Supplementary file

Appendix S1. C4P Demo Collection form.

See next page.
### A/ General Country Information

| Country Information                  | Labels |
|--------------------------------------|--------|
| Country name                         |        |
| Country currency                     |        |
| Exchange rate (Local currency to $US)|        |
| Inflation rate (%)                   |        |
| Annual discount rate (%)             |        |
| Estimated useful years for introduction costs |        |
| Annual population growth rate (%)    |        |
| Proportion of target population in school |       |
| Proportion of target population out of school |       |
| Project demonstration start year     |        |

| Country Administrative Levels        | Labels |
|--------------------------------------|--------|
| First level label                   |        |
| Second level label                  |        |
| Third level label                   |        |
| Fourth level label                  |        |
| Facility Level name                 |        |
| School type level name              |        |

### B/ Demo Project Location

| District A name | District B name | Subnational Info |
|-----------------|-----------------|------------------|
| # of sub districts | # of sub districts |                   |
| Estimated target population | Estimated target population |   |
| # of vaccination facilities | # of vaccination facilities |   |
| # of health workers in vaccination facilities | # of health workers in vaccination facilities |   |
| # of primary school | # of primary school |   |

Notes
### C/ Vaccine delivery Strategy

 comida How is the vaccine being delivered? (you can choose a single or a combination of methods).

| Through schools (vaccinators go out) | If then, # to visit to a school per year | Through Health Facilities (Patients come in) | Through Outreach | If then, # of outreach per year (other than to a school) |
|-------------------------------------|--------------------------------------|---------------------------------------------|-----------------|------------------------------------------------------|
| District A                          | [ ]                                  | [ ]                                         | [ ]             | [ ]                                                  |
| District B                          | [ ]                                  | [ ]                                         | [ ]             | [ ]                                                  |

Provide expected coverage and dropout rates per delivery methods.

| District A | Through schools (vaccinators go out) | Through Health Facilities (Patients come in) | Through Outreach | D1 coverage rate | [%] | [%] | [%] |
|------------|--------------------------------------|---------------------------------------------|-----------------|----------------|------|------|------|
| District B | Through schools (vaccinators go out) | Through Health Facilities (Patients come in) | Through Outreach | D1 coverage rate | [%] | [%] | [%] |

| District A | Average # of vaccinators per school visit | Service Delivery |
|------------|------------------------------------------|------------------|
| District B | Average # of teachers assisting per school visit | Service Delivery |
| District A | Average # of vaccinators per outreach activity | Service Delivery |
| District B | Average # of vaccinators per outreach activity | Service Delivery |
| District A | Average # of minutes per person vaccinated in Health facility | Service Delivery |
| District B | Average # of minutes per person vaccinated in other outreach activity | Service Delivery |
| District A | Average length (in days) per school visit | Service Delivery |
| District B | Average length (in days) per outreach visit | Service Delivery |

| District A | Unit Cost (Financial) | Unit Cost (Economic) | Service Delivery |
|------------|----------------------|----------------------|------------------|
| District B | Average monthly salary and benefits of a health facility vaccinator | Service Delivery |
| District A | Average cost of a R/T transport for a school vaccination visit (per person) | Service Delivery |
| District B | Average cost of a R/T transport for an other outreach visit (per person) | Service Delivery |
| District A | Average per diem for outreach (out of station) visits by a vaccinator | Service Delivery |
| District B | Average per diem allowance for a teacher assisting with school vaccination | Service Delivery |
D/ Vaccine information

| Type and presentation of HPV vaccine used | Planned doses to give to each FIG |
|------------------------------------------|----------------------------------|
| □ Quadravalent Gardasil (1 dose vial)*1   | □ Bivalent Cervarix (1 dose vial)*1 |
| □ Quadravalent Gardasil (1 dose vial)*10 | □ Bivalent Cervarix (1 dose vial)*100 |

VACCINES

COLD CHAIN

VACCINES

| Vaccine cost | Vaccine Dose | AD Injection | Safety box |
|--------------|--------------|--------------|------------|
|              |              |              |            |
|              |              |              |            |

VACCINES

VACCINES

| Additional charges to vaccine cost (%) | Vaccine | Syringe | Safety Box |
|---------------------------------------|---------|---------|------------|
| Marine Insurance                      | %       | PLUG-VACS | VACCINES  |
| Wharfage                              | %       | PLUG-VACS | VACCINES  |
| Handling                              | %       | PLUG-VACS | VACCINES  |
| Removal from transport                | %       | PLUG-VACS | VACCINES  |
| Port storage                          | %       | PLUG-VACS | VACCINES  |
| Transport to stock management centre  | %       | PLUG-VACS | VACCINES  |
| Bank charges                          | %       | PLUG-VACS | VACCINES  |
| Destination inspection fee            | %       | PLUG-VACS | VACCINES  |
| Storage in warehouses (cold rooms, refrigeration and insurance coverage) | % | PLUG-VACS | VACCINES |
| Distribution to zonal centres and insurance coverage | % | PLUG-VACS | VACCINES |

VACCINES

VACCINES

| Notes | VACCINES |
|-------|----------|

E/ Micro planning activities

For detailed calculation, refer to form 4.

| Number | Financial Cost | Economic Cost |
|--------|----------------|---------------|
|        | MICROPLANNING  |               |
|        | MICROPLANNING  |               |
|        | MICROPLANNING  |               |
### F/ Training activities – For detailed calculation, refer to form 4.

|                                      | TRAINING | Notes |
|--------------------------------------|----------|-------|
| Max # of participants per training of trainers workshop |          |       |
| Max # of participants per training of supervisors       |          |       |
| Max # of participants per training of vaccinators       |          |       |
| # of trainers trained per district          |          |       |
| # of supervisors trained per Sub district     |          |       |
| # of vaccinators trained per vaccination facility |          |       |

| Curriculum Development workshop | TRAINING | Notes |
|---------------------------------|----------|-------|
| Training of Trainers workshop   | TRAINING |       |
| Training of supervisors workshop | TRAINING |       |
| Training of vaccinators workshop | TRAINING |       |

### G/ IEC and Social Mobilization – For detailed calculation, refer to form 4.

|                                      | Unit Cost (Financial) | Unit Cost (Economic) |
|--------------------------------------|-----------------------|----------------------|
| Sensitization event at first level    | SOCIALMOB-IEC         |                      |
| Sensitization event per project area  | SOCIALMOB-IEC         |                      |
| Sensitization event per sub project area | SOCIALMOB-IEC       |                      |
| Sensitization event per facility catchment area | SOCIALMOB-IEC | |
| Sensitization event per school       | SOCIALMOB-IEC         |                      |

|                                      | Unit Cost (Financial) | Unit Cost (Economic) |
|--------------------------------------|-----------------------|----------------------|
| Initial IEC support Country level    | SOCIALMOB-IEC         |                      |
| Initial IEC support Project area level | SOCIALMOB-IEC     |                      |
| Initial IEC support Sub project area level | SOCIALMOB-IEC | |
| Initial IEC support Facility catchment area level | SOCIALMOB-IEC | |
| Initial IEC support School level     | SOCIALMOB-IEC         |                      |

### H/ Supervision and monitoring

|                                      | Unit Cost (Financial) | Unit Cost (Economic) |
|--------------------------------------|-----------------------|----------------------|
| Supervision visit from first level   | MONITORING            |                      |
| Supervision visit from second level  | MONITORING            |                      |
| Supervision visit from third level   | MONITORING            |                      |
| Monitoring record book per facility per year (accounting wastage) | MONITORING | |
| Vaccination tally sheet reporting forms per facility per year (accounting wastage) | MONITORING | |
| Vaccination cards per HPV-1 (accounting for wastage) | MONITORING | |
| Post Introduction Evaluation        | MONITORING            |                      |

| Proportion of supervisory cost allocated to HPV vaccine | % | MONITORING |
## C4P Demo Collection form

### I/ Cold chain (supplement)

| Number of supply/resupply shipments per year |   |   |
|---------------------------------------------|---|---|
| From Manufacturer to Central stores         |   |   |
| From Central stores to intermediate stores  |   |   |
| From intermediate stores to health facility |   |   |

| Estimate excess cold chain capacity available at each level | Estimate expenditure required to purchase additional space needed |
|-------------------------------------------------------------|---------------------------------------------------------------|
| Central stores level                                        | cm³ | $US |
| Intermediate stores level                                  | cm³ | $US |
| Health facility level                                       | cm³ | $US |

| Estimate expenditure required to purchase additional space needed | Useful life years for cold chain storage supplement |
|-------------------------------------------------------------------|-----------------------------------------------------|
| Central stores level                                             | Central stores equipment (assume cold rooms)       |
| Intermediate stores level                                        | Intermediate stores equipment (assume cold rooms) |
| Health facility level                                            | Health facility equipment (assume refrigerator)    |

### J/ Other costs

⊕ List in the table below all additional recurrent costs per dose administered:

| Other recurrent cost item | Unit Cost (Financial) | Unit Cost (Economic) |
|---------------------------|-----------------------|----------------------|
| ...                       |                       | OTHER                |
| ...                       |                       | OTHER                |
| ...                       |                       | OTHER                |

⊕ List in the table below all additional Capital goods required for the demo project:

| Other Capital goods | # needed | Unit Cost (Financial) | Useful life years |
|---------------------|----------|-----------------------|-------------------|
| ...                 |          |                       | OTHER             |
| ...                 |          |                       | OTHER             |
| ...                 |          |                       | OTHER             |

### Notes
## A/ Demo project location

| District name | SUBNATIONAL INFO | SUBNATIONAL INFO | SUBNATIONAL INFO | SUBNATIONAL INFO | SUBNATIONAL INFO | SUBNATIONAL INFO |
|---------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Number of sub districts | | | | | | |
| Estimated target population | | | | | | |
| # of vaccination facilities | | | | | | |
| # of health workers in vaccination facilities | | | | | | |
| # of primary school | | | | | | |

## B/ Vaccine delivery Strategy

How is the vaccine being delivered? (you can choose a single or a combination of methods).

| Through schools (vaccinators go out) | If ✓ then, # to visit to a school per year | Through Health Facilities (Patients come in) | Through Outreach | If ✓ then, # of outreach per year (other than to a school) |
|--------------------------------------|------------------------------------------|------------------------------------------|------------------|--------------------------------------------------|
| ☐                                    | ☐                                       | ☐                                       | ☐               | STRATEGY                                        |

Provide expected coverage and dropout rates per delivery methods.

| Through schools (vaccinators go out) | Through Health Facilities (Patients come in) | Through Outreach | STRATEGY |
|--------------------------------------|------------------------------------------|------------------|----------|
| D1 coverage rate | % | % | % | STRATEGY |
| Dropout rate (between D1 and D2) | % | % | % | STRATEGY |
| Dropout rate (between D2 and D3) | % | % | % | STRATEGY |

| Average # of vaccinators per school visit | SERVICE DELIVERY |
|------------------------------------------|------------------|
| Average # of teachers assisting per school visit | SERVICE DELIVERY |
| Average # of vaccinators per outreach activity | SERVICE DELIVERY |
| Average # of minutes per person vaccinated in Health facility | SERVICE DELIVERY |
| Average # of minutes per person vaccinated during a school visit | SERVICE DELIVERY |
| Average # of minutes per person vaccinated in other outreach activity | SERVICE DELIVERY |
| Average length (in days) per school visit | SERVICE DELIVERY |
| Average length (in days) per other outreach visit | SERVICE DELIVERY |

| Unit Cost (Financial) | Unit Cost (Economic) |
|-----------------------|----------------------|
| Average monthly salary and benefits of a health facility vaccinator | SERVICE DELIVERY |
| Average cost of a R/T transport for a school vaccination visit (per person) | SERVICE DELIVERY |
| Average cost of a R/T transport for an other outreach visit (per person) | SERVICE DELIVERY |
| Average per diem for outreach (out of station) visits by a vaccinator | SERVICE DELIVERY |
| Average per diem allowance for a teacher assisting with school vaccination | SERVICE DELIVERY |
### C4P Demo Collection form

#### C/ Micro planning activities - *For detailed calculation, refer to form 4.*

| Micro planning activities at second level | Number | Financial Cost | Economic Cost | MICROPLANNING |
|------------------------------------------|--------|----------------|---------------|---------------|
| Micro planning activities at third level |        |                |               | MICROPLANNING |

#### D/ Training activities - *For detailed calculation, refer to form 4.*

| # of trainers trained per district | Number | Financial Cost | Economic Cost | TRAINING |
|-----------------------------------|--------|----------------|---------------|----------|
| # of supervisors trained per Sub district |        |                |               | TRAINING |
| # of vaccinators trained per vaccination facility |        |                |               | TRAINING |

| Curriculum Development workshop | Unit Cost (Financial) | Unit Cost (Economic) | TRAINING |
|---------------------------------|----------------------|----------------------|----------|
| Training of Trainers workshop    |                      |                      | TRAINING |
| Training of supervisors workshop |                      |                      | TRAINING |
| Training of vaccinators workshop |                      |                      | TRAINING |

#### E/ IEC and Social Mobilization - *For detailed calculation, refer to form 4.*

| Sensitization event per project area | # | Unit Cost (Financial) | Unit Cost (Economic) | SOCIALMOB-IEC |
|-------------------------------------|---|----------------------|----------------------|---------------|
| Sensitization event per sub project area | |                      |                      | SOCIALMOB-IEC |
| Sensitization event per facility catchment area | |                      |                      | SOCIALMOB-IEC |
| Sensitization event per school      | |                      |                      | SOCIALMOB-IEC |

| Initial IEC support Project area level | Unit Cost (Financial) | Unit Cost (Economic) | SOCIALMOB-IEC |
| Initial IEC support Sub project area level | |                      |                      | SOCIALMOB-IEC |
| Initial IEC support Facility catchment area level | |                      |                      | SOCIALMOB-IEC |
| Initial IEC support School level | |                      |                      | SOCIALMOB-IEC |

#### F/ Supervision and monitoring

| Supervision visit from second level | Number | Unit Cost (Financial) | Unit Cost (Economic) | MONITORIN |
| Supervision visit from third level |        |                      |                      | MONITORIN |
| Monitoring record book per facility per year (accounting wastage) |        |                      |                      | MONITORIN |
| Vaccination tally sheet reporting forms per facility per year (accounting wastage) |        |                      |                      | MONITORIN |
| Vaccination cards per HPV-1 (accounting for wastage) |        |                      |                      | MONITORIN |
| Post Introduction Evaluation |        |                      |                      | MONITORIN |

| Proportion of supervisory cost allocated to HPV vaccine | % | MONITORING |
## G/ Cold chain (supplement)

### Number of supply/resupply shipments per year

| From Central stores to intermediate stores | From intermediate stores to health facility |
|-------------------------------------------|-------------------------------------------|
| COLD CHAIN                                | COLD CHAIN                                |

### Estimate excess cold chain capacity available at each level

| Level                      | Capacity (cm³) | Cost ($US) |
|----------------------------|----------------|------------|
| Intermediate stores level  | cm³            | $US        |
| Health facility level      | cm³            | $US        |

### Estimate expenditure required to purchase additional space needed

| Level                      | Cost ($US) |
|----------------------------|------------|
| Intermediate stores level  | $           |
| Health facility level      | $           |

### Useful life years for cold chain storage supplement

| Level                      | Useful Life Years (ULY) |
|----------------------------|-------------------------|
| Intermediate stores level  | COLD CHAIN              |
| Health facility level      | COLD CHAIN              |

### H/ Other costs

List in the table below all additional recurrent costs per dose administered:

| Other recurrent cost item | Unit Cost (Financial) | Unit Cost (Economic) |
|---------------------------|-----------------------|----------------------|
| ...                       |                       | OTHER                |
| ...                       |                       | OTHER                |
| ...                       |                       | OTHER                |

List in the table below all additional Capital goods required for the demo project:

| Other Capital goods | # needed | Unit Cost (Financial) | Useful life years |
|---------------------|----------|-----------------------|-------------------|
| ...                 |          |                       | OTHER             |
| ...                 |          |                       | OTHER             |
| ...                 |          |                       | OTHER             |

### Notes
### A/ Health catchment area information

| Health facility name |  |
|----------------------|---|
| Proportion of target population in school | ECON&DEMOG INPUTS |
| Proportion of target population out of school | ECON&DEMOG INPUTS |
| # of health workers in vaccination facilities | SUBNATIONAL INFO |
| # of primary school | SUBNATIONAL INFO |

### B/ Vaccine delivery Strategy

How is the vaccine being delivered? (you can choose a single or a combination of methods).

| Health catchment area | Through schools (vaccinators go out) | If ☐ then, # to visit to a school per year | Through Health Facilities (Patients come in) | Through Outreach | If ☐ then, # of outreach per year (other than to a school) |
|-----------------------|--------------------------------------|------------------------------------------|--------------------------------------------|-----------------|--------------------------------------------------|
|                       |                                      |                                          |                                            |                 | STRATEGY                                         |

Provide expected coverage and dropout rates per delivery methods:

| Health catchment area | Through schools (vaccinators go out) | Through Health Facilities (Patients come in) | Through Outreach |
|-----------------------|--------------------------------------|--------------------------------------------|-----------------|
| D1 coverage rate      | %                                    | %                                         | %               |
| Dropout rate (between D1 and D2) | % | % | % |
| Dropout rate (between D2 and D3) | % | % | % |

| Health catchment area | Service Delivery |
|-----------------------|------------------|
| Average # of vaccinators per school visit | SERVICE DELIVERY |
| Average # of teachers assisting per school visit | SERVICE DELIVERY |
| Average # of vaccinators per outreach activity | SERVICE DELIVERY |
| Average # of minutes per person vaccinated in Health facility | SERVICE DELIVERY |
| Average # of minutes per person vaccinated during a school visit | SERVICE DELIVERY |
| Average # of minutes per person vaccinated in other outreach activity | SERVICE DELIVERY |
| Average length (in days) per school visit | SERVICE DELIVERY |
| Average length (in days) per other outreach visit | SERVICE DELIVERY |

| Unit Cost (Financial) | Unit Cost (Economic) |
|-----------------------|----------------------|
| Average monthly salary and benefits of a health facility vaccinator | SERVICE DELIVERY |
| Average cost of a R/T transport for a school vaccination visit (per person) | SERVICE DELIVERY |
| Average cost of a R/T transport for an other outreach visit (per person) | SERVICE DELIVERY |
| Average per diem for outreach (out of station) visits by a vaccinator | SERVICE DELIVERY |
| Average per diem allowance for a teacher assisting with school vaccination | SERVICE DELIVERY |
### C4P Demo Collection form

**C/ Training and supervision**

| # of vaccinators trained per vaccination facility | TRAINING |
| Supervision visit from third level | MONITORING |
| Monitoring record book per facility per year (accounting wastage) | MONITORING |
| Vaccination tally sheet reporting forms per facility per year (accounting wastage) | MONITORING |

| Proportion of supervisory cost allocated to HPV vaccine | % MONITORING |

#### Estimate excess cold chain capacity available at each level

| Health facility level | cm³ | $US |
|-----------------------|-----|-----|

#### Estimate expenditure required to purchase additional space needed

| Health facility level | $ |

#### G/ IEC and Social Mobilization— For detailed calculation, refer to form 4.

| Sensitization event per facility catchment area | SOCIALMOB-IEC |
| Sensitization event per school | SOCIALMOB-IEC |

| Initial IEC support Facility catchment area level | SOCIALMOB-IEC |
| Initial IEC support School level | SOCIALMOB-IEC |

#### H/ Supervision and monitoring

| Supervision visit from first level | MONITORING |
| Supervision visit from second level | MONITORING |
| Supervision visit from third level | MONITORING |
| Monitoring record book per facility per year (accounting wastage) | MONITORING |
| Vaccination tally sheet reporting forms per facility per year (accounting wastage) | MONITORING |
| Vaccination cards per HPV-1 (accounting for wastage) | MONITORING |
| Post Introduction Evaluation | MONITORING |

| Proportion of supervisory cost allocated to HPV vaccine | % MONITORING |

**Notes**
C4P Demo Collection form

I/ Cold chain (supplement)

| Number of supply/resupply shipments per year |
|---------------------------------------------|
| From intermediate stores to health facility |

| Estimate excess cold chain capacity available at each level | Estimate expenditure required to purchase additional space needed |
|-------------------------------------------------------------|---------------------------------------------------------------|
| Health facility level | cm³ | $US |

| Health facility level | $ | Useful life years for cold chain storage supplement |
|-----------------------|---|--------------------------------------------------|
| Health facility level | $ | Health facility equipment (assume refrigerator) |

J/ Other costs

List in the table below all additional recurrent costs per dose administered:

| Other recurrent cost item | Unit Cost (Financial) | Unit Cost (Economic) |
|---------------------------|-----------------------|----------------------|
| ...                       | ...                   | OTHER                |
| ...                       | ...                   | OTHER                |
| ...                       | ...                   | OTHER                |

List in the table below all additional Capital goods required for the demo project:

| Other Capital goods | # needed | Unit Cost (Financial) | Useful life years |
|---------------------|----------|-----------------------|-------------------|
| ...                 | ...      | ...                   | OTHER             |
| ...                 | ...      | ...                   | OTHER             |
| ...                 | ...      | ...                   | OTHER             |

Notes
Form 4: Micro planning and training activities - Detailed calculation

Use this form to detail the cost of micro planning, training and social mobilization (sensitization) events. Use a different form for each different event.

| Personnel (government and salaried staff only) | Category               | Cost item | # of Persons | # of Days | Unit cost |
|-----------------------------------------------|------------------------|-----------|--------------|-----------|-----------|
| Trainers & facilitators                       | Trainers              |           |              |           |           |
|                                               | Facilitators           |           |              |           |           |
| Resource personnel                            |                        |           |              |           |           |
| Support personnel                             |                        |           |              |           |           |
| Participants                                  |                        |           |              |           |           |

| Transport and travel cost items               | Category             | Cost item | # of Persons | # of Days | Unit cost |
|-----------------------------------------------|----------------------|-----------|--------------|-----------|-----------|
| Per diems                                     |                      |           |              |           |           |
| Transport allowances                          |                      |           |              |           |           |
| Other allowances                              |                      |           |              |           |           |

| Other direct cost items                       | Category             | Cost item | # of Rooms   | # of Nights | Unit cost |
|-----------------------------------------------|----------------------|-----------|--------------|-------------|-----------|
| External staff (contract hire)                |                      |           |              |             |           |
| Lodging                                       |                      |           |              |             |           |
| Hall rental                                   |                      |           |              |             |           |
| Meals                                         | Lunch                |           |              |             |           |
|                                               | Dinner               |           |              |             |           |
| Refreshments                                  | Morning break        |           |              |             |           |
|                                               | Afternoon break      |           |              |             |           |
| Supplies                                      | Daily supplies       |           |              |             |           |

| Course meeting materials                      | Category             | Cost item | # of Pieces  | # of Days  | Unit cost |
|-----------------------------------------------|----------------------|-----------|--------------|------------|-----------|

| Equipment (rental)                            | Category             | Cost item | # of Pieces  | # of Days  | Unit cost |
|-----------------------------------------------|----------------------|-----------|--------------|------------|-----------|

| Other (specify)                                | Category             | Cost item | # of Pieces  | # of Days  | Unit cost |
|-----------------------------------------------|----------------------|-----------|--------------|------------|-----------|
Appendix S2. Analytical expressions to compute the average: (1) cost per dose and (2) cost per fully-immunised girl (FIG)

**average cost per dose** = \( \Sigma (\text{introduction costs for the 1st year} + \text{recurrent costs} + \text{cold chain costs}) / \text{number of doses delivered}; \)

being:

- **introduction costs** = microplanning costs + training costs + IEC & social mobilization costs;
- **recurrent costs** = vaccine procurement cost + vaccine delivery cost + supervision & monitoring costs + other costs;

**average cost per FIG** =

\( \Sigma (\text{introduction costs for the 1st year} + \text{cold chain costs}) / \text{target population} + \Sigma \text{recurrent costs} / \text{number of FIG}; \)

being:

- **target population** = number of 10 years old girls in Manhiça district.
| Institution                      | Position                      | Contacted and interviewed | Contacted but not interviewed |
|---------------------------------|-------------------------------|---------------------------|------------------------------|
| CISM                            | Financial manager            | YES                       |                              |
| Manhiça District Hospital       | Medical technician           | YES                       |                              |
| Manhiça District Hospital       | Physician                    | YES                       |                              |
| Manhiça District Hospital       | Physician chief              | YES                       |                              |
| Direcção Distrital Educação Manhiça | Health promotion responsible | YES                       |                              |
| Ministry of Education           | Programas Especiais responsible | YES                      |                              |
| CMAM                            | Deputy director              | YES                       |                              |
| Ministry of Health              | Current EPI chief            | YES                       | YES                          |
| Ministry of Health              | Former EPI chief             |                           | YES                          |
| Ministry of Health              | Financial EPI head           | YES                       |                              |
| Ministry of Health              | Logistics EPI head           | YES                       |                              |
| Ministry of Health              | Data manager                 | YES                       |                              |
| Ministry of Health              | Supervisor in HPV demo       | YES                       |                              |
| Ministry of Health              | Supervisor in HPV demo       | YES                       |                              |
| Direcção Provincial Saúde Maputo | Provincial EPI responsible   | YES                       |                              |
| WHO                             | Involved in HPV project      | YES                       |                              |
| UNICEF                          | Involved in HPV project      | YES                       |                              |
| Village Reach                   | Involved in HPV project      | YES                       |                              |
| USAID                           | Involved in HPV project      |                           | YES                          |
| FDC                             | Involved in HPV project      | YES                       |                              |
Annex S4. Role of the programme partners

Role of the Ministry of Education

The District Directorate of Education (DDE) did not receive direct financial support from the Ministry of Health (MoH) to implement the human papillomavirus (HPV) programme in the district. In preparation for the campaign, its task consisted of coordinating the identification of 10-year-old girls with the support of the Centro de Investigação em Saúde de Manhiça (CISM). During this process, teachers used the girls name as personal identification and recorded the information in registration books at each school, censusing the target population. On the one hand, the school-based census allowed achieving the vaccination of almost all girls enrolled at school (table S2.1). On the other hand, this approach did not allow reaching out-of-school girls in the community. Manhiça DDE made an effort to actively participate in the capacity building, which took place prior to the start of each vaccination cycle and targeted at both health and education professionals. Discussions at central level resulted in the recommendation of cascade training targeting the Pedagogic Influence Zones, which were in total 17. One or two DDE representatives were supervising the course of the programme during 7 days (65 US$ per diem), implying the use of one car to travel to some of the schools in the district (average estimation of 32 US$ per return trip).

Table S2.1. Target girls and coverage for different rounds of vaccination

| Round 1 | Target girls | Girls vaccinated | Coverage |
|---------|--------------|-----------------|----------|
|         | 2,280        | 2,365           | 103.7    |
| Round 2 | 2,280        | 2,307           | 101.2    |
Round 3  
2,280  
2,276  
99.8

Note: 2,280 10-year-old girls enrolled at school (according to the school-based census) over an estimated total of 2,974 girls of 10 years of age in Manhiça district (according to the National Institute of Statistics).

The Ministry of Education (MoE) incurred no direct expenses but some resources were used during the HPV programme, considered in the analysis as economic costs. Three representatives of the MoE participated in microplanning, social mobilisation, training activities (as recipients of the district level training and as trainers at school level) prior to vaccine delivery. During the first week of the programme kick-off, the representatives moved to the district to supervise and support vaccination activities in coordination with the Manhiça District Directorate of Health.

Assuming an average per diem of 65 US$, for 3 representatives of the MoE and 7 days of work, a total of 1,365 US$ in resources were allocated to MoE staff by the demonstration program. Additional resources from the MoE included the use of a car during 7 days, implying an average per diem of 55 US$ for the driver and around 226 US$ of fuel (160 litres).

Role of Manhiça District Hospital

The key respondents at the Manhiça District Hospital confirmed that, among the 12 health facilities, 11 normally have at least three health professionals: an internist technician, a general nurse and a maternal health technician. One to two health professionals from each facility travelled to every school within the health facility’s catchment area to participate in Information, Education and Communication (IEC) and mobilisation activities and administer vaccines as part of the vaccine delivery activities. The same health professionals were responsible for the waste management at school and later in the health facility.
An average yearly wage of 4,785 US$ for each vaccinator (preventive medicine technician) was considered in the analysis. The team also included a responsible for school health promotion and one teacher to help organise the activities. The teacher brought the students to the area allocated for vaccination, confirmed their names, eligibility and presence, updated the registration book, as well as filled in and managed the vaccination cards.

The role of the Manhiça Health Research Centre (CISM)

Most of CISM activities concerned scientific evaluation of vaccine acceptability, coverage, practicality of reporting adverse events, programme costs and post-vaccine introduction evaluation. These included disease surveillance and monitoring (5,000 US$) and post introduction evaluation (9,000 US$). Additionally, CISM incurred in the evaluation of vaccine delivery strategy (7,000 US$), assessment of feasibility of integrating adolescent health programmes with HPV vaccine (10,000 US$), improvement of the national cervical cancer prevention and control strategy (10,000 US$), coverage survey (26,000 US$) and test HPV vaccine delivery with adolescent health interventions (25,000 US$). All monitoring and evaluation activities amounted to a total of 92,000 US$. These activities were not considered as programme costs as they remained outside the usual EPI vaccination activities. However, CISM supported activities of the Manhiça District Hospital with own funding, such as pre-testing IEC materials in Manhiça (transport, a fieldworker and refreshments for participants) and implementation (transport, personnel for vaccine delivery and social mobilisation), which did not receive funding from the programme and were considered economic costs.

Role of partner Non-Governmental Organisation (NGOs)
Two NGOs participated in the development of the HPV programme in Manhiça district. Village Reach (VR) focused their support at the provincial level, by providing human resources for the vaccine delivery. They spent 161 US$ on the mobilisation and other educational materials for the three districts where the initial programme was launched. They also supported advocacy work by contributing with 50% of per diems at provincial level for the personnel in charge of advocating activities.

The Foundation for the Development of the Community (FDC) was the collaborator of the MoH for community mobilisation activities including development and testing of IEC materials, training and mobilising the community to adhere to the campaigns. Their expenses were mainly funded by MoH (through the GAVI grant), but due to delays in reimbursements, some resources were used in advance by FDC to fulfil their IEC and mobilisation objectives. Their activities lasted 15 days in total and included more than 1 week developing and testing the IEC materials, 3 days of activists and radio actors training and 2 days of sensitisation at the community. Sixty people were involved in total and their work focused in Manhiça district, mainly Maluana, Xinavane, Manhiça and 3 de Fevereiro administrative posts. Supervision activities were initially considered but later dismissed due to budget cuts. A total of 7,184.57 US$ were spent in social mobilisation activities by FDC. From this amount, 5,371.61 US$ were considered financial costs transferred from MoH, while 1,812.96 US$ were incurred by FDC and not reimbursed by MoH (economic cost). Additional funds were available for communication materials reprint, airing of radio spots and dissemination of messages for the subsequent doses. These were not transferred to FDC and this activity became responsibility of MoH with the support of CISM.
Table S5. Number of schools and girls censed for vaccination

| Administrative Post | School               | 10-year-old girls (2004) | Censed girls for vaccination |
|---------------------|----------------------|---------------------------|-----------------------------|
| Municipio           | 1. EPC Manhiça       | 84                        | 34                          |
|                     | 2. Maragra           | 143                       | 47                          |
|                     | 3. Cambeve           | 37                        | 34                          |
|                     | 4. EP2 - Manhiça     | 34                        | 18                          |
|                     | 5. Maciana           | 109                       | 61                          |
|                     | 6. 7 de Abril        | 152                       | 143                         |
|                     | 7. Ribangua          | 72                        | 56                          |
|                     | 8. Chibututuine      | 37                        | 33                          |
|                     | 9. Timaquene         | 32                        | 5                           |
|                     | 10. Ribjene          | 15                        | 17                          |
|                     | 11. Machavanhane     | 22                        | 13                          |
|                     | 12. Machecane        | 4                         | 3                           |
|                     | 13. Chibucutso       | 37                        | 32                          |
|                     | 14. 24 de Julho      | 9                         | 6                           |
|                     | 15. Muboco           | 12                        | 10                          |
|                     | 16. Malungana        | 17                        | 13                          |
|                     | 17. Malangana        | 2                         | 4                           |
|                     | 18. Nhambi            | 9                         | 10                          |
|                     | 19. Magaba           | 7                         | 4                           |
|                     | 20. Swinhaquene      | 7                         | 3                           |
|                     | 21. Mitilene         | 18                        | 29                          |
|                     | 22. Mulembja         | 124                       | 84                          |
|                     | 23. Eduardo Mondlane  | 45                       | 48                          |
|                     | 24. Marista          | 18                        | 19                          |
|                     | **TOTAL Municipio**  | **1,046**                 | **726**                     |

| Maluana             | 25. Maluana          | 45                        | 50                          |
|                     | 26. Pateque          | 42                        | 35                          |
|                     | 27. Tavira           | 25                        | 25                          |
|                     | 28. Cuanine          | 41                        | 33                          |
|                     | 29. Munguine         | 50                        | 41                          |
|                     | 30. J. M. Cocolino   | 19                        | 11                          |
|                     | 31. Cantine          | 40                        | 37                          |
|                     | 32. Pembe            | 16                        | 7                           |
|                     | 33. Macandzene       | 8                         | 4                           |
|                     | 34. Barrica          | 14                        | 7                           |
|                     | 35. Serra            |                           | 25                          |
|                     | 36. Bunhe            | 1                         | 1                           |
|                     | 37. Xirindza         | 11                        | 13                          |
| TOTAL Maluana          |       |       |
|-----------------------|-------|-------|
| 38. EPC 9 de Fevereiro| 32    | 39    |
| 39. EPC Xinavane      | 32    | 32    |
| 40. Mepambe           | 101   | 65    |
| 41. Aguiar            | 39    | 33    |
| 42. Machambutana      | 30    | 30    |
| 43. Machambuiana      | 10    | 26    |
| 44. Mababe            | 6     | 3     |
| 45. Mataquenhane      | 11    | 12    |
| 46. Filipe S. Magaia  | 12    | 9     |
| 47. Vamagogo          | 24    | 12    |
| 48. Santa Rita        | 21    | 15    |

| TOTAL Xinavane        | 312   | 289   |

| TOTAL Xinavane        | 318   | 276   |

| TOTAL Calanga         | 110   | 127   |

| Illha Josina          |       |       |
|-----------------------|-------|-------|
| 71. Ilha Josina Machel| 63    | 42    |
| 72. Cutana            | 22    | 22    |
| 73. Mampsana          | 22    | 22    |
| 74. Marilampfuvo      | 12    | 12    |
| 75. Dzonguene         | 35    | 25    |
| TOTAL Ilha Josina | 76. 1o de Maio | 6 | 5 |
|------------------|---------------|---|---|
|                  | 160           |   | 128 |
| 3 de Fevereiro   | 77. Palmeira  | 98 | 64 |
|                  | 78. Manguendene | 99 | 74 |
|                  | 79. 3 de Fevereiro | 51 | 91 |
|                  | 80. Manchiana | 28 | 23 |
|                  | 81. Chicunguluine | 48 | 47 |
|                  | 82. Milalene | 43 | 49 |
|                  | 83. Taninga | 32 | 10 |
|                  | 84. Chicuachana | 69 | 43 |
|                  | 85. Lhanimane | 5 | 10 |
|                  | 85. Mirrone | 3 | 6 |
|                  | 87. Hunguana | 2 | 2 |
|                  | 88. Pfungurene | 12 | 11 |
|                  | 89. Tchelane | 28 | 20 |
|                  | 90. Melembe | 53 | 53 |
|                  | 91. Nhavambe | 1 | 1 |
|                  | 92. Condlana | 32 | 16 |
| TOTAL 3 de Fevereiro | 551 | 520 |

**TOTAL** 2,497 2,066

Note: There was a discrepancy between the 10-year-old girls censed by the Ministry of Education (2,497 in 2004) and the estimated by the National Institute of Statistics (2,974 in 2014). The number of primary schools was the same (92).
Table S6: Financial and economic costs of the alternative scenario (US$).

|                          | FINANCIAL COSTS | ECONOMIC COSTS |
|--------------------------|-----------------|----------------|
| **Introduction costs**   |                 |                |
| Microplanning and training | 2,484           | 6,232          |
|                          | 8.80%           | 7.10%          |
| Social mobilisation – IEC 2 | 3,101           | 3,653          |
|                          | 10.99%          | 4.16%          |
| **Subtotal introduction costs** | **5,585**       | **9,885**      |
|                          | **19.79%**      | **11.27%**     |
| **Recurrent costs**      |                 |                |
| Vaccine procurement      | 10,388          | 52,241         |
|                          | 36.81%          | 59.56%         |
| Service delivery         | 2,935           | 13,283         |
|                          | 10.40%          | 15.14%         |
| Supervision, monitoring & evaluation | 7,401           | 7,401          |
|                          | 26.22%          | 8.44%          |
| Other recurrent costs    | 1,914           | 1,914          |
|                          | 6.78%           | 2.18%          |
| **Subtotal recurrent costs** | **22,638**      | **74,839**     |
|                          | **80.21%**      | **85.32%**     |
| **Cold-chain supplement**|                 |                |
| **Subtotal cold-chain supplement** | **0**           | **2,994**      |
|                          | 0.00%           | 3.41%          |
| **Total costs**          | 28,223          | 87,718         |

1Introduction costs were annualised in 5 years and only the first year amount was attributable for the 2014 vaccination cycle.
2IEC: Information, Education and Communication.