

## Immunization programs

IMMUNIZATION ⑥  
World Bank Renew  
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Global prog. in immun. has been and remains today centerpiece of child survival program.

Not surprising - as paper points out - immun. represents the single, most cost-effective and most readily applied health intervention which we have today.

Hx - slide

Antigens - slide

advances in

With <sup>bio</sup>medical research & biotechnology, excellent potential for

- many more effective antigens
- more antigenic, i.e. only 2 or perhaps 1 dose to protect for life
- more heat stable
- able to be given as combined vaccines and by mouth.

Potentially

At the beginning of a revolutionary era in disease prevention.

1990 CWI launched intent of advancing the dream

After 2 years - a realization that there is trouble in Paradise - realities <sup>introduce</sup> which apply to every real or potential intervention we ~~are~~ discussing at this Conference.

To simply sustain what has already been achieved will require imaginative and heroic efforts.

The problems being encountered are embedded in the history of development of EPI.

Simplified scheme of vaccine dev. + application

# SMPALPOX PROGRAM

EPI beginning ~~no research or development in vaccines~~ <sup>Application only</sup>

~~Production and quality control - UNICEF~~ <sup>in India. Unit.</sup>

1985 Prog. Vac. Develop. - another unit.

Supports good basic research + limited early develop. research.

Not concerned to program needs -

None of the vaccines - fully satisfactory antigenic / heat stable  
cont. e.g. OPV.

Research - some support by such as NIH and other national vs. efforts.

little support for development.

No effort to develop national capacity for vaccine production or self-sufficiency (except Americas)

No effort to develop quality control - other than UNICEF provided  
QVI com. study now reveals 70% of DPT produced in third world. (? WHO authority to invoke standards)

Some estimate that as much as 40% of locally produced DPT meets standards - my estimate (spc exper.)

little recognition that vaccine may not be satisfactory - because

No effort able to develop surveillance until very recently.

Tracked by Americas - polio surveillance

Finding - type III problem.

Americas - now c 20,000 reporting units / weekly

Prod + dual control  
unattended  
biological unit  
+ UNICEF purchase

EPI Program - A vaccine application program not a disease control effort.

During the spx era - we referred to such programs as SE - India - 1966  
anomalous effort vaccinating a number equal to one-fifth of the pop. annually

China - epidemic in New Delhi where 120% of the pop. had been vaccinated

Problems - now in early stages of discussion -

(8)

Consensus - Need for integration of management to bring under one control authority Prog. operations (incl. strong man. component), research (incl. vaccine development), vaccine production strategy, and vaccine quality control.  
? whether this might apply to other programs.

Emerging  
Consensus

ad vaccination)  
- Vaccines may need to be dealt with in a special manner.  
Vaccines - not generally attractive to commercial sector -  
not especially profitable even for vaccines <sup>those</sup> ~~to~~ <sup>to be sold in</sup> dev. countries  
How to expand capacity, how to bring new vaccines on line  
Priv. sector - not interested in contract work, or production.  
However valuable as a health care information  
Public sector is now quite limited -

Ill. of problems - <sup>collaboration</sup> A - Immunization or no  
Vaccine containing Hep B and Hem. inf. & DPT - 70% of DPT in dev. countries.  
New vaccines - who is to produce?

If assistance ~~needed~~ for vaccine prod. to be provided - what standards?  
U.S. - code for GMP or other  
note: USSR initiative.

Priorities in development - vaccinia virus variants.

SURVEILLANCE  
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Should to make jud. as to what has been important & what has not been important  
smallpox - rockefeller - Sch. - Est. - Ken - Williams - Sullivan - Greening - problem

Surveillance

(No, of cases, geographic & time)

A simple, straight forward concept which A&L pioneered at CDC.  
Intended to provide at least a crude indication of trends and epidemiological patterns in incidence of the disease problem for which control measures are being applied.

Note: outcome measures such as ~~the~~ exemplify ~~are~~ still little known and little used in health care systems.

Why? Such data are seldom used. ~~There is a surveillance system.~~ but if data such

as are provided by surveillance were used for programmatic, or for allocation of resources - structure could change rapidly.

Points: Second reason - disdain by many epidemiologists for data which do not fit on a computer, and the proliferation of computerized sys. (the leather epidemiologist) - M + IV infection

Reporting rates - how many - as many as can be persuaded. hospitals - yes (special measures); clinics

how frequently - for inf. dis. & action implied - weekly  
reportable - smallpox - 1 to 2 yrs. in a country.

potholes in Americas - 20,000 units > 90% on time weekly

amount of data - minimum necessary - (no more than that on one line, abandoning - one page form -> 2, 3 pages.  
3 pp - no fatality data - not necessary

VP Ford Motor Co. - daily report on operations - one page of data.  
Key symptoms or indicators of total functioning to be followed up upon.

Compilation

Are all cases reported - no!; what proportion of total - interesting but not critical  
PAD

Compilation and interpretation -

Usually confined to archives

Geographical concentrations; indications of age affected; ? of vaccine failures

see page 2

Much too complicated for starting program for nations -  
for nations -  
Embry of 1940s -  
and began to report from them  
What does it tell you?  
Slide  
epidemiology  
How many cases - really  
Need accurate definition

- o Reporting back - impossible task - not enough personnel.  
 Brazilian spy surveillance report - 2000 copies sent outly throughout the country. Time = 1/2 time clock; 1 day of professional.  
 Results - Brazil -  
 Point - involve a larger community
- o Action -

A corollary ~~to the~~ concept - every case of 'x' which occurs is in some way a failure in the program. Provides a focus of attention of ~~the~~ all concerned.

Evaluation - Necessary but inevitably subsidiary to a surveillance mechanism

Principle - fewest possible indicators to monitor progress

Keep it simple stupid. The ~~best~~ <sup>(Ford example)</sup> better thought out and understood the program, the fewer the indicators. <sup>Example of existence of many programs, the funding agencies</sup>

Indicators must be seen to be used by those providing the data - not an archive

- Interval between 1<sup>st</sup> case in outbreak & detection - surveillance quality
- Interval between detection & last case - containment quality.

[Assessment of coverage - ~5% sample - Afghanistan.

Problem: addition of many other measures - duration of time to begin containment, % of population vaccinated, no. of vaccinators employed, w. of vaccination given per day, etc. etc. - faulty coverage of system.

Conclusion: Surveillance & assessment different for every disease & every intervention.

but absolutely critical. Principles: Keep it simple, use it and make sure all concerned in the program know that the reports they provide are used.

## LANDMARKS - GLOBAL IMMUNIZATION

- 1970 International conference - plan proposed
- 1974 EPI (Expanded program on immunization) - WHA
- 1983 1<sup>st</sup> Bellagio Summit Conference
- 1985 Polio eradication campaign - Americas  
1988 " " " - World
- 1990 Immunization coverage = 75%+  
2 600 000 deaths prevented  
A delivery system in place