

# The UN Commission on Life Saving Commodities 3 years on: global progress update and results of a multicountry assessment



Paul M Pronyk, Bennett Nemser, Blerta Maliqi, Nora Springstubb, Diana Sera, Rouslan Karimov, Elizabeth Katwan, Benedicte Walter, Pascal Bijleveld, for the UNCoLSC Technical Resource Teams, UN Agency Leads, and UNCoLSC Monitoring and Evaluation Advisory Group\*



## Summary

**Background** In September, 2012, the UN Commission on Life Saving Commodities (UNCoLSC) outlined a plan to expand availability and access to 13 life saving commodities. We profile global and country progress against these recommendations between 2012 and 2015.

**Methods** For 12 countries in sub-Saharan Africa that were off-track to achieve the Millennium Development Goals for maternal and child survival, we reviewed key documents and reference data, and conducted interviews with ministry staff and partners to assess the status of the UNCoLSC recommendations. The RMNCH fund provided short-term catalytic financing to support country plans to advance the commodity agenda, with activities coded by UNCoLSC recommendation. Our network of technical resource teams identified, addressed, and monitored progress against cross-cutting commodity-related challenges that needed coordinated global action.

**Findings** In 2014 and 2015, child and maternal health commodities had fewer bottlenecks than reproductive and neonatal commodities. Common bottlenecks included regulatory challenges (ten of 12 countries); poor quality assurance (11 of 12 countries); insufficient staff training (more than half of facilities on average); and weak supply chains systems (11 of 12 countries), with stock-outs of priority commodities in about 40% of facilities on average. The RMNCH fund committed US\$175.7 million to 19 countries to support strategies addressing crucial gaps. \$68.2 million (39.0%) of the funds supported systems-strengthening interventions with the remainder split across reproductive, maternal, newborn, and child health. Health worker training (\$88.6 million, 50.4%), supply chain (\$53.3 million, 30.0%), and demand generation (\$21.1 million, 12.0%) were the major topics of focus. All priority commodities are now listed in the WHO Essential Medicines List; appropriate price reductions were secured; quality manufacturing was improved; a fast-track registration mechanism for prequalified products was established; and methods were developed for advocacy, quantification, demand generation, supply chain, and provider training. Slower progress was evident around regulatory harmonisation and quality assurance.

**Interpretation** Much work is needed to achieve full implementation of the UNCoLSC recommendations. Coordinated efforts to secure price reductions beyond the 13 commodities and improve regulatory efficiency, quality, and supply chains are still needed alongside broader dissemination of work products.

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## Introduction

The Every Woman Every Child (EWEC) movement was established in 2010 by the UN Secretary General to address the major health challenges facing women and children around the world.<sup>1</sup> Under this umbrella, the first Global Strategy for Women's and Children's Health was launched as a roadmap to enhance financing, strengthen policy, and improve service delivery for the most vulnerable women and children. It drew attention to the estimated 8 million children dying of preventable causes each year and the

350000 women dying of complications related to pregnancy and childbirth.<sup>2</sup>

Persistent gaps in availability of and access to life saving commodities (medicines and medical devices) were identified as major obstacles to achieving universal basic health care for pregnant women and children.<sup>3</sup> Estimates suggested that, across low-income countries, just a third to half of children received basic drugs to treat childhood diarrhoea and pneumonia (appendix). Similarly, only a third of women received appropriate management for the major causes of maternal death:

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\*Listed at the end of the report

Unicef, New York, NY 10017, USA (P M Pronyk PhD, B Nemser MPH, N Springstubb MPH, D Sera MPA, R Karimov MSc, B Walter MPhil, P Bijleveld MBA); World Health Organization, Geneva, Switzerland (B Maliqi PhD); and ALMA2030, New York, NY 10020, USA (E Katwan MPH)

Correspondence to: Paul M Pronyk, Unicef, 3 United Nations Plaza, New York, NY 10020, USA [ppronyk@unicef.org](mailto:ppronyk@unicef.org)

See Online for appendix

**Research in context**

**Evidence before this study**

Original coverage estimates for the 13 life saving commodities and related reproductive, maternal, newborn, and child health (RMNCH) interventions identified in the UNCoLSC report were generated using the Lives Saved Tool for 49 countries of the world with the lowest income plus India (appendix). Evidence on potential systemic bottlenecks influencing coverage such as regulatory hurdles, supply chain weakness, or training gaps are partial and fragmented. This evidence exists in non-standardised formats at the country level and includes policy documents, essential medicines lists, treatment guidelines, health facility assessments, and routine performance monitoring platforms such as health and logistics management information systems.

**Added value of this study**

This multicountry assessment used the conceptual framework implicit in the UNCoLSC recommendations to systematically track the 13 priority RMNCH commodities across the continuum—from manufacturing through to utilisation and

coverage for the post-2012 period. We generated a standardised set of indicators for each recommendation, drawing from the range of best-available data sources outlined above. Country-level bottlenecks that were identified through this process informed the prioritisation and financing of national RMNCH plans. Challenges identified across multiple countries informed evolving global efforts.

**Implications of all the available evidence**

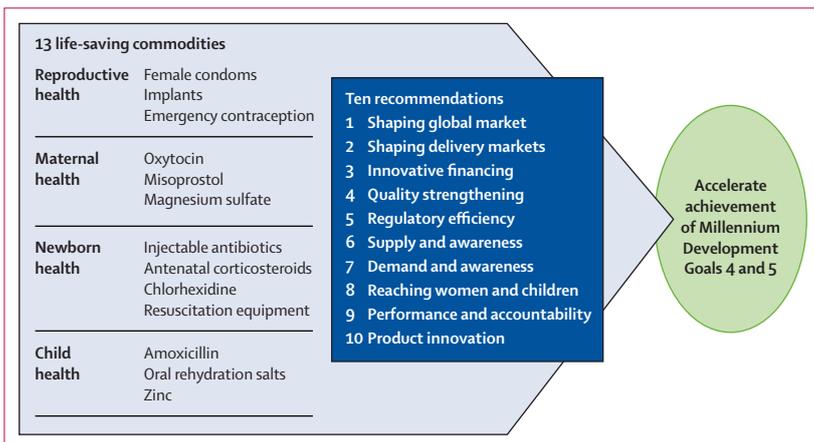
Much needs to be done to achieve full implementation of the UNCoLSC recommendations. Coordinated global action will be required to enhance market shaping, secure price reductions, improve regulatory efficiency, enhance the quality and safety of medicines, and strengthen supply chains. Translation of the latest evidence, tools, and best-practice materials developed through the UNCoLSC and related global initiatives to the country level will require robust and sustained technical assistance. Further harmonisation and alignment of RMNCH monitoring tools and systems is essential.

eclampsia and post-partum haemorrhage. For newer commodities such as implantable contraceptives, zinc for diarrhoea, and intravenous antibiotics for sepsis in newborns, coverage levels were near zero (appendix).

A series of global consultations in 2011 explored strategies to overcome crucial gaps. Barriers included the paucity of affordable products and age-appropriate formulations; weak supply chains; inadequate regulatory capacity; and little awareness of where, when, and how to use essential medicines and medical devices.<sup>4</sup> Establishment of a high-level commission was recommended as a mechanism to synthesise technical evidence and identify innovative actions to rapidly increase availability, access, and rational use of key commodities.

The UN Commission on Life Saving Commodities (UNCoLSC) launched its Report<sup>3</sup> and Implementation Plan<sup>5</sup> in September, 2012, highlighting 13 underused, low-cost, and high-impact commodities across reproductive, maternal, newborn, and child health (RMNCH) that if implemented at scale could make the greatest impact in reducing preventable deaths. The report included ten recommendations for addressing key systemic bottlenecks, including strategies to shape global and local markets; improve regulatory efficiency; enhance medicine quality and safety; strengthen supply chains; improve health worker performance; augment demand; and stimulate product innovation (figure 1). The commodities provided a concrete and actionable focus for efforts across this continuum, acting as tracers to help identify and address barriers to effective intervention delivery.

To advance this agenda, a steering committee was established to draw together stakeholders throughout RMNCH with the aim of enhancing coordination between UN agencies, partner organisations, programmes, and countries. To accelerate implementation, direct technical and financial support was provided to a subset of EWEC countries selected on the basis of being off-track to achieve the Millennium Development Goals for maternal and child survival. Building on International Health Partnership principles,<sup>6</sup> an RMNCH country engagement process was initiated that included a joint, rapid multistakeholder synthesis of the existing plans and subplans relevant to a particular country context; a prioritisation process, based on the RMNCH situation analysis, the burden of disease, and specific programmatic and financial gaps across the RMNCH continuum of care; and the commitment of development



**Figure 1: UNCoLSC recommendations to improve access to 13 life saving commodities**  
UNCoLSC=UN Commission on Life Saving Commodities.

	Commodity or systems related	Bottleneck definition
<b>RMNCH coordination*</b>		
Coordination mechanism	Systems	A national coordination mechanism that fulfils three or fewer of the following criteria: membership with a diverse representation, under the leadership of a government agency, has a terms of reference specifying activities to be carried out, meets at least twice per year, or has meeting minutes available
RMNCH plan costed and budgeted	Systems	A national RMNCH plan that does not fulfil one of the criteria: costed interventions, subnational level detail, or identifies funding sources or budget allocation for the costed interventions
Commodity security strategy	Systems	A national RMNCH commodity security strategy that does not cover commodities across all RMNCH service delivery areas or has not been approved by the Ministry of Health
<b>Innovative financing</b>		
Results-based financing mechanism	Systems	A result-based financing programme that includes life saving commodities is piloted only in select areas or is non-existent
<b>Regulatory efficiency</b>		
National EML	Commodity	Commodity is not included on the EML within context-appropriate formulation
National treatment guidelines	Commodity	National treatment guideline that is unclear or has significant deviations from up-to-date WHO guidelines
Registered in-country	Commodity	Commodity without at least one brand fully registered in-country under any formulation
Prescription authority	Commodity	For oral rehydration solution, zinc, amoxicillin, emergency contraceptives, and female condoms: commodity is not authorised for distribution by community health workers or private sector vendors without a prescription For all other commodities, commodity is not authorised for distribution at the primary health-care facility
<b>Quality strengthening</b>		
Good manufacturing practices-accredited manufacturers	Systems	Valid good manufacturing practices accreditation is not required for both domestic and international public sector procurement of RMNCH commodities
National medicines control laboratory	Systems	No national medicines control laboratory is certified by any standard accreditation agency
Medicine quality monitoring	Systems	A medicine quality monitoring system that does not fulfil all of these criteria: medicines are sampled from all levels of the health system, sampling and testing take place regularly, and regulatory action has been taken as a result of findings in the last 12 months
Patient safety monitoring (pharmacovigilance)	Systems	A patient safety monitoring (pharmacovigilance) system that does not fulfil one of these criteria: active with at least 20 suspected adverse drug reactions reported in the last 12 months, regulatory action has been taken as a result of findings in the last 12 months
<b>Supply and awareness</b>		
Forecasting tools	Systems	Forecasting tools for RMNCH commodities and devices that are not used annually or do not use at least two of three data methods (consumption-based, morbidity, health services)
Comprehensive national eLMIS	Systems	A national eLMIS that does not fulfil one of the criteria: automatically compiles and aggregates information; provides updated information at least once per month; tracks RMNCH commodity availability and distribution from first point of warehousing to the health facility
Supply chain training to districts	Systems	Training in supply chain management has not been deployed to all public sector district-level health facilities
Tracked in eLMIS	Commodity	Commodity-specific availability is not tracked from first point of warehousing to health facility by an electronic logistics management information system
National level stock-outs	Commodity	A stock-out of the commodity occurred at national level in the past 12 months
Stock-out in health facilities	Commodity	More than 20% of health facilities (eg, point-of-service locations) had a stock-out of the commodity at time of assessment
<b>Performance and accountability</b>		
Training curricula (national)	Commodity	For the respective service area, national level in-service training curriculum is unclear or has substantial deviations from up-to-date WHO guidelines
Recent training at health facilities	Commodity	For the respective service area, more than 40% of health facilities did not have a health worker who has been recently trained (within the past 1–2 years based on data source)
Job aids or check lists (national)	Commodity	For the respective service area, national level job aids or checklists are unclear or have significant deviations from up-to-date WHO guidelines
Job aids or checklists at health facilities	Commodity	For the respective service area, more than 40% of health facilities did not have relevant job aids or checklists at time of assessment
<b>Reaching women and children</b>		
Policy against user fees	Commodity	For the respective service area, national policy regarding user fees does not meet all of the following criteria: covers all costs related to life saving commodities (eg, not a sliding scale), covers both life saving commodities and related services, and covers all relevant populations and levels of care
<b>Demand and utilisation</b>		
Demand generation	Systems	The national RMNCH plan does not include costed demand generation or behaviour change initiatives for RMNCH
Coverage rate	Commodity	For family planning commodities: less than 15% of affected population receive treatment with appropriate life saving commodity For all other commodities: less than 60% of affected population receive treatment with appropriate life saving commodity

RMNCH= reproductive, maternal, newborn, and child health. UNCoLSC=UN Commission on Life Saving Commodities. EML=Essential Medicines List. eLMIS=electronic logistics management information system.  
\*RMNCH Coordination is a performance indicator but not a UNCoLSC recommendation.

**Table 1: Definitions of UNCoLSC system-related and commodity-specific bottleneck indicators**

partners to support implementation of prioritised interventions, under Ministry leadership. Although the potential range of support was broad and country-driven, the commodity focus of UNCoLSC remained central to help identify, prioritise, and track progress against key bottlenecks. A Strategy and Coordination Team comprised of representatives of WHO, the United Nations Population Fund, and UNICEF worked as a secretariat to help with implementation of these efforts.

In summary, three main strategies were introduced to further the UNCoLSC recommendations: an RMNCH situation analysis across a range of countries to systematically identify commodity-related and systems-related bottlenecks, a country engagement process to provide technical and financial support to national RMNCH plans, and a network of technical resource teams to address global bottlenecks and support country implementation.

This Article reviews progress against these strategies in the 3 years since the UNCoLSC report. With the 2015 launch of the updated Global Strategy for Women's, Children's and Adolescents' Health<sup>7</sup> and new Global Financing Facility,<sup>8</sup> which aim to reduce preventable

deaths and improve the quality of life for women, children, and adolescents until 2030, we describe how lessons learned through implementing the UNCoLSC recommendations should inform this ambitious agenda.

**Methods**

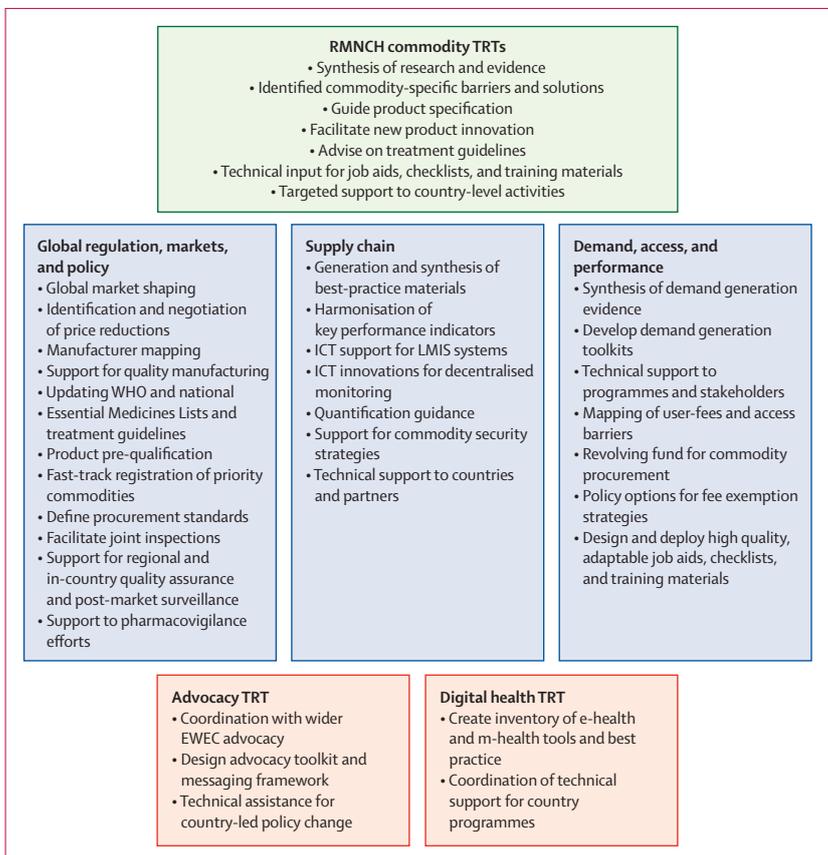
**RMNCH situation analysis**

We did an RMNCH situation analysis in 12 of the 19 countries that received grants from the RMNCH trust fund in sub-Saharan Africa. The remaining six countries were recent fund recipients, with the timing of the situation analysis at the discretion of national ministries. Between January, 2013, and September, 2015, we collected data from the Democratic Republic of Congo, Cameroon, Ethiopia, Kenya, Malawi, Mali, Nigeria, Senegal, Sierra Leone, Tanzania, Uganda, and Zambia.

The situation analysis relied on maximising the use of existing data sources across RMNCH, which included a review of the latest information from national strategic plans, essential medicine and medical device lists, training materials, and other related documents. Where available, we compiled aggregated indicators from nationally representative health facility assessments or health and logistics management information systems, alongside the most recent population-based survey data. We conducted semi-structured interviews with programme managers, procurement and regulatory agencies, and local experts to verify and complement the data sources. Assessments were done in each country over a 1–2 week period by a trained RMNCH facilitator supported by the RMNCH Strategy and Coordination Team in collaboration with ministries, UN country teams, and relevant partners. After each assessment, the RMNCH Strategy and Coordination Team helped with quality assurance procedures, analysis, and content reviews in collaborating organisations.

Before conducting the situation analysis, we undertook a standardisation process to generate a core set of indicators with clear performance thresholds. We used the UNCoLSC framework to inform the choice of indicators, highlighting systemic and commodity-related bottlenecks at each level of the health-care system (table 1). Standard performance ranges (from 1, weakest, to 5, strongest) were defined for each indicator in consultation with the global network of UNCoLSC technical resource teams to show differences in systemic and programmatic conditions (appendix). During each country assessment, we compared results of structured question sets with the standard performance cutoffs to generate categorical performance scores (from 1, weakest, to 5, strongest). These scores produced a standard rating that could be compared over time and across countries. A bottleneck is defined as moderate-to-weak performance for a particular indicator (see table 1 for indicator-specific definitions).

We entered results into a relational database (MS Access, Microsoft, 2013), processed the results (R version 3.2.0, 2015), and uploaded the data to a web-based



**Figure 2: UNCoLSC technical resource teams and areas of work**

UNCoLSC=UN Commission on Life Saving Commodities. TRT=technical resource team. EWEC=Every Woman Every Child. ICT=information and communication technologies. LMIS=logistics management information system. RMNCH=reproductive, maternal, newborn, and child health. e-health=electronic health. m-health=mobile health.

platform. A dashboard was created to provide visual representation of bottlenecks across RMNCH for a single or several countries. Detailed descriptions of methods and performance ratings are provided in the appendix.

### RMNCH country engagement process

We monitored country progress in several ways. A representative of the RMNCH Strategy and Coordination Team supported the country engagement process, and formally documented the process using a range of purpose-based tools and systems that articulated the prioritised RMNCH plan, costs, and resource contributions from domestic and partner sources. The UNCoLSC commodity and recommendation area coded budgeted activities from the RMNCH fund grants. Country teams reported 6-monthly progress by use of standard templates, with periodic country visits in many cases.

### Progress against global milestones

Global efforts to advance the UNCoLSC mandate were the responsibility of a network of technical resource teams, who addressed cross-cutting challenges that

required coordinated global action, which included priorities and targets outlined in the UNCoLSC 2012 report and a wider range of related activities.

About 450 experts from 85 organisations established nine thematic teams: four focusing on commodity areas (one each for the RMNC components), three focusing on systemic areas (global regulation, markets, and policy; supply chain; and demand access and performance); and two cross-cutting themes of digital health and advocacy. An interagency review panel reviewed work plans for each team. Figure 2 profiles each team and related work stream.

Progress against key milestones was documented through a range of methods including: monthly coordination calls, biannual global meetings, an annual workplan reporting against specific objectives, and a synthesis of relevant global documents and work products.

For more information on the teams and work streams see <http://www.lifesavingcommodities.org>

### Role of the funding source

The funders had no role in the design, conduct, analysis, and writing up of the study. The corresponding author had full access to all data.

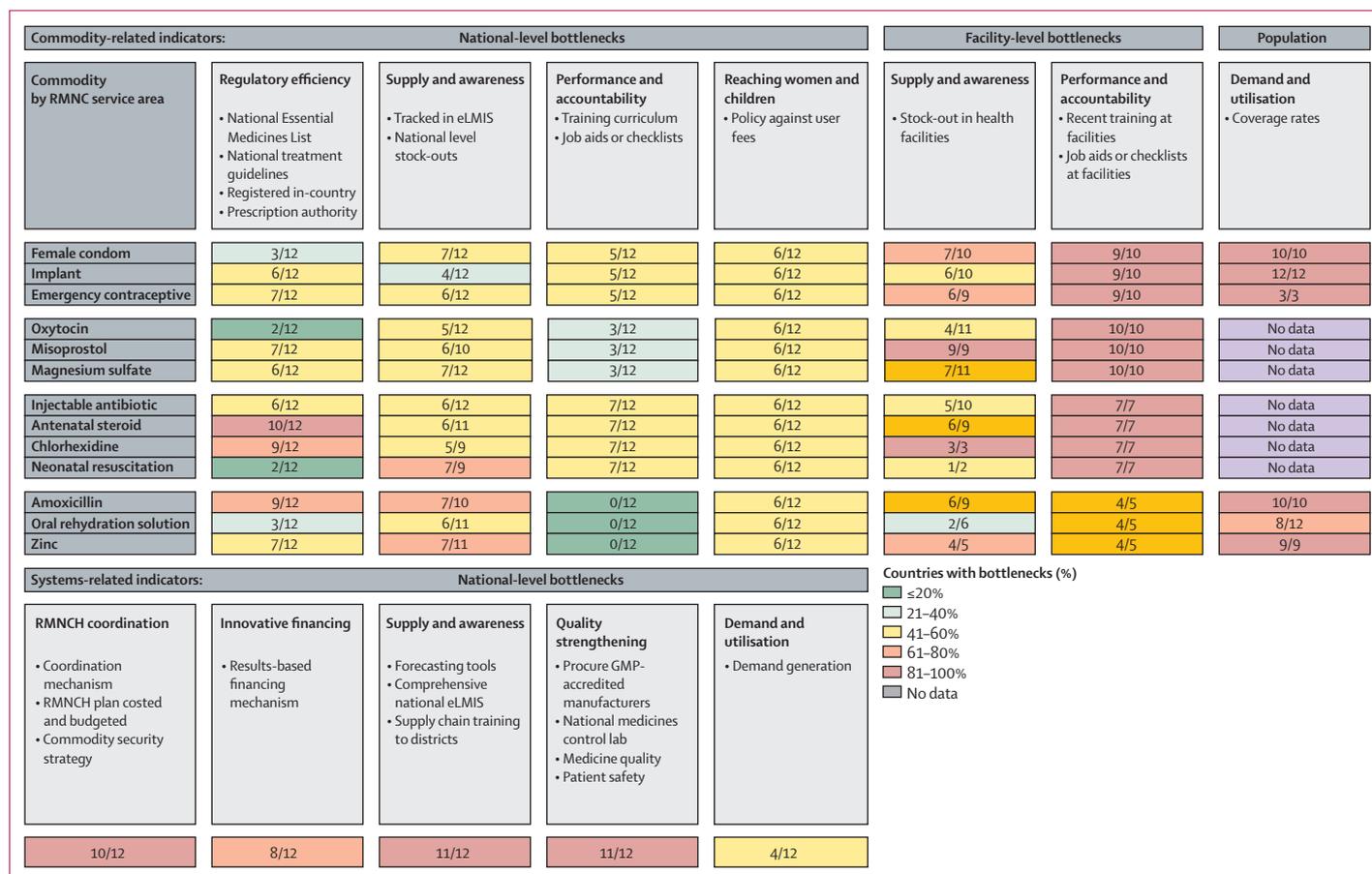


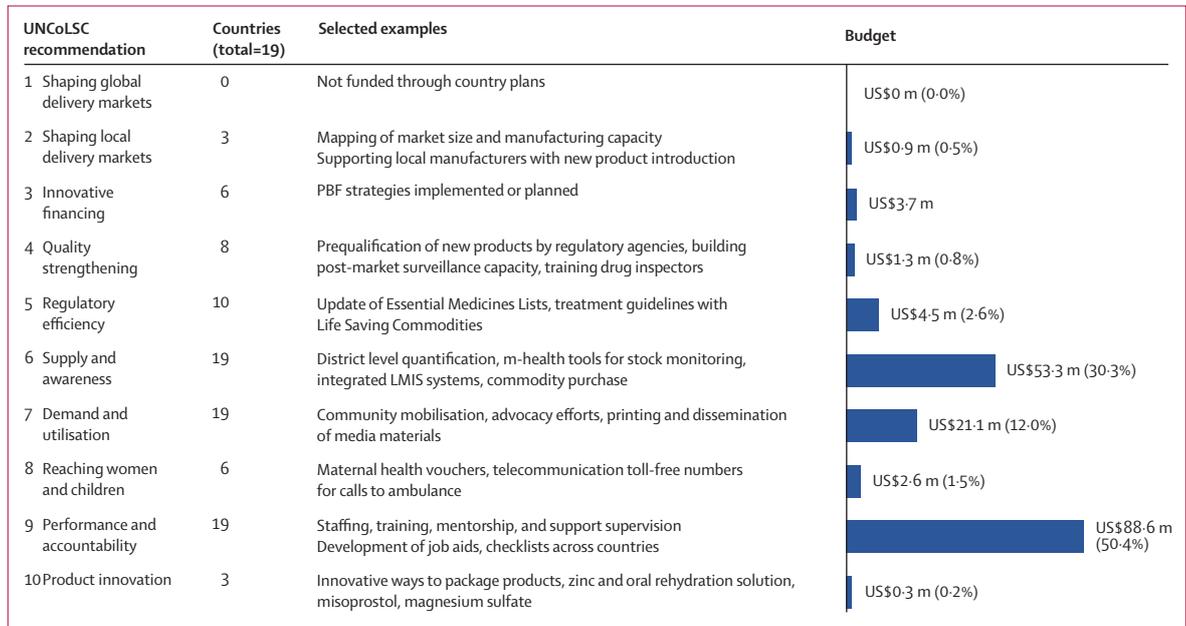
Figure 3: Number of countries with bottlenecks by UNCoLSC recommendation, level of health-care system, and RMNC service area

Denominators change due to absence of data in some countries for some indicators. UNCoLSC=UN Commission on Life Saving Commodities. RMNCH=reproductive, maternal, newborn, and child health. EML=Essential Medicines List. eLMIS=electronic logistics management information system. GMP=good manufacturing practice.

	Cameroon	Democratic Republic of Congo	Ethiopia	Kenya	Mali	Malawi	Nigeria	Senegal	Sierra Leone	Tanzania	Uganda	Zambia	Average
<b>Reproductive</b>													
Female condom	66%	58%	93%	80%	74%	25%	10%	12%	12%	..	89%	..	52%
Implant	46%	78%	22%	25%	63%	11%	6%	4%	20%	..	71%	..	35%
Emergency contraceptives	71%	87%	31%	15%	..	20%	15%	86%	27%	..	36%	..	43%
<b>Maternal</b>													
Oxytocin	9%	10%	3%	49%	..	5%	16%	22%	18%	6%	50%	23%	19%
Misoprostol	71%	..	21%	90%	..	89%	84%	99%	65%	55%	85%	..	73%
Magnesium sulfate	49%	78%	11%	74%	..	15%	49%	65%	14%	11%	67%	68%	46%
<b>Newborn</b>													
Injectable antibiotics	..	8%	3%	47%	..	9%	18%	47%	15%	28%	31%	73%	28%
Antenatal steroids	7%	11%	8%	84%	..	84%	42%	96%	42%	..	76%	..	50%
Chlorhexidine	..	..	..	..	..	64%	..	51%	..	..	25%	..	47%
Neonatal resuscitation	..	..	..	..	..	11%	..	..	..	..	91%	..	51%
<b>Child</b>													
Amoxicillin	..	16%	..	31%	..	24%	..	48%	47%	21%	72%	8%	33%
Oral rehydration solution	..	..	..	26%	..	9%	..	..	10%	13%	21%	5%	14%
Zinc	..	..	..	37%	..	24%	..	..	19%	46%	31%	..	31%
Average (mean)	46%	43%	24%	51%	69%	30%	30%	53%	26%	26%	57%	35%	40%

Percentages derived from secondary data sources (appendix).

**Table 2: Proportion of health facilities with stock-out at the time of assessment for 13 life saving commodities.**



**Figure 4: Distribution of committed funds by UNCoLSC recommendation (US\$175.7 million, 19 countries)**

UNCoLSC=UN Commission on Life Saving Commodities. PBF=performance-based financing. eLMIS= logistics management information system. m-health=mobile health.

**Results**

The proportions of countries with a bottleneck by UNCoLSC recommendation, commodity, and sector of the health-care system are summarised in figure 3. For each recommendation, a bottleneck is defined as moderate-to-weak performance on any indicator within a recommendation. For example, regulatory efficiency was

a bottleneck if the commodity was not on the national Essential Medicines List (EML) in the preferred formulation, treatment guidelines were absent or incomplete, or the preferred formulation was not registered in-country or had restricted prescription authority (table 2, appendix).

Systems-related bottlenecks were identified in all countries. Ten of 12 countries had a weakness in RMNCH

**Panel 1: Examples of country achievements to improve access to life-saving commodities (2013–14)****Democratic Republic of Congo**

- Established a third-party payment coupon system for RMNCH commodities through family kits
- Updated National Standard Treatment Guidelines and the Essential Medicines List
- Printed copies of standards and guidelines on RMNCH for all health facilities
- Updated Essential Medicines List to include all 13 priority commodities

**Ethiopia**

- Supported manufacturers to make high-quality chlorhexidine for the domestic market
- Produced media materials to increase demand for female condoms and emergency contraception
- Trained health extension workers on implantable contraception insertion and removal
- Procured essential commodities, including amoxicillin, gentamicin, ceftriaxone, and oral rehydration solution

**Malawi**

- Revised the National Standard Treatment Guidelines and Essential Medicines List to include all 13 priority commodities
- Revised, printed, and distributed Logistics Management Information System forms
- Trained health workers on stock and logistics management and use of essential commodities
- Initiated quarterly review of quantifications and introduced supply-chain management as an agenda in the zonal quarterly review meetings
- Procured dexamethasone, chlorhexidine, and neonatal resuscitation equipment
- Introduced post-market quality surveillance for RMNCH drugs
- Introduced supportive supervision for supply chain management
- Initiated a mobile phone stock-tracking system for peripheral facilities (cStock)
- Engaged community leaders to improve RMNCH service uptake
- Introduced national emergency obstetric and newborn care assessment
- Trained health workers in four districts on the insertion and removal of contraceptive implants

**Nigeria**

- Provided technical support for local manufacturing of chlorhexidine and zinc or oral rehydration solution, with the entry of four new oral rehydration solutions and five zinc suppliers to the local market, resulting in reductions in wholesale price of nearly 80%
- Introduced performance-based financing to track and improve commodity use
- Registered chlorhexidine, zinc or oral rehydration solution, and misoprostol (pending)

- Instigated fast-track registration process for UNCoLSC commodities
- Initiated discussions on supply-chain integration, trained health workers on eLMIS in seven states
- Arranged community distribution of misoprostol and chlorhexidine in five states
- Introduced conditional cash transfer programmes in eight priority states and community health insurance schemes
- Trained health-care workers from eight states to administer misoprostol, magnesium sulfate, and oxytocin; job aids printed and distributed to health facilities
- Trained trainers for implantable contraceptives, ongoing cascade training in six states
- Developed messaging materials on pneumonia case management

**Senegal**

- Updated Essential Medicines List and hired pharmacist inspector
- Trained community stakeholders in RMNCH service package to strengthen community-level provision
- Procured transport and information technology equipment to strengthen supply chains
- Began studies on morbidity and mortality in children aged under 5 years, and on cord care

**Sierra Leone**

- Systematic roll-out of all approved procurement lists, guidelines, and updated protocols
- Integrated RMNCH training for health workers
- Competency-based training in long-acting family planning methods
- All health facilities trained in Helping Babies Breathe newborn resuscitation
- Ensured health facilities are Basic Emergency Obstetric and Newborn Care-compliant
- Conducted demand generation for RMNCH through maternal child health weeks
- Scaled up integrated community case management for community health workers
- Scaled up performance-based finance scheme

**Uganda**

- Achieved 60% reduction in import price for zinc and oral rehydration solutions
- Developed, pretested, and automated the RMNCH scorecards
- Profiled and assessed the existing manufacturers of chlorhexidine and dispersible amoxicillin
- Ministry of Health signed an addendum to the Uganda Clinical Guidelines and Essential Medicines and Health Supplies List to include all 13 life saving commodities

(Panel continues on next page)

(Panel 1 continued from previous page)

#### Tanzania

- Expanded integrated LMIS to cover all regions
- Registered amoxicillin dispersible tablets and misoprostol
- Updated standard treatment guidelines and Essential Medicines List
- Updated user-friendly family planning guidelines and an Integrated Management of Childhood Illness

- Held provider consultations to increase use of antenatal corticosteroids

RMNCH=reproductive, maternal, newborn, and child health. UNCoLSC=UN Commission on Life Saving Commodities. eLMIS=electronic logistics management information system. LMIS=logistics management information system.

### Panel 2: Global achievements by UNCoLSC technical resource teams and related partners

#### Shaping global markets

- Global price reductions of 50% have been secured for implantable contraceptives with major increases in procurement and availability
- Achievable cost per use of the Non-pneumatic Anti-Shock Garment reduced by over 75%, from US\$1.30 to below \$0.30, following agreement with manufacturer
- Agreements have been signed with three quality manufacturers of neonatal bag and mask resuscitator which could achieve a 30–40% price reduction
- Needs-based forecast algorithms have been developed for all commodities and demand-based forecasts are underway to better estimate global manufacturing requirements

#### Shaping local delivery markets

- Major manufacturers for all 13 commodities have been identified, including for newly listed commodities such as chlorhexidine and amoxicillin dispersible tablets
- Three manufacturers in Nigeria, two manufacturers in Kenya, and one manufacturer in Bangladesh were assessed for GMP compliance and received additional technical assistance to ensure quality of 7.1% chlorhexidine digluconate for umbilical cord care
- Regional market-shaping efforts were conducted with the East African Community pharmaceutical industry to strengthen its competitive position and market share

#### Innovative financing

- A multicountry study is underway to assess the feasibility of providing governments with a revolving fund to secure better price, quality, and delivery of RMNCH commodities
- Results-based financing strategies have been developed and successfully implemented to incentivise the reduction of stock-outs

#### Quality strengthening

- A post-market quality survey of the 13 commodities has been conducted in 10 countries
- The WHO collaborating centre in Ghana developed a model pharmacovigilance programme
- Four local manufacturers have now achieved quality certification in Nigeria, with additional support provided to manufacturers in five other EWEC countries

- Several products have been WHO prequalified or ERP approved (oxytocin, misoprostol)

#### Regulatory efficiency

- All commodities have been included on the WHO Essential Medicines List
- A fast-track registration process was established for prequalified products in 23 countries

#### Supply and awareness

- Best-practice tools for harmonising and strengthening supply-chain management have been finalised, including for private sector partnerships; country-level dissemination is underway
- A quantification and forecasting guide for all life saving commodities is available
- An integrated LMIS and HMIS platform has been developed and tested in Tanzania
- Amoxicillin dispersible tablets for pneumonia have been registered in nine new countries and 30 countries have started procurement, which has increased by 500% since 2012
- 7.1% chlorhexidine digluconate for umbilical cord care has been registered in three new countries and is underway in several other countries

#### Demand and utilisation

- Advocacy and demand-generation tool-kits have been developed to improve levels of information, awareness, and use of commodities
- Tool-kits are being widely disseminated, including in-country dissemination in Uganda, Zambia, Nepal, Bangladesh, Democratic Republic of Congo, and Madagascar, to strengthen new or existing national strategies or programmes

#### Reaching women and children

- A mapping of financial access barriers and point-of-service exemption strategies has been initiated

#### Performance and accountability

- A compendium of high quality, adaptable, up-to-date training materials, job aids, and checklists have been developed for all 13 life saving commodities

(Panel continues on next page)

(Panel 2 continued from previous page)

- New, global adaptable tools (including job aids, posters, brochures, and videos) were designed for health providers to promote zinc and ORS, as well as chlorhexidine
- Over \$200 million in new funding has been mobilised to support scale-up of integrated community case management of childhood illnesses in eight countries, which includes co-financing from a range of donors leveraging funding from the Global Fund New Funding model
- A quality framework has been developed for neonatal resuscitation to enhance the quality of training and education programmes
- A global inventory of e-health and m-health tools and applications has been completed

#### Product innovation

- An agreement has been finalised between UNICEF and WHO to allow oxytocin to be included in the cold-chain

- New upright newborn resuscitators have been developed and are now available on the global market
- New patient-friendly product presentations for amoxicillin dispersible tablets for pneumonia have been developed and are being tested in eight high-burden countries
- Three-pack misoprostol developed and commercially available
- Ready-to-use packs are being evaluated to enhance the use of magnesium sulfate for pre-eclampsia and eclampsia, consisting of a loading dose pack and a maintenance pack
- Preliminary work on heat-stable inhaled oxytocin has been initiated

RMNCH=reproductive, maternal, newborn, and child health. UNCoLSC=UN Commission on Life Saving Commodities. eLMIS=electronic logistics management information system. HMIS=health management information system. GMP=good manufacturing practice. ERP=Expert Review Panel. ORS=oral rehydration solution. e-health=electronic health. m-health=mobile health.

coordination, which typically related to poor commodity security strategies. Eight of 12 had insufficient regulatory capacity, usually because of poor pharmacovigilance or post-market surveillance systems.

We commonly observed commodity-specific bottlenecks for regulatory efficiency, health worker performance and accountability, and supply and awareness. Regulatory bottlenecks were most common in reproductive and neonatal health commodities, and antenatal steroids and emergency contraceptives had regulatory bottlenecks in most countries. All countries had health worker performance gaps: despite having up-to-date national curriculum and tools available, only half of facilities had recently trained staff (58%) or tools (53%) to support effective service delivery, including job-aids and checklists (appendix).

Supply chain bottlenecks existed in all countries. Although most countries used appropriate forecasting tools, just one of 12 countries assessed had comprehensive logistics management systems to track commodities from central warehouses to service delivery points. National stock-outs were common for female condoms, misoprostol, and dispersible amoxicillin (table 2). Although data-gaps exist, an average of 40% of health facilities had stock-outs, with child health commodities most available and misoprostol, antenatal steroids, female condoms, and newborn resuscitation equipment out of stock in at least half of facilities. Finally, half of countries still report formal or informal user fees that constrain access to some or all of the 13 commodities. Data was not available for all countries for some indicators. Challenges in presenting the data are outlined in the discussion.

Countries performed better in relation to demand generation, where eight of 12 countries had programmes in place. Nearly all (nine of 11) countries needed all public

sector procurements to take place from a good-manufacturing practice certified manufacturer.

In terms of the RMNCH country engagement process, and to advance the UNCoLSC mandate, the RMNCH Fund committed \$175.7 million for 19 countries between Oct 7, 2013, and Aug 15, 2015. This commitment included an initial wave of eight countries that received support in 2013 and a second group of eleven countries that received support in a phased manner during 2014–15, with the duration of funding extending over a 1–3 year period. All countries in the plan were in sub-Saharan Africa except for Afghanistan, Bangladesh, and Pakistan. \$24.9 million (39.0%) of resources were directed to cross-cutting system-strengthening interventions such as improvement of supply chains, with the remaining balance fairly evenly split between maternal and neonatal joint care (\$13.6 million, 8%), family planning (\$24.9 million, 14%), maternal health (\$17.6 million, 10%), neonatal health (\$19.5 million, 11%), and child health categories (\$31.9 million, 18%).

\$86.6 m (50.4%) of funds were committed to improve health worker performance and accountability, \$53.3 million (30.3%) to strengthen supply chains, and \$21.2 million (12.0%) to stimulate demand (figure 4). 3.4% of funds were directed to support regulatory efficiency and quality improvements. Panel 1 provides a summary of achievements for an initial wave of eight countries where efforts have been in progress for at least 18 months.

Global progress against UNCoLSC recommendations was supported through the work of the technical resource teams. All commodities are now formally listed on the WHO EML (panel 2). Global market-shaping efforts yielded substantial price reductions for implantable contraceptives, and the securing of additional manufacturers created potential competitive price reductions for neonatal resuscitation equipment. Manufacturers were identified for all commodities, including newly

listed commodities such as dispersible amoxicillin and chlorhexidine, with manufacturers in south Asia and Africa supported to produce key RMNCH products. Global forecasts were done to estimate manufacturing and procurement needs and a fast-track registration process was established for WHO prequalified commodities. A post-market commodity survey across ten countries suggested that most UNCoLSC commodities, with the exception of oxytocin, were of reasonable quality. Agreements were secured between the Global Alliance for Vaccines and Immunization and UNICEF that allow oxytocin to be included in the vaccine cold-chains.<sup>9</sup> Best-practice materials were generated for a range of priorities including advocacy, demand generation, supply chain management, digital health, and health worker support (ie, training materials, job aids and checklists). Finally, innovations in product packaging and formulation supported the scale-up of amoxicillin dispersible tablets and misoprostol.

## Discussion

The 2015 Millennium Development Goal deadline represented a crucial opportunity to assess progress against key targets and identify remaining gaps. For the Global Strategy for Women's and Children's Health, the world fell short of achieving goals 4 and 5, saving just 2·4 million of the projected 6 million lives of women and children in the past 5 years.<sup>10</sup> As a contributing initiative to this strategy, the UNCoLSC has played a part at the nexus between global systems, countries, and markets to advance more effective pricing, procurement, distribution, and delivery of essential commodities. Although major advances have been achieved in implementing its recommendations, a substantial body of work remains.

Persistent commodity bottlenecks were common at the country level, including out-of-date EMLs, unregistered commodities, and restrictive guidelines and prescription authority, which limit distribution of commodities where they are needed most. Commodity security strategies were often poorly developed, and capacity to monitor the quality and safety of medicines is scarce. Although most national protocols and training materials were updated, dissemination to peripheral health facilities will need further efforts. The monitoring and distribution of commodities from national warehouses to service delivery points remains a barrier, with 40% of the 13 priority commodities out of stock at the time of assessment. Fragmented supply chains contribute to these challenges. For example in Kenya, 12 different types of health commodities are provided by at least 18 donor organisations, procured by 13 agencies, sent to five warehouses, and delivered through seven supply chains.<sup>11</sup>

The UNCoLSC experience suggests that countries opted to finance a balanced set of RMNCH priorities—from focused efforts to scale up implantable contraceptives to cross-cutting efforts to strengthen supply chains. Commodity procurement was de-emphasised, potentially

because the 13 UNCoLSC commodities were low-cost and could be sustainably procured through national systems. Although frequent regulatory and quality assurance bottlenecks were identified at the country-level, they were not often prioritised, which suggests additional guidance and technical support could be appropriate.

Most of the global milestones outlined in the original UNCoLSC Report and Implementation Plan have been achieved or are nearing completion. Key areas of progress include listing all commodities on the WHO EML; securing price reductions for implantable contraceptives; establishing a fast-track system to accelerate product registration; and generating means and materials to support advocacy, demand generation, and health worker training. However, progress is slower in other areas. National regulatory systems remain complex and inefficient, creating disincentives for manufacturers to register commodities with low profit margins. Efforts to streamline and harmonise systems between countries, such as the African Medicines Regulatory Harmonization Programme, are crucial.<sup>12</sup> Commodity procurement is often hindered by being out of line with domestic budget cycles, leading to national stock-outs.<sup>13</sup> The feasibility of a revolving fund to support commodity procurement is under exploration. Finally, mechanisms to support quality assurance for essential medicines will require additional technical support from the global and regional levels.<sup>14,15</sup>

The process of documenting the country status in relation to UNCoLSC recommendations highlighted often overlooked implementation barriers, but several limitations and information gaps are evident. First, the sub-Saharan African countries assessed might not adequately represent challenges experienced elsewhere on the continent or in other regions. Second, although efforts were made to capture the most up-to-date information since 2012, recent gains might not be adequately profiled. Third, existing data sources in several areas are inadequate. For example, coverage data exist for child health and family planning (with the exception of emergency contraception), but there are few standard information sources to document delivery of maternal and neonatal interventions and the quality of care provided. Global efforts are underway to address these gaps.<sup>16</sup> Fourth, country bottleneck identification depended upon the generation of categorical variables from non-standard and sometimes qualitative data collected by different enumerators. Despite the use of expertly defined performance thresholds to generate these variables, this process might be subject to interpretation and bias. Finally, although this assessment provides a snapshot of commodities and related systems, periodic updating will be essential to track change over time.

Lessons learned from implementation of the UNCoLSC agenda carry important implications for the updated Global Strategy for Women's, Children's and Adolescents' Health. The first priority is securing financing needed to support country plans. Estimates suggest an additional \$28–30 billion per year is needed to close the gap across

75 high-priority countries.<sup>7</sup> Under the umbrella of the new Global Financing Facility, a more sustainable mix of grant and loan-based support is envisioned to be channelled to countries based on prioritised reproductive, maternal, neonatal, child, and adolescent health (RMNCAH) investment cases. The second priority is the need for commodity perspectives to inform the development and monitoring of investment cases, and national plans to achieve the targets outlined in the updated Global Strategy. The commodity lens has provided a useful and actionable focus for identifying and addressing key bottlenecks; use of standard metrics to track commodity flow highlights crucial gaps. Efforts to simplify and standardise the monitoring of country plans and investment cases, drawing from the UNCoLSC experience and other initiatives such as Countdown 2015, are essential.<sup>17</sup>

Finally, the unfinished components of the UNCoLSC mandate have the potential to inform an agenda for the so-called global public good, where coordinated efforts at the global and regional levels provide complementary support to country implementation. This agenda should include market-shaping efforts to secure price reductions beyond the 13 commodities; the establishment of financing mechanisms to underwrite timely domestic commodity procurement; efforts to improve regulatory efficiency through establishing product standards, harmonisation of guidelines, and support for joint inspections; and mechanisms to foster procurement of quality products, enhance post-market surveillance, and strengthen pharmacovigilance. Addressing supply chain gaps will require global efforts to reduce fragmentation and country action to improve forecasting, logistics management, and distribution. Finally, robust and sustained technical support should be made available to strengthen RMNCAH investment cases, ease country access to the latest evidence and best-practice materials, and enhance south-south exchanges and regional learning to support the implementation of nationally defined priorities.

#### Contributors

PMP, BN, DS, and NS drafted the manuscript. All authors contributed to the design of the assessment, analysis of data, contributed to the writing of the manuscript, and agree with the results and conclusions.

#### Declaration of interests

We declare no competing interests.

#### RMNCH Steering Committee

Development Partners: The Bill & Melinda Gates Foundation, Canada, France, Norway, Sweden, UK, United States Agency for International Development. Technical and financing agencies: the GAVI alliance, the Global Fund, UNFPA, UNICEF, WHO, the World Bank. Related coordination bodies or networks: the Executive Office of the UN Secretary General, the Office of the UN Secretary General's Special Envoy for Financing the Health MDGs, PMNCH, the United Nations Foundation. Every Woman Every Child countries: Ethiopia, Indonesia, Nigeria, Senegal, Tanzania. Civil societies: CAI, PATH, and CHESTRAD.

#### UNCoLSC Technical Resource Teams and UN Agency Leads

Kabir Ahmed (UNFPA), Elizabeth Anderson (USAID), Deborah Armbruster (USAID), Aron Betru (Financing for Development), Nancy Bolan (World Vision), Mickey Chopra (UNICEF), Heather Clark (Population Council), Patricia Coffey (PATH), Mario Festin (WHO), Nancy Goh (CHAI), Lisa Hedman (WHO), Katherine Holland (UNICEF), Amelia Kinter (PATH), Nadi Kaonga

(HealthEnabled), Frederik Kristensen (WHO), Ashley Latimer (PATH), Stephanie Levy (USAID), Alice Miller (Financing for Development), John Nduba (AMREF), Joachim Osur (AMREF), Sharmila Raj (USAID), Sarah Rich (Family Care International), Hema Srinivasan (CHAI), Andrew Storey (CHAI), Hayalnes Tarekegn (UNICEF), Renee Van de Weerd (UNFPA), Sanjanthi Velu (Johns Hopkins University), Donna Vivio (USAID), Brendan Wackenreuter (Save the Children), Mark Young (UNICEF).

#### UNCoLSC Monitoring and Evaluation Advisory Group

Agbessi Amouzou (UNICEF), Aisha Dasgupta (Marie-Stopes International, London School of Hygiene & Tropical Medicine), Schadrack Dusabe (UNDP), Mark Grabowsky (UN Special Envoy for Health Financing), Troy Jacobs (USAID), Suman Jain (The Global Fund), Desmond Koroma (UNFPA), Felix Lam (CHAI), John Quinley (UNICEF), Meghan Reidy (PSI), Katherine Rockwell (UN Special Envoy for Health Financing), Suzy Sacher (JSI), William Weiss (USAID), Joseph Wilson (USAID), Nathalie Zorzi (The Global Fund).

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