(13 May 1965; original 22 April 1965)

ADMINISTRATION IS ESSENCE OF ERADICATION

DEFINITIONS

Eradication

Biological absolute

Local Global

No neglected minority

Geographical, Cultural

Defensible limits or
continuing expansion

People cry out for more research
for better tools. Aa eradication involved the discovery and application of nothing new; Ag return to first simplified technique of Paris green application.

He who rides the tiger may not dismount--so long as the tiger lives!

Public Health Administration

Total action applying scientific knowledge for benefit of public

Includes housekeeping, bookkeeping

Not blind application of pre-established measures

Meticulous application of measures constantly adapted to changing conditions

Administration itself an epidemiological tool.

Epidemiology

Art and science of determining, on a continuous basis, where & when infectious diseases occur and how diseases spread from person to person, from home to home, and from community to community.

Epidemiology is the intelligence service of man's war on disease; it is the detective service of public health.

Public Health Administrator his own epidemiologist

Current records
Visualization
Analysis
Evaluation

Flexible adaptation to phases of eradication--Epidemiology of a Disappearing Disease

Malaria measures suitable for control; inadequate for eradication.

Administration not only essential in eradication but essential to determine feasibility of eradication!

Eradication--Modern concept awaiting

Individual Disease Entity
Demonstration Specific Cause
Method of Prevention

Smallpox
Jenner, Jefferson

Parasitic Diseases
Pasteur

TBC, Chapin, 1888
Chapin, 1900

Bovine Pleuropneumonia, 1884
BAI, 1892

Texas Cattle Fever

Yellow Fever
Local, Havana, 1901
Panama
Rio
Etc.

Malaria
Mathematics, Ross
USA, F. L. Hoffmann

Hookworm Disease
RSC, 1909
RF, 1913

Yellow Fever
RF/Gorgas, May 1915
First serious international eradication effort

General use of term Eradication when Control was meant; attack on misapplication of term became attack on eradication concept itself

Experience with

Smallpox
HWD
TB, Chapin
Bovine, 1/2 per cent
Malaria, RF, 1936
YF, Brazil, failure

US PH workers settled for local health units; multivalent nurses and inspectors

Rehabilitation
(Omit further facts in Agriculture--pests and animal diseases)

Species Eradication

a. Aedes aegypti
Brazilian cities, 1933
Nationwide planned 1934;
official 1942 #8675, 4 Feb. 1942, Decree
Looking Toward the complete eradication of this species.

b. Anopheles gambiae
Brazil, 1930-1942
Egypt, 1942-1945

Disease Eradication, International

PAHO

Urban Yellow Fever
Aa eradication
Bolivia, 1942
Brazil, 1947

Yaws
Haiti, 1949-1958
(Penicillin)

Smallpox
Costa Rica, 1950
(Dry Vaccine)

Malaria
Secretariat, 1950
Again 1954
(Residual DDT)

UNICEF

Malaria
Mexico, 1955

WHO

Malaria
Secretariat, 1955

Smallpox
USSR, 1958

Significant Publications

Species Eradication, FLS & DBW
Aedes aegypti
Anopheles gambiae

Organization of Permanent Nationwide Anti-Aedes Aegypti Measures in Brazil, FLS, DBW, SL, & WSA, 1943

Anopheles gambiae in Brazil,
1930-1940, FLS & DBW, 1943

Tuberculosis

How Much Control of TB?
W. Hampton Frost, 1937
(BEFORE specific drugs)

Eradication of TB by Epidemiological Methods, J. Arthur Myers, 1947
(BEFORE specific drugs)

Arden House Conference, 1958
(AFTER specific drugs)

Carroll Palmer
James Perkins
FLS
(AFTER specific drugs)

Plans
1963, Tennessee
1964, Texas
1964, California

1963, Textbook of Malaria Eradication by Emilio Pampana

1963, Evolution and Eradication of Infectious Diseases, by T. Aidan Cockburn

1965, World Eradication of Infectious Diseases, by E. H. Hinman

As an almost fanatical eradicationist, I have welcomed the acceptance of the concept of eradication in the prevention of communicable diseases but must lament the failure to convince other workers that in many cases ~~to realize that~~ eradication is not easy; is not merely more of existing control effort.

Eradication requires new standards of efficiency in local health services and coordination of operations

throughout entire range of infection or vector under attack.

This generation of PH workers faces Revolutionary Concept:

Responsibility to the totality of the population for the non-occurrence of any cases of specific disease under current attack rather than for generally low incidence of all diseases!

Complacent disregard of minority, however small, defeats eradication effort.

Complete coverage in depth of population served and service to entire population.

Specific vs. general responsibility.

Pressure will build up increasingly as more and more diseases become eradicable: TB, polio, measles, leprosy, syphilis--make your own list.

I trust this introduction has gotten the attention of everyone here--students are notoriously loath to dig into administrative problems when more interesting technical subjects are being taught.

Importance of Eradication Concept

A. gambiae, 1930
Local eradication, 1931
Interior infestation left

A. gambiae, 1938
Assú and Jaguaribe Valleys
Total eradication

Why the difference? 1930 & 1938?

a. Recognition of threat

b. Eradication of Aa seen!
Some species eradicable!

c. Technique for Aa eradication learned while doing--why not possible with Ag?

(Administration as Research Tool)

Eradication of Aa had occurred through administrative adaptation of known methods and not through development of new technical resources.

Difficulties of eradication become apparent only when eradication is attempted.

Aedes aegypti Eradication

May 1965: Golden Anniversary of RF decision to eradicate YF!

1934 success overshadowed by 1932 discovery of Jungle YF.

Permanent source of reinfection.

Problem partially solved by 1933 observation of Aa eradication.

Aedes aegypti problem in the Americas.

Aa tree hole breeder in Africa, but strains which invaded Americas are adapted to artificial water containers.

Distribution: From Tennessee to Buenos Aires--all countries--all islands, in and about human habitation, not in forest areas.

Distributes eggs over various containers--seeks container by instinct--travels as adult and as larva and pupa.

Long lived egg.

Long lived adult.

Effort to Eradicate YF by *Aa* Reduction

First local eradication human disease--YF

Gorgas, Havana, 1901

Shot-gun anti-mosquito work also gave first control of malaria

Local eradication of *Ae. aegypti* in large cities led to area eradication

Key Center Plan based on weekly visits to all houses in Large Endemic Centers

RF/Gorgas Program

YF apparently followed the rules everywhere except Brazil

a. Federal Service, 1919-21, debacle

b. RF--routine--special staff

1926--debacle; 1928--optimism
1928--debacle; 1929--Recife cases

c. Attempted *Aa* eradication
Curve flattened out

d. Proposed decentralization
"integration of *Aa*"

Were failures due to faulty administration or to failure of YF to obey the ground rules set up for it by Gorgas and the Rockefeller Foundation?

Uncertainty regarding the efficacy of administration left the question unanswered!

IN 1930

FLS as Administrative Head of RF Cooperative YF Service in North Brazil

Came in at top without previous experience

Rejection of proposal to decentralize--to integrate

FLS education by guardas
Mata mosquito gordo não presta
Learned to think like guarda

Decided on certifiable results

Manual of Operations
Printed forms
All towns mapped
Blocks numbered
Measured itineraries
FA 52
Flag
Responsible for being found

Nichteroy explosion--
Guarda in Maranhão

Men in Uniform--Identified by numbered insignia; individual zone responsibility

Detailed single line record each visit when made

Supervisor made same report;
Chief Inspector and Medical Chief also

Records analyzed and bonuses established

Gave men legal support for necessary action

All Aa foci found oiled

Established independent check for low incidence and negative reports

Capture of adults--costly but cheap
Explained flattening of curve

Most sensitive indicator of low level infestation--Example of needed flexibility of administration

Expansion of responsibility to all Brazil in 2 steps

1930 (Dec) So. Brazil Special Fed
1932 (Jan) Federal district.

(1932 story of Rio staff reduction--administration valuable in public health as well as business--money saved in Rio carried program to interior--we should teach principles of administration to all public health administrators (MDS))

Good Administration in eradication refers to national as well as county and state machinery

1933

Aa eradication observed to have occurred in some cities in 1932

Aa eradication born of efficient administration of a combination of known techniques

First observed eradication of Aa in 30 years--~~Gorgas, 1901~~, of Yellow Fever Control (1933)

Eradication came through meticulous administration when it was not sought nor expected

Obligatory expansion
Soper's Law
National Eradication proposed 1934

Attempts in 1930's to get eradication of Aa in Paraguay, Bolivia, Peru, Colombia, Venezuela, British Guiana, and the United States

Only in Bolivia with direct administration by RF staff did eradication succeed before the introduction of DDT

Back to A. gambiae eradication with confirmed concept and Aa administrative techniques

Problem radically different
Ground breeding Anopheles in rural as well as village areas

Mapping--marking zones
Individual geographical responsibility

Breakdown of jobs to simplest elements--Paris green man never looked for mosquitoes, either adults or larva

Success was due to simplification of Pg application--Learn by doing

Few get so much credit for correcting past errors or omission as did we for eradication of Ag

Story of Ag in Egypt
With Manual of Instructions 1943
150 tons of Pg
4600 men--1943 was a calamity RF came in July 1944
Sending in 2 top administrators
in 1944, problem was solved
in 9 months

Nothing altered for Egypt
Administrative methods of Brazil
worked perfectly well in spite
of forebodings of other workers
in Egypt

International Eradication--RF, PAHO,
WHO, and UNICEF sponsorship,
already mentioned

Special field for international
agency
But overshadowing of situation
by philosophy of advanced
nations, especially USA

Malaria difficulties attributed to
lack of rural health infrastructure

Aa, Ag (Brazil and Egypt), yaws in
Haiti, and smallpox in Latin America,
in absence of health infrastructure

General Health Service
dedicated to control of all diseases,
is not geared to eradication; direct
specific geographical responsibility
is essential

Eradication and the General Health
Service

Eradication is all-inclusive; inac-
cessible population groups, whether
isolated geographically or culturally
must be served. The eradication
concept by its very nature forces

new standards of public health administration. These new standards involve both the efficiency of coverage of the entire population of a given area with respect to the infection or vector under attack and the concomitant coverage of peripheral areas from which reinfection or reinfestation may come.

Eradication forces the consideration of the individual disease as a national, a regional, and a global problem; in eradication the policy of concentrating attack on the most obvious disease problem in each local area must be subordinated at times to the over-all strategy of eradication. (PASC action against hold out countries, 1950.)

The local health unit as developed in the United States is poorly adapted to eradication efforts. The multivalent nurse or inspector unavoidably becomes less active on individual pressures as these decrease in importance; it is difficult to get the type of one-eyed-dog-in-the-butcher-shop type of fanaticism so essential to the final stages of eradication.

The local health service, essentially a mechanism whereby heavily populated wealthy areas could look after themselves without consideration of isolated groups, is not effective in eradication programs. Economic eradication requires complete coverage of all population groups with concomitant operation over a progressively larger and larger area to obviate the threat of reinfection or reinfestation from the periphery.