow Fever and Cholera epidemics highlight again the importance of the Immediate Notification system for reporting outbreaks. Until diseases such as these are prevented, the best hope of saving lives is a quick response to treat ill patients and to control outbreaks .

CHOLERA IN NIGERIA

An outbreak of cholera is an acute public health problem with the potential to spread fast and cause many deaths. Rapid rehydration will save lives of the affected, and special attention must be given to surveillance and control. This article reports on cholera in Nigeria and is followed by an article which gives the current Federal Ministry of Health and World Health Organisation recommendations for responding to cholera.

1991 Cholera Outbreaks

In Nigeria, 36,196 cases of suspected cholera and 4,293 deaths have been reported to the FMOH Epidemiological Division from 1st January through 16 August 1991, giving a case fatality rate of 11.8%. Ninety-six Local Government Areas (LGAs), in 18 States of the Federation and the Federal Capital Territory, Abuja are reported to have been affected by cholera. Borno State has reported the highest number of cases (16,596), followed by Kano State (7,730 cases), and Bauchi State (2,629) (Figure 1, Table 1).

There were bacteriologically confirmed cases of cholera in Akwa Ibom, Kaduna Gongola, Oyo, Bauchi, Bornu and Kano; serotyping was done in the last three States, and found *Vibrio cholerae, serotype Ogawa.* 97% of the cases reported as of July were in areas where cholera had been confirmed. All other States have reported suspected cases, except Cross River, Niger and Rivers States. Akwa-Ibom, Anambra, Bendel, Benue, Imo, Lagos, Ogun and Ondo States have reported fewer than 100 cases in 1991.

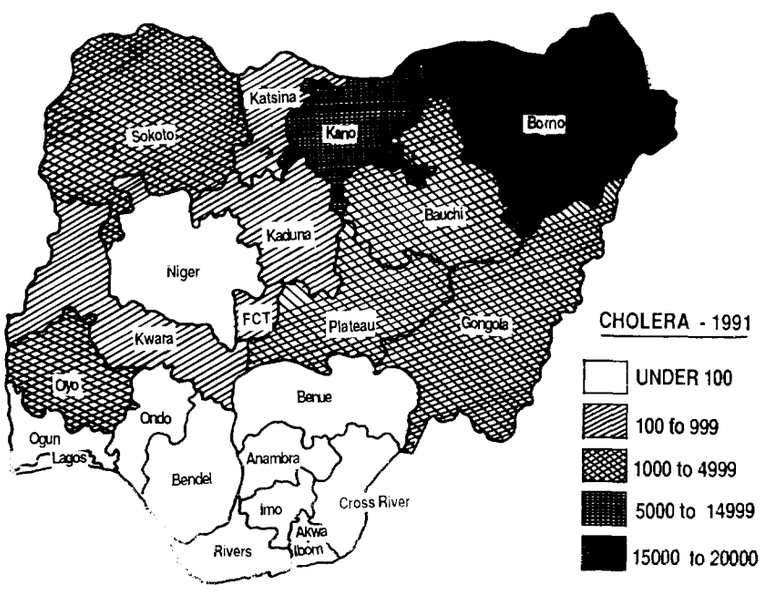
Cholera in Nigeria 1985 - 1990

In Nigeria, in 1985, 727 cases of cholera were reported, with 18 deaths; 653 of those cases were in Kaduna State In 1986, only 88 cases (no deaths) were reported. Borno State accounted for more than half of the 2,737 cases.reported in 1987. Fourteen States reported cholera in 1988, a total of 838 cases and 41 deaths.

In 1989,1,059 cases, and 81 deaths from cholera were reported from 10 States. Akwa Ibom, Katsina and Benue states reported more than 150 cases each. Although there was bacteriological confirmation in one state, no serotyping was done.in 1989.

In 1990, 13 states reported 4,101 cases and 61 deaths. Anambra (1,797) and Kano States, (1,756) reported the highest numbers of cases. There was bacteriological confirmation in Anambra and Oyo States, but no serotyping was done due to lack of antisera.

FIGURE 1 CHOLERA CASES REPORTED BY STATE
JANUARY - AUGUST 1991



Only four States reported cholera in 1985, and only 6 States in 1986. Each year since 1987, ten or more states of the Federation have reported cases. The rise in number of cases in 1991 seen in Figure 2 is especially alarming because it only only covers the period from January through 16 August.

Recommendations
Long term measures are described here. The next article outlines the short term actions needed to care for patients with cholera and to limit the spread of an outbreak.

Surveillance & Epidemic Investigation: Continuing surveillance of diarrhoea cases is the basis of early detection, whether cholera is newly introduced or recurring. Health workers should report any sign of a cholera outbreak. They should suspect cholera if they see an increase in the daily number of patients with diarrhoea, especially those with "rice water" stools.

TABLE 1

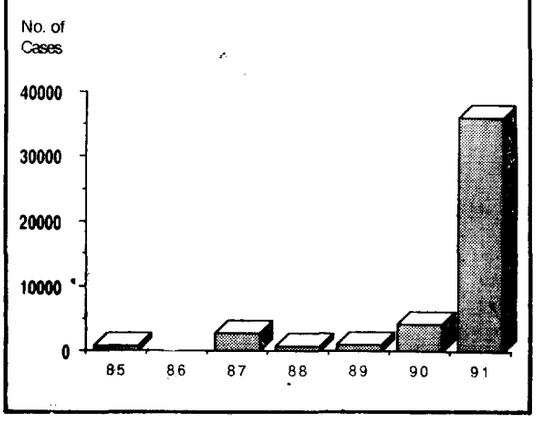
CHOLERA – Reported Cases and Deaths
By State, January – 15 August 1991

STATE	Deaths	Cases	CFR-*
FCT-Abuja	27	269	10.0%
Akwa Ibom	4	62	6.5%
Anambra	6	26	23.1%
Bauchi	433	2,629	16.5%
Bendel	43	45	95.6%
Benue	28	51	54.9%
Borno	1,829	16,596	11.0%
Cross River	0	0	0.0%
Gongola	345	2,102	16.4%
Imo	5	25	20.0%
Kaduna	124	774	16.0%
Kano	792	7,730	10.2%
Katsina	52	122	42.6%
Kwara	29	129	22.5%
Lagos	1	4	25.0%
Niger	0	0	0.0%
Ogun	0	6	0.0%
Ondo	5	76	6.6%
Oyo	106	2,362	4.5%
Plateau	166	1,160	14.3%
Rivers	0	0	0.0%
Sokoto	298	2,028	14.7%
TOTAL	4,293	36,196	11.9%

CFR-* = Case Fatality Ratio

Key points for conducting an epidemic investigation are mentioned below, and will be covered in detail in a future issue of the *Bulletin.*

FIGURE 2
REPORTED CASES OF CHOLERA IN NIGERIA
1 JANUARY 1985 - 16 AUGUST 1991



Cholera should be suspected when:

an adult develops severe dehydration from acute watery diarrhoea (usually with vomiting)

any patient has acute watery diarrhoea in an area where there is an outbreak of cholera.

Environmental Sanitation:
Provision of potable water must be a high priority in areas that have been affected by cholera. State Ministries of Health should link with the Water Boards of the Ministry of Water Resources to dig bore holes. Safe disposal of waste is another priority.

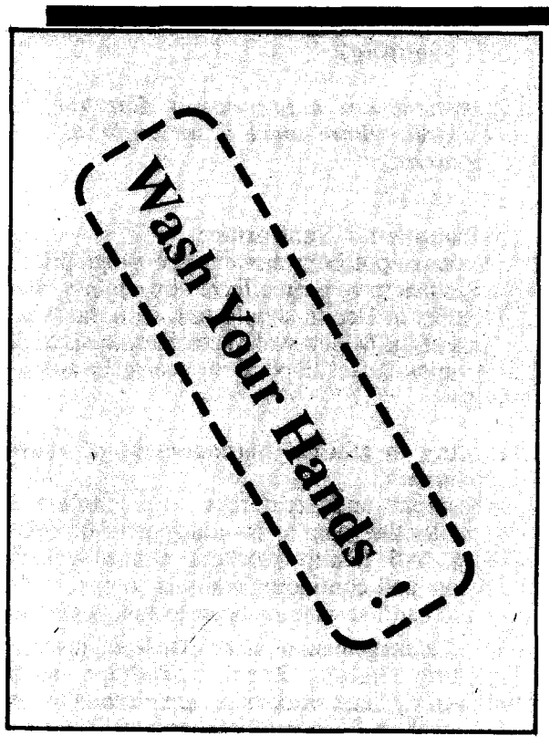
Training in clinical management of acute diarrhoea:
Assessment and treatment for cholera is essentially the same as for diarrhoea from other causes. All health workers should receive intensive and continuing training to ensure that they are familiar with the latest techniques for the clinical management of acute diarrhoeal diseases, including cholera. Zonal workshops, to be followed by State workshops, are planned to train LGA level staff in control of diarrhoeal diseases.

Health Education:
Outbreaks can be controlled more quickly when the public understands the problem and how they can help solve it. Health education should be conducted continuously to support environmental sanitation activities, and to inform the public of basic principles of diarrhoea transmission and prevention. Mothers and family members should know how to treat diarrhoea at home, and when to seek help.

During outbreaks, the public should be informed that cholera is no longer considered a fatal disease, that most cases can be treated with simple measures, and that vaccination is not effective. Health education should stress good personal hygiene and food safety.

Laboratory Support:
States should strengthen laboratories so that clinical diagnosis of disease can be quickly confirmed. This may require the provision or repair of equipment, and the regular supply of chemicals and reagents. Increased funding would enable laboratories to function more effectively.

Reported by Epidemiological Division, Dept. of Disease Control and International Health, FMOH:



GUIDELINES FOR RESPONDING TO CHOLERA

Communities, and health authorities, must respond quickly to the threat of cholera in order to save lives and limit the spread of the disease. In addition, medium and long term actions should be taken to anticipate, to prepare for and to prevent future outbreaks

In an unprepared community cholera can kill as many as 50% of patients. But when treatment facilities are organized and proper treatment is available, as few as 1% of cases may be fatal. Extensive experience worldwide has shown that the spread of cholera in a country can be contained by appropriate control measures.

This article gives recommendations for the management of the patient with cholera, discusses outbreak investigations, and describes measures to control the spread of cholera.

Management of Patients with Cholera

Cholera differs from childhood diarrhoeas because of the very high purging rate, and because it often strikes adults in non-endemic areas. Nonetheless, the procedures for assessment of dehydration and treatment are the same, and most cholera patients can be treated with oral rehydration.

Both health workers and the public should be informed that oral rehydration is appropriate for adults as well as for children. Intravenous solutions are usually required only for the initial rehydration of the severely dehydrated patient who is in shock or is unable to drink. During an epidemic, grouping cholera patients together can facilitate treatment and minimize environmental contamination, but care must be taken to avoid nosocomial outbreaks.

The FMOH recommends that in the community, cholera patients be managed with **Salt-Sugar Solution (SSS)** (see below), and that in health institutions cholera patients be managed with Oral Rehydration Salts (ORS) sachets and intravenous (IV) fluids as well, according to the severity of the dehydration.

The five steps in the management of a person with suspected cholera are to

(1) assess the degree of dehydration,
(2) rehydrate rapidly
(3) maintain hydration,
(4) give antibiotic to patients with severe dehydration,
(5) feed the patient.

Step 1: Assess dehydration.

Use the Table 2 entitled "*Assessment of diarrhoea patients for dehydration*" to decide if the patient has **severe** dehydration, **some** dehydration (moderate), or **no signs** of dehydration.

In adults and children older than 5 years, other signs for severe dehydration are absent such as radial pulse and low blood pressure. The skin pinch is less useful in patients with marasmus (severe wasting) or kwashiorkor (severe malnutrition with oedema) or obese patients. Tears are a relevant sign only in infants and young children. Health workers may be more familiar with the previous version of this assessment chart. They may use which ever chart they have available. However, the key to treatment is prompt rehydration. Health workers should never delay giving fluids in order to look for a chart, or a scale, for example.

TABLE 2

Assessment of Diarrhoea Patients for Dehydration

	A	B	C
LOOK AT:			
1.CONDITION	Well, alert	* RESTLESS, IRRITABLE*	*LETHARGIC OR UNCONSCIOUS; FLOPPY *
EYES	Normal	Sunken	Very sunken & dry
TEARS	Present	Absent	Absent
MOUTH & TONGUE	Moist	Dry	Very dry
THIRST	Drinks normally, not thirsty	* THIRSTY, DRINKS EAGERLY *	* DRINKS POORLY OR NOT ABLE TO DRINK *
2.FEEL: SKIN PINCH	Goes back quickly	* GOES BACK SLOWLY *	* GOES BACK VERY SLOWLY*
3.DECIDE:	The patient has NO SIGNS OF DEHYDRATION	If the patient has two or more signs including at least one *SIGN* there is SOME DEHYDRATION	If the patient has two or more signs including at least one *SIGN* there is SEVERE DEHYDRATION
4.TREAT:	Use Treatment **Plan A**	Weigh the patient,if possible and use Treatment **Plan B**	Weigh the patient and use Treatment **Plan C.** URGENTLY

Step 2: Rehydrate the patient

If the patient has severe dehydration

(Plan C)

Give IV fluid rapidly.
Ringer's Lactate is the best. If it is not available, use Normal Saline. Other acceptable solutions are Half-strength Darrow's solution, and Half Normal Saline with 5% dextrose. **Do not use plain glucose (dextrose) in water, it is not effective.**

Start IV fluids immediately. If the patient can drink, give ORS by mouth while the drip is being set up.

For patients 1 year old and above, give 100 ml/kg of IV fluid in 3 hours, divided as follows:

30 ml / kg IV fluid as rapidly as possible (in 30 minutes); then

70 ml / kg IV fluid in the next $2^1/_2$ hours

For patients below 1 year,
give 100 ml / kg of IV fluid in 6 hours, divided as follows:

30 ml / kg IV fluid in the first hour, then

70 ml / kg IV fluid in the next 5 hours

Reassess the patient very frequently. After the initial 30 ml / kg IV fluid are given, the radial pulse should be strong. If it is not, continue to give IV fluids rapidly. Check the vital signs and the skin turgor.

Give ORS (about 5 ml / kg / hour) as soon as the patient can drink, as well as IV fluid.

Evaluate the patient after 3 hours, (infants after 6 hours) using the same Assessment Table. If the patient still shows signs of severe dehydration (this is rare), repeat the IV therapy already given. If the patient has signs of "some" dehydration, continue as indicated below for moderate dehydration, using oral fluids. If there are no signs of dehydration, maintain hydration by replacing ongoing fluid losses .

If the patient has "some" dehydration

(Plan B)

Give ORS Solution or SSS

If ORS sachets are used, it is important to look at the label to determine the amount of water needed to prepare the solution. It usually is either 600 ml (2 mineral bottles) or 1 litre ($3^1/_3$ mineral bottles).

Give 100 ml / kg of ORS (oral fluids) in 4 hours. More fluid can be given to a patient who wants more.

For example, a 15 kg child needs 1,500 ml (1 $^1/_2$ litres) in 4 hours. This would be 375 ml each hour.

A 50 kg adult needs 5,000 ml (5 litres) in 4 hours. This would be 1 1/4 litre each hour.

A 60 kg adult needs 6 litres in 4 hours - the amount in the "bucketful of SSS" made with 10 beer bottles (20 Coca-Cola bottles) and 10 level teaspoons of salt. (see below)

At clinics without weighing scales, health workers can assume that

- an adult weighs 60 kg;
- a 10 year old weighs 30 kg
- a 7 year old weighs 25 kg
- a 5 year old weighs 15 kg
- a 3 year old weighs 15 kg
- a 2 year old weighs 12 kg
- a 1 year old weighs 10 kg

Monitor the patient often to be sure the ORS is taken well and to detect patients who have profuse diarrhoea - they must be monitored more closely.

Reassess the moderately dehydrated patient every 4 hours. and continue treatment according to the degree of dehydration.

If the patient has "no signs of dehydration"

(Plan A)

The patient who is not dehydrated can be treated at home. Many mothers have been taught to prepare Salt-Sugar-Solution. (SSS). In an area where there is cholera, they should prepare buckets of SSS.

Health workers should make sure that the mothers understand how to prepare it correctly by asking them to demonstrate it at the clinic, or to give a thorough description, including what measures they will use.

Age of patient	As a guide, give after each loose stool
Under 2 years	100 ml
2-10 years	200 ml
Over 10 years	as much as wanted (at least 300 ml)

Health workers should describe and show the amount of SSS or ORS to be given after each loose stool using a local measure that is likely to be available in most homes.

Tell the patient or mother or the caretaker to go to a clinic or hospital immediately if any of these signs develop:

- increased number of watery stools
- marked thirst
- eating or drinking poorly
- repeated vomiting

Step 3: Maintain hydration - replace on-going fluid losses

When a patient who has been rehydrated with IV fluid or ORS is reassessed and is no longer dehydrated, give ORS solution to maintain hydration. **Reassess the patient for signs of dehydration at least every 4 hours** to ensure that ORS is being taken properly, and to detect patients with profuse ongoing diarrhoea for closer monitoring.

Keep the patient for observation until the diarrhoea stops or is infrequent and of small volume, especially for any patient who presented with severe dehydration. If a patient must be discharged before diarrhoea has stopped, show the caretaker how to prepare SSS. Health workers should emphasize to relatives that the patient needs a great deal of fluid. SSS should be prepared by the bucketful.

Notes on Rehydration: *vomiting usually subsides in 2-3 hours, as rehydration is achieved. Use a naso-gastric tube for ORS if the patient has some signs of dehydration and cannot drink, or for a person with severe dehydration only if IV therapy is not possible at the facility. Fluid should be given per NG tube at a rate of 20 ml/kg/hour. If it is too rapid, the patient may vomit repeatedly.*

The amount of ORS solution needed to maintain hydration varies greatly from patient to patient, depending on the volume of stool passed. However, the amount needed is greatest in the first 24 hours of treatment, and is especially great in patients who presented with severe dehydration. In the first 24 hours, the average requirement in such patients is 200 ml per kg of body weight, but some may need as much as 350 ml/kg. Following rehydration, urine output usually resumes in 6-8 hours. Regular urinary output (every 3-4 hours) is a good sign that adequate amounts of fluids are being given.

Step 4 : Give an oral antibiotic to patients with severe dehydration

An effective antibiotic can reduce the volume and duration of severe cholera diarrhoea and shorten the period during which *Vibrio cholerae* are excreted. The antibiotic should be given orally as soon as vomiting stops, usually within a few hours of beginning rehydration. There is no advantage in using injectable antibiotics.

Tetracycline is the antibiotic of choice for adults; cotrimoxazole and furazolidone are alternatives. A single 300 mg dose of doxycycline may be given to adults, if it is available

For children, use cotrimoxazole as the first choice, and tetracycline as the alternative agent. In some places, *V. cholerae* has developed resistance to tetracycline and other antibiotics. This is suggested when diarrhoea continues after 48 hours of antibiotic treatment. Erythromycin and chloramphenicol may be used when other recommended antibiotics are not available.

Antibiotic Doses:

Tetracycline

Adults: 500 mg 4 times a day for 3 days

Children: 12.5 mg/kg 4 times a day for 3 days

Cotrimoxazole (Trimethoprim-sulfamethoxazole) (TMP-SMX)

Adults: TMP 160 mg and SMX 800 mg twice a day for 3 days

Children: TMP 5 mg/kg and SMX 25 mg/kg twice a day for 3 days.

No other types of medications, such as anti-diarrhoeals, anti-emetics, anti-spasmodics, cardiotonics or corticosteroids should be used to treat cholera.

Selective treatment with antibiotics for members of the same household as the cholera patient (that is, those who share food and shelter), may be useful. In communities where social mixing and sharing of food between households is common it is difficult to determine who is a close contact. As a rule, the value of selective chemoprophylaxis depends on the local situauon. It is justified **only** if surveillance shows that an average of one household member in a family of five becomes ill after the first case. Mass, or community, chemoprophylaxis does not work.

Step 5: Feed the patient

Resume feeding when the vomiting has stopped. Continue breastfeeding in infants and young children. Give water or other fluids in addition to ORS, if the patient wishes.

Cholera Treatment in the Community

Cholera kills quickly. Many victims will not have time to come to a health institution.

Save lives by making sure people know how to make **"buckets of SSS"**. The Honourable Minister's formula (below) makes 6 litres of SSS - that is the amount a moderately dehydrated 60 kg adult should drink in **four** hours ! Be sure people know they must drink **plenty** of SSS.

As soon as one bucketful is finished, they should make another, and continue to drink as long as they have diarrhoea, or they are thirsty. SSS cannot save their lives unless they drink plenty.

Health education will save lives. Tell people to boil their water. Tell people to wash their hands after using the toilet and before cooking and eating.

Make Plenty of SALT - SUGAR- SOLUTION (SSS) for a Person with Cholera

Get a clean plastic bucket.

Pour 10 beer bottles or 20 Coca - Cola bottles full of clean water into the bucket.

Add 10 level teaspoons of salt and 50 lumps of sugar.

Mix thoroughly. Drink the solution liberally.

Drink the solution as soon as diarrhoea begins and to quench any thirst that may arise.

The victim will be saved only if the water lost in the stool is immediately replaced through drinking SSS.

The victim must drink plenty of SSS as long as he has diarrhoea. Prepare a new bucket full of SSS as soon as one is empty.

Epidemiology: Investigating the Outbreak

At the start of an outbreak, even as general control measures are undertaken an epidemiological investigation should be started to determine the magnitude of the outbreak, the vehicle and the circumstances (time, place and person) of transmission so that more effective and more specific control measures can be applied.

Close communication should be established between the epidemiologist in the field, and clinicians, sanitarians and laboratory staff. This allows suspected and confirmed cholera cases to be identified and recorded in time and place, preferably on a spot map.

Detecting cholera cases early is important for prompt treatment and so that fewer places will be contaminated. Early case detection helps the epidemiologist investigate how cholera is being spread so that specific control measures can be taken. Members of voluntary organisations, religious leaders, teachers, students and community members should be encouraged to help by providing information on the occurrence of cases.

With the help of clinicians and the laboratory, a sufficient number of stool specimens should be examined to identify the causative organism and test its sensitivity to antibiotics. Once the presence of cholera is confirmed, it is not necessary to examine specimens from all cases or contacts. In fact, this should be discouraged because it puts an unnecessary burden on laboratories, and is not needed for effective treatment.

Case control studies which may help define the mode of transmission - particularly in newly infected areas - may be undertaken if necessary. It may be helpful to submit samples of suspect water, sewage and foods for laboratory analysis.

In newly infected areas, people of all ages may be affected. However, the more mobile members of the community (usually adults) may be more affected since they have greater exposure to possible sources of contamination, such as meals outside the home. A preponderance of cases in children suggests that the disease is endemic in the area.

The epidemiologist should alert and maintain contact with all health workers and community leaders to ensure prompt detection of newly affected areas. The epidemiologist will collaborate closely with the CDD Programme Manager.

Preventing the Spread of the Outbreak

Health Education:

In areas where there is cholera, the community must be actively informed about the extent and severity of the outbreak. All channels of information should be used to inform and reassure the public about the effectiveness and simplicity of treatment, and the benefits of prompt reporting of cases. Families should know how to treat diarrhoea in the home and they should know when to seek help. They should be told about sources of contamination, and how to avoid infection.

During an outbreak, health education should focus on simple and practical measures that will prevent the spread of the disease, for example, boiling drinking water, and washing hands after using the toilet, and before preparing food or eating.

Long term measures to improve the general level of sanitation, and to provide potable water should be addressed when the epidemic is under control.

Training health workers to manage patients with diarrhoea

The assessment and treatment for cholera cases are essentially the same as for diarrhoea from other causes. Health workers who are well trained in the latest techniques for clinical management of diarrhoea can use the same techniques. Health workers and the community should know that oral rehydration is effective for adults .

Good sanitation and hygiene

People get cholera from drinking water or eating food contaminated with cholera organisms. and prevention is based on reducing the chances of ingesting vibrios. The highest priority must be given to practising basic principles of sanitation regarding the disposal of human wastes, personal hygiene, food safety and ensuring safe water supplies.

When large groups of people congregate, such as for religious festivals, markets or funerals, particular care must be taken to ensure safe disposal of human waste, an uncontaminated water supply and safe food preparation.

Disposing of human waste

All communities need appropriate facilities for human waste disposal, such as latrines; it can be lifesaving in areas threatened with cholera. Community members must be taught how to use latrines, the dangers of defecating on the ground or in or near water, and the importance of

thorough handwashing with soap or ashes after defecating. Environmental Health Officers assigned to LGA PHC Departments can provide leadershop and instructions.

Assuring a safe water supply

Since water is the most important vehicle for transmitting cholera, every effort must be made to provide safe water for drinking, cooking and washing. Contaminated surface water used for washing can cause infection even when drinking water is safe. When public bathing places are contaminated - as confirmed by laboratory tests - measures, including closing off affected areas - should be taken. In cities, properly treated drinking water should be made available to the public. In rural areas, where water is from the surface or shallow wells, people should boil drinking water.

Food safety

Food can be an important vehicle of infection, so health education should stress the importance of cooking food until it is thoroughly hot, eating cooked food while it is still hot; washing and thoroughly drying all cooking and serving utensils after use, and handling food so that it is not contaminated. People should wash their hands thoroughly with soap after defecating and before preparing and eating food.

Although flies themselves play a small role in spreading cholera, the presence of many flies indicates poor sanitation which produces the very conditions that favour the spread of cholera.

Disposal of dead bodies, disinfection and funerals:

In unhygienic living condtions, contamination of a cholera patient's surroundings is almost inevitable. Public health officials should encourage disinfection of the patients room, clothing, used articles and surroundings and provide disinfectant.

Funerals for those who die of cholera should be held quickly and near the place of death. Efforts should be made through intensive public education or legislation to limit funeral gatherings, ritual washing of the dead or feasting. Funerals may bring people from uninfected areas into an infected area from which they can carry the cholera organism back home.

Those who care for and clean up the cholera patient, and especially those who prepare the body of those who have died can be exposed to high concentrations of vibrios. These are often the same people who prepare large quantities of food for funeral attenders. This practice should be discouraged. If other people are not available to prepare the food, meticulous hand-washing with soap and clean water is essential before handling food.

"Preventive" Measures that do not work:

Vaccination is not effective. The Honourable Minister of Health has stated "*Vaccination has no place in the Control of Cholera*". The vaccines available do not help in controlling cholera. Vaccination gives a false sense of security to those vaccinated, and to some health authorities, who may then neglect truly effective measures.

Mass treatment of a community with antibiotics (chemoprophylaxis) has never succeeded in limiting the spread of cholera. It diverts attention and resources from effective measures, and in some countries it has contributed to the emergence of antibiotic resistance in the cholera organism, thus depriving severely ill patients of a valuable treatment.

Emergency Notification

Immediate notification disease outbreaks is imperative so that disease can be quickly controlled and lives saved. Immediate or Emergency Notification is required in two situations:

1. When any case or death due to any one of the following nine diseases is suspected: AIDS, Human Anthrax, Cerebro-Spinal Meningitis, **Cholera,** Plague, Human Rabies, "Smallpox", Typhoid and Paratphoid Fevers and **Yellow Fever.**

2. When an epidemic of any disease or condition occurs.

Figure 3 is the official "Immediate Notification Form" DSN - 001. Information about an outbreak should be sent by the quickest means available - telephone, radiophone or courier. In addition, health facilities should also send in Form DSN-001 and continue to send it in weekly until there have been three consective weeks, with nil cases reported. Cases should also be reported on Form DSN-002, for routine reports.

FIGURE 3

FORM DSN - 001

IMMEDIATE NOTIFICATION FORM

1. Name of Reporting Institution _____

2. Location _____ Town _____ LGA _____ State

3. Name of Disease _____

4. Symptoms and Signs _____

5. Date and place of onset _____

6. Age and Sex Distribution of cases and deaths

AGE	CASES		DEATHS		TOTAL	
	MALE	FEMALE	MALE	FEMALE	CASES	DEATH
Less than 1 year						
1–4 years						
5-14 years						
15 years and Above						

7. Weekly incidence since index case was seen

Week Beginning (date)	Location (name of town or village)	Cases	Deaths

8. Have samples been collected for laboratory studies? ☐ YES ☐ NO

9. To which institution(s) were they sent? Specify _____

10. Results (if available) — specify _____

11. What measures have been taken so far for investigation, treatment and control? Briefly specify _____

12. Any other relevant information? Specify _____

Name of person reporting _____ Signature _____

Designation _____ Date _____

Address _____

Telephone No. _____

Routine Monthly Disease Notification Returns from States

1st Quarter 1991 (January-March) as at the 15th June 1991

STATES	Jan.	Feb.	March
Abuja			
Akwa Ibom	■		
Anambra	■	■	■
Bauchi	■	■	■
Bendel	■	■	
Benue			
Borno			
Cross River	■	■	■
Gongola	■	■	■
Imo	■	■	
Kaduna			
Kano			
Katsina	■	■	■
Kwara	■	■	■
Lagos	■	■	■
Niger			
Ogun			
Ondo		■	
Oyo	■	■	■
Plateau			
Rivers	■		
Sokoto			

■ Report Received □ Not Received

YELLOW FEVER IN NIGERIA 1986 -1990

Oyewale Tomori (1) Abdulsalaam Nasidi (2) Bola Asagba(3) Ololade Ojo(3) 1. Department of Virology, UCH, Ibadan. 2 Federal Vaccine Production Laboratory, Yaba. Lagos. 3 Federal Epidemiology Unit, F.M.O.H., Onikan, Lagos.

There have been at least ten severe epidemics of Yellow Fever (YF) in Nigeria since the first case was reported in 1913.(1) Major outbreaks occurred at Ile-Ife (1928), at Ogbomosho (1946), in Eastern Nigeria with foci in the old Onitsha and Ogoja provinces (1950-1952), in Benue and Plateau States (1969-1970) and Cross River State (1973).(1,6) This paper describes the most recent YF epidemic, which occurred from 1986 to 1990 in 19 of the Nigeria's 21 state (2,3,4,5). It has been difficult to provide details of the epidemiology and control of this five year long YF epidemic because:

* peripheral health workers had difficulty with the clinical recognition of Yellow Fever.
* inadequate disease surveillance meant the disease was recognized late.
* inadequate laboratory services and diagnostic facilities meant Nigeria depended on assistance - sometimes foreign - for the definitive diagnosis.
* inadequate information about the ecology, population dynamics and distribution of YF vectors resulted in a poor vector control programme.

Information on the epidemic was gathered from:

* Immediate and routine disease reports DSN 001 and DSN 002, submitted by peripheral health units, LGAs and States.
* Reports of field investigations of YF outbreaks.
* Laboratory reports, notably from the Department of Virology , U.C.H., and the Federal Vaccine Production Laboratory, Yaba.
* Records of the National Technical Advisory Committee on Disease Epidemics.
* Other published results.

We tried to reconcile the differing figures for morbidity and mortality from these sources; but because of gross under-reporting of disease incidence in Nigeria, we have usually used the highest figures reported. In certain instances where laboratory studies proved the contrary, officially notified data on YF cases were not counted.

Onset and spread of Yellow Fever outbreaks in Nigeria

Although it was not recognized until March 1987, the current epidemic probably started in June 1986. It probably began in southeastern Nigeria in Benue and the spread to Cross River, Imo and Anambra States. The most severely affected areas were contiguous southern Benue and northern Cross River with epicentres at Oju and Alifokpa respectively (see Figure 4). These states reported cases as late as February - March, 1987.

From December 1986, the epidemic moved southwest. Nomadic travellers from the southeastern focus may have introduced the disease to Ogbomosho area, which became the epicenter of the 1987 epidemic. That epidemic, in turn, then spread through the southwestern states of Oyo, Ogun, Ondo, Kwara, Lagos and Bendel States before dying out in September 1987.

Beginning in August 1987 a new focus was established - probably by nomadic cattlemen - in the northwestern states of Niger, Sokoto and bordering areas of Kaduna. It lasted until early 1988. Between March and June 1988, there was no report of YF cases in the country. However, in early June 1988, YF cases were reported further to the east in Kaduna, Katsina, Kano and Bauchi States. Although YF transmission probably occurred in 1987 in Kaduna State it was not recognized until June 1988, after the rains began. It then spread to Katsina State (part of Kaduna State until 1987) and to Kano and Bauchi States.

Outbreaks in Kano and Bauchi States lasted until the latter half of 1989 and were more severe in gallery forest areas. Anambra, Benue, Niger and Oyo States also reported YF. In Oyo State, YF was restricted to Ilesa and Ipetu-Ijesha towns near Ondo State. Cases of of YF were reported in some states until February 1990.

From about June 1990, YF was reported from Gongola and Borno States, probably extensions of the 1988-1989 epidemic in Kano and Bauchi States. This may have been the source of the 1990 YF epidemic in the Cameroon Republic, that started in mid September in the northern departments Mayo-Sara and Mayo-Tsanga, bordering Borno State (7). In 1990, for the first time, Niger Republic reported YF (6 fatal cases), all from areas near the southern border with Nigeria. (7)

FIGURE 4 SPREAD OF YELLOW FEVER IN NIGERIA 1986 - 1990

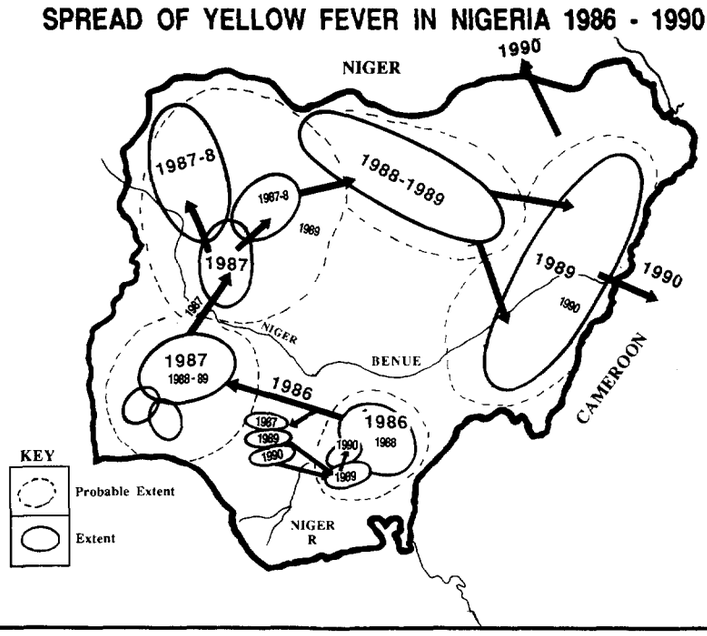


TABLE 3

Yellow Fever - Reported Cases and Deaths, 1986–1991

State	1986		1987		1988		1989		1990		TOTAL	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Abuja/FCT	0	0	0	0	0	0	0	0	0	0	0	0
Akwa Ibom	0	0	0	0	0	0	0	0	0	0	0	0
Anambra	0	0	4	0	87	45	0	0	54	26	145	71
Bauchi	0	0	0	0	1103	283	0	0	1	0	1104	283
Bendel	0	0	13	2	2	0	79	49	50	30	144	81
Benue	559	200	302	20	21	15	0	0	0	0	882	235
Borno	0	0	9	0	4	0	12	0	272	25	297	25
Cr. River	697	222	0	0	1	0	0	0	10	0	708	222
Gongola	0	0	0	0	0	0	0	0	3166	48	3166	48
Imo	0	0	0	0	0	0	1308	224	0	0	1308	224
Kaduna	0	0	206	44	518	298	1709	258	13	1	2446	601
Kano	4	1	14	4	9	1	8	7	366	64	401	77
Katsina	0	0	0	0	2795	794	8	7	0	0	2803	801
Kwara	0	0	8	6	9	4	13	13	0	0	30	23
Lagos	0	0	71	9	1	0	1	0	0	0	73	9
Niger	9	1	849	226	43	30	0	0	0	0	901	257
Ogun	1	0	128	12	0	0	0	0	15	0	144	12
Ondo	2	0	9	3	1	0	0	0	1	1	13	4
Oyo	15	0	905	482	263	22	100	60	9	4	1292	568
plateau	0	0	15	0	1	0	2	0	0	0	18	0
Rivers	0	0	0	0	0	0	0	0	0	0	0	0
Sokoto	2	0	143	58	62	10	30	0	118	24	355	92
TOTAL	1289	424	2676	866	4920	1502	3270	618	4075	223	16230	3633

Cases and Deaths 1986-1990

For the five year period 1986-1990, Nigeria reported 16,126 YF cases with 3,633 deaths, a Case Fatality Rate (CFR) of 22.5%. The highest number of cases (4,920) was reported in 1988, and the fewest (1,289) in 1986 at the onset of the epidemic (Table 3 & 4, Figure 5). Of the 3633 deaths notified from 1986 - 1990, 1502 (41.3%) occured in 1988. The case fatality rate was highest (33.7%) in 1987, and the lowest (5.5%) in 1990. Kwara State and Borno State recorded the highest and lowest CFRs (76.7% & 8.4%, respectively) for the period. Most Kwara cases were imported from contiguous States.

Nineteen States of the Federation reported YF cases and deaths between 1986 and 1990. Gongola State accounted for nearly one fifth (3,166 cases) of the total reported cases and Ondo State the least (13). Over 90% of the 3,166 cases in Gongola State were reported in 1990 and the rest in early 1991. In 1987, Kaduna State was separated into Kaduna (south) and Katsina (north) States Together (the old Kaduna State) they accounted for 5,249 (32.5%) of the total cases reported.

Approximately 64% of the cases occurred in five states: Kaduna, Katsina, Benue and Gongola. Kano Oyo and Sokoto States reported at least one case of YF in every year of the epidemic. Bendel, Borno and Ondo States reported cases for four of the years, while Bauchi and Katsina States reported for two years. Imo State reported cases in only 1989, and Gongola State in only1990. Akwa Ibom and Rivers State and Abuja, reported no YF cases from 1986 - 1990. Epidemiologic investigations suggest that many more cases and deaths occurred than were reported. (Table 4).

Epidemiologic investigations of the Benue (1986) and Oyo (1987) YF epidemics (2,3) revealed a male to female case ratio of 1.1 : 1.0 (Benue) and 1.4 :1 0 (Oyo). One third of the cases in Benue State were in children under ten years old and 82% of cases were less than 30 years old (Table 5).

There was a discrepancy between official reports and data obtained during field investigations in Benue-Plateau State (1974) Benue State (1986), Oyo State (1987) and Niger State (1987) (3,8). Epidemiologic investigations suggest that many more cases and deaths occurred than were reported. (Table 4) Data obtained in direct investigations were from four to ninety times higher than the reported figures. The larger the population affected, the bigger the discrepancy .

Discrepancy Between Offical Reports and Epidemiological Investigations

Year	Place	Estimated Population	Official Notification		Epidemiological Investigation		Official data/ Epid. Investig.	
			Cases	Deaths	Cases	Deaths	Cases	Deaths
1974	Mabudi	200,000	23	10	2,000	200	1:87	1:20
1986	Benue	300,000	921	257	9,800	5,600	1:11	1:22
1987	Oyo	4,000,000	1,292	568	116,000	24,000	1:90	1:42
1987	Zago	200,000	187	37	692	226	1:4	1:6

ENTOMOLOGICAL INVESTIGATIONS

The vectors responsible for the epidemic were not determined because only limited entomological investigations were carried. out. Nonetheless, information from investigations conducted during the Benue/Cross River 1986 epidemic found that over 66% of mosquito collections were *Aedes africanus*. Biting rates were as high as 3.5 *Ae africanus* per person per hour, indicating a high risk of transmission. House to house larval surveys in three villages in Cross River State found no domestic *Ae aegypti*. In Benue, the vector was found in only one of three (Breteau index of 2.4) villages surveyed. In Oyo State, all ten sites investigated revealed indices which significantly exceeded levels associated with a risk of virus transmission (Table 6)

The mean biting density at Ogbomosho was 2.69 *Ae aegypti* per person hour. *Mansonia africana* (biting rate 0.28 per person hour) was the only other mosquito species capable of transmitting YF virus.

Table 7 lists mosquitoes species trapped by teams of the Federal Ministry of Health Vector Control Unit and the National Arbovirus Research Unit - during the 1986 - 1990 YF epidemic. and Vector Research Unit - FMOH. There is no evidence that these mosquitoes were actually involved in the epidemics.

CONTROL OF THE EPIDEMIC

Epidemic control focused on mass vaccination with 17D Vaccine. Over 31 million doses of 17D vaccine were imported and 30.9 million (97.5%) distributed to affected States (Figure 6). Although poor returns on vaccine usage make it difficult to know how how many people were actually vaccinated, we estimate that from 1986 to the end of 1989 about 17 million people were reached.

FIGURE 5
YELLOW FEVER CASES AND DEATHS NIGERIA 1986 - 1990

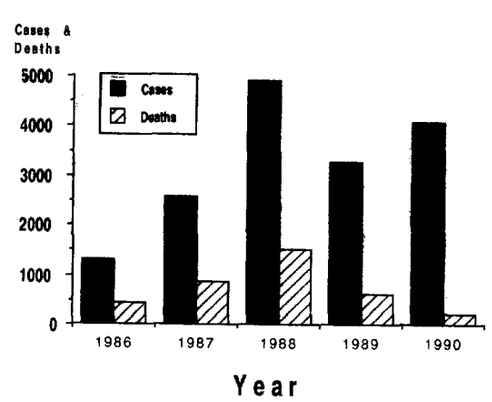


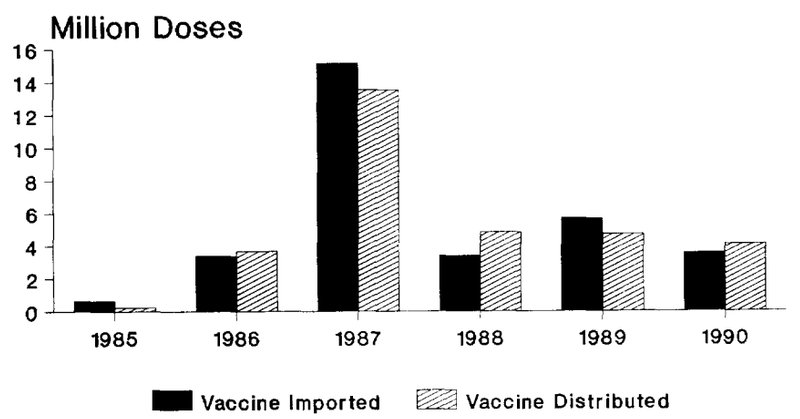
TABLE 5
AGE DISTRIBUTION OF YF CASES IN BENUE & OYO STATES

	Number		
Age in Years	Benue	Oyo	Total
0-9	41	105	146
10-29	62	91	153
30 +	23	72	95
Total	126	258	384

TABLE 6

Aedes aegyptii surveys in Oyo State, May 1987				
Locality	No. of houses inspected	House index (%)	Container index (%)	Breteau index
Ogbomosho	100	96	37	676
Igbeti	55	86	25	250
Shaki	30	52	15	90
Igboho	10	30	17	100
Aha	24	100	56	417
Iseyin	17	100	62	353
Ikire	30	100	76	250
Ipetu-Modu	15	100	46	110
Ilesha	40	18	23	45
Oshogbo	30	100	52	163

FIGURE 6
YELLOW FEVER VACCINE IMPORTATION AND DISTRIBUTION TO STATES, NIGERIA, 1985 - 1990



Total Imported - 31,666,180;
Total Distributed - 30,998,670

COMMENTS

Spread of YF in Nigeria

The maintenance of epidemic YF for as long a period as five years is probably due to:

* endemic transmission
* variation in herd immunity in different zones
* free movement of affected persons
* insufficient vaccine
* poor infrastructure to deliver vaccine

Serosurveys for YF neutralizing (N) antibody done during a non-epidemic period in Nigeria revealed antibody prevalences of 41% to 59% in the South (Ibadan/Abeokuta), and of up to 90% in the Jos area of Plateau State. The last major YF epidemic in Ogbomosho (Southern Nigeria) occurred in 1946, and in Jos in 1969 - 70. Mass vaccination campaigns were done to control those epidemics. Plateau State was relatively free of the 1986- 90 YF epidemic.

The forty year interval (1946 - 1986) between the two epidemics in Ogbomosho was long enough to build up a large number of susceptibles. Thus, the introduction of YF to the southern states via Ogbomosho ignited the severe epidemics of 1987 in Oyo State. Ogbomosho's location on the north-south highway and the lack effective quarantine ensured the easy spread of the disease to other parts of the country.

The route of spread follows the movement of the nomads who spend the drier months in the south and the wet season. in the north. At the onset of the epidemic in 1986, the country was in a state of extreme unpreparedness. Vaccine stocks were low, laboratory facilities and personnel for rapid disease diagnosis were unavailable, and logistics and resources for mounting a quick and decisive intervention were grossly inadequate.

As the epidemic spread, the country's ability to cope with the rapidly expanding epidemic was stretched to the breaking point. Vector control was non-existent as the vector(s) responsible for the epidemic were not determined. It is obvious that the devastation caused by the epidemic was limited more by the dry season alternating with the wet season, than by the vaccination campaigns. The depletion of the vector population was probably responsible for the waning of the epidemics in the dry season.

TABLE 7

Yellow Fever Mosquito Vectors Trapped 1986-1990 Epidemic in Nigeria

YEAR	LGA	STATE	MOSQUITO VECTORS
1986/87	Oju	Benue	*Ae. aegypti, Ae. africanus, Ae. luteocephalus, Ae. taylori, Ae. vittatus, Mansonia africana*
1986/87	Ogoja	Cross River	
1987	Ogbomosho	Oyo	*Ae. aegypti, Ae, metallius, Ae. vittatus, M. africanus*
1987/88	Minna	Niger	*Ae. aegypti, M. africana*
1988	Kachia	Kaduna	*Ae. aegypti, Ae. africanus, Ae, vittatus, M. africana*
1989	Wudil	Kano	*Ae. cumminisii, M. africana*
1989	Katagun	Bauchi	*Ae. aegytpi*
1989	Ikeduru	Imo	*Ae. aegypti*

Unexpectedly, some areas did not report cases of YF during the epidemic. Abuja is contiguous with Kaduna and Nigeria States which reported YF cases throughout the five year period, and there is a large volume of movement between Abuja and these two States. Rivers and Akwa Ibom States are surrounded by Cross River and Imo States, which experienced severe outbreaks. Indeed, Akwa Ibom State was carved out of the Cross River State in 1987 at a time when Cross River was experiencing an epidemic of YF . However, no case of YF was reported in the areas now in Akwa Ibom State. Although this is likely the result of poor surveillance, it is important to determine the factors responsible for the reported absence of YF in these areas . The findings may provide answers to important questions about the ecology of YF in Nigeria.

YF Cases and Deaths

While there is gross under-reporting of YF cases in Nigeria for reasons mentioned above, it also appears many of the cases reported as YF are indeed other viral infections with similar clinical presentations. This may account for the drop in the case fatality rate that occurred in 1989. For the first three years of the epidemic the CFR was consistently above 30% but in 1989, it decreased to 18.9% and to only 5.5% in 1990. Laboratory studies done both at Ibadan and at the Centres for Disease Control, Fort Collins, Colorado USA suggested that other viral agents - such as dengue - might be responsible for some of the reported YF cases (Tsai, 1991 pers comm).

Increasing reports of YF cases may be due to improvements in the disease notification system, but this has not been matched by improvements in clinical recognition of the disease or in diagnostic capablities. There is an urgent need to improve the laboratory services for rapid and reliable diagnosis of diseases, and to also improve the clinical recognition of the disease by health workers.

Entomological Investigations

The combined facilities of the Vector Control and Laboratory Services were not used to identify the vector(s) responsible for the YF epidemic, as virus isolation studies were not carried out on mosquito samples collected during field investigations. As a result, vector control prgrammes to complement the vaccination programme could not be carried out. This is an area that needs urgent attention if YF is to be brought under control in Nigeria.

Control of the Epidemic

Currently, Nigeria provides only about 5% of its 17D YF vaccine requirements. The remainder - about 5 million does - must be imported every year. With the anticipated inclusion of YF immunization to the Expanded Programm on Immunization (EPI), the number of doses needed will increase by two million in 1991, and increase annually in proportion with the infant population. Assuming Nigeria has the resources to import the vaccine, the country will need to improve the infrastructures required to deliver it to the target population in a suitable state of potency.

CONCLUSION

Between 1986 and 1990, a large epidemic of YF occurred in Nigeria affecting 19 of the 21 States. Official numbers of cases and deaths were 16,126 and 3,633 deaths, but these figures are 4 - 10 fold underestimates. The epidemic was not effectively controlled for a number of reasons including poor disease surveillance and notification, poor diagnosis and response time, insufficient vaccine, and poor logistic support for vaccination campaigns.

While disease notification is improving, laboratory diagnostic capabilities and vector control programmes have remained poor. There is an urgent need to carry out a detailed ecological study of Yellow Fever in Nigeria.

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WHEN YOU SUSPECT YELLOW FEVER

The rains are here with mosquito [illegible] Yellow Fever

When you suspect [illegible]
Jaundice following fever [illegible]

NOTE

[illegible]

[illegible]

Send samples as [illegible]
General Public Health Lab[illegible] Lagos
Department of Virology [illegible]
keep sample [illegible]

PROTECT YOU[illegible]

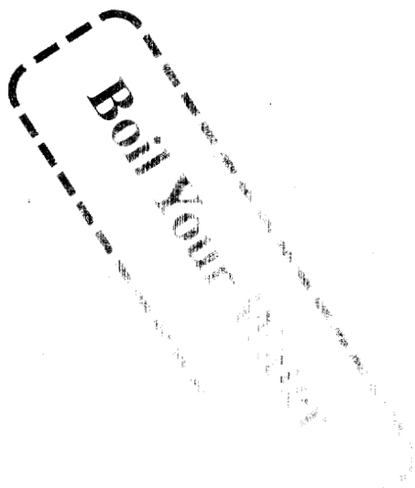
- Yellow fever is a killer [illegible] mosquito
- Protect [illegible]

DISEASE NOTIFICATION REPORTS FROM STATES
JANUARY - DECEMBER 1990.

DISEASE	Cases	Deaths	CFR-*	DISEASE	Cases	Deaths	CFR-*
AIDS	n/a	n/a	n/a	ONCHOCERCIASIS (RB)	2,002	1	0.0%
ANTHRAX (HUMAN)	8	0	0.0%	OPHTHALMIA NEONATOR	4,176	26	0.6%
BRUCELLOSIS (HUMAN)	12	0	0.0%	PERTUSSIS Whooping Coug	42,929	184	0.4%
CEREBRO-SPINAL MENINGITIS	78,904	784	1.0%	PLAGUE	0	0	
CHICKEN POX	10,300	65	0.6%	PNEUMONIA	166,875	818	0.5%
CHOLERA	4,101	61	1.5%	POLIO	1,873	29	1.5%
DIARRHOEA (SIMPLE)	433,753	1,497	0.3%	RABIES (HUMAN)	341	n/a	n/a
DIARRHOEA (WITH BLOOD)	274,797	721	0.3%	SCHISTOSOMIASIS	18,146	7	0.0%
DIPHTHERIA	1,768	2	0.1%	SMALL POX	0	0	
DRACUNCULIASIS Guinea Worm	9,050	7	0.1%	SYPHILIS	2,641	0	0.0%
FILARIASIS	8,438	8	0.1%	STD (Not syphilis)	20,987	2	0.0%
FOOD POISONING	12,060	75	0.6%	TETANUS (NEONATAL)	1,060	150	14.2%
GONORRHOEA	52,759	7	0.0%	TETANUS (OTHER)	2,703	134	5.0%
HEPATITIS	5,495	69	1.3%	TRACHOMA	14,704	46	0.3%
LASSA FEVER	0	0		TRYPANOSOMIASIS	1,061	13	1.2%
LEPROSY	20,557	7	0.0%	TUBERCULOSIS	20,122	213	1.1%
LOUSE BORNE Relapsing Fever	6,658	5	0.1%	TYPHOID AND PARATYPH	4,772	92	1.9%
LOUSE BORNE Typhus Fever	564	2	0.4%	VIRAL INFLUENZA	7,918	13	0.2%
MALARIA	1,116,992	2,284	0.2%	YAWS	691	0	0.0%
MEASLES	115,682	1,399	1.2%	YELLOW FEVER	3,528	306	8.7%

CFR-* = Case Fatality Ratio

n/a - Not Available



The Bulletin welcomes the views of its readers, though letters may be edited for clarity and space. The Editor invites readers to submit articles for consideration for publication. Articles longer than 500 words may be edited for space.

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Editorial

Focus on Malaria - New Guidelines

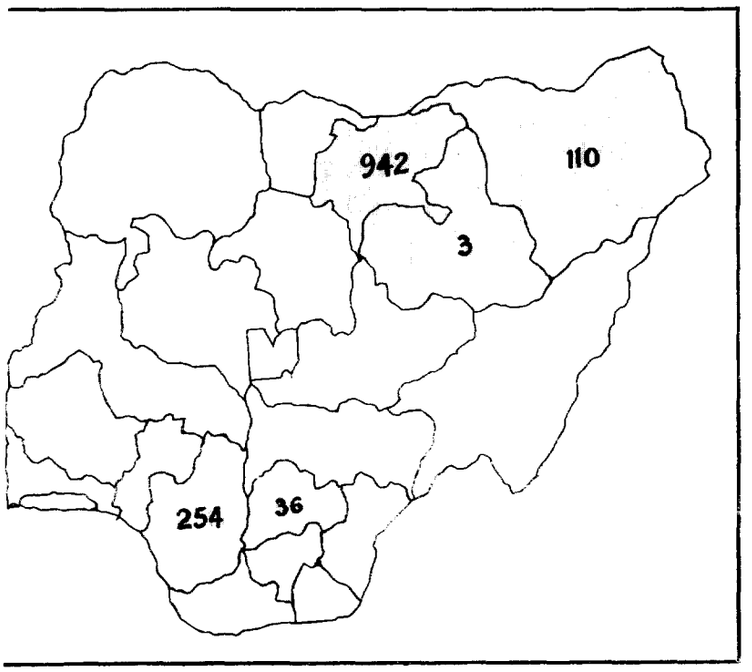
Malaria is a major cause of morbidity and mortality, especially amongst children. As many as 2,100 million people in the world are at risk from malaria, and the disease kills about 2 million people every year. In Nigeria, malaria is the most common cause of outpatient visits and it consistently ranks among the three most common causes of death.

The Primary Health Care system offers a new approach to combatting the problem, and all levels of the health system are being mobilised to control this disease.

This issue of the *Nigeria Bulletin of Epidemiology* reports on the epidemiology of malaria in Nigeria, and presents the Federal Ministry of Health's *Guidelines for Malaria Control in Nigeria*, which were adopted in 1989 by the National Council on Health. We urge all health workers to study them and to follow them.

Yellow Fever Outbreak

The year 1991 has seen serious outbreaks of Yellow Fever in Delta (former Bendel) state. We report on this outbreak and remind readers that Yellow Fever is preventable.



Number of Cases of Yellow Fever Reported
January 01 to October 31, 1991

TABLE OF CONTENTS

1 Editorial

2 Malaria: Epidemiology and National Control Guidelines

11 Guidelines for Management of Malaria at the LGA Level

19 Yellow Fever in Delta State

20 Routine Reports Submitted

21 Cerebro-Spinal Meningitis Warning

22 Update on Cholera Epidemic

MALARIA IN NIGERIA: EPIDEMIOLOGY AND CONTROL

Introduction

Malaria is highly endemic in Nigeria and is one of the major causes of ill health and death. The risk of malaria exists throughout the country, but is greater in the rural areas.

Malaria reduces economic productivity due to absenteeism from schools and places of work during severe attacks of malaria. The foundation of the national health policy is Primary Health Care which emphasizes health care at the grassroots level. Thus, all health workers, and especially those at the grassroots - the Village Health Worker or Community Health Aide - must be able to control malaria.

Incidence of malaria

Information about the number of cases and deaths from malaria in Nigeria are obtained from several sources:

1) routine reports submitted from the states,
2) the malaria sentinel surveillance system,
3) hospitals, and
4) special surveys and studies.

The exact incidence and mortality rates from malaria are unknown because routine reporting is incomplete and sometimes inaccurate. But we do know that from 1985 to 1989 malaria was the most common cause of outpatient visits in Nigeria. In those years, malaria consistently ranked among the three most common causes of death in Nigeria (Table 1).

Malaria represents about 10% of deaths in children under the age of five years. Approximately 50% of the population experience at least one episode of malaria each year.

According to hospital records reviewed at Ogun State Teaching Hospital, Sagamu, malaria was the second most common cause of admission. The most common cause for admission was deliveries.

Poor Reporting

Figure 1 shows the number of cases each state reported to the FMOH for the years 1989 and 1990. Many more cases undoubtedly occurred. Bendel state did not report any malaria cases in 1989, and Borno state did not report any malaria cases in 1990. Sokoto and Gongola states reported far more cases (even accounting for the populations of each state) than others in the Federation.

Because reporting of malaria cases seems so irregular and incomplete, malaria incidence figures may tell us as much about the quality of reporting, as they tell us about malaria.

Usefulness of Routine Reports

Although routine reports are not complete, the number of cases and deaths reported can be used to assess general trends of malaria. The accuracy of the reports may be affected by changes in community awareness of malaria, by changes in health worker practices

Reported Cases of Morbidity from Notifiable Diseases 1985-1989

1985	1986	1987	1988	1989
Malaria	Malaria	Malaria	Malaria	Malaria
Dysentery	Dysentery	Dysentery	Dysentery	Dysentery
Measles	Measles	Measles	Pneumonia	Pneumonia
Pneumonia	Pneumonia	Pneumonia	Measles	Measles
W. Cough	Gonorrhoea	Gonorrhoea	Gonorrhoea	Gonorrhoea

Major Causes of Death from Notifiable Diseases 1985-1989

1985	1986	1987	1988	1989
Measles	Measles	Malaria	Malaria	Meningitis
Malaria	Meningitis	Meningitis	Yellow Fever	Malaria
Pneumonia	Malaria	Measles	Measles	Dysentery
Dysentery	Pneumonia	Yellow Fever	Pneumonia	Y. Fever
Tuberculosis	Tuberculosis	Pneumonia	Dysentery	Pneumonia

Table 1 Top Five Causes of Morbidity and Mortality 1985-1989

and changes in the diagnostic facilities. Improving access to health care (such as providing more Village Health Workers) and improving reporting systems might cause an apparent increase in the number of cases of malaria.

Sentinel Surveillance

The FMOH National Malaria and Vector Control Division has developed a system for careful focused, sentinel surveillance at certain hospitals and health centres in the Federation. Figure 2 shows the age distribution of 48,874 cases of malaria seen at five sentinel sites in 1990, and the case fatality rates from malaria at selected sentinel sites.

Groups at high risk from malaria

Although anyone can get malaria, two groups of people are at a special risk from malaria: children under five years of age and pregnant women. Young children more easily convulse and can die from the high fevers caused by malaria. Malaria during the first and second pregnancies may result in anaemia and low birth weight infants as well as increased rates of abortions and stillbirths.

Rural populations are more affected than urban populations, and nomadic populations receive a greater impact of the scourge than settled populations.

Malaria Transmission in Nigeria

The pattern of malaria is that of intense transmission and remarkable stability. Malaria transmission is intense all year round in the forest belt but in the dry savannah transmission is relatively low during the dry season (November to April).

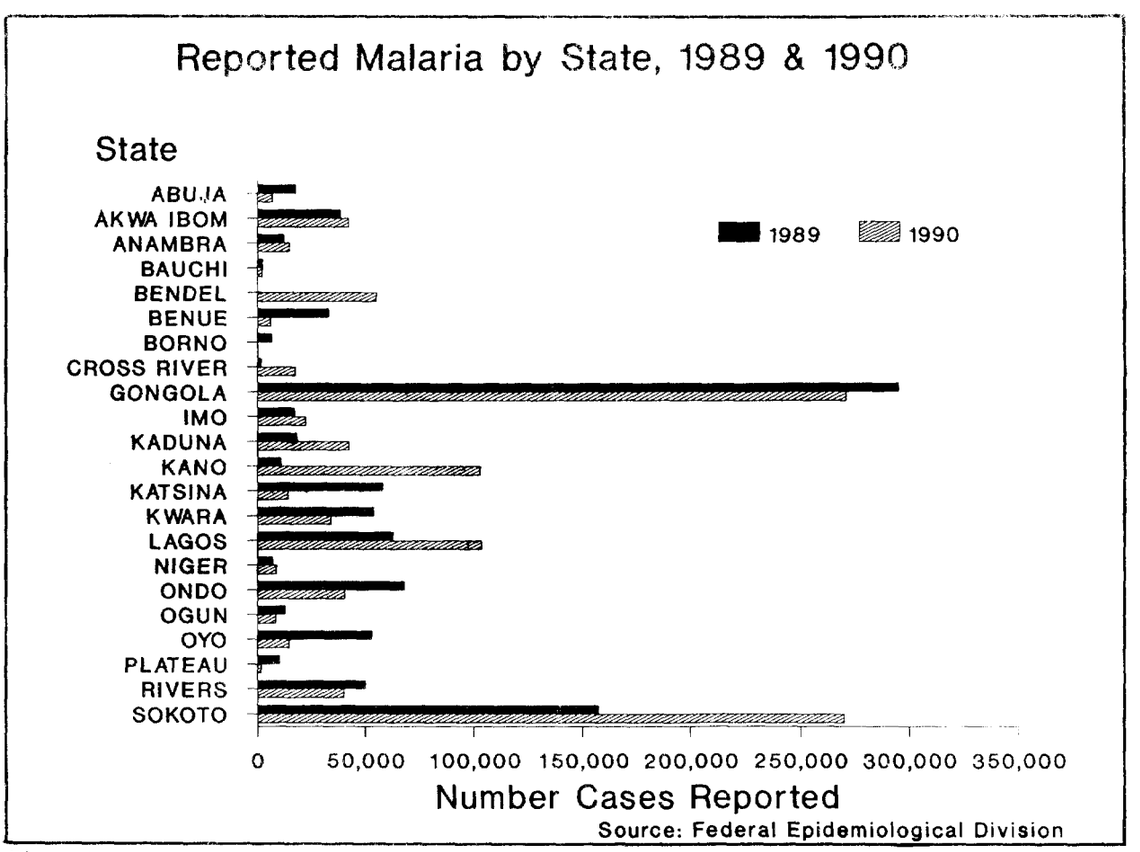


Figure 1

118

Factors that favour transmission of malaria
Malaria is caused by a parasite - the *Plasmodium* - that lives in and feeds on red blood cells. This parasite is transmitted to humans by *Anopheles* mosquitos and those in Nigeria are very efficient vectors.

The environment in many parts of Nigeria favours malaria transmission, i.e. temperature ranges from 20^0 - 28^0C, mean monthly rainfall of greater than 10 cm), relative humidity greater than 60% and topography with altitudes of less than 2000 meters above sea level.

The malaria parasite
The plasmodium species responsible for malaria in Nigeria are *P. falciparum, P. malariae and P. ovale.* More than 80% of malaria infections are caused by *Plasmodium falciparum*, while up to 15% are caused by *P. malariae* and less than 5% by *P. ovale*. Mixed infections with *P. falciparum* are common. A patient may be infected with all the three species of plasmodium at the same time.

A serious aspect of our problem is that over 80% of our malaria infections are caused by *Plasmodium falciparum* which is responsible for severe infections and deaths. *P. malariae* which can cause nephrotic syndrome in children and adults is a significant component of the malaria parasite profile.

One of the most prominent problems threatening malaria control is the emergence and rapid spread of chloroquine resistant *Plasmodium falciparum* infections. The National Malaria Surveillance Network has documented resistance in all four PHC zones in the Federation.

Chloroquine is still clinically effective throughout the country, but the existence of parasites resistant to chloroquine means that alternative drugs must be evaluated for use in the future. Figure 3 shows areas of resistance to chloroquine July 1987 - December 1990. It is worth repeating that chloroquine is still recommended for initial treatment of uncomplicated malaria in all areas of Nigeria.

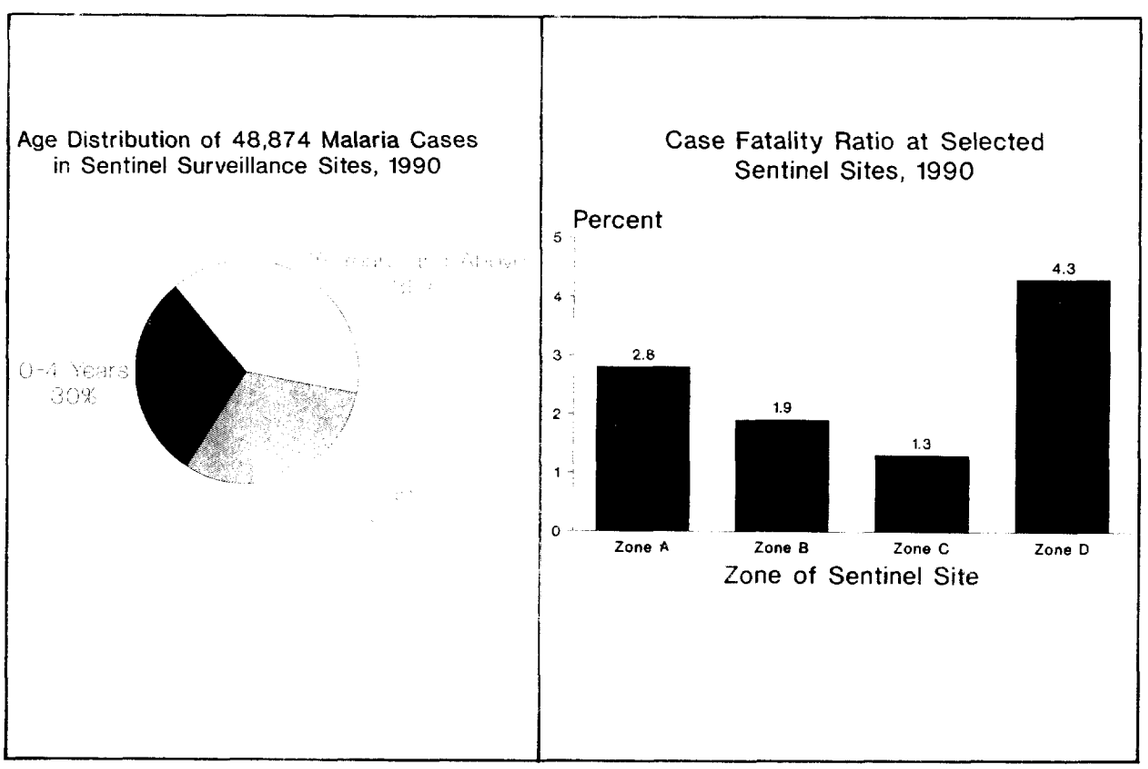


Figure 2 Malaria Sentinel Surveillance System

The mosquito vector

Over 40 species of *Anopheles* mosquito have been identified in Nigeria, but the major vectors of human malaria are *Anopheles gambiae, A. arabiensis, A. funestus, and A. melas. A. arabiensis* are dominant in the savannah areas and cities while *A. gambiae* are very common in the forest areas. *A. funestus* has an uneven distribution and the salt water form, *A. melas,* is a coastal species. *A. gambiae* is the most efficient vector of human malaria in the world.

MALARIA CONTROL STRATEGY

Because of the great public health importance of malaria, the Federal Ministry of Health has developed malaria control guidelines which will be implemented as part of Primary Health Care.

Malaria control activities are guided and strengthened by the national philosophy of social justice and equity, so they aim to provide cost-effective health care to the entire population. Anti-malaria activities that are feasible, acceptable, achievable and affordable include:

- *Early recognition and adequate treatment of cases to reduce deaths and duration of illness*
- *Prophylactic use of effective antimalarial drugs during pregnancy to prevent severe malaria and anaemia in the mother, particularly during first and second pregnancies*
- *Periodic training of health workers to implement recommended malaria control activities*
- *Provision of adequate quantities of recommended antimalarial drugs*
- *Community mobilization and health education to reduce human contact with mosquitos and to encourage proper and prompt utilization of health facilities*
- *Maintenance of trained Malaria Control Staff at the Federal and State Ministries of Health to provide guidance for planning and monitoring malaria control activities and to maintain links with Universities, Specialist Hospitals, Research Institutions and interested International Agencies.*
- *Support of operational research leading to the improvement of malaria control.*

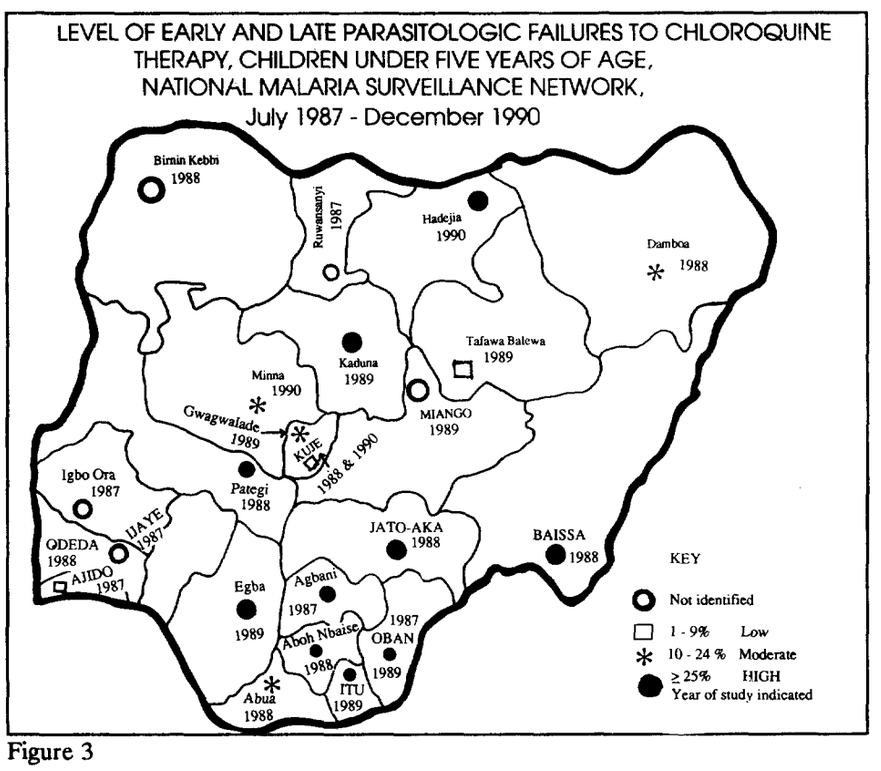


Figure 3

Copies of the National Malaria Guidelines are available from the FMOH at the address below:

National Malaria and Vector Control Division, Department of Disease Control and International Health, FMOH, Lagos.

PRIMARY HEALTH CARE APPROACHES TO MALARIA CONTROL

The two primary health care approaches to controlling malaria are the curative and preventive.

Curative Approach: Early Diagnosis and Effective Treatment
All health workers should be able to treat fever and malaria, and they must have access to adequate supplies of chloroquine.

All fevers in children under five years of age should be treated with chloroquine, even if a laboratory has not confirmed the diagnosis. Chloroquine cures most of the malaria cases. Chloroquine will not harm the child if the fever is caused by another disease.

THE CURATIVE APPROACH

- **Early Diagnosis and Correct Treatment of Malaria and Fever**
- **Treating Fever in Children under Five Years with Chloroquine**

THE PREVENTIVE APPROACH

- **Chemoprophylaxis for Pregnant Women and People with Sickle Cell Disease**
- **Reducing Contact with Mosquitoes**

Preventive Approach: Chemoprophylaxis and Decrease Contact with Mosquitoes

Preventive efforts aim at keeping people from getting malaria. An important part of this approach to malaria control is giving chemoprophylactic -- preventive -- treatment to people who are at high risk from severe and complicated malaria. In Nigeria, these groups include pregnant women, people with sickle cell disease and non-immune visitors and residents.

The routine use of chemoprophylaxis in healthy young children is not recommended.

The preventive approach also aims at protecting people from getting mosquito bites and at reducing the number of mosquitoes in the environment. These efforts may be made by individuals, families, or entire communities.

RECOMMENDATIONS FOR TREATMENT OF MALARIA

The guidelines adopted by the National Council on Health are summarized here. A detailed description of these guidelines for grassroots health workers is found in the next article. The management of severe malaria is discussed in the *Guidelines for Malaria Control in Nigeria*, available from the National Malaria and Vector Control Division, FMOH.

The management of a patient with fever/malaria differs according to the type of health facility (see Figure 4). In Nigeria, three levels of facilities are recognized. At the grassroots are Level I facilities. These are Dispensaries and Health Posts without microscopes.

Level II facilities are Health Centres staffed by Medical Officers or Community Health Officers. Level II facilities may or may not have laboratories.

Level III facilities are General Hospitals, Specialist Hospitals and Teaching Hospitals with laboratories.

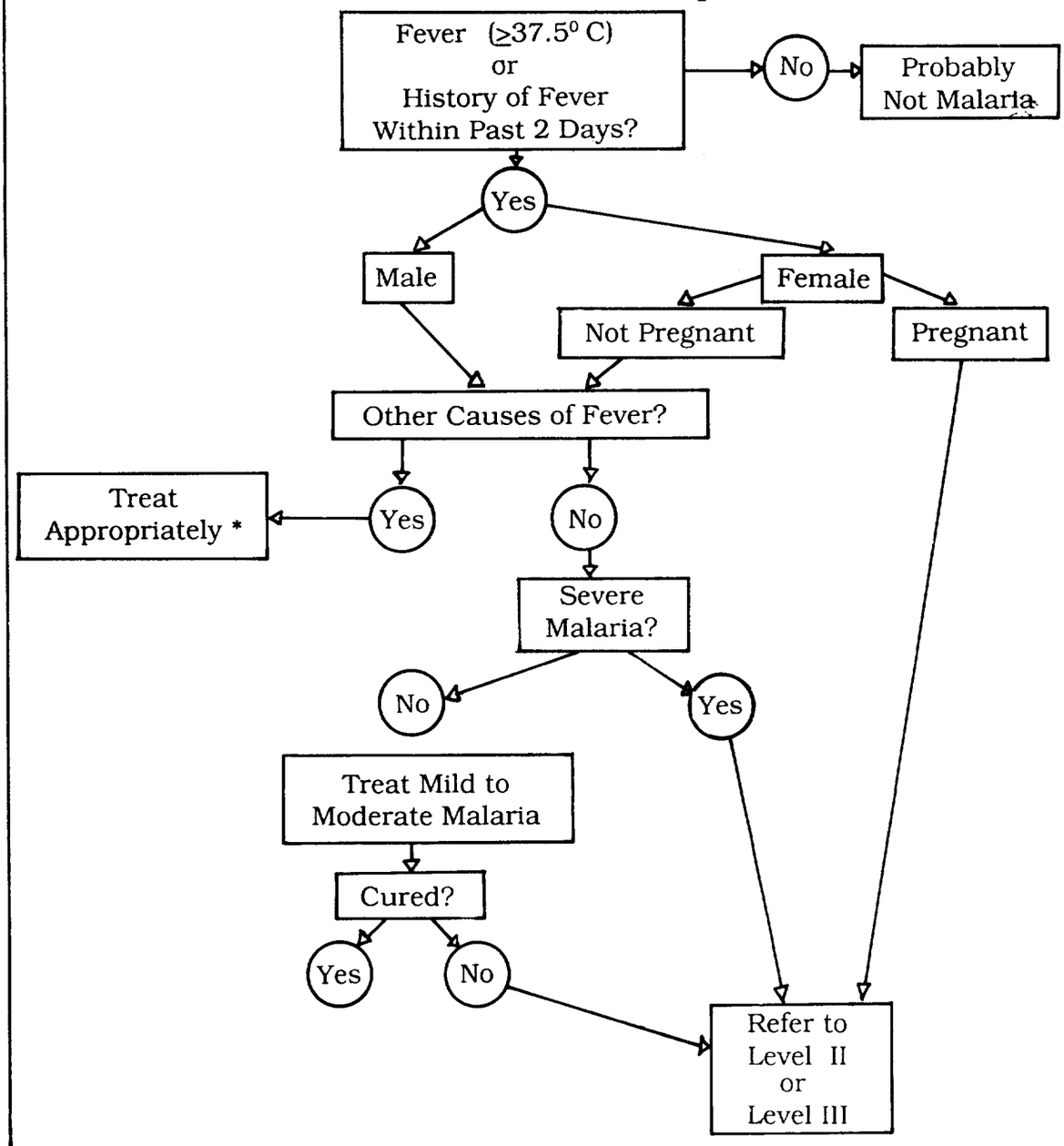
Level I
At PHC facilities without microscopes and the ability to confirm the diagnosis (dispensaries, health posts and some health centres), all fevers in children 0-4 years of age and suspected malaria in older persons will be treated with oral chloroquine.

Children should be given chloroquine if they have fever, or if the mother says the child had fever in the past three days.
The facility should have chloroquine syrup and tablets in stock. Patients with severe illness or persistent vomiting should be referred to Level II or to Level III.

Level II
At Level II Health Centres Medical Officers or Community Health Officers should perform more detailed histories and physical examinations.

Algorithm for Diagnosis and Treatment of Malaria at Level 1 Facilities

All children with fever, under the age of five years, should be treated with chloroquine.



A Health Centre staffed by a Medical Officer or Community Health Officer, but without a laboratory, should treat all fevers in children 0-4 years (and suspected malaria in older persons) with oral chloroquine.

If vomiting persists three or more times a day, begin intramuscular chloroquine - if vomiting ceases, resume oral chloroquine. If the illness is severe, or persists more than two days, treat with intramuscular quinine and refer to Level III.

A Level II facility with no laboratory should have chloroquine in tablet, syrup and injectable forms, and injectable quinine in stock.

A health centre staffed by a Medical Officer or Community Health Officer, with a laboratory should confirm the malaria diagnosis by microscopy, and treat with oral chloroquine.

If vomiting persists three or more times a day, refer to Level III. If fever persists for two days, treat with sulfadoxine/pyrimethamine (Fansidar).

For severe illness, treat with intramuscular quinine and refer to Level III.

The facility should have chloroquine in tablet, syrup and injectable forms, injectable quinine and sulfadoxine/pyrimethamine tablets in stock.

Level III

At General Hospitals, Specialist Hospitals and Teaching Hospitals the diagnosis should be confirmed by microscopy, and treatment begun with oral chloroquine.

If vomiting persists or if the illness is severe, treat with parenteral chloroquine or quinine until the patient can tolerate oral chloroquine. Parasitaemia should be monitored by microscopy two days and seven days following initial therapy.

Level III Hospitals should have chloroquine in tablet, syrup and injectable forms, injectable quinine and sulfadoxine/pyrimethamine tablets in stock.

TREATMENT OF NON-SEVERE MALARIA

Oral Chloroquine is the drug of choice for mild to moderate malaria in all areas of Nigeria.

The recommended dosage by weight is:

25 mg chloroquine base per kg body weight over three days (preferably after meals):

1st day	10 mg base/kg
2nd day	10 mg base/kg
3rd day	5 mg base/kg

The article which follows this one presents tables which give recommended chloroquine and sulfadoxine-pyrimethamine (Fansidar) dosages by age (and weight groups) for health workers without weighing scales.

Single dose sulfadoxine-pyrimethamine (Fansidar) is recommended for malaria resistant to chloroquine.

Antipyretics such as paracetamol, sponge baths and extra fluids are recommended for all children and adults with fever.

REFERRAL

Health workers at peripheral Primary Health Care facilities should refer malaria patients to higher levels based on these criteria:

1. Very ill patients who cannot walk
2. Febrile patients who can't take oral medication
3. Persistent vomiting = 3 or more times in a day
4. Febrile pregnant women
5. Severe chloroquine induced pruritus
6. No improvement in health or worse after taking oral medication.

CHEMOPROPHYLAXIS

Chemoprophylaxis -- taking anti-malarials to prevent malaria -- aims to reduce illness in people who are at high risk from severe and complicated malaria. In Nigeria, these groups include pregnant women, (particularly in their first and second pregnancies)

Level	Drugs Available	Management
Level I PHC facility without laboratory	• Chloroquine (tablets & syrup)	• Treat with oral Chloroquine. • If vomiting persists 3 or more times a day, or if illness is severe, refer to Level II or Level III.
Level II with Laboratory Health Centre staffed by Medical Officer or Community Health Officer with laboratory	• Chloroquine (tablets, syrup & injectable) • Sulfadoxine/Pyrimethamine tablets (SP) • Quinine injectable	• Confirm diagnosis by microscopy. • Treat with oral chloroquine. • If vomiting persists 3 or more times a day, refer to Level III. • If fever persists for 2 days, treat with SP. • For severe illness, treat with intramuscular quinine and refer to Level III.
Level II without a Laboratory Health Centre staffed by Medical Officer or Community Health Officer without a laboratory	• Chloroquine (tablets, syrup & injectable) • Quinine injectable	• Treat with oral chloroquine. • If vomiting persists 3 or more times a day, begin IM chloroquine. If vomiting ceases, follow-up with oral chloroquine. • If illness persists for 2 days or if illness is severe treat with IM quinine and refer to Level III.
Level III General, Specialist & Teaching Hospitals	• Chloroquine (tablets, syrup & injectable) • Sulfadoxine/Pyrimethamine tablets (SP) • Quinine injectable	• Confirm diagnosis by microscopy. • Treat with oral chloroquine. • If vomiting persists 3 or more times a day or if illness is severe, treat with parenteral chloroquine or quinine until patient can tolerate oral chloroquine. • Monitor parasitaemia by microscopy 2 days and 7 days after initial therapy.

Figure 4. Treatment and Referral of Malaria According to Level of Health Facility in Nigeria

persons with sickle cell disease and non-immune visitors/residents. The routine use of chemoprophylaxis in healthy young children is not recommended.

Chemoprophylaxis for Pregnant Women
Women who have malaria while they are pregnant are more likely to be ill and to die. This risk is greatest during a woman's first and second pregnancies. The risks to the foetus are abortion, still birth, premature delivery and low birth weight.

Weekly malaria prophylaxis prevents malaria infection during pregnancy. Studies to evaluate the impact of this prophylaxis on birth weight and infant mortality have not been completed. Concern has been expressed that chemoprophylaxis may reduce maternal immunity, and decrease the transfer of antimalaria immunity to the foetus and to infants during their first six months of life.

Recommendations in Nigeria
In Nigeria, even though chloroquine resistance has been documented, it is recommended that all pregnant women be given a curative treatment dose with 1,500mg chloroquine base over three days (600mg - 600mg - 300mg) at the time of first attendance at a health facility.

This initial curative treatment is recommended because asymptomatic malaria infection has been detected in many pregnant women and a curative dose may help eliminate parasitaemia.

Laboratory confirmed cases of symptomatic malaria in pregnant women should be treated with 1500mg of chloroquine base over three days. If clinical symptoms or parasitaemia continue, treat with 30 mg/kg body weight of quinine for seven days.

Suspected cases of acute malaria in pregnant women at facilities without a laboratory should be referred to a higher level.

Treatment of pregnant women with sulfadoxine/-pyrimethamine, tetracycline or amodiaquine during pregnancy is not recommended.

Children and Adults with Sickle Cell Disease
Persons with sickle cell disease are at increased risk of sickle cell crisis from malaria infections. Children with known sickle cell disease should be given lifetime chemoprophylaxis with either weekly pyrimethamine at 0.5mg / kg body weight per week or daily proguanil at 1.5mg/kg body weight per day.

Chloroquine prophylaxis of 5mg/kg body weight per week may also be considered but the duration of prophylaxis should be judiciously determined by clinicians to prevent the risk of severe retinopathy and other side effects.

Non-Immune Visitors and Residents.
Non-immune visitors are at high risk of getting malaria. Visitors should be told how to reduce their contact with mosquitoes. They should take 300mg chloroquine one week prior to arrival in Nigeria, 300mg weekly during the visit and for four weeks following departure.

VECTOR CONTROL ACTIVITIES
Vector control activities aim to reduce the number of mosquitoes. They were a major part of malaria control in the past, but studies such as the Garki Project in Kano State indicate that chemical control may be too expensive for us to sustain. Using chemicals to kill mosquitoes becomes more difficult as many Anopheles species adapt to insecticides. Therefore, the widespread application of insecticides is no longer recommended.

Four recommended methods for controlling mosquitoes are:

- Environmental Management
- Personal Protection Measures
- Limited Larviciding in Urban Areas
- Biological Control.

Reported by Dr. O.J. Ekanem, Chief Consultant Malariologist, and the Epidemiological Division, Department of Disease Control & International Health, FMOH; and the Ogun State Teaching Hospital, Sagamu.

MALARIA TREATMENT
Guidelines for LGA Health Workers

This article describes the best way to manage cases of non-severe malaria in children. When health workers treat malaria properly, it will reduce the severity of the disease and fewer people will die of malaria. Since many health workers do not have access to a laboratory, the policy in Nigeria is to treat all fevers in children under five with chloroquine.

Although children under five years of age are at a higher risk of severe illness and death, people of all ages get malaria. You should follow the eight steps below for treating fever/malaria for anyone with suspected malaria.

TREAT ALL FEVERS IN CHILDREN UNDER FIVE WITH CHLOROQUINE

Fever is a very common symptom of malaria, but not everyone with fever has malaria. Fever can be associated with many other illnesses such as ear infections, pneumonia, diarrhoea and measles. Children can have malaria and another disease at the same time. If the cause of fever is another serious condition, such as measles, give chloroquine in addition to the treatment for the other diseases.

EIGHT BASIC STEPS in treating malaria:

1. Assess the patient's condition.
2. Give the correct dosage of chloroquine.
3. Give other treatments for fever, including tepid baths, paracetamol and extra fluids. Teach the mother to give these treatments at home.
4. Identify and treat other conditions. Always assess dehydration and look for anaemia.
5. Record information on the correct form(s).
6. Advise the mother or patient to return if there is no improvement within two days or if the fever persists for two days.
7. Refer patient when indicated.
8. Educate about malaria.

Step 1. Assess the patient's condition

You should decide whether a patient is severely ill or not. Severe malaria should be recognized early so the patient can be sent to a facility that can give special care. Severe illness includes:

1. Very ill patients who cannot walk
2. Febrile patients who can't take oral medication
3. Persistent vomiting = 3 or more times in a day
4. Febrile pregnant women
5. Severe chloroquine induced pruritus
6. No improvement in health or worse after taking oral medication.

All health workers should know:

- **signs and symptoms of malaria**
- **that pregnant women & children under five are at high risk of severe illness and death from malaria**
- **how to treat fevers in children under five with oral chloroquine**
- **how to select correct chloroquine dosage for children of different weights and ages**
- **how to reduce fevers**
- **how to give preventive therapy to pregnant women**
- **when to refer persons with fever to a higher health facility**
- **the reasons why a child with fever might not respond to chloroquine treatment**
- **ways by which people can reduce their exposure to mosquito bites.**

Does the child have fever? If the axillary temperature is above 37.5°C, or 101°F, the child has fever. If you do not have a thermometer, see if the child feels hot by holding the back of your hand against the forehead.

Ask the mother if the child has had fever during the past three days. A child with malaria may not have fever at the time of the clinic visit. Fever may occur only every two days as part of the natural malaria cycle. Fever may also subside if treatment was given before the child's visit to the health facility. If the mother says that the child has had fever in the past three days without adequate treatment, treat with chloroquine.

Signs and symptoms of malaria include:

- sweating
- diarrhoea
- headache
- muscle pain
- vomiting
- chills
- dehydration
- convulsions
- unconsciousness.

Step 2. Give the correct amount of chloroquine

Chloroquine is the best drug for treating malaria in Nigeria because it acts quickly, it is safe and it is low in cost. You must give the correct dose of chloroquine. If you give too little chloroquine, the patient may not recover. Too much chloroquine may be harmful.

Tablets and syrup are the best form of chloroquine to give. They are absorbed rapidly into the blood and do not have the risks associated with injections.

Chloroquine injections should only be given to patients who cannot swallow or who are vomiting. Injections can cause paralysis of the legs or an abscess at the injection site if they are administered incorrectly. *Chloroquine or quinine injections can sometimes cause shock and sudden death in small children. They should be given very carefully by trained and competent staff in health clinics or hospitals and only when absolutely necessary.*

In almost all cases of fever, chloroquine **tablets** can and should be used. The amount to give depends on the weight or age of the patient. Consult the Chloroquine Dosage Chart (Table II) to find the correct dose. Always read the label on the container to ensure that the tablets contain 150mg base chloroquine.

Answer these four questions to give the right amount of chloroquine.

How much chloroquine?
Consult the Chloroquine Dosage Chart. Weigh the child to determine the correct dosage. If you cannot weigh the child, give the dose listed for the child's age.

When should it be given? Give doses over three days. Give the first dose immediately - at the clinic. Repeat the same dosage on day 2 (the next day) and half that dosage on day 3. Tell the mother the child should take all the chloroquine even if the child feels better after the first dose.

Where to give the treatment? The first dose may be given by health workers at home or at health facilities. The second and third doses can be given at home if the mother or another responsible person can properly give the drug.

Children who are very young, very ill, who cannot take anything by mouth, or who are unconscious should be treated at an adequately equipped health facility.

How to give the chloroquine? Chloroquine is bitter but children will accept it better when ground tablets are mixed with a small amount of sweetened juice, banana, or other soft food. After swallowing chloroquine, the child should drink some clean water. Taking chloroquine with food will help prevent a stomach ache.

If the child spits out the chloroquine or vomits within the first 30 minutes, give the entire dose again. If the child vomits between 30 minutes and one hour after taking the medicine, give an additional half of the dose.

TREATMENT OF NON-SEVERE MALARIA
150 mg base chloroquine tablets
Syrup 50mg base per 5ml. 1 teaspoon = 5ml.

Age	Weight	1st Day	2nd Day	3rd Day
Less than 1 year	Under 9.9kg	½ tablet 7.5 ml syrup	½ tablet 7.5 ml syrup	¼ tablet 3.75 ml syrup
1-3 years (walking)	10kg to 14.4kg	1 tablet 15 ml syrup	1 tablet 15 ml syrup	½ tablet 7.5 ml
4-6 years (school age)	14.5kg to 18.4kg	1 ½ tablet	1 ½ tablet	1 tablet
7-11 years	18.5 to 34.9kg	2 tablets	2 tablets	1 tablet
12 years and above	35kg and over	4 tablets	4 tablets	2 tablets

Table II

8

TEPID BATHS TO REDUCE FEVER.

Sponge the child with cool or tepid water to bring down a fever.

Fill a large bucket full of tepid water.
Remove all of the child's clothing.

Place the child in a large basin. Use a small bowl to pour tepid water in a steady stream all over the child's body.

A child who is too large for the basin can use a bathroom or sit on a stool in a larger bowl.
He can be showered or have the cool water poured gently all over him.

Do this for about for 15-20 minutes.

The child may cry, complain of feeling cold and begin to shake. You are not harming the child. Pacify him, and continue. You will remove the heat from his body and reduce the fever.

Expose the child and let the air dry the child's skin.

DO NOT: wrap a child with fever in a blanket. The blanket will keep the heat inside, and increase the fever.

Paracetamol Dosages

Age	500mg Paracetamol Tablets Dose taken every 4 hours
Under 2 years	¼ tablet or 5ml syrup
2 years	½ tablet or 10ml syrup
3 years	3/4 tablet or 15 ml syrup
4-11 years	1 - 2 tablets
12 years and older	2 tablets

Figure 5

Step 3. Give other treatments for fever.

High fever can cause convulsions, a delay in recovery and even death despite treatment. Therefore, you should give other treatments to reduce fever, in addition to chloroquine. These treatments (paracetamol, tepid baths and extra fluids) can be given at the health facility and at home.

Paracetamol

Paracetamol is the safest medicine for reducing a high fever in children. The amount of paracetamol to be given depends upon the age of the child. The correct doses of paracetamol are in Paracetamol Dosage Chart (Figure 5). Give it every four hours until the fever goes off, but not for more than three days.

Tepid Baths

Tepid baths lower the temperature and make a feverish child feel better. At a health facility, give the child a tepid bath or shower and teach the mother how to do so at home. To give a tepid bath or shower, sit the child in a bath tub or large bowl and pour tepid or cool water over him continuously. Expose the child to dry. Repeat this procedure for 15-20 minutes.

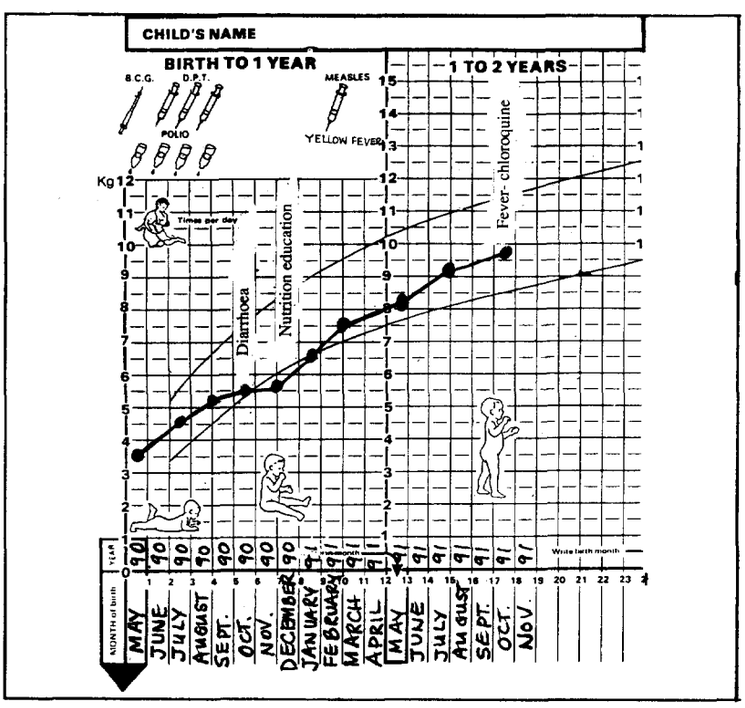
Extra Fluids

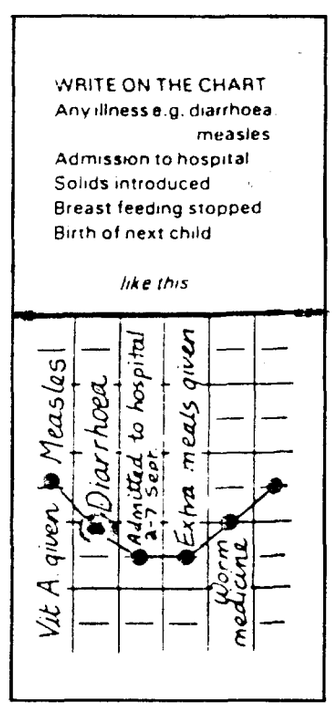
A child with fever needs more than the normal amount of fluids. Encourage the mother to breast-feed and give increased amounts of clean water or other fluids throughout the illness.

Step 4. Treat other conditions.

Fever is associated with many kinds of infections and other illnesses. When treating a feverish child, you must treat other conditions that may be present.

Diarrhoea and anaemia are commonly found; if a child with malaria also has **diarrhoea**, the danger of dehydration is great. Always give oral rehydration therapy (ORT) along with the chloroquine treatment if both fever and diarrhoea are present. Other fluids and foods should be increased as well. If the child seems to be breathing very quickly or has difficulty breathing or a cough check for pneumonia.





30

Always check malaria patients for **anaemia**. Children with iron deficiency and malaria are susceptible to severe anaemia. If severe anaemia is detected, treat according to the *Federal Ministry of Health (F.M.O.H) Standing Order on the Management of Pallor (or low Haemoglobin).*

Other conditions that may be associated with fever include pneumonia and tooth or ear infections. Treat these conditions according to the appropriate Standing Order, in addition to giving chloroquine for malaria.

Always check the immunisation status of both mother and child.

Treatment of chloroquine-resistant malaria with a single dose of Fansidar
(Sulfadoxine 500mg / Pyrimethamine 25mg)

Age	Dose
Birth - 3 Years	½ tablet
4 - 8 Years	1 tablet
9 - 11 Years	1 ½ tablets
12 - 15 Years	2 tablets
16 years and older	3 tablets

Figure 6

Step 5. Record information

Proper record-keeping is important for patient follow-up, management of the drug supply and monitoring of malaria cases. For each initial and return visit, record the signs and symptoms, diagnosis, treatment (including the amount of chloroquine).

There are four forms that must be filled out concerning patients with malaria. Different people may fill out these forms, depending on the staffing at the health facility. The forms are:

- Patient Register at the facility - at the time of the treatment.
- PHC Tracer Disease Form - once a month.
- DSN-002. The Notifiable Diseases Form - once a month.
- *Road to Health Card* for a child (or the Personal Health Card for an adult). Write "Malaria treated with chloroquine" in small letters in the space above the date. Be sure and record a child's weight, if you have a weighing scale.

Step 6. Advise the mother to return if child does not improve.

Tell every mother to bring her child back if the child does not improve within two days or if there is still fever after two days.

When a child is not improved, ask the mother questions to find out whether she gave the correct treatment, whether there is another illness present, or if the child did not respond to chloroquine. Review the reasons for referral to a higher facility (Step 7, below).

If the fever persists even though you think the patient took chloroquine correctly and you suspect resistance to chloroquine give sulfadoxine/pyrimethamine

(Fansidar). Consult the Dosage Chart (Figure 6) for sulfadoxine/pyrimethamine (Fansidar) to select the correct dosage. Note that you only need to give one dose.

If the presence of chloroquine resistance has not been confirmed in your area, inform the State Ministry of Health of your suspicion.

Step 7. Refer to a higher level health facility if necessary.

Refer immediately a person with severe illness:

- convulsions
- unconsciousness
- persistent vomiting that prevents swallowing chloroquine and accepting ORT
- febrile illness during pregnancy.

Step 8. Educate the mother about the management of malaria.

While deciding if the child has a fever, explain to the mother that many fevers are caused by malaria and should be treated properly. Teach her signs and symptoms of malaria if she does not already know them. Teach her how to reduce fever.

As you carry out each step in the care of the child, explain what you are doing to the mother (or guardian).

Stress the need to complete the child's full dose of chloroquine even when the child looks better. The mother should learn how to reduce fever and prevent dehydration at home and when to return to the health facility. Messages should be simple and clear, focusing on what she must know to treat the illness properly. After you have explained, ask her to repeat the instructions back to you. It is not enough to ask her "Do you understand?".

Find a good time to talk with her about preventing malaria. If her child is very ill she may be too worried to listen well. Tell her to keep the chloroquine out of reach of children.

PREVENTING MALARIA

Selective Chemoprophylaxis

"Selective chemoprophylaxis" means giving certain people preventive doses of antimalarials to protect them. It is especially dangerous if these people get malaria. Three groups of people need protection:

- pregnant women
- people who have sickle-cell disease
- people who come from areas without malaria.

The routine use of chemoprophylaxis in healthy young children is not recommended.

Pregnant Women.
Protect pregnant women from the harmful effects of malaria by giving weekly doses of chloroquine throughout the pregnancy. Start with a treatment dosage as early as possible.

A pregnant woman may have malaria parasites in her blood without feeling ill; so before starting preventive weekly doses, treat her with chloroquine to clear her blood. At her first visit to a health facility, give a pregnant woman a total of 1,500mg of chloroquine base over three days. Give 600mg (4 tablets of 150mg) initially, repeat the 600mg dose on the second day and give 300mg (2 tablets) on the third day (Figure 7).

One week after the third day pregnant women should begin a routine of taking 300mg of chloroquine every week until the baby is born. Make a special effort to provide chemoprophylaxis to women during their first and second pregnancies.

Special Care of Pregnant Women.

Anaemia: Many pregnant women are very anaemic, perhaps because of poor nutrition and parasitic infections. Give 5mg folic acid and 200mg ferrous sulfate daily to all pregnant women throughout their pregnancy.

Neonatal Tetanus Prevention: The FMOH has issued new guidelines on Tetanus Toxoid (TT) immunisation. In the past, it was recommended to give two doses of TT to a pregnant woman during her pregnancy. Now it recommended that all women of childbearing age get five doses of TT. Your task

2

is to make sure that all pregnant woman are vaccinated!

TETANUS TOXOID FIVE DOSE SCHEDULE

TT1 = at 1st contact and as early as possible in pregnancy

TT2 = at least 4 weeks after TT1

TT3 = at least 6 months after TT2

TT4 = at least 1 year after TT3

TT5 = at least 1 year after TT4

Nutrition: encourage green leafy vegetables and protein-rich foods.

Compliance: It may be difficult to get pregnant women to take chloroquine every week. Learn about your community to find out why this might happen in your area. When you do health education, remember that TBAs and older women are a valuable resource. Such women are respected and often advise younger women about health and childbearing.

Children and Adults with Sickle Cell Disease

People with sickle cell disease may have a sickle cell crisis when they get malaria. Give children with known sickle cell disease lifetime chemoprophylaxis with either weekly pyrimethamine at 0.5mg/kg body weight per week or daily proguanil at 1.5mg/kg body weight per day. Do not give chloroquine (for prevention of malaria) unless instructed by a specialist physician because there is a risk of eye damage if it is taken for a very long time.

COMMUNITY MEASURES FOR MALARIA PREVENTION

Mosquitoes carry malaria, so people must reduce their exposure to mosquitoes to prevent the disease. Mosquitoes carrying malaria usually bite people inside their homes between dusk and dawn. Reducing the number of mosquitoes in an area can be very expensive and difficult.

There are some simple measures that individuals, families and communities can take to protect themselves against mosquito bites - especially for their young children.

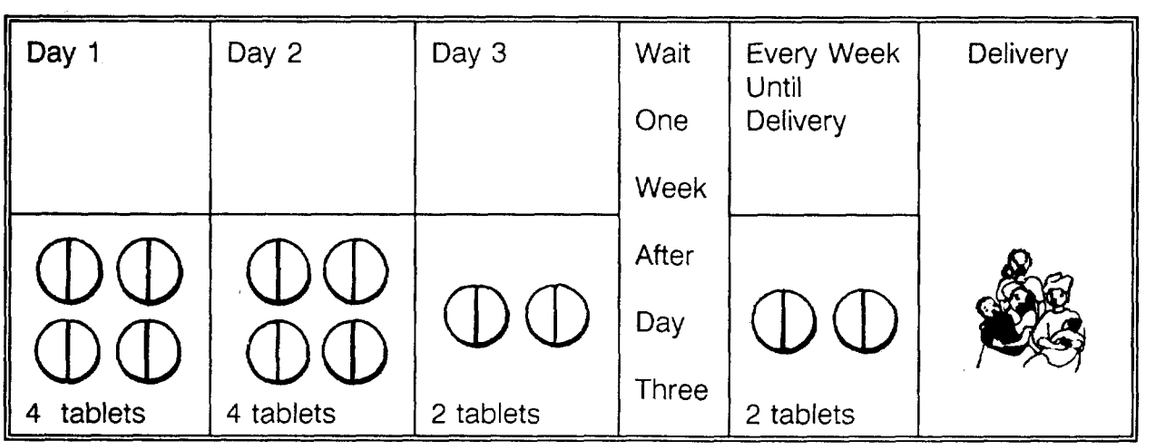


Figure 7. Preventing Malaria in Pregnant Women with 150mg base Chloroquine tablets

Malaria-carrying mosquitoes breed in standing water or moist areas, such as puddles or ponds. There are other disease-bearing mosquitoes that breed in and near houses such as in pots, cans, tyres or stagnant water in ditches, sewers and refuse. **Keeping the community clean and eliminating these breeding sites** will reduce the number of mosquitoes in the environment.

Bed nets, window screens and repellents can be used. If a family cannot afford a screen for every window or a net for every bed, then they should consider protecting the rooms and beds where young children under 5 years old and pregnant women sleep.

Primary Health Care staff and community members should work together to:

1. Increase the population's awareness of malaria, and make sure people know:
   - mosquitoes spread malaria
   - communities can work to prevent malaria.

2. Teach people about the symptoms of malaria so people will seek prompt treatment. Urge mothers to take children with fever to a health worker right away.

3. Improve the skills of health workers in interviewing, counselling, treating and referring people with malaria and fever.

4. Promote community participation by forming village health committees with support from traditional and religious leaders and community organizations.

Reported by the National Malaria and Vector Control Division, Department of Disease Control & International Health, FMOH.

YELLOW FEVER IN DELTA STATE

Preliminary Report

An outbreak of confirmed Yellow Fever has been ongoing in Delta (former Bendel) State since mid-April 1991. Ika South, Ika Northeast, Aniocha South and Aniocha North LGAs have been most affected. Investigation teams estimate that there were 1,200 to 2,400 cases, and 600 to 800 deaths between 15 April and 31 October 1991. Nearly 60% of cases were between 10 and 29 years old and males were hospitalized more frequently than females (3:1 ratio). Villages near forests were more affected, suggesting sylvatic transmission of the virus.

Urban areas near the outbreak have low levels of vaccination coverage and high levels of mosquito activity. A mass immunization campaign was begun July 4, 1991 in Ika LGA but the efforts were plagued by a lack of transport, and non-functioning Ped-O-Jets, and a shortage of vaccine.

Stocks of Yellow Fever vaccine in Nigeria are low, and additional outbreaks could occur at any time. If urban transmission occurs, an epidemic disaster is possible.

FMOH Case Definition: Yellow Fever

Sudden onset, fever, headache, backache, prostration, nausea and vomiting. Pronounced albuminuria and anuria may occur. Haemorrhagic symptoms include epistaxis, buccal bleeding, haematemesis and melena. Disease of short duration and varying severity.

Reported by Central Public Health Laboratory, Federal Vaccine Production Laboratory, Epidemiological Division, FMOH, Lagos; National Arbovirus Research Unit, FMOH, Enugu; Virus Research Unit, University College Hospital, Ibadan; Combatting Childhood Communicable Diseases Project (CCCD / USAID); Division of Vectorborne Infectious Diseases, Centers for Disease Control, Fort Collins, Colorado, USA.

124

Routine Monthly Disease Notification Returns from States

January - August as at the 21st October 1991

	January	February	March	April	May	June	July	August
Abuja	■	■	■	■	■	■	■	■
Akwa Ibom	■	■	■	■	■	■	■	■
Anambra	■	■	■	■	■	□	□	■
Bauchi	■	■	■	□	■	■	■	■
Bendel	■	■	■	■	■	□	□	□
Benue	■	■	■	■	■	■	□	□
Borno	□	□	□	□	□	□	□	□
Cross River	■	■	■	□	□	□	□	□
Gongola	■	■	■	■	■	□	□	□
Imo	■	■	■	■	■	□	□	□
Kaduna	□	□	□	□	□	□	□	□
Kano	■	■	■	■	■	■	■	■
Katsina	■	■	■	■	□	□	□	□
Kwara	■	■	■	■	■	■	■	■
Lagos	■	■	■	■	■	■	■	■
Niger	□	□	□	□	□	□	■	■
Ogun	□	□	□	□	□	□	□	□
Ondo	□	■	■	■	■	■	■	■
Oyo	■	■	■	■	■	■	■	■
Plateau	■	■	■	■	■	■	□	■
Rivers	■	■	■	■	■	■	■	□
Sokoto	■	■	■	■	□	□	□	□

■ Report Received □ Report not Received

CEREBRO-SPINAL MENINGITIS (CSM)

Epidemic meningitis is primarily due to group A *Neisseria meningitidis*. This is the organism that causes the cycles of meningitis which occur about every ten years in the "meningitis belt" of sub-Saharan Africa. This "belt" is stretches from the Gambia in the west to Ethiopia in the east, and includes much Nigerian territory. During an epidemic, one person in every hundred may become ill.

The FMOH case definition for CSM is:
Acute illness, with fever, intense headache, nausea and often vomiting, stiff neck and often a skin rash. Delirium and coma commonly occur and death is common in untreated cases.

The CSM season usually begins during the dry months and ends with the rainy season. Figure 8 shows the number of cases of CSM reported to the FMOH each month for the years 1987-1990.

The dry season is here -- bringing CSM Cerebro-Spinal Meningitis

CSM can be prevented by vaccination !

The vaccine protects older children and adults for several years, but children less than four years old should be vaccinated every year.

<u>If there is a CSM outbreak in your state</u>

- Notify the State and Federal Ministries of Health using Immediate Notification Form DSN-001
- Send samples to the Central Public Health Laboratory, Yaba, Lagos
- Vaccinate !

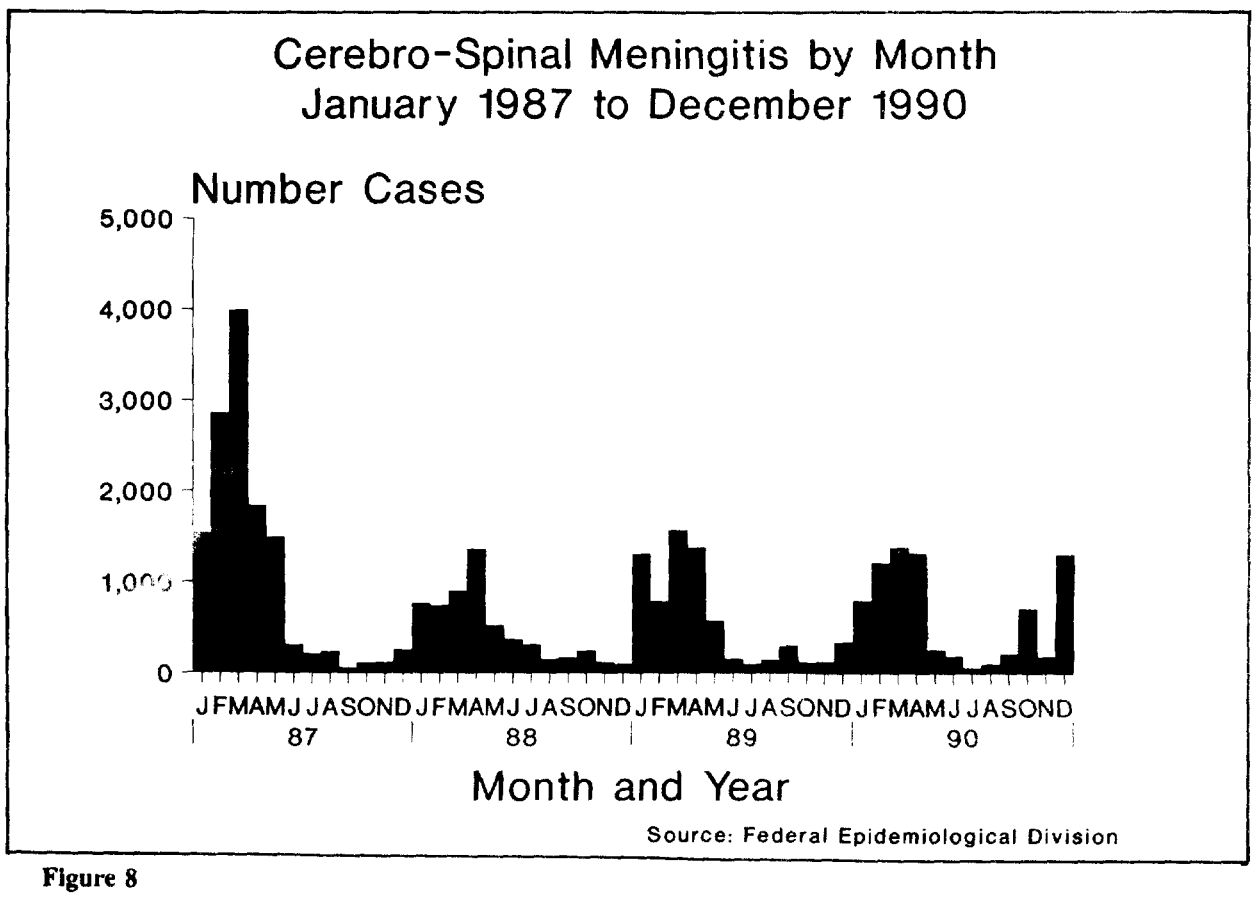


Figure 8

CHOLERA UPDATE

Cholera in Nigeria in 1991

Cholera has been continuously reported in Nigeria since it was introduced to the country in 1970. In 1990, 4,101 cases were reported, but this year, fourteen times more cases (56,749) were reported.

The case fatality rate is alarmingly high. Of every 100 Nigerians who were reported to have cholera, thirteen died. Reasons for such a high percentage of deaths may be:

- patients reported late for treatment
- lack of preparation for an epidemic
- too few health workers trained in Control of Diarrhoeal Diseases (CDD)
- lack of supplies and equipment
- improper treatment
- over-reporting of severely ill patients relative to mildly ill.

The epidemic probably peaked in June; Figure 9 shows the number of cases and deaths reported from January through October 1991. This graph does not include 16,596 cases and 1,829 deaths that occurred in Borno from April to July, because the state did not provide cholera figures by month.

Response to FMOH Cholera Questionnaire

The FMOH set up an Emergency Task Force on the Control of Cholera, and many States and LGAs set up special groups to coordinate their responses to the epidemic.

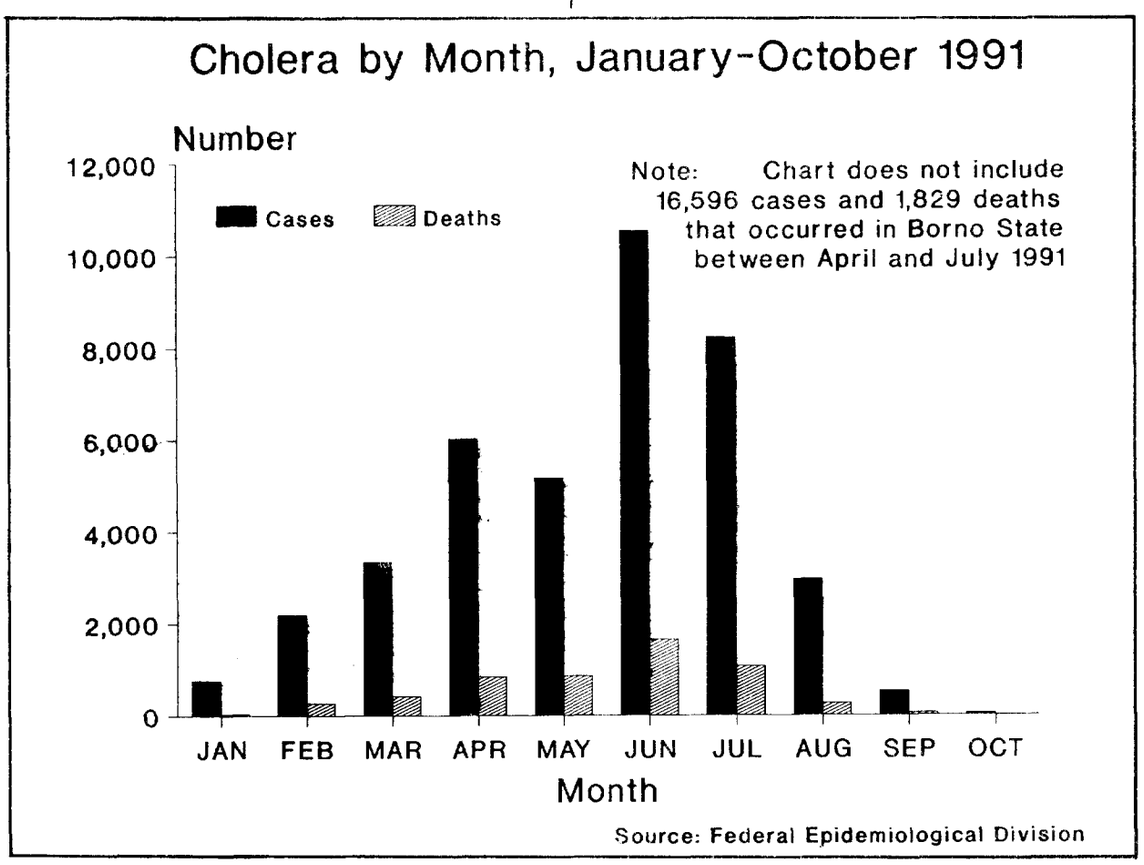


Figure 9

At the time this issue of the Nigeria *Bulletin of Epidemiology* is being prepared, 13 states had replied to a special questionnaire on cholera activities sent by the Honourable Minister of Health: Imo, Kaduna, Gongola, Ondo, Borno, Sokoto, Oyo, Abuja FCT, Kano, Plateau, Bauchi, Rivers and Niger.

Treatment of Patients during the Outbreak:
All states reported that health workers had used IV fluids, ORS and SSS to treat victims of cholera, but many states did not have enough of these supplies. There was a general shortage of ORS and of appropriate intravenous (IV) fluids; one state even reported difficulty getting enough sugar for SSS. Some states reported that people did not know that oral rehydration could be used for adults in the treatment of cholera.

At least one state reported using IV fluids that contained only dextrose - this solution would not have been effective. We remind readers that the best IV fluid is Ringer's Lactate and that Normal Saline, Half Strength Darrow's Solution, and Half Normal Saline with 5% Dextrose are acceptable. Plain dextrose in water does not contain the electrolytes needed to correct dehydration.

Actions Taken to Prevent Spread of the Outbreak
All states conducted health education, and many undertook emergency water treatment. One state spent 5,200,000 Naira on cholera control measures. Most states spent around 150,000 Naira.

Unfortunately vaccination against cholera was done in several states. It is unfortunate because the money and the efforts that went for vaccination could have been used for some truly effective measures to halt the outbreak.

In some places it appears vaccination was done against the better judgement of the health authorities. This suggests that communities need to be educated that vaccination does not control cholera epidemics, and health authorities should actively direct a community's efforts to more useful activities.

Results of Visits to States

FMOH/UNICEF teams visited the four Primary Health Care Zones to investigate the epidemic. They found that the epidemic was dying down and discovered there had been problems with oral rehydration salts (ORS) sachet distribution. There were not enough ORS sachets in the severely affected states, and even those ORS sachets that did reach the State and LGA level were often not distributed to the health facilities. **Thus, ORS did not reach patients who needed it.**

In addition, some health workers were confused about the correct dilution of ORS sachets. In the recent past, Nigeria has used 600ml sachets of ORS, but during this epidemic 1000ml sachets were imported. We urge readers to inspect each ORS sachet to see whether it is meant to be diluted with 1 litre (1000ml) or 600ml of water.

FMOH Policy on Fluid Replacement

We remind readers that Salt-Sugar-Solution (SSS) is to be used in the home to prevent dehydration.

ORS in sachets is to be used in health facilities to correct moderate ("some") dehydration.

Intravenous fluids (Ringer's Lactate if possible) is for the urgent correction of severe dehydration.

The Bulletin welcomes the views of its readers, though letters may be edited for clarity and space.

The Editor invites readers to submit articles for consideration for publication. (Guidelines for authors will appear in the next issue, and are available from the Editor).

Surveillance is a Key to Early Response

An early response to an outbreak can save lives, so continuing surveillance of diarrhoea cases is a major strategy for cholera control. A record of diarrhoea cases treated in health facilities and by community health workers should be maintained, and any suspicion of cholera reported immediately.

Health workers and facilities should use the PHC Tracer Disease Reporting system, and the Routine Report Form DSN-002 to report all cases of diarrhoea, and should use Emergency Report Form DSN-001 to report suspected cholera. Readers are reminded to report even suspected cases.

Report Cholera and Suspected Cholera promptly
Health workers should be trained to watch for changes in the pattern of diarrhoea and to suspect cholera when an adult develops severe dehydration from acute watery diarrhoea (usually with vomiting), or when any patient develops the same in an area where there is cholera. Such changes should be promptly reported to health authorities by the quickest means possible, and using Form DSN-001.

Quick Response Can Save Lives

Early case detection and prompt rehydration of cholera patients greatly reduce the case fatality rate. Patients with symptoms of cholera must promptly report to the nearest health facility for treatment. On their way to a health facility, they should take salt-sugar-solution (SSS) to prevent dehydration.

Health workers should know the latest techniques of treating diarrhoea. The same techniques can be used for treatment of cholera. However, health workers should appreciate that in cholera, the victim may become dehydrated very quickly, and need a large volume of fluid replacement urgently.

Antibiotics are not recommended in "ordinary" childhood diarrhoeas, but the use of tetracycline (or cotrimoxazole in children) is approved for severe cases of cholera.

Vaccination is of No Practical Value

Vaccination does not help control an epidemic. It also gives a *false sense of security* to people who are vaccinated, and to health authorities who may then neglect more effective control measures.

Environmental Health Measures

Cholera is now endemic in Africa and Nigeria. There is no doubt that cholera is here to stay as long as environmental conditions permit the survival of *V. cholerae*.

Cholera spreads rapidly in communities with poor sanitation and unsafe drinking water. Special attention should be given to improving water supply and sanitation. These efforts must be supported by preventive education. Surveillance of water sources and water stores should be done to detect contamination by *V. cholerae*.

These measures are effective in areas where there is cholera and also in those which are threatened with the introduction of the disease.

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ANNEX E:National Guidelines on Mangement of Cholera

40

NATIONAL GUIDELINES ON MANAGEMENT OF CHOLERA

August, 1991

A Publication of the National Task Force on the Control of the Cholera Epidemic (F.M.O.H.)

RESPONDING TO THE THREAT OF CHOLERA

Cholera is treatable. Health workers who have been trained in the case management of diarrhoea, and who have adequate supplies for treating patients, can prevent deaths due to cholera. Most cholera cases are mild. Even when there is a cholera outbreak, 90% of the cases are mild and can be treated by simple measures. Many infected persons have no symptoms.

Cholera must be taken seriously because it can kill quickly. A patient can rapidly lose water and essential salts from the body, and become dehydrated. Untreated, the patient may die in three to four hours after symptoms appear.

To prevent deaths due to cholera, the public should be told to take patients with suspected cholera to a health worker for treatment. In the home and the community most cases of cholera can be rehydrated quickly, and simply, using plenty of salt-sugar - solution (SSS) to replace the lost water and salts. In health facilities Oral Rehydration Salts (ORS) solution and intravenous fluids can be used. Patients who become severely dehydrated need a fluid that is given intravenously. Rehydration, and treatment with an appropriate antibiotic, can save the lives of nearly all patients who are brought to a health facility early enough.

The best preparation in the threat of a cholera epidemic is to have a strong programme for the Control of Diarrhoeal Diseases. Conditions that create cholera epidemics are the same as those favouring other diarrhoeas. In the long term, improved water supply and sanitation is the only way to prevent cholera. In an outbreak, early detection and rehydration of cholera patients is the best control measure. The treatment of cholera is similar to that of other acute diarrhoeas, with the differences that cholera often strikes adults, and patients lose great volumes of fluid very rapidly.

During cholera outbreaks personal hygiene and environmental sanitation are of paramount importance, including waste collection and disposal, water treatment and hygienic food handling and preparation.

Vaccinating against cholera and limiting movement of possible carriers are ineffective against the spread of cholera. The available cholera vaccines are unable to prevent cholera infection.

It is also difficult, even with enormous efforts, to detect and isolate all infected persons, most of whom have no signs of illness. Most importantly, imposing these measures diverts resources and manpower from more useful control activities.

Suspect cholera when:

* **an adult develops severe dehydration from acute watery diarrhoea (usually with vomiting)**
* **any patient has acute watery diarrhoea in an area where there is an outbreak of cholera.**

TABLE OF CONTENTS

Responding to the Threat of Cholera	1
Management of Patients with Cholera	2
Treatment in the Community	6
Public Education	7
Form DSN-001	8

141

MANAGEMENT OF PATIENTS WITH CHOLERA

STEP 1: ASSESS FOR DEHYDRATION

Assessement of Diarrhoea Patients for Dehydration

	A	B	C
LOOK AT:			
1.CONDITION	Well, alert	* RESTLESS, IRRITABLE*	*LETHARGIC OR UNCONSCIOUS; FLOPPY *
EYES	Normal	Sunken	Very sunken & dry
TEARS	Present	Absent	Absent
MOUTH & TONGUE	Moist	Dry	Very dry
THIRST	Drinks normally, not thirsty	* THIRSTY, DRINKS EAGERLY *	* DRINKS POORLY OR NOT ABLE TO DRINK *
2.FEEL: SKIN PINCH	Goes back quickly	* GOES BACK SLOWLY *	* GOES BACK VERY SLOWLY*
3.DECIDE:	The patient has NO SIGNS OF DEHYDRATION	If the patient has two or more signs including at least one *SIGN* there is SOME DEHYDRATION	If the patient has two or more signs including at least one *SIGN* there is SEVERE DEHYDRATION
4.TREAT:	Use Treatment **Plan A**	Weigh the patient,if possible and use Treatment **Plan B**	Weigh the patient and use Treatment **Plan C.** URGENTLY

STEP 2: REHYDRATE THE PATIENT

FOR SEVERE DEHYDRATION (PLAN C)

Give IV fluid to replace the fluid losses.
Ringer's Lactate is the best. If it is not available, use Normal Saline. Other acceptable solutions are Half-Strength Darrow's Solution, and Half Normal Saline with 5 % dextrose.
Do not use plain glucose (dextrose) in water, it is not effective.
Start IV fluids immediately. If the patient can drink, give ORS by mouth while the drip is being set up.

If you do not have IV fluids, or cannot refer quickly, use oral fluids; if the patient cannot drink, use a naso-gastric tube at fluid rate of 20 ml/kg body weight per hour. If it is given too fast, the patient may vomit repeatedly. Give it more slowly.

For patients 1 year old and above, give 100 ml/ kg in 3 hours, divided as follows:

* 30 ml / kg as rapidly as possible (in 30 minutes); then

* 70 ml / kg in the next $2^1/_2$ hours

For patients below 1 year, give 100 ml / kg in 6 hours, divided as follows:

* 30 ml / kg in the first hour, then
* 70ml / kg in the next 5 hours

Reassess the patient very frequently. After the initial 30 ml / kg are given, the radial pulse should be strong. If it is not, continue to give IV fluids rapidly.

Give ORS (about 5 ml / kg /hour) as soon as the patient can drink, in addition to IV fluid.

Evaluate the patient after 3 hours

* If there are still signs of severe dehydration (this is rare), repeat the IV therapy already given.

* If there are signs of some dehydration, continue as indicated below for <u>some</u> dehydration.

* If there are no signs of dehydration, continue to Step 3 to maintain hydration by replacing on-going fluid losses (see below).

FOR SOME DEHYDRATION (PLAN B)

Give ORS solution or SSS

* Give 100 ml / kg in 4 hours.

* If the patient wants more ORS, give more.

For example, for a 10 kg child, give 1,000 ml (1 litre) in 4 hours. This would be 250 ml each hour.

For a 15 kg child, give 1,500 ml ($1^1/_2$ litres) in 4 hours. This would be 375 ml, or about 2 full (200ml) cups each hour.

For a 50 kg adult, give 5,000 ml, which is 5 litres. This is $1^1/_4$ litres each hour.

A 60 kg adult needs 6 litres in 4 hours - the amount in the "bucketful of SSS" (made with 10 beer bottles or 20 Coca-cola bottles).

If you have ORS sachets, you **must** mix the powder with the **correct amount of water**.

Some sachets are meant for 1,000 ml - this is 1 litre , or $3^1/_2$ mineral bottles.

Some sachets are for 600 ml -2 mineral bottles, or 1 beer bottle.

Check the label and be sure!

103

If you don't have a scale, assume that:

- **an adult weighs 60 kg;**
- **a 10 year old weighs 30 kg;**
- **a 7 year old weighs 25 kg;**
- **a 5 year old weighs 20 kg;**
- **a 3 year old weighs 15 kg;**
- **a 2 year old weighs 12 kg; and**
- **a 1 year old weighs 10 kg.**

For children 5 and under, you may also look at a "Road to Health" card. Find the child's age and choose the weight that is between the lines.

Monitor the patient often to be sure the ORS is taken well. Look for patients who have profuse ongoing diarrhoea - you must monitor them more closely.

If you have ORS sachets, read the label to find out how much water must be used to prepare the solution. Be certain of the amount of fluid needed to dissolve the contents.

After 4 hours reassess the patient:

* If signs of severe dehydration have appeared (this is rare) , shift to rehydration for severe dehydration, as described above.

* If there is still some dehydration, repeat the rehydration for **some** dehydration, but also offer food, and other fluids.

* If there are no signs of dehydration, go to Step 3. In Step 3, the patient maintains hydration by replacing on-going fluid losses.

FOR NO SIGNS OF DEHYDRATION

(PLAN A)

The patient who is not dehydrated can be treated at home. Many mothers have been taught to prepare **Salt - Sugar - Solution (SSS).** Tell them to prepare **buckets** of SSS. Make sure they really know how to do it by asking them to demonstrate it to you at the clinic, or by a thorough description including what things they will use to measure the volume of water and amount of salt and sugar. Make sure they know how much to give.

They must give **plenty.**

For children less than 24 months old, the mother should give at least 50 - 100 ml after every loose stool.

For children 2 - 10 years, give at least 100 - 200 ml after each loose stool.

Persons over ten years should drink as much as they want.

Describe and show the amount to be given after each loose stool using a local measure that is likely to be available in most homes.

Tell the patient or mother to go to the clinic or hospital if any of these signs develop:

* increased number of watery stools
* marked thirst
* eating or drinking poorly
* repeated vomiting

STEP 3: MAINTAIN HYDRATION - REPLACE ON-GOING FLUID LOSSES

When you reassess a patient who has been rehydrated with IV fluid or ORS, and find no signs of dehydration, continue to give ORS solution to maintain normal hydration.

Age	*As a guide, give after each loose stool*
Less than 2 years	100 ml
[illegible] 10 years	200 ml
[illegible]	as much as [illegible] (at least 300 ml

Reassess the patient for signs of dehydration at least every 4 hours to ensure that ORS is being taken properly, and to detect patients with profuse on-going diarrhoea for closer monitoring. Keep the patient for observation until diarrhoea stops or until it is infrequent and of small volume - especially any patient who presented with severe dehydration.

If a patient **must** be discharged before diarrhoea has stopped, show the caretaker how to prepare **buckets of SSS.** Tell the caretaker to bring the patient back if the patient passes an increased number of watery stools, is eating or drinking poorly, shows marked thirst, or has repeated vomiting. Make sure the caretaker know how to give **plenty** of SSS.

Notes on Rehydration:

Vomiting usually subsides in 2 - 3 hours, as rehydration is achieved. Use a naso-gastric tube for ORS if the patient has some signs of dehydration and cannot drink, or for a person with severe dehydration only if IV therapy is not possible at the health institutions. The rate for naso-gastric therapy is 20 ml / kg body weight per hour. The amount of ORS solution needed to maintain hydration varies greatly from patient to patient, depending on the volume of stool passed. However, the amount needed is greatest in the first 24 hours of treatment, and is greatest in patients who presented with severe dehydration. In the first 24 hours the average requirement in such patients is 200 ml per kg of body weight, but some may need as much as 350 ml / kg After rehydration, urine output usually resumes in 6 - 8 hours. Regular urinary output (every 3 - 4 hours) is a good sign that adequate amount of fluid are being given.

STEP 4: GIVE ORAL ANTIBIOTIC T0 PATIENTS WITH SEVERE DEHYDRATION

An effective antibiotic can reduce the volume and duration of severe cholera diarrhoea and shorten the period during which *V. cholerae* are excreted. Antibiotics should be given orally as soon as vomiting stops, usually within a few hours of beginning rehydration. There is no advantage in using injectable antibiotics.

Tetracycline is the antibiotic of choice for adults; cotrimoxazole and furazolidone are alternatives. For children, use cotrimoxazole as the first choice, and tetracycline as the alternative agent. In some places, *V. cholerae* has developed resistance to tetracycline and other antibiotics. This is suggested when diarrhoea continues after 48 hours of antibiotic treatment. Erythromycin and chloramphenicol may be used when other recommended antibiotics are not available.

Antibiotic Doses:

TETRACYCLINE

Adults: 500 mg 4 times a day for 3 days.

Children: 12.5 mg / kg 4 times a day for 3 days.

COTRIMOXAZOLE (Trimethoprim - sulfamethoxazole) (TMP - SMX).

Adults: TMP 160 mg and SMX 800 mg twice a day for 3 days.

Children: TMP 5 mg / kg and SMX 25 mg /kg twice a day for 3 days.

No other anti-diarrhoeal, anti-emetic, antispasmodic, cardiotonic or corticosteroid should be used to treat cholera.

STEP 5: FEED THE PATIENT

* **Resume feeding when vomiting has stopped**
* **Continue breastfeeding in infants and young children.**
* **Give water or other fluids in addition to ORS, if the patient wishes.**

CHOLERA TREATMENT IN THE COMMUNITY

Cholera kills quickly. Many victims will not have time to come to a health institution.

Save lives by making sure people know how to make **"buckets of SSS"**. The Honourable Minister's formula (below) makes 6 litres of SSS - that is the amount a moderately dehydrated 60 kg adult should drink in **four** hours ! Be sure people know they must drink **plenty** of SSS.

As soon as one bucketful is finished, they should make another, and continue to drink as long as they have diarrhoea, or they are thirsty. SSS cannot save their lives unless they drink plenty.

Health education will save lives. Tell people to boil their water. Tell people to wash their hands after using the toilet and before cooking and eating.

Make Plenty of SALT - SUGAR- SOLUTION (SSS) for a Person with Cholera

Get a clean plastic bucket.

Pour 10 beer bottles or 20 Coca - Cola bottles full of clean water into the bucket.

Add 10 level teaspoons of salt and 50 lumps of sugar.

Mix thoroughly. Drink the solution liberally.

Drink the solution as soon as diarrhoea begins and to quench any thirst that may arise.

The victim will be saved only if the water lost in the stool is immediately replaced through drinking SSS.

The victim must drink plenty of SSS as long as he has diarrhoea. Prepare a new bucket full of SSS as soon as one is empty.

146

KEY POINTS FOR PUBLIC EDUCATION

People get cholera from drinking water or eating food contaminated with cholera organisms. Prevention is based on reducing chances of ingesting cholera germs.

When cholera appears in a community, intensify efforts to promote the sanitary disposal of human waste, and to ensure a safe water supply and safe food practices.

Tell people that :

* with proper treatment, cholera is not fatal
*most cases can be treated with simple measures
* human faeces must be disposed of safely
* good personal hygiene helps prevent spread of cholera
* safe preparation of food and proper cleaning of utensils reduces risk of infection
* use only clean water for drinking and bathing
* vaccination is not effective

CHOLERA VACCINE IS NOT EFFECTIVE

The Honourable Minister of Health has stated "Vaccination has no place in the Control of Cholera " The vaccines avail able do not help in controlling cholera. Vaccination gives a false sense of security to those vaccinated, and to some health authorities, who may then neglect truly effective measures.

EDUCATE THE PEOPLE about the extent and severity of the outbreak. Use all channels of information to inform and reassure the public about the effectiveness and simplicity of current treatments, and the benefits of prompt reporting of cases.They should be told about sources of contamination, and how to avoid infection.

COMMON SOURCES OF INFECTION

Drinking water that has been contaminated at its source (e.g., by faeces through an unsealed well) or during storage (e.g., by contact with hands contaminated by faeces).

Contaminated Foods e.g. milk, cooked rice, yam, cassava, gari, beans, eggs, chicken. Although the original contamination may be slight, bacteria multiply to infectious levels during storage

Leafy vegetables that have been "cleaned" with contaminated water

Fish particularly shellfish taken from contaminated water and eaten raw or insufficiently cooked

Disease Notification

Cholera is a "Notifiable Disease" because of its immediate threat to the health of the population. Cases and deaths from cholera should be reported every month using the notification form DSN-002.

In addition, during epidemics, use Form DSN-001 for emergency notification, and send the information by the fastest means available. This might be by telephone, telex, radio-phone, courier and so forth. Send in Form DSN-001 as well. Sending the information in by telephone, telex or courier is not a substitute for filling and sending in Form DSN-001.

Then send **weekly follow-up reports** on the progress of epidemic until there have been three consecutive weeks with "nil" cases reported.

Wash Your Hands !

FORM DSN - 001

IMMEDIATE NOTIFICATION FORM

1. Name of Reporting Institution _____

2. Location _____ Town _____ LGA _____ State

3. Name of Disease _____

4. Symptoms and Signs _____

5. Date and place of onset _____

6. Age and Sex Distribution of cases and deaths

AGE	CASES		DEATHS		TOTAL	
	MALE	FEMALE	MALE	FEMALE	CASES	DEATH
Less than 1 year						
1–4 years						
5-14 years						
15 years and Above						

7. Weekly incidence since index case was seen

Week Beginning (date)	Location (name of town or village)	Cases	Deaths

8. Have samples been collected for laboratory studies? ☐ YES ☐ NO

9. To which institution(s) were they sent? Specify _____

10. Results (if available) — specify _____

11. What measures have been taken so far for investigation, treatment and control? Briefly specify _____

12. Any other relevant information? Specify _____

Name of person reporting _____ Signature _____

Designation _____ Date _____

Address _____

Telephone No. _____

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