

Smallpox - why a lecture?

1 1/2 hrs.

WHA - 8 May ¹⁹⁸⁰ proclaimed eradication -

last known endemic case 26 Oct 1977.

Perhaps, you might assume, a ~~lecture~~ ^{lecture} about the Dodo bird would

be as logical. There are 3 cogent reasons.
1) ~~History + epidemiology~~ ^{History} Through history

2) World's most devastating disease -

World-wide

20%+ case-fatality rate (in Asia, recently, the same).

e.g. + Europe - relationship to Industrial Revolution

+ Aztec - Incan civilization.

+ Colonization of North America.

+ Again + again changed the course of history - Lincoln's bellysore address.

~~Will we ever see a case again~~ - hope no.

~~Convention on biological warfare~~ ^{which was employed} but -

2) Strategy of eradication needs to be understood. ~~There is~~

• Has applicability in other areas but cannot be imitated.

3)

Need to examine ^{the concept of} eradication as this is a concept now increasingly talked about.

(clinical)

• The disease - a virus

① ② ③

④ ~~Malaria~~ Europe

⑤ Blindness

Unique features:

• Transmission - day 1 of rash until scabs off. - short spread

• No animal reservoir - contrast yellow fever

• No carrier state - contrast malaria

n.b. exhaustion for susceptible -

• Clinical recognition - young M.D. vs. grandmother. - ^{no need for} _{lab} facial pore marks.

1958 USSR Resolution Mass vaccination -
Strategy 80% vaccination (policy) New Delhi

⑦ 1964 Expert Committee.

1966 WHA -

10 years - planning process.

⑧ 1967 Status of smallpox -

No. of cases

Types of smallpox

Strategy at the beginning of the campaign

+ Vaccine ~~issues~~

+ Vaccination devices

+ ^{Epidemiological} Surveillance was the key

Manual 1967 "Every case is in some way a failure of the program - failure to protect through vaccination, failure to prevent spread - continuing epidemiological analysis of cases permits the program to be monitored and permits corrective measures to be applied"

Morbidity reporting - frequently divided - incomplete inaccurate. but for the practicing epidemiologist, a valuable, essential tool

+ Get Best Available Data -

Started at several points - ^{principle} minimum necessary

- ^{surveillance template} Reporting posts + line listing (e.g. no death data)
- Provincial level - weekly report
- National level -

Surveillance reports $\leftarrow$ ^{sample} interpreted e.g. Brazil.
• International - cases by country, prov., dist.
? suppression of cases.

+ Results.

1st vaccination -

~~Manual~~ Force results.

⑫ 1970

⑬ 1973

Different strategy in Asia

- Problem of density and population movement even when sick.
- Tradition of suppression of reports.

Decision to begin search →

village list
guards
area search

Standards
All contacts found < 30 days
No case after 15 days
Source > 90% +

14

Results in U.S.

15

Progress in different countries

16

Rahema Bannu

17

Ethiopia

Patterns: Size — 100 staff.

Disperse population.

Varied minor
Rocks

18

19

Strategy - extensive vaccination + surveillance - containment.
Map of area of last cases in Ethiopia

20

Curves - Ethiopia and Somalia

21

Ali Maslin

Confirmation -

- Stipulated - 2 yrs + geographic area + international commission
- 1978 Global Commission 21 from 19 countries

22

\$1000 reward

23

Rumors

24

Laboratories to virus

25

Monkeypox - animal reservoir

26

African dist.

27

Seasonal dist.

28

? Bacteriological warfare

Not a good candidate

~~Reflection on program~~

What next do we eradicate

- Inevitable consequence - two meetings ^{last} ~~so far~~ this year of >100 of scientists and policy makers from the and other countries to decide what next should be eradicated.

Proposed - Measles, Polio, urban rabies, tuberculosis

Traffic accidents, Hunger, poverty, cancer

"Religious mission" ventures - disquieting - ~~as a result of fulfillment~~

- Are there other diseases or problems to be eradicated? If so, which should be undertaken and what is our strategy?

Public health policy is implied - important that we define terms and objectives so that we know where we are going
Deeply concerned that in p.h. we set realistic goals & realistic expectations of fulfillment -

Dictionary - "eradication"

derives from the Latin "to pull up by the roots", "to destroy utterly"

~~Between~~ Two components - an action

- implication of time - permanent

when used in respect to hunger, poverty or road accidents -

the term is ^{use of the} ~~not~~ ^{absurdly} ~~It~~ Its application in this context

I ~~need~~ ^{need} not further discuss and let us hope that the term will not be ~~applied~~

Eradication of species is entirely possible and this has occurred.

Through nuclear war, we may indeed achieve such an objective & man.

This is a problem about which in public health must be concerned

but today my remarks will be confined to the prospects for

achieving eradication, ~~rather than preventing it.~~

of species other than man.

Through the term eradication as an objective, we risk being as ill-served and as we are now being - ill-served by WHO's declaration that we are now "ill-served" by the year 2000.

Fundamentally, we ~~then~~ are discussing ~~anti~~^{prospects} for disease eradication - specifically, the eradication of infectious agents - given the state of medicine.

- In this context, COCKBURN (Book "The Evolution & Ext. of Lup. Dis.") has given us this definition.
+ Harry said this, Cockburn himself set out to eradicate tuberculosis in Cincinnati.

+ Problem to us in smallpox. - deep freezers.

- Andrews + Langmuir defined it in more realistic terms.

termed "Regional eradication" - this, too, has its problems.

in ~~this country~~ ^{the} Balto - in ~~Balto~~ ^{Mexico} - measles is periodically eradicated
but its absence does not alter p.h. practise - continuing vac.

- Cockburn returns to the argument and qualifies his early definition.
Combination of Langmuir's definition & this seem to me to be most logical

W. G. Sullivan

in ~~defining~~ ^{examining} the potential for establishing, as a public health policy, the objective of eradication of an agent.

Ques What did we use as a definition in analysis

Necessary to raise the concept of evaluation in historical context -

Concept that a disease could be eradicated due to failure to

1908 GORGAS - ~~combating~~ ^{in Cuba} yellow fever (mode of transmission)
~~Research~~ ^{anti} Aedes aegypti campaigns in key endemic centers ^{URBAN} VECTOR

1915 Roosevelt Yellow Fever Commission - "to collaborate with
govts in the infected countries to eradicate yellow fever from the world".
+ ~~But 1915~~ ¹⁹¹⁹⁻¹⁹²⁰ in Americas - rest of the world would follow later.
+ late 1920's, victory in Americas, hopeful but ~~just~~
jungle reservoir in 1932.

* ~~10-10 years~~ in America - rest of the world would follow later.

+ Late 1920's, victory in Americas, hopeful but ~~just~~
jungle reservoir in 1932.

* Shift & eradication of *Aedes aegypti* - slow.

+ *Amphelis gambial* - success.

After the war - DDT became available to ~~control malaria~~ combat malaria -

Concept of how it worked. Many species to wall of blood meal.

Very successful in certain areas - Temperate zones (but yr. road brown)

1955 WHA "program having as its objective the world wide eradication of malaria".

- P.H. policy - widely lauded and ~~praised~~ enthusiastically so is now being done the new ~~plan~~ ^{dozen} "Health for All by the Year 2000" although in ~~important to connect in the program~~

Forms of defining ~~an~~ ^{a specific} objectives, which to be preferred.

- The program, as you know, was ~~an unmitigated~~ ^(intentionally) disaster and, in the opinion of many, has ~~done more to discredit~~ ^{discredited} public health ~~than~~ is any other program before or since.

- To those of us shaping the smaller eradication program, however, it was important ^{to learn} from the mistakes ~~it made~~. Not were made.

- Strategy - systematic spraying followed by surveillance.

Mistake 1 - Answers are basically known, no further brainwork is needed. Reinforce drugs, mechanisms, do work in vacuo.

Mistake 2 - Answer lay in a carefully supervised examination which was the same for all countries. (Purely administrative - indicated the uniformity)

Mistake 3 - ~~Second~~ Although the objection was 'O' cases of malaria, this component of the program received little attention. This was the biggest mistake.

Diseases -
 No. of ~~in~~ will ~~valer~~ ^{long}
 in ~~leaves~~ ^{no long}
 not ~~of~~ ^(e.g. the)
 + Can

+ Can we ~~eradicate~~ ^{not using techniques in small scale} others? Should we, as a p.h. policy, undertake global eradication of another disease?

indication of another disease.

Most attractive are ^{controlling the virus} diseases ~~subject to~~ for which we have effective vaccines & providing durable immunity. If a drug is required, it necessitates the early discovery ~~of a drug~~ and detection of cases, their treatment and Rx of contacts. With civil disorder & prog. disruption, one effectively ~~begin~~ may have to begin almost from the beginning. ^{Emergency} ~~Response~~ from vaccination, however, persists.

③② ~~③①~~ + Two prime candidates

33 Disadvantages

Explanatory disadvantages

Rate of transmission

Contrast age spx/measles

Geographic problem.

Measles - the vaccine problem.

In brief, spx eradication hardly achieved. Don't see another disease for eradication. ~~Before~~ ^{Before} see this I believe we can eradicate and that is the word "eradicate".