Mapping Financial Flows for Immunisation in Uganda

2009/10 and 2010/11: New Insights for Methodologies and Policy

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1. Background

Uganda is a low-income country with a population of 34.5 million in 2011 [1]. The Ugandan Expanded Programme on Immunisation (UNEPI) achieved significant performance improvements in the early 2000's. However, performance stagnated after 2007 due to service delivery challenges and districts' varied success in achieving immunisation targets [2]. WHO reported a reduction in DTP3 coverage from 82% to 78% between 2011 and 2012 [3]. The Ugandan health care system is funded from public, external development partners and private sources [6, 24]. Per-capita health spending was reported to be \$10.29 in 2011/12, well below the estimated requirement of \$48 for a minimum health package [4, 5]. The Ugandan public financing management performance report (2008) found public sector financial management had generally credible budgeting processes but weak monitoring of

expenditures, budget execution and control, and only average accounting and reporting systems [28] with limited detail on specific programmes and illnesses. The review found that donor funding had poor predictability and provision of financial information, and low proportions were managed by government processes. Other sources also note difficulty in tracking funding, coordinating partner efforts, and ensuring that national health priorities are addressed [7, 4].

The Global Vaccine Plan (GVAP) emphasises the need to strengthen the understanding of costs and financing of country immunisation programmes [8]. Resource tracking through methods such as National Health Accounts (NHA) and National AIDS Spending Assessments (NASAs) can improve the efficiency of allocations and the predictability and sustainability of health financing [9, 10, 20]. Resource tracking for women and children's health is also being promoted to ensure that funding commitments are honoured and results measured [11]. Since 1998 the WHO-UNICEF Joint Reporting Form (JRF) has collected coverage and financial indicators from member states, including the percentage of all expenditures for routine vaccines financed by governments using internal public funds as compared to donor or other funding sources [19]. The Ugandan JFR for 2011 reported that 19% of routine vaccines were funded by the government of Uganda (GOU) [29]. Apart from the JRF, which in many cases tends to have limited reporting on financing indicators [19], there have been few resource-tracking efforts for routine immunisation (RI) funding and spending [12, 31]. In Uganda, the comprehensive multi-year plan (cMYP) estimated financing for the national immunisation programme at US\$23 per child in 2011 [13,2]. The cMYP provides national estimates but does not examine facility-specific data.

This paper presents a detailed mapping of all government and external funding flows for RI in Uganda in 2009/10 and 2010/11. The study was done as a companion analysis to the detailed facility-costing EPIC studies [30]. The objectives were to:

- Identify and quantify the total envelope of funding available for RI from all sources and evaluate the distribution of the envelope by line items, activity, and health providers.
- Map the funding flows from sources to the ultimate uses of those funds for RI.
- Evaluate differences between the funding envelope and estimated financial costs derived from a companion study [14].

2. Methods

The analysis identified financial and commodity flows for immunisation, and focused on disbursements and flows in 2009/2010 and 2010/2011. The rationale for focusing on funding flows is that they reflect the total funding envelope available for RI, whereas expenditures are a function of the efficiency and effectiveness of government and donor disbursement mechanisms [21]. This mapping represents an alternative way of tracking resource flows specific to RI, defined as facility and outreach-based services providing traditional vaccines,¹ but excluding supplementary immunisation activities (SIAs). Private, for-profit sector financing was

¹ BCG; 3 doses of pentavalent diphtheria, pertussis, tetanus, Hepatitis B, *Haemophilus Influenza* Type b; 3 doses of polio; and measles first dose.

also excluded. The methodology was adapted from the NHA approach that uses the System of Health Accounts (SHA) for coding financing sources, agent service providers, and health care functions / activities [20]. The 2011 SHA codes were further disaggregated for the Health Care Functions (HC6.2) to provide a common framework for analysis of immunisation-specific financial flows across the six EPIC countries [16]. (See Table 1.)

Data were collected from all government and external sources of immunisation financing or commodities in financial years 2009/10 and 2010/11 using a standardised questionnaire and methods developed for the EPIC studies [15]. The questionnaire was adapted from the NASA and NHA tools, and aimed to collect quantitative financing data linked to sources, agents, service providers and activities of immunisation². Data were analysed based on a matrix of immunisation activities and line items.

>> Table 1 here >>

The national-level analysis traces UNEPI funding from the ministry of health (MOH) for all national-level activities and EPI staff salaries, as well as for central vaccines funding. Disbursements to Uganda from the secretariat of the Global Alliance for Vaccines and Immunisation (GAVI) for vaccines were channelled through the national medical stores. Public financing for RI at the facility level includes staff salaries and MOH primary health care (PHC) grants to district health offices (DHOs), which cover overhead and operational items such as maintenance,

² Refer to supplementary materials for the questionnaire.

fuel, and supplies. These cater for all PHC services and it was not possible to track immunisation-specific funding apart from village health workers' outreach stipends. Therefore, total funding flows for salaries for district and facility-level RI activities were based on estimates obtained from the detailed costing [14] of a stratified random sample of 52 facilities in 12 districts conducted for the EPIC study in Uganda [30]. For salary and vaccine financing, 60% were allocated to routine facility-based immunisation and 40% to outreach, based on costing study estimates. Salary costs in 2009/10 were 2011 costs deflated by a CPI of 5% [22]. Data are reported using a 2011 exchange rate of 1 US dollar to 2290 Ugandan shillings (US \$1:2290 USh). Non-profit organisations that deliver RI services on behalf of the government receive vaccines free of charge from UNEPI, and data were not available on their service volumes or funding. The analysis consequently categorised them as public providers.

3. Results

Figure 1 shows that between 2009/10 and 2010/2011, total financing for RI in Uganda increased from \$24.2 million to \$32.9 million. In both years, the Ugandan government contributed approximately half of all financing (56.4% and 42.2%, respectively). Funding from the MOH for salaries at the district and the facility level accounted for the largest share of public financing for RI (49% of total spending in 2009/10 and 38% in 2010/11). Inter-governmental transfers at the central level accounted for the remainder of public funding for RI.

Development partners accounted for 43.6% of total RI financing in 2009/10 and 58% in 2010/11, with GAVI as the largest external contributor (\$7,962,874 in 2009/10 and \$12,540,610 in 2010/11). The expanding role of external financing in

2010/11 was thus due to increased GAVI funding (57% increase) and to a large injection of funds from the Japan International Cooperation Agency (JICA) for equipment to strengthen the RI cold chain before the introduction of the pneumococcal conjugate vaccine (PCV). The estimated real government contribution remained the same in both years, but decreased as a portion of the total due to the increasing external funding in 2010/11.

Figure 1 also illustrates some volatility of funding from various sources and in total financing for RI, suggesting potential challenges for both domestic resource mobilisation and management of donor financing.

>> Figure 1 here>>

Importantly, this study found that the public sector was responsible for managing 90.5% and 83% of total RI financing in the two years. In 2010/11, the national medical stores managed 41% of immunisation funding through the procurement and distribution of the vaccines (this included the GAVI contribution), while MOH managed 35% for facility-level salaries, and UNEPI managed 7% for its specific coordination, supervision, and support roles. JICA managed its own contribution of cold chain equipment (14%), as did most of the other external sources.

The study found that 93.4% of immunisation funding in 2010/11 was directed toward the service delivery level; the small remaining proportion was spent at the national level or by development partners. At the healthcare provider (HP) level, the bulk of financing was for provision of immunisation services by public entities: UNEPI, DHOs and facilities (Figure 2), including non-profit facilities that provided immunisation on behalf of the government (except for a few that received identifiable

funding from the Red Cross).

>>Figure 2 here>>

In terms of the health care function (activity), Table 2 shows that in 2009/10 and 2010/11, the largest proportion of funding went to routine facility-based immunisation (47% and 43%, respectively), and outreach immunisation (31% and 29%, respectively). Supervision, record keeping, cold chain maintenance, surveillance, training and social mobilisation amounted to 2% or less of the total in both years. However, this probably reflects the difficulty that respondents had in determining funding flows for programme functions, and that some of the non-disaggregated funding might relate to these activities.

>>Table 2 here>>

Table 2 further shows the factors of production, and that the majority of RI funding was for government salaries (49% and 38% in 2009/10 and 2010/11, respectively), followed by vaccines and supplies (37% and 42%, respectively) which were primarily the GAVI contribution and Uganda's co-financing for pentavalent vaccine. Investments in cold rooms by USAID and cold chain equipment by JICA, which are captured under capital investments, contributed almost 3% in 2009/10 and 13% in 2010/11. The non-disaggregated flows may include some financing for transport and per diem, but it was not possible to identify these details in a top-down mapping exercise.

4. Discussion

This study presents a comprehensive and rigorous mapping of funding for RI in Uganda, which identified a number of sources, quantified funding for human

resources, and – as far as was possible – identified the intended use of the funding for RI activities.

Important findings are that Uganda's government has been providing approximately 50% of total RI financing per year, mainly for health system costs (particularly salaries), as well as contributing to the vaccine costs. In addition, the government is managing the lion's share of resources. These findings may be important when assessing government ownership and leadership of the immunisation programme, and may have implications for sustainability and co-financing strategies.

There are not many similar immunisation-mapping studies for comparison, apart from the WHO-UNICEF JRF data which indicated that the Ugandan government contributed 19% of the vaccine costs in 2011 [29], but that obviously did not capture public spending on salaries. An analysis of financial sustainability plans found that, on average, governments in low-income countries financed 35% of immunisation, and that this percentage had not increased between 2000 and 2006 [17]. A study between 2004 and 2012 of 56 cMYPs from countries at all levels of income also found that governmental spending accounted for around 56% of total RI financing [18]. Another encouraging finding of the mapping was that the majority of funding (93.3%) was spent at the level of service delivery. The remainder, spent at the national level (6.6%) or by the development partners (0.1%), appears relatively small, but data are not yet available from other countries to confirm this.

Nevertheless, the mapping confirmed that development partners still play a key role in financing critical inputs, even before the introduction of new vaccines. GAVI financing for vaccines was pivotal, but other partners' catalytic funding enabled the overall immunisation system to function, including large non-routine expenditures

such as for cold chain equipment. The study also found some volatility in flows from different funding sources and in allocations to programme components, as well as the challenge of allocating flows to specific activities. This can lead to difficulties for both funders and managers in ensuring optimal resourcing of the programme.

Comparing the study results with the 2012-2016 cMYP's estimate of anticipated funding sources for 2011 [2] highlighted several issues. The mapping identified additional funders and provided a more comprehensive, updated view of off-budget contributions. (See Table 3.) Overall, actual mapped contributions in 2010/11 were only \$1.2 million (4%) higher than the cMYP estimate, partly due to the larger estimated government contribution to salaries, and the increased GAVI contribution. The other external sources, excluding the JICA contribution for cold chain equipment that was double what was anticipated by the cMYP (probably because the earlier year's commitment rolled over into 2010/11), were US\$4 million less than anticipated in the cMYP. This raises questions about reasons for shortfalls and their potential impact on RI and other PHC services.

The mapping exercise also highlighted the potential for mismatches between available resources and the estimated resource needs. The accompanying costing study [14, 30] estimated total Ugandan RI economic costs at \$40 million in 2011. Excluding the JICA capital investments from this mapping total, the actual available funds mapped were only US\$28 million, 29% less than was estimated to be necessary in 2011. However, direct comparisons have limitations; for example, the mapping methodology probably underestimated government funding, particularly on items such as transport, fuel, maintenance and vehicles at the district and facility levels, something that could not be readily identified from integrated primary health spending data. This is a common challenge in health sector resource tracking [20];

limited ability to track funding at decentralised levels and underfunding of these items was reported as a major hurdle for RI [23].

>>Table 3 here>>

The mapping also raises questions around sustainability of Uganda's plans to improve coverage, introduce new vaccines, and ensure system capacity for their delivery. The cMYP estimated that total RI resources requirements would increase by 200% by 2016, driven mainly by new vaccines, but also by most other activities, and by line items. This will require rapid increases in programme financing, well-coordinated funding flows and efficient programming of extra resources. For the foreseeable future, the sustainability of immunisation programmes seems likely to depend on increased partner funding combined with contributions from government. Advocacy efforts aimed at both donors and government will be important to ensure adequate funding, especially with possible reductions in global development assistance. Systematic assessment of the likely fiscal space to support the expanded immunisation is also desirable. The Ugandan government contribution to RI of just \$14 million was already equivalent to 9.3% of total government health funding in 2011, and there are also indications of pressure on public funding for health programmes and steadily increasing staff costs [4].

The Uganda study shows that further financial mapping is likely to be valuable for Uganda and other countries to quantify issues around changing funding needs, funding flows and gaps, and to track trends across more years. The study suggests the following for future immunisation resource tracking efforts:

- Full expenditure tracking and costing studies may be desirable, at least to establish baseline parameters and estimate public salary contributions, but these

223 may not be feasible in many countries. Therefore, mapping of financial flows may
224 often be a feasible and cost-effective way to provide priority information for planners,
225 managers and funders.

226 • Ideally, a single, routine system should accurately capture all funding
227 commitments and contributions from partners, and reconcile government reported
228 figures to plans and donor reports. It should be feasible to establish a system that
229 accurately records all substantial donations, their primary purposes, and actual
230 expenditures at each level of the health system. This is compatible with
231 recommendations for “compacts” between governments and partners to report on
232 commitments and expenditures for women and child health in each country [11], and
233 would allow for more accurate on-going assessment of levels and adequacy of
234 financing flows, as well as absorption bottlenecks [23].

235 • Both resource mapping studies and routine mapping systems will require
236 some extra resources. While no representative data on costs of such systems are
237 available, it is clear that, given the relatively small number of funding sources and
238 implementers of services for immunisation, mapping studies and systems will require
239 far smaller resources than NHAs and NASAs, especially if data collection becomes
240 routinized.

241 • Furthermore, countries’ experience in optimising approaches to routine data
242 collection and analyses for NASAs and NHAs, combined with the relative simplicity
243 of immunisation resource flows, may help to avoid some of the challenges
244 encountered by previous efforts to institutionalise health resource tracking [20].
245 These have mostly related to difficulties of working within poor public financial
246 information systems, particularly for tracking public health care spending related to
247 specific programmes or interventions.

• The SHA coding system provides a useful framework for collecting and analysing funding commitments and flows. However, the SHA codes required further disaggregation to be meaningful for analysing the components of the RI programme.

(See Table 1.)

• Consideration needs to be given to harmonising cMYP systems with financial information from partners and government at national and sub-national levels. The data collection may not yet be well co-ordinated or complete, hindering the analysis or interpretation for operational and planning decisions. Possible areas for review include cMYP financial classifications and clearer linkages between cMYP resource needs and financing projections.

• Further, detailed financing analyses of priority programmatic area and line items, as well as the identification of potential bottlenecks, delays and fund re-allocations, could enhance funding and programmatic efficiency.

• Other areas for further exploration include sub-national funding flows, and also funding related to non-governmental providers. In Uganda, an estimated 22% of private expenditure for child health is for non-curative services but there has been no assessment of their contribution to immunisation [6].

The resource mapping approach had limitations, although they are unlikely to affect its main conclusions. The analysis mapped funding allocations and did not track actual expenditures, or track funds down to district and service level. The mapping was thus not a full resource tracking and should also not be assumed to provide an accurate reflection of all actual consumed RI spending, which was not its primary intention. However, the identification of the large GAVI disbursement late in 2011 which was largely expended in 2012, illustrates the importance of

272 understanding differences between the approaches, as well as usefulness of multi-
273 year data to interpret mapping results and trends.

274 **5. Conclusion**

275 Results highlight that governments and partners need to improve systems to
276 routinely track immunisation financing flows for enhanced accountability,
277 performance, country ownership, co-funding decisions and sustainability.
278 Comparison of cMYP and mapping estimates of resource needs, gaps, and financing
279 flows showed some variation, particularly related to funding sources. These warrant
280 further assessment and monitoring to ensure key planning and activities function
281 optimally. Introducing new, expensive vaccines will involve large costs and increased
282 financial flows, and create new challenges to optimise financing. The modified SHA
283 coding developed here (see Table 1) could be used for standardised, NHA-
284 compatible resource tracking.

285 **Conflict of interest statement**

286 The authors declare that they have no competing interests.

287 **Author Declaration**

288 I wish to confirm that there are no known conflicts of interest
289 associated with this publication and there has been no significant financial
290 support for this work that could have influenced its outcome.

291 I confirm that the manuscript has been read and approved by me and
292 that there are no other persons who satisfied the criteria for authorship but are
293 not listed. I further confirm that the order of authors listed in the manuscript
294 has been approved by all of us.

295 I confirm that we have given due consideration to the protection of
296 intellectual property associated with this work and that there are no
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300 I understand that the Corresponding Author is the sole contact for the
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303 progress, submissions of revisions and final approval of proofs.

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References

- [1] Uganda Bureau of Statistics. Uganda Demographic and Health Survey: 2011. 2011. www.measuredhs.com
- [2] Ministry of Health, Republic of Uganda. Uganda National Expanded Programme on Immunisation Multi-Year Work Plan (2012-2016). 2012. Kampala.
- [3] WHO Best Estimates of Immunisation Coverage. http://www.who.int/immunisation/monitoring_surveillance/data/uga.pdf Last accessed April 25 2014.
- [4] Ministry of Health, Republic of Uganda. Annual Health Sector Performance Report 2012/13. 2013. Kampala. http://health.go.ug/docs/AHSPR_11_12.pdf Last accessed April 25 2014.
- [5] Ministry of Health, Republic of Uganda. Development of the Minimum Service Standards in Uganda's Health Sector Report prepared by HLSP. 2008. Kampala.
- [6] Ministry of Health, Republic of Uganda. National Health Accounts for the Financial Year 2008/09 and Financial Year 2009/10. General Health Accounts, Reproductive Health Sub-accounts and Child Health Sub-accounts. 2013. <http://health.go.ug/mohweb/> Last accessed April 25 2014.
- [7] Ministry of Health, Republic of Uganda. Statistical Report for 2010. 2011. Kampala.
- [8] World Health Organization Global Vaccine Action Plan: 2011–2020. 2013. Geneva.

- 339 [9] World Health Organization Global Health Expenditure Database. 2013.
340 <http://apps.who.int/nha/database> Last accessed April 25 2014.
- 341 [10] UNAIDS. National AIDS Spending Assessments: NASA country Reports.
342 [http://www.unaids.org/en/dataanalysis/knowyourresponse/nasacountryrep
343 \[orts/\]\(http://www.unaids.org/en/dataanalysis/knowyourresponse/nasacountryreports/\) Last accessed April 25 2014.](http://www.unaids.org/en/dataanalysis/knowyourresponse/nasacountryreports/)
- 344 [11] Commission on Information and Accountability for Women's and
345 Children's Health. Keeping Promises, Measuring Results. 2011.
346 [http://www.everywomaneverychild.org/resources/accountability-
347 \[commission/implementing-recommendations.\]\(http://www.everywomaneverychild.org/resources/accountability-commission/implementing-recommendations\) Last accessed April 25
348 2014.](http://www.everywomaneverychild.org/resources/accountability-commission/implementing-recommendations)
- 349 [12] Brenzel L. Immunisation Resource Tracking Exercise: Case Study of the
350 Republic of Tajikistan. 2008. World Bank. Washington, D.C.
- 351 [13] World Health Organization. Immunisation Costing & Financing: A Tool
352 and User Guide for comprehensive Multi-Year Planning (cMYP). 2008.
353 Geneva, Switzerland.
- 354 [14] Guthrie T, Zikusooka C, Kwesiga B, Abewe C, Lagony C, Schutte C,
355 Marinda E, Humphreys K, Nombewu C, Motlogelwa K, Kinghorn A.
356 Technical Report: Costing and Financing Analyses of Routine
357 Immunisation in Uganda. 2014. Bill and Melinda Gates Foundation.
358 Seattle.
- 359 [15] Brenzel L. Common Approach to Estimating the Costs and Financing for
360 Routine Immunisation. 2013. Bill and Melinda Gates Foundation.
361 *Mimeograph.*
- 362 [16] World Health Organization. System of Health Accounts (SHA). 2011.
363 Geneva, Switzerland.

- 364 [17] Lydon P, Beyai PL, Chaudhri I, Cakmak N, Satoulou A, Dumolard L.
365 Government Financing for Health and Specific National Budget Lines: the
366 Case of Vaccines and Immunisation. *Vaccine* 2008;26:6727-6734.
- 367 [18] Brenzel L, Politi C. Historical Analysis of the Comprehensive Multi-Year
368 Plans in GAVI-Eligible countries (2004 - 2015). Mimeograph. World
369 Health Organization.
370 http://www.who.int.2012/immunisation_financing/analysis/Historical_cMY
371 [P_Analysis_2012.pdf](http://www.who.int.2012/immunisation_financing/analysis/Historical_cMY_P_Analysis_2012.pdf)
- 372 [19] WHO & UNICEF, 2004. Analysis of the Vaccine Financing Indicators
373 (Joint Funding Report).
374 http://www.who.int/immunisation/monitoring_surveillance/routine/reporting
375 [/immunisation_financing_2004.pdf?ua=1](http://www.who.int/immunisation/monitoring_surveillance/routine/reporting/immunisation_financing_2004.pdf?ua=1)
- 376 [20] Powell-Jackson T & Mills A. 2007. A review of health resource tracking in
377 developing countries. *Health Policy Plan.* (2007) 22 (6): 353-362.
- 378 [21] Bijleveld P. 2013. Resource Mapping as an essential tool to support
379 comprehensive health financing approach. CHAI. [http://www.hha-](http://www.hha-online.org/hso/system/files/8.18.03.2013_pascal_bijleveld_resource_mapping.pdf)
380 [online.org/hso/system/files/8.18.03.2013_pascal_bijleveld_resource_ma](http://www.hha-online.org/hso/system/files/8.18.03.2013_pascal_bijleveld_resource_mapping.pdf)
381 [pping.pdf](http://www.hha-online.org/hso/system/files/8.18.03.2013_pascal_bijleveld_resource_mapping.pdf)
- 382 [22] Trading Economics & Uganda Bureau of Statistics, 2013. Uganda's
383 Historical Inflation Rates. www.tradingeconomics.com
- 384 [23] Guthrie T, Muheki Zikusooka C, O'Connell T, Kwesiga B, Abewe C,
385 Lagony S, Kanoowe S, Mayanja R. 2014. Addressing sub-national
386 financial bottlenecks for immunisation services: Piloting a rapid
387 assessment approach. UNICEF Working Paper Maternal, Newborn and
388 Child Health: June 2014.

- 389 [24] Zikusooka C M, Kyomuhang R, Orem J N, Tumwine M. 2009. Is health
390 care financing in Uganda equitable? African Health Sciences 2009;
391 9(S2):S52-S58. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2877292/>
- 392 [25] Ministry of Health, the Republic of Uganda. 2013. National Health
393 Accounts: FY 2008/09 and FY 2009/10.
- 394 [26] WHO, 2012. World Health Report 2012: No Health Without Research.
395 <http://www.who.int/whr/previous/en/>
- 396 [27] Ministry of Health, the Republic of Uganda. 2010. Health Financing
397 Review: 2009/10.
398 http://www.who.int/health_financing/documents/hsfr_e_10-uganda.pdf?ua=1
- 399 [28] Republic of Ugandan, 2009. Public Finance Management Report (2008).
- 400 [29] WHO. 2014. WHO vaccine-preventable diseases: monitoring system:
401 2014 global summary.
402 [http://apps.who.int/immunisation_monitoring/globalsummary/countries?co](http://apps.who.int/immunisation_monitoring/globalsummary/countries?countrycriteria[country][]=UGA&commit=OK)
403 [untrycriteria\[country\]\[\]=UGA&commit=OK](http://apps.who.int/immunisation_monitoring/globalsummary/countries?countrycriteria[country][]=UGA&commit=OK)
- 404 [30] Brenzel L, Young D, Walker DJ. 2015. Costs and Financing of Routine
405 Immunisation: Approach and Selected Findings of a Multi-Country Study
406 (EPIC). Vaccine 2015. In press.
- 407 [31] Valdez W, Janusz CB and Resch S. 2015. Tracking financial flows for
408 immunisation in Honduras. Vaccine 2015. In press.

TABLES - UGANDA

Table 1: Additional Disaggregated SHA Health Care Function Codes for Immunisation Mapping
in Uganda

HC.CODE	HC.Description
HC.1	Curative care
HC.6	Preventive care
HC.6.1	Information, education and counseling programmes
<i>HC.6.1.1</i>	<i>Social mobilisation, advocacy</i>
HC.6.2	Immunisation programmes (not disaggregated)
<i>HC.6.2.1</i>	<i>Facility-based routine immunisation service delivery</i>
<i>HC.6.2.2</i>	<i>Outreach routine immunisation service delivery</i>
<i>HC.6.2.3</i>	<i>Training</i>
<i>HC.6.2.4</i>	<i>Vaccine collection, storage and distribution</i>
<i>HC.6.2.5</i>	<i>Cold chain maintenance</i>
<i>HC.6.2.6</i>	<i>Supervision</i>
<i>HC.6.2.7</i>	<i>Programme management</i>
<i>HC.6.2.8</i>	<i>Other routine immunisation programme activity</i>
HC.6.5	Surveillance
<i>HC.6.5.1</i>	<i>EPI Surveillance</i>
<i>HC.6.5.2</i>	<i>Record-keeping and HMIS</i>
HC.7	Governance and health system financing & admin.
HC.99	Not disaggregated
HC.RI.3	Prevention and public health services
HC.RI.3.3	Prevention of communicable diseases
Cap.Invstmt.	Capital Investment

** The inserted dis-aggregated activities are shown in italics.*

Table 2: Routine Immunisation Funding in Uganda by Activity and Factors of Production (2009/10 and 2010/11), US\$

US\$ (2009/10)	Immunisation Activity (Healthcare)													
Line items (Factors of Production)	Facility-based routine service delivery	Outreach routine service delivery	Program management	Record keeping & HMIS	Social mobilisation & advocacy	Super-vision	Surveil-lance	Training	Vaccine collection, storage & distrib.	Not disag-gregated	Cold chain maintnce	Capital investmt	Grand Total	% by Line item
Wages & salaries												684 629	684 629	2.8%
Vaccines & other goods	6 844	19 760	283 145		172 435	139 421	183 299	402 154		1 300 307	78 496		2 585 860	10.7%
Cold chain equipment						14 446	39 411						53 857	0.2%
Transport	4 691		60 731	2 809									68 231	0.3%
Per diem	5 371 111	3 580 741							6 266				8 958 118	37.1%
Not disaggregated*	5 962 705	3 975 137	1 872 315										11 810 157	48.9%
Grand Total	11 345 352	7 575 638	2 216 191	2 809	172 435	153 867	222 709	402 154	6 266	1 300 307	78 496	684 629	24 160 851	100%
% of Total Healthcare	47.0%	31.4%	9.2%	0.0%	0.7%	0.6%	0.9%	1.7%	0.0%	5.4%	0.3%	2.8%	100.0%	
US\$ (2010/11)	Immunisation Activity (Healthcare)													
Line items (Factors of Production)	Facility-based routine service Delivery	Outreach routine service delivery	Program management	Record keeping & HMIS	Social mobilisation & advocacy	Super-vision	Surveil-lance	Training	Vaccine collection, storage & distrib.	Not disag-gregated	Cold chain maintnce	Capital investmt	Grand Total	% by Line item
Wages & salaries												4 374 936	4 374 936	13.3%
Vaccines & other goods			203		44 017	43 323		178 993		1 566 483			1 833 020	5.6%
Cold chain equipment			403 371				70 742						474 113	1.4%
Per diem			34 061										34 061	0.1%
Maintenance	8 300 219	5 365 589											13 665 808	41.5%
Transport											191 378		191 378	0.6%
Not disaggregated*	6 276 532	4 184 355	1 876 149										12 337 036	37.5%
Grand Total	14 576 751	9 549 944	2 313 784		44 017	43 323	70 742	178 993		1 566 483	191 378	4 374 936	32 910 352	100.0%
% of Total Healthcare	44.3%	29.0%	7.0%	0%	0.1%	0.1%	0.2%	0.5%	0%	4.8%	0.6%	13.3%	100.0%	

* Where details of functions or line items were not available, funding was categorized as “not disaggregated”. HMIS: Health Management Information System

Table 3: cMYP Financing Estimates vs Mapping Funding Sources, Uganda (2010/11, US\$)

	cMYP Finance Estimates	Study Mapping Estimates	Variance Between cMYP & Mapping	
Funding Sources:	2011 (US\$)	2010/11	2011	%
Central Government	8 437 918	12 738 948	4 301 029	51%
District Local Government	3 587 818	1 160 718	-2 427 100	-68%
UNICEF	3 423 584	977 401	-2 446 182	-71%
PATH *	653 617		-653 617	-100%
WHO	1 584 167	782 344	-801 823	-51%
GAVI	11 746 006	12 540 611	794 605	7%
JICA	2 283 654	4 566 313	2 282 659	100%
TOTAL	31 716 763	32 910 352	1 193 588	4%

* USAID/ PATH contributed in 2009/10 but not 2010/11. JICA: Japan International Cooperation Agency.

Figure 1: Sources and Percent of Contribution of Routine Immunization Financing in Uganda 2009/10 and 2010/11 (\$ millions and %)

USG: United States Government. AFENET: African Field Epidemiology Network. RCS: Red Cross Society. JICA: Japan International Cooperation Agency.

Figure 2: Allocation of Routine Immunisation Financing to Providers in Uganda (2009/10 and 2010/11, US\$ millions)

*UNEPI: Ugandan Expanded Programme for Immunisation.

ABSTRACT

Mapping Financial Flows for Immunisation in Uganda 2009/10 and 2010/11: New Insights for Methodologies and Policy

Background: The Global Vaccine Action Plan highlights the need for immunisation programmes to have sustainable access to predictable funding. A good understanding of current and future funding needs, commitments, and gaps is required to enhance planning, improve resource allocation and mobilisation, and to avoid funding bottlenecks, as well as to ensure that co-funding arrangements are appropriate. This study aimed to map the resource envelope and flows for immunisation in Uganda in 2009/10 and 2010/11.

Methods: To assess costs and financing of immunisation, the study applied a common methodology as part of the multi-country Expanded Program on Immunization Costing (EPIC) study (Brenzel *et al.*, 2015). The financial mapping developed a customised extension of the System of Health Accounts (SHA) codes to explore immunisation financing in detail. Data were collected from government and external sources. The mapping was able to assess financing more comprehensively than many studies, and the simultaneous costing of routine immunisation collected detailed data about human resources costs.

Results: The Ugandan government contributed 56% and 42% of routine immunisation funds in 2009/10 and 2010/11, respectively, higher than previously estimated, and managed up to 90% of funds. Direct delivery of services used 93% of the immunisation financial resources in 2010/11, while the *above* service delivery costs were small (7%). Vaccines and supplies (41%) and salaries (38%) absorbed most funding. There were differences in the key cost categories between actual resource flows and the estimates from the comprehensive multi-year plan (cMYP).

Conclusions: Results highlight that governments and partners need to improve systems to routinely track immunisation financing flows for enhanced accountability, performance, and sustainability. The modified SHA coding allowed financing to be mapped to specific immunisation activities, and could be used for standardized, resource tracking compatible with National Health Accounts (NHA). Recommendations are made for refining routine resource mapping approaches.

Keywords:

Financial flows, mapping, resource tracking, immunization, donors, Uganda