

Impact of introducing new vaccines on strengthening immunization and health systems

Ad-hoc SAGE Working Group

SAGE

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Data Sources

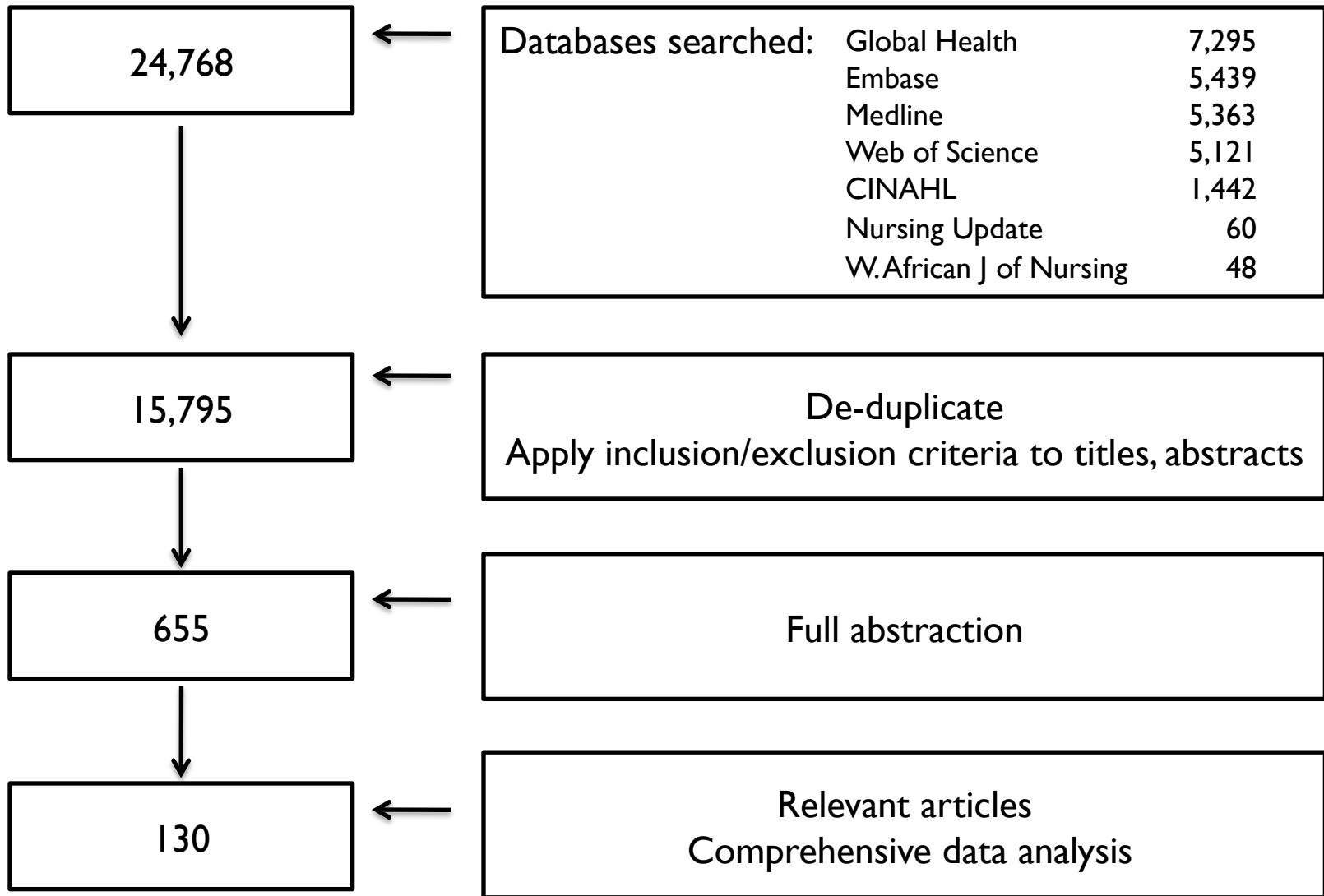
- Published literature review
- Grey literature review
- Three country study
- Interviews with country and regional informants
- Analysis of NUVI impact on DTP3 coverage

Published Literature Review

- Hyde, TB et al, CDC
- Objective: Comprehensive review of the published literature
- Systematic search of six publication databases
 - 104 search terms encompassing vaccines, immunization systems and health systems
 - Search completed Sept 29, 2010; no beginning date
- Information organized by WHO Building Blocks



Search Method Algorithm



Characteristics of 130 articles in review

<u>Vaccine</u>	<u>N</u>
Hib	28
PCV & PPV	28
HBV	24
Rotavirus	18
Mening	17
HPV	13
HAV	3
Influenza	1
JE	1
Typhoid	1

Countries represented by World Bank income level

	<u>N</u>	<u>(%)</u>
High	97	(75%)
Middle	21	(16%)
Low	4	(3%)

Year vaccine introduced

	<u>N</u>	<u>(%)</u>
1980-1989	14	(12)
1990-1999	37	(32)
2000-2008	64	(56)

Grey Literature Review

- Favin, M et al, MCHIP
- Objective: Systematic review of non-published literature
- Systematic search of eight data bases; Internet search of agencies working on immunization and vaccine introduction; Networking
- Inclusion criteria: information on new vaccine impact; known and respected sources
- Information organized by WHO Building Blocks

Scope

- **Documents:** 61 documents, mostly PIE reports and summaries, consultant reports, and meeting reports and presentations
- **Time period:** Late 1990s - 2010
- **Vaccines:** Mostly HepB & Hib; a few cases of RV, PCV, HPV
- **Countries:** Mostly low-income African countries; some countries middle-income or from other regions

Three Country Study

- Burchett, H. et al, London School of Hygiene and Tropical Medicine

	Guatemala	Kenya	Mali
Vaccine	Rotavirus	PCV-10	Men A
Income	Middle-income	Low-income	Low-income
Delivery strategy	Routine immunization programme	Routine immunization programme	Campaign (2 phases-2010 and 2011)
Target population	Routine child immunisation schedule	Routine child immunisation schedule	1-29 years old (10 million people)
Date of introduction	Feb 2010	Feb 2011	Dec 2010 and Nov 2011
Funding	Self financing	GAVI +co-financing	GAVI+ co-financing

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Methods

	Guatemala	Kenya	Mali
Vaccine evaluated	Rotavirus	PCV-10	MenA
Regions where data were collected	Chimaltenango, Santa Rosa, Suchitepéquez	Nairobi, Rift Valley, Western	Bamako, Koulikoro
Number of key informant interviews:			
National level	11	11	20
Regional/district level	30	32	12
<i>Total</i>	<i>41</i>	<i>43</i>	<i>32</i>
Number of health facilities surveyed	26	43	18

Interviews with Country & Regional Informants

- DeRoeck et, al; WHO/IVB
- Objective: Gain perspectives from informants on impact of recent vaccine introductions on immunization and health systems
- Additional questions on possible tools to guide countries
- Semi-structured interviews with one or two persons at a time using a question guide
 - Interviews lasted 45 minutes to 1.5 hours



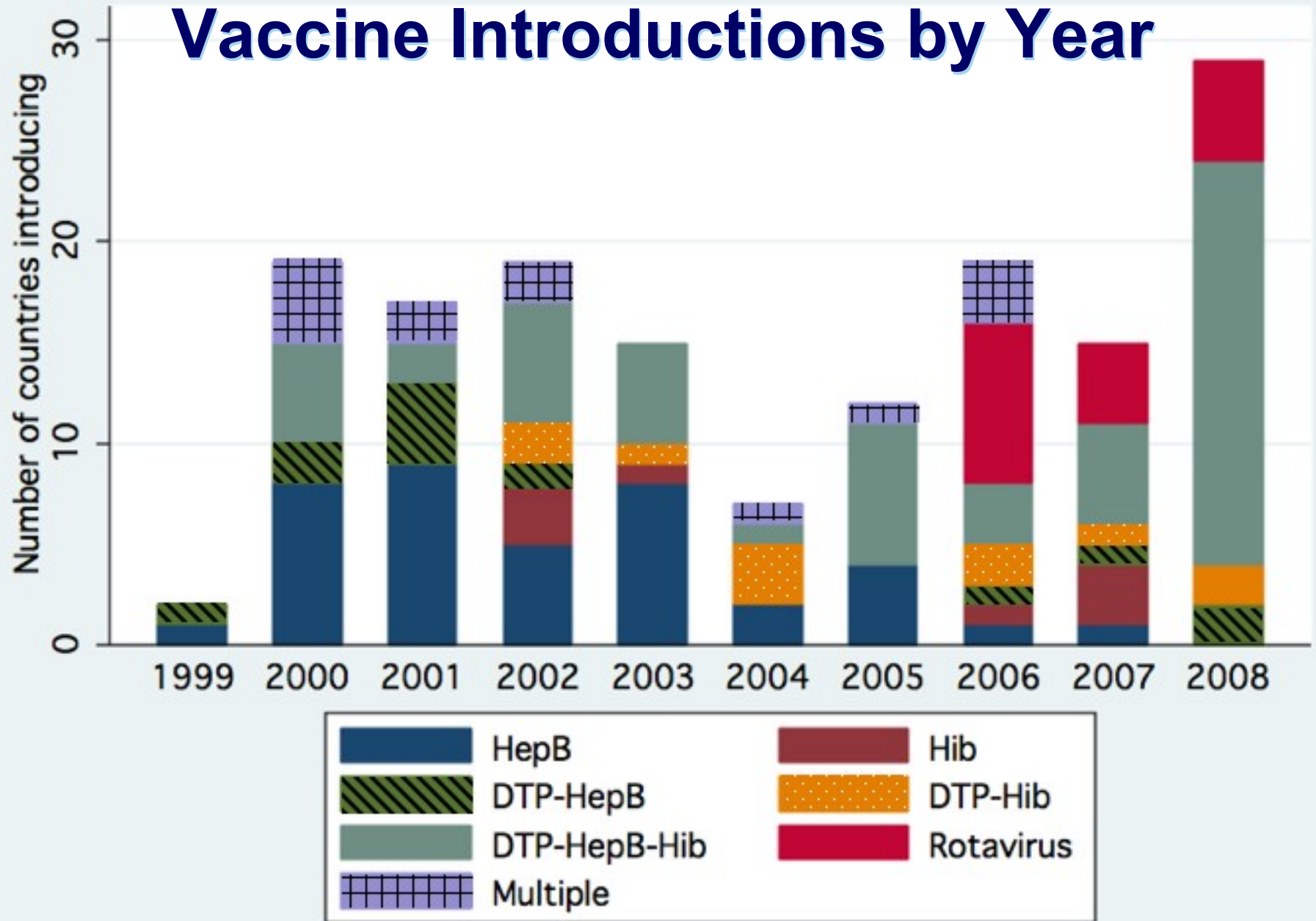
Interviews with Country & Regional Informants

- Informants:
 - 9 national EPI managers and other MOH officials (5 AFR, 2 EMR, 1 SEAR, 1 PAHO)
 - 7 WHO immunization specialists from regional offices (WPRO, EMRO, SEARO, PAHO, EURO)
- Vaccine introductions discussed:
 - Most frequently: Hib or pentavalent vaccine
 - Also H1N1, HPV, pneumococcal conjugate, Japanese encephalitis, yellow fever

Analysis of NUVI Impact on DTP3 Coverage

- Shearer, J et al., Centre for Health Economics and Policy Analysis, McMaster University, Canada
- Aim: To measure the association between new vaccine introduction and DTP3 coverage
- Methods: Multi-variate, cross-national, mixed effect longitudinal model
- Data: DTP3 and covariates for 176 countries from 1999-2008 from UNICEF/WHO Joint Reporting Form

Vaccine Introductions by Year



185 introductions between 1999-2008

Summary of Findings

NUVI Impact on DTP3 Coverage

- No association between NUVI and DTP3 coverage when controlling for other possible determinants of coverage
- Instead, access to antenatal care, infant mortality rate, % of health expenditures that are private, and health expenditures per capita were associated with changes in DTP3

Service Delivery

- Immunization systems – mixed effects
 - Routine vaccination coverage
 - No positive/negative impact in long term
 - Perception of short-term improvement
 - Campaigns had short-term effects on coverage and other health services
 - New vaccines increased acceptance of EPI activities
 - Exceptions related to anti-vaccine movements
 - Positive impact on safe injection practices and quality of services
- Health Systems – little evidence of impact

Health Workforce

- Immunization Systems – mixed effects
 - Positive impacts on health worker skills
 - Trainings implemented with introduction
 - Increase supervision (short-term)
 - Health worker motivation increased
 - Ability to offer additional effective health intervention
 - Temporary increase in staff workload
 - Generally no expansion in workforce except with campaigns or alternative delivery strategies
- Health Systems – no evidence of impact

Information

- Immunization Systems – mostly positive effects
 - Disease surveillance systems (health facility and laboratory) have shown improvement
 - Improved awareness and reporting of AEFI
- Health Systems – limited evidence of a positive effect
 - Improvement in surveillance for new VPDs led to improvement for surveillance of other diseases

Supply Management

- Immunization Systems – mixed effects
 - Cold chain
 - Assessed and expanded at central level
 - Commonly remained inadequate at the periphery
 - Combination vaccines placed less stress on system
 - Supply & use of safe injection equipment greatly increased
 - Existing weaknesses in vaccine forecasting and stock management were amplified
 - No significant improvement in waste disposal
- Health Systems - limited evidence of a positive effect
 - Safe injection equipment implemented in other health services

Financing and Sustainability

- Immunization Systems – mixed effects
 - Substantial increases in cost
 - Collateral expenses of introduction not adequately planned
 - Greater diversification of financing mechanisms and funding
 - Greater govt co-financing & innovative global financing mechanisms
 - Concerns of donor dependency by countries and uncertainty about long-term sustainability of financing
 - Most countries able to sustain funding for safe injection equipment
- Health Systems – positive effects
 - Reduced outpatient visits, hospitalizations, disease outbreaks, and costs

Leadership and Governance

- Immunization Systems – positive effects
 - NITAGS established or strengthened
 - Increased recognition of importance of NRAs
- Health Systems - positive effects
 - Improved coordination between MOH and other government ministries
 - Especially with expansion of vaccination to new target age groups

Conclusions (I)

- New vaccine technologies made available because of NVI (e.g., AD syringes, combination vaccines)
- Requirements for cold chain often increased with NVI
- Social mobilization and training and education for health care workers was emphasized
- Reduced disease incidence led to declines in use of related curative services
- Existing information infrastructure were utilized and often strengthened
 - Strong focus on surveillance with NVI

Conclusions (II)

- Communities and health workers generally welcomed the introduction of new vaccines
 - Particularly for diseases with large, well-recognized burden
- Introductions did not commonly occur in tandem with greater integration, coordination or synergies with other health systems
- Weaknesses in planning for human resource and supply needs emerged as a significant gap in preparing for vaccine introduction

Conclusions (III)

- WHO Health Systems Framework Building Blocks useful framework for analysis
- Major findings and themes similar across five studies
- Future introductions should explicitly consider the impact of vaccine introduction on broader health systems
- Where positive effects occurred following vaccine introduction, outcomes were often in areas where detailed technical guidance or tools and adequate financing were available