Costing in Vaccine Planning and Programming

Costing of Routine Immunization (RI) Programs

TVEE
TEACHING VACCINE ECONOMICS EVERYWHERE
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Objectives

• Familiarity with main resource and cost categories in routine immunization programs

• Understand application of general costing processes to immunization programs and services

• Know of various sources of cost and denominator data
Steps in Immunization Costing

Define the scope and perspective:
- Routine immunization / supplemental immunization / epidemic, outbreak response
- Government health service / societal perspective
- Economic / financial cost

Step 1: Identify resources used
- What resource use is induced by the program; directly or due to program or treatments effects

Step 2: Measure resources used
- What quantity of each resource is needed per person or per state?

Step 3: Value resources used
- How much does each resource cost in monetary terms?

Step 4: Allocate shared resources costs
- How much of shared resources are used by immunization or specific activities?
Collecting Cost Data - Intervention

Step 1: Identify resources used

• **Service level** - Immunization service component
  – Difference service models:
    – facility based; outreach; mobile; SIA’s/ campaigns; school based....
    – Urban/ rural health centres; HC/clinics/ health posts; large vs small?

  *Why might this be important?*

• **Higher levels**: District, Province/ Region and National

• **EPI Functions** at each level – for activity based costing

• **Line items** at each level
## Collecting Cost Data – Routine Immunization
(Common Approach, 2014)

<table>
<thead>
<tr>
<th>Line Items/Cost Drivers</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Salaried labor</td>
<td>- Routine facility-based service delivery</td>
</tr>
<tr>
<td>- Volunteer labor</td>
<td>- Record keeping, HMIS, monitoring and evaluation</td>
</tr>
<tr>
<td>- Per diem &amp; travel allowances</td>
<td>- Supervision</td>
</tr>
<tr>
<td>- Vaccines</td>
<td>- Outreach service delivery</td>
</tr>
<tr>
<td>- Vaccine injection and safety supplies</td>
<td>- Training</td>
</tr>
<tr>
<td>- Other supplies</td>
<td>- Social mobilization &amp; advocacy</td>
</tr>
<tr>
<td>- Transport/fuel</td>
<td>- Surveillance</td>
</tr>
<tr>
<td>- Vehicle maintenance</td>
<td>- Cold chain maintenance</td>
</tr>
<tr>
<td>- Cold chain energy costs</td>
<td>- Cold chain maintenance</td>
</tr>
<tr>
<td>- Printing</td>
<td>- Vaccine collection, dist, storage</td>
</tr>
<tr>
<td>- Building operation, utilities, communication</td>
<td>- Program management</td>
</tr>
<tr>
<td>- Cold chain equipment</td>
<td>- Other</td>
</tr>
<tr>
<td>- Vehicles</td>
<td></td>
</tr>
<tr>
<td>- Lab equipment</td>
<td></td>
</tr>
<tr>
<td>- Other equipment</td>
<td></td>
</tr>
<tr>
<td>- Other capital</td>
<td></td>
</tr>
</tbody>
</table>
Identification of activities related to immunization at different levels

**Facility level** - staff time and other resources for:

- *Routine facility based service delivery*: administering vaccines to children within facilities
- *Outreach service delivery*: for traveling and vaccinating children at outreach sites
- *Supervision*: by facility staff of immunization related activities.
- *Record-keeping, HMIS*: data entry and analysis, including stock registers, records of children vaccinated etc.
- *Training and meetings*: attending and/or training and meetings
Identification of activities related to immunization at different levels

**Facility level (2)** - staff time and other resources for:

- *Vaccine collection, distribution and storage*: collection from higher cold chain points, distribution to facilities and sites
- *Social mobilization and advocacy*: mobilizing community and households
- *Cold chain maintenance*: maintaining the cold chain.
- *Surveillance*: post-vaccination events; vaccine preventable diseases
- *Waste management*: waste disposal after vaccination sessions
Identification of activities related to immunization at different levels

District, regional and national level - staff time & other resources for:

- (Service delivery – some items budgeted/ expended at district level)
- Program management: planning, budgeting, managing the EPI e.g. forecasting vaccine needs and procuring vaccines.
- Supervision: of immunization-related activities
- Record-keeping, HMIS: data entry, analysis, vaccine stock records
- Training and meeting: attendance or provision
- Vaccine collection, distribution and storage: from higher cold chain points to facilities
- Cold chain maintenance
- Surveillance: of post-vaccination events & cases of vaccine preventable diseases
- Other
Understanding Costs of Routine Immunization – Activity-Based Costing (Zambia)

Urban Health Centre:
• What are the main features of interest?

Rural Health Centres:
• How do cost contributions differ?
Understanding Costs of Routine Immunization – Activity-Based Costing from Six Countries (EPIC)

B

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage Breakdown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uganda</td>
<td>$29.7M</td>
</tr>
<tr>
<td>Benin</td>
<td>$10.6M</td>
</tr>
<tr>
<td>Ghana</td>
<td>$54.6M</td>
</tr>
<tr>
<td>Zambia</td>
<td>$35.6M</td>
</tr>
<tr>
<td>Moldova</td>
<td>$5.6M</td>
</tr>
<tr>
<td>Honduras</td>
<td>$18.2M</td>
</tr>
</tbody>
</table>

Programmatic Activities

- Facility-based Service
- Outreach Service
- Supply Chain
- Program Management
- Surveillance
- Social Mobilization

Percent Breakdown:

- 0%
- 25%
- 50%
- 75%
- 100%
Identification of Cost Line Items

Recurrent costs

1. *Paid labour*: Portion of salaried time to immunization-related activities

2. *Volunteer labor*: Estimation of the market value of volunteer labour used for immunization related activities

3. *Per diem and travel allowances*: Allowances for paid or volunteer workers for immunization-related activities

4. *Vaccines*: Cost of vaccines including wastage

5. *Supplies*: Cost of syringes, diluent, safety boxes, other immunization supplies
Recurrent Cost Line Items

6. *Transport & fuel*: fuel for immunization related transport; travel (taxi or other) to sites

7. *Vehicle maintenance*: share of maintaining vehicles, motor cycles etc for immunization-related activities

8. *Printing costs*: immunization cards, training and IEC materials, other materials

9. *Utilities & communication*: portion of building maintenance, utilities, telephone, internet connections

10. *Other recurrent*: Other immunization-related recurrent costs not included above
Identification of Cost Line Items

Capital Cost line items

1. *Cold chain equipment*: used to store and transport vaccines

2. *Vehicles*: share of value of all vehicles, motorbikes etc used

3. *Laboratory equipment*: any specific equipment used for surveillance tests

4. *Other equipment*: e.g. computers, printers, peripherals, furniture, other medical equipment for immunization-related activities

5. *Buildings*: share of building space used for services and store vaccines

6. *Other capital*: Any other capital investments related to immunization.
Understanding costs by line item – Costs at the primary health centres in India (2013-14)
Distribution of facility cost drivers – Line Items
Urban vs. Rural HF Economic costs (Zambia)

- What are the main features of the costs that can be useful to planners or understanding how best to cost new vaccine for CEA?
Steps 2 & 3: Measure and Value Resources Used

- **Step 2:** Measure resources used
  - Line items
    - Which are most important?
  - Activity costs
    - Which are most important
  - Quantities and costs from
    - Questionnaires, diaries, logs

- **Step 3:** Value resources used
  - Unit costs from
    - Previous costing studies
    - Cost accounting data
    - Micro-costing
    - Billing data adjusted by revenue center codes
  - Salary scales and data; cost/km
## Data Source Options: Program Costs

<table>
<thead>
<tr>
<th>Item</th>
<th>Source and Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccines</td>
<td>• Country procurement records; UNICEF/ GAVI/ Revolving Fund prices; include insurance &amp; freight  &lt;br&gt;  • Stock management records or WHO norms for wastage</td>
</tr>
<tr>
<td>Supplies</td>
<td>• Procurement records; WHO GPRM; MSH Drug Price Guide; Drug Topics Red Book</td>
</tr>
<tr>
<td>Labor</td>
<td>• Staff and manager surveys; Time-motion; time diaries  &lt;br&gt;  • Public service remuneration packages</td>
</tr>
<tr>
<td>Patient time</td>
<td>• Survey for time amount  &lt;br&gt;  • Value with average gross wages</td>
</tr>
<tr>
<td>Maintenance, Fuel</td>
<td>• District or facility accounts</td>
</tr>
<tr>
<td>Subsistence/ other Allowances</td>
<td>• District or facility accounts</td>
</tr>
</tbody>
</table>
## Data Source Options: Program Costs (2)

<table>
<thead>
<tr>
<th>Item</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinic space</td>
<td>• Market price, annualize, allocate based on minutes used</td>
</tr>
<tr>
<td>Overhead</td>
<td>• Step-down allocation of facility-level costs?</td>
</tr>
<tr>
<td>Surveillance</td>
<td>• Proportion of EPI budget? allocate based on vaccine type?</td>
</tr>
<tr>
<td>Cold chain</td>
<td>• Country records; UNICEF &amp; WHO product information sheets</td>
</tr>
<tr>
<td></td>
<td>• Refrigerators alloc. based on vaccine volume (‘semi-fixed’)</td>
</tr>
<tr>
<td>Social mobilization</td>
<td>• One-time push at launch - annualize; child health weeks etc</td>
</tr>
<tr>
<td>Training</td>
<td>• Large training at launch treated as capital, plus recurrent amount linked to staff turnover</td>
</tr>
</tbody>
</table>
Data Source Options: Program Output Data And Allocation Factors (2)

<table>
<thead>
<tr>
<th>Item</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPI program outputs</td>
<td>• Program records at various levels</td>
</tr>
<tr>
<td>Outpatient numbers</td>
<td>• HIS at various levels</td>
</tr>
<tr>
<td>Denominator populations</td>
<td>• Central Statistics, Census and MoH catchment population estimates</td>
</tr>
<tr>
<td>Staff numbers</td>
<td>• Facility and District offices</td>
</tr>
<tr>
<td>Km</td>
<td>• Log books or Google?</td>
</tr>
<tr>
<td>Space – m²</td>
<td>• Measure directly; plans</td>
</tr>
</tbody>
</table>

EPI and HIS statistics, denominator populations and coverage estimates can be larger source of uncertainty and inaccuracy than cost data.
Cost Analysis: Recurrent Costs

• **Cost of labour:**
  • estimate of salary & benefits X % of time spent on immunization

• **Cost of vaccine:**
  • value of vaccine doses administered + value of vaccine doses wasted

• **Cost of injection supplies:**
  • number of syringes used (+ 10% wastage) X price of syringes

• **Cost of training:**
  • initial training is capital cost; ongoing, routine training is recurrent
  • Training costs include the cost of venue, per diem for participants, cost of trainers, and reproduction of training materials.
Cost Analysis: Recurrent Costs

- **Cost of social mobilization:**
  - community meetings, printing flyers and materials, events; other sensitization (per diem, staff time, materials).

- **Vehicle maintenance:**
  - total vehicle maintenance costs per facility (per district) and (x) the share of mileage (km) made for routine immunization related activities.

- **Cold chain maintenance:**
  - fuel and energy costs required to run the cold chain as well as the cost of repairs and spare parts.

- **Surveillance cost:**
  - proportion of time spent, transport cost, cost of laboratory materials etc.
Cost Analysis : Capital Cost

• *Cold chain equipment:*  
  number X replacement price X % capacity used by particular vaccine

• *Vehicles:*  
  number X replacement price by type X % use by the routine EPI

• *Building:*  
  m² X cost/m² X % allocation to immunization

• *Computers and office equipment:*  
  discounted annual value of these inputs
### Examples of Allocation of Shared Costs

<table>
<thead>
<tr>
<th>Line item</th>
<th>Tracing factor (total to immunization)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff time</td>
<td>% of time spent on immunization</td>
</tr>
<tr>
<td>Vehicle</td>
<td>% used for routine immunization (share of km travelled for routine immunization)</td>
</tr>
<tr>
<td>Building</td>
<td>% of facility area used for immunization</td>
</tr>
<tr>
<td>Overhead</td>
<td>Electricity / housekeeping: % of facility area used for immunization</td>
</tr>
<tr>
<td></td>
<td>Telephone: number of full time equivalent (FTE) in immunization compared to total FTE at the facility</td>
</tr>
<tr>
<td>Waste management</td>
<td>share of vaccine load to total load in the incinerator</td>
</tr>
</tbody>
</table>

The more important the cost item is for the analysis, the greater the effort that should be made to estimate it accurately.
Understanding Unit Costs - Ghana

Bar chart showing unit costs for different health facilities in Ghana:
- CHPS rural (n=19): 8.00
- CHPS urban (n=1): 6.88
- Health Center rural (n=14): 5.51
- Health Center urban (n=3): 3.47
- Clinic rural (n=6): 3.44
- Clinic urban (n=3): 2.80
- RCH urban (n=4): 2.41

Legend:
- Blue: unit cost per dose
- Red: unit delivery cost per dose
Understanding costs of Routine Immunization – Average Unit cost per dose from six countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Average cost per site</th>
<th>Average cost per dose</th>
<th>Average cost per DTP3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>$18K</td>
<td>$2.75</td>
<td>$30</td>
</tr>
<tr>
<td>Ghana</td>
<td>$18K</td>
<td>$6.09</td>
<td>$56</td>
</tr>
<tr>
<td>Honduras</td>
<td>$13K</td>
<td>$9.48</td>
<td>$128</td>
</tr>
<tr>
<td>Moldova</td>
<td>$4K</td>
<td>$13.63</td>
<td>$139</td>
</tr>
<tr>
<td>Uganda</td>
<td>$8K</td>
<td>$2.76</td>
<td>$27</td>
</tr>
<tr>
<td>Zambia</td>
<td>$28K</td>
<td>$4.05</td>
<td>$40</td>
</tr>
</tbody>
</table>

What does this suggest that we should think about when assessing and modelling cost effectiveness?
As # goes up, avg. $ goes down

If we draw an imaginary curve for each center type, and see the cost/dose when each facility serves say 1,000, we see that at the same scale up level, community health centers are more costly (less efficient, more crowded). As we scale-up the efficiency gap between the sub-centers and Community Health Centers shrinks.
Aggregation of costs from facility to national level

**Aggregation Method**

1. **Total Annual National Cost of the Routine Program**
   
   \[
   \text{Weighted Average District Costs} \times \frac{\text{Number of Districts}}{\text{National Level Costs}}
   \]

2. **Total Annual District Cost of the Routine Program**
   
   \[
   \text{Weighted Average Facility Costs} \times \frac{\text{Number of Facilities}}{\text{District Level Costs}}
   \]

3. **Total Annual Facility Cost for the Routine Immunization Program**
   
   \[
   \text{Weighted Average Facility Cost} \times \frac{\text{Number of Facilities}}{}
   \]


Should studies consider aggregate national costs of different interventions?
## Understanding Total National Program Costs

**Zambia EPI Economic Cost by Health System Level & Line Item (Zambia $2011 ‘000)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Facility</th>
<th>District</th>
<th>Prov.</th>
<th>Nat.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cost</td>
<td>31m</td>
<td>5.4m</td>
<td>0.9m</td>
<td>0.7m</td>
<td>38.16m</td>
</tr>
<tr>
<td>Percentage of total</td>
<td>82%</td>
<td>14%</td>
<td>2%</td>
<td>2%</td>
<td>100%</td>
</tr>
</tbody>
</table>

![Pie chart showing distribution of costs across different categories]
When to Sample Facilities

If goal is to:

- Measure nationally representative average cost for routine immunization

- Observe variation in costs among
  - Facilities
  - Marginal cost of vaccinating a child
Approach to Sampling in Routine Immunization Programs

• Common approach
  o Not possible to collect data from all facilities in each country
    • Use a sample of facilities
    • Select facilities that will represent the range of variation
    • Use two-stage sampling approach

• Define what is the primary sampling unit
  o Public facilities or Private facilities (Non-governmental organization)
  o Include secondary hospitals if believed important source of immunization activity

• Define the geographical areas of focus in the study (i.e. region, province, etc.)
  • Suggested to select areas that reflect range of costs (high performance, medium performance, low performance)
Example of the Proposed Sampling Frame

- Province (or Region)
  - District 1 (high volume)
    - Rural PHCs
    - Urban PHCs
  - District 2 (middle volume)
    - Rural PHCs
    - Urban PHCs
  - District 3 (low volume)
    - Rural PHCs
    - Urban PHCs

Approach To Sampling in Routine Immunization Programs

• 1\textsuperscript{st} Stage: List all the districts in these areas & order these by number of doses administered and population density
  • Randomly selected 3 to 5 districts

• 2\textsuperscript{nd} Stage: List all the facilities in each district & order these rural/urban
  • Randomly select 2 to 4 facilities (or more if you can afford to survey more) from each district
  • Recommendation is to over-sample rural (remote) facilities compared to urban (near-urban facilities)
Sampling Procedure Example

• The sampling procedure determines the weights used in reporting of average facility cost
  • Weights: Are the inverse of the probability of being selected

• Example:

  Data:
  Province X has 12 Districts. Randomly select 3 Districts
  District 1 has 20 facilities. Randomly select 4 facilities from each District

  • What is the probability of selecting a facility in District 1?
    Prob. of selecting a district: \( \frac{3}{12} = \frac{1}{4} \)
    Prob. of a HF in district 1: \( \frac{4}{20} = \frac{1}{5} \)
    \( \frac{1}{4} \times \frac{1}{5} = \frac{1}{20} \)

  • What is the weight? 20
  • How to use the weights?
    To get nationally representative values estimate average weighted facility cost
Summary: Measurement of Vaccine Program Costs

• Measurement of vaccine program / intervention costs is core to economic evaluation of new options for vaccines or implementation models

• General costing process and methods relevant to costing of implementation:
  • Describe intervention -> identify resources -> quantify resources -> value resources -> allocate costs to immunization or specific service
  • Direct/ micro-costing; ingredients based; step down; secondary data?

• Structure costing around immunization 1) activities and then 2) line items
Suggested readings


Exercise:

Estimation of Total and Unit Routine Immunization Costs from Facility to National Level
Costing in Vaccine Planning and Programming

Costing New Vaccine Introduction (NUVI)

Application & Illustration of Costing Methodology
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Importance of Costing NUVI

• Understanding the full scope of the cost and implications of introducing a new vaccine is essential to ensure adequate planning and resource mobilization.

• In the medium to long-term introducing new vaccines requires a commitment of significant resources over a long period of time. These costs, having implications for the nation’s fiscal space, ought to be carefully assessed.

• NOTE: Incremental costing approach is commonly used when costing NUVI.
  • Only additional costs relating to the introduction of the new vaccine are considered. Costs of pre-existing resources / inputs with extra capacity are excluded, implying that the full economic costs of NUVI are usually not estimated.
Incremental Cost Focus – Economic Or Fiscal?

- CEA need full incremental **economic** costs not just **financial or fiscal** costs
- Financial costs (depreciated) and fiscal (full purchase cost) for government planning and donor budgeting

<table>
<thead>
<tr>
<th>Line item</th>
<th>Economic Costs</th>
<th>Financial Costs</th>
<th>Fiscal Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paid labour</td>
<td>✓ Time of existing or new staff</td>
<td>✓/✗ Only extra staff hired</td>
<td>✓/✗ Only extra staff hired</td>
</tr>
<tr>
<td>Volunteers</td>
<td>✓ Economic Value</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Per diems</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Vaccines</td>
<td>✓ Full economic value</td>
<td>✓ Purchase cost</td>
<td>✓ Purchase cost</td>
</tr>
<tr>
<td>Injection supplies</td>
<td>✓ Full economic value</td>
<td>✓ Purchase cost</td>
<td>✓ Purchase cost</td>
</tr>
<tr>
<td>Fuel &amp; other transport</td>
<td>✓ Full economic value</td>
<td>✓ Purchase cost</td>
<td>✓ Purchase cost</td>
</tr>
<tr>
<td>Cold storage</td>
<td>✓ Economic value of current and new space used by new vaccine – <em>discount &amp; annualise</em></td>
<td>✓ Purchase cost of <em>extra storage equipment</em> - <em>depreciated</em></td>
<td>✓ Full Purchase cost of <em>extra storage equipment</em></td>
</tr>
<tr>
<td>Vehicles</td>
<td>✓ Economic value of vehicle use for new vaccine + activities – <em>discount &amp; annualise</em></td>
<td>✓ Value of vehicles used for NUVI - <em>depreciated</em></td>
<td>✓ Full Purchase cost</td>
</tr>
</tbody>
</table>

Source: Common Approach 2014
Costing Considerations for NUVI

1. Prospective or retrospective costing?
   • **Prospective**: usually ingredients-based, plus secondary data needed - what could possibly go wrong.....?

2. Need for clear description of the intervention
   • Information from: EPI managers; Pilot sites; well informed service managers and staff; Gavi New Vaccine Application guide
   • Develop common, detailed understanding of practicalities of vaccine (e.g., storage, reconstitution, administration), additional workload implications etc.
   • Clarify scale-up strategy (Gavi assumption of 2 years for 60% coverage; some costs e.g. cold chain may be incurred in years before)
     • May affect cost and effectiveness estimates

3. Startup and once-off costs
   - Once-off costs e.g. planning, vaccine distribution, training, systems
   - Capital items e.g. cold chain
QUIZ

Which incremental costs do you expect to be the largest for new vaccine introduction?

1) Which Activities?
2) Which Line items?

Why? (and which vaccine do you have in mind?)
**EXAMPLE:** Distribution of total economic PCV and Rota introduction costs by function (Zambia)

Ongoing economic cost for 90% PCV coverage would add 27% to total RI cost of +/- $38 million.

Incremental NUVI cost/dose higher than average RI cost/dose ($7.56 vs. $7.18);
Cost/child is an additional 42% of total RI cost/child ($24.91 vs $59.32)
EXAMPLE: PCV and Rota Fiscal costs – start-up vs. on-going by function (Zambia)

This graph highlights the fact that what we should be concerned about is not the start-up costs but the on-going implementation costs.
Some Specific Considerations For New Vaccine Introduction

4. Cold chain costs
   - Identifying true incremental needs vs opportunistic replacement
   - WHO EPI Logistics tool & WHO volume calculator for capacities and volumes

5. Budget impact, sustainability and fiscal space
   - Often a key issue when translating evaluation into decisions
   - Consider costs at each level in the health system
**Exercise: Which costs to include in incremental cost of new vaccines?**  
(Adapted from WHO 2002)

<table>
<thead>
<tr>
<th>New Monovalent vaccine</th>
<th>Combination vaccine with 1) fewer doses per vial than older vaccine and/or 2) extra vials for diluent</th>
<th>Combination vaccine with no change in vial size and no extra vials for diluent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccines</td>
<td>Vaccines</td>
<td>Vaccines</td>
</tr>
<tr>
<td>Reconstitution syringes</td>
<td>Reconstitution syringes</td>
<td>Reconstitution syringes</td>
</tr>
<tr>
<td>Additional safety boxes</td>
<td>Additional safety boxes</td>
<td>Additional safety boxes</td>
</tr>
<tr>
<td>Vaccine distribution and storage</td>
<td>Vaccine distribution and storage</td>
<td>Vaccine distribution and storage</td>
</tr>
<tr>
<td>System to transport &amp; store new vaccine</td>
<td>System to transport &amp; store new vaccine</td>
<td>System to transport &amp; store new vaccine</td>
</tr>
<tr>
<td>Waste management costs</td>
<td>Waste management costs</td>
<td>Waste management costs</td>
</tr>
<tr>
<td>Additional staff time</td>
<td>Additional staff time</td>
<td>Additional staff time</td>
</tr>
<tr>
<td>Disease surveillance related to new vaccine</td>
<td>Disease surveillance related to new vaccine</td>
<td>Disease surveillance related to new vaccine</td>
</tr>
<tr>
<td>Initial training</td>
<td>Initial training</td>
<td>Initial training</td>
</tr>
<tr>
<td>Social mobilization</td>
<td>Social mobilization</td>
<td>Social mobilization</td>
</tr>
<tr>
<td>Extra printing &amp; other costs</td>
<td>Extra printing &amp; other costs</td>
<td>Extra printing &amp; other costs</td>
</tr>
</tbody>
</table>

1. Review vaccines and costs in groups – share team technical and economic expertise!
2. Identify costs NOT relevant to each of the new vaccines
<table>
<thead>
<tr>
<th>New Monovalent vaccine</th>
<th>Combination vaccine with fewer doses per vial than older vaccine and/or extra vials for diluent</th>
<th>Combination vaccine with no change in vial size and no extra vials for diluent</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Vaccines</td>
<td>✓ Vaccines</td>
<td>✓ Vaccines</td>
</tr>
<tr>
<td>Reconstitution syringes</td>
<td>✓ Reconstitution syringes</td>
<td>Reconstitution syringes</td>
</tr>
<tr>
<td>✓ Additional safety boxes</td>
<td>Additional safety boxes</td>
<td>Additional safety boxes</td>
</tr>
<tr>
<td>✓ Vaccine distribution and storage</td>
<td>✓ Vaccine distribution and storage</td>
<td>Vaccine distribution and storage</td>
</tr>
<tr>
<td>✓ System to transport &amp; store new vaccine</td>
<td>System to transport &amp; store new vaccine</td>
<td>System to transport &amp; store new vaccine</td>
</tr>
<tr>
<td>✓ Waste management costs</td>
<td>Waste management costs</td>
<td>Waste management costs</td>
</tr>
<tr>
<td>✓ Additional staff time</td>
<td>Additional staff time</td>
<td>Additional staff time</td>
</tr>
<tr>
<td>✓ Disease surveillance related to new vaccine</td>
<td>✓ Disease surveillance related to new vaccine</td>
<td>✓ Disease surveillance related to new vaccine</td>
</tr>
<tr>
<td>✓ Initial training</td>
<td>✓ Initial training</td>
<td>✓ Initial training</td>
</tr>
<tr>
<td>✓ Social mobilization</td>
<td>✓ Social mobilization</td>
<td>✓ Social mobilization</td>
</tr>
<tr>
<td>✓ Extra printing &amp; other costs</td>
<td>✓ Extra printing &amp; other costs</td>
<td>✓ Extra printing &amp; other costs</td>
</tr>
</tbody>
</table>


