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Abstracts from the 1st International Symposium on Community Health Workers

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Introduction

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Community health workers (CHWs) are recognised globally as part of human resources for health due to the increasing evidence of their role in delivering preventive and curative services particularly in low and middle income countries. CHWs contribute significantly in attainment of the Sustainable Development Goals (SDGs) especially SDG 3 (good health and well-being) since they are at the forefront of improving health in the community. It is against this background that Makerere University School of Public Health, Uganda in collaboration with Nottingham Trent University, UK and the Ministry of Health, Uganda organised the 1st International Symposium on Community Health Workers held from 21st to 23rd February 2017 at Hotel Africana in Kampala, Uganda. The symposium, which had the theme: *Contribution of Community Health Workers in attainment of the Sustainable Development Goals*, was attended by over 450 participants from 22 countries around the world who included researchers, policy makers, funders, implementers, civil society, students and other stakeholders from national and international organisations. The symposium participants shared evidence and experiences on the value and contribution of CHWs to national health systems as well as the achievement of the 2030 agenda for sustainable development enshrined in the SDGs. Furthermore, the symposium enhanced greater interdisciplinary collaboration and learning globally across sectors and initiatives. The symposium received funding support from the UK Department for International Development (DFID) through Tropical Health and Education Trust (THET). Other symposium partners and co-funders included UNICEF, USAID, Pathfinder International, AMREF Health Africa, World Vision, Malaria Consortium, Harvest Plus, Healthy Child Uganda, Healthcare Information For All (HIFA), CHW Central, Health Systems Global Community Health Workers thematic working group, Advancing Partners and Communities (APC), Makerere University Centre of Excellence for Maternal Newborn Health Research (CMNHR), Living Goods, FHI 360, BRAC, REACHOUT consortium, and The AIDS Support Organisation (TASO). This supplement is constituted of 100 abstracts which were among those presented at the symposium.

Session 1: History and current state of CHW programmes

O1:

Community Health Workers around the World: policy findings from the community health systems catalog

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BMC Proceedings 2017, **11(Suppl 6):**O1:

Background: In 2012, the Advancing Partners & Communities (APC) project developed the Community Health Systems Catalog, a resource providing information on community health policies and programs in 25 countries. Recognizing a shift toward increased harmonization of community health programs, APC is updating the Catalog, which provides detailed information on community health worker (CHW) cadres, including scope of work, coverage, selection, training, supervision, reporting, and motivation, per documented guidance.
Methods: APC developed and conducted a community health survey in each country and verified data in national and sub-national policies, strategies, and curricula. To date, APC has updated data for 15 countries: Afghanistan, Ghana, Haiti, India, Liberia, Madagascar, Malawi, Mali, Nepal, Nigeria, Pakistan, the Philippines, Senegal, South Sudan, and Zambia.
Results: Across these 15 countries, policy information was available for a total of 44 CHW cadres – typically two to three per country. Data show diversity in all CHW aspects: job description; supervision and reporting structure; coverage area and ratio; selection; data collection; training curricula; and incentives. Findings also highlight commonalities: for instance, many CHWs report to multiple supervisors (75%); most CHWs access clients on foot (84%), but many CHW clients also travel to them (61%) or CHWs access clients by bike (43%); and CHW selection criteria most commonly stipulate community residence (52%), age (50%), education (41%), and literacy (32%). Data further reveals that CHW information is often absent, limited, unclear, and contradictory in policy.
Conclusions: The Catalog documents policy related to CHWs and related operational aspects. Both the commonalities and the diversity across countries may inform, reinforce, and expand the growing body of knowledge of CHWs – and their relationship to the health system more generally – for researchers, policymakers, and program implementers. Further, findings highlight policy gaps and areas where additional guidance to better align and scale up CHW programs may be needed.

O2:

Achieving Sustainable Development Goals: a case study of Community Health Workers in working class communities in Gauteng Province, South Africa

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BMC Proceedings 2017, **11(Suppl 6):**O2:

Background
The South African government's neoliberal policies over the past 20 years of democracy together with the HIV/AIDS pandemic, has deepened poverty, unemployment and social inequality. Consequently, the Community Health workers (CHWs) play a critical role delivering healthcare services and supporting communities.
Methods
The case study draws on the daily work and experience of CHWs in Gauteng Province, South Africa, from 2012 to 2016. Methods used

include in-depth interviews, focus group discussions and desktop research. The study focuses on two inter-related aspects facing CHWs in their daily work:

i) The context and content of delivery of health services focusing on the nature of CHWs daily work with communities with respect to health care systems and health services delivery; and
ii) As the agents of delivery of community health care services, the nature of CHWs' work contributes integrally to daily social reproduction within working class family/households and communities.

Results
The paper argues that the CHWs do not only provide important services to communities within the failing healthcare system, but contribute substantially towards the social reproduction of large sections of the working class. While seemingly contradictory: the CHWs work within the public sphere and their work is social, but the modality of their work in working class communities is a form of privatisation, where predominantly women, provide 'care work' and subsidise the state and society with their labour.
Conclusion
While the CHWs provide important support to communities, their full potential contribution to sustainable development is weakened objectively on several levels: the nature of the healthcare provided, the nature of social reproduction of working class communities and the continued exploitation of black women's labour and confinement to 'care work'.

O3:

Living on the Frontline: Community Health Work in rural South Africa

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BMC Proceedings 2017, **11(Suppl 6):**O3:

Background
Community Health Workers (CHWs) provide health support and basic level care to large numbers of rural populations, particularly in sub-Saharan Africa. The World Health Organization has formally recognised their work and acknowledges their potential to make a substantial contribution to the achievement of the Sustainable Development Goals. This study was a pilot of a training intervention for CHWs in South Africa, and this paper presents findings that report on the qualitative exploratory phase of the study.
Methods
CHWs were invited to share their perspectives on their role: Semi-structured interviews with 48 CHWs explored their motivation, as well as the barriers preventing them from doing their job well. Each CHW was also shadowed, which gave insight into the practical day-to-day activities that they engage in.
Results
Participating CHWs identified that the key motivation was elevating their status in their community, whilst the main barrier was a lack of confidence resulting from sub-standard training and supervision. Shadowing revealed that CHWs, contrary to literature, are the 'front line' for health issues far removed from basic level care, which extend much wider than the provision of basic level healthcare. Complex health issues that were addressed by CHWs included provision of care for medication defaulters, ante natal care and being 'first responder' for emergencies.
Conclusions
CHWs are key health professionals who shoulder a significant burden of care at community level. In practice, CHWs provide more than basic care and patient support. An absence of training and support means that CHWs do not feel well-equipped to deal with the challenges that they encounter daily while living on the frontline, delivering healthcare services in rural South Africa.

O4:

Assessing successes and challenges in the scale-up of a national, public sector community health worker cadre in Zambia: A qualitative study

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Background
In 2010, a public-sector cadre of Community Health Workers (CHWs) called Community Health Assistants (CHAs) was created in Zambia through the National Community Health Worker Strategy to expand access to health services. This cadre continues to be scaled up to meet the growing demands of Zambia's rural population. To foster continuous learning, evaluation and innovation, a study was conducted in 2015 to understand the successes and challenges of introducing and institutionalizing the CHA cadre within the Zambian health system.
Methods
Semi-structured, individual interviews were held across 5 districts with 16 CHAs and 6 CHA supervisors, and 10 focus group discussions (FGDs) were held with 93 community members. Audio recordings of interviews and FGDs were transcribed and thematically coded using Dedoose web-based software.
Results
The study showed that the CHAs play a critical role in providing a wide range of services at the community level, as described by supervisors and community members. Some challenges remain that may inhibit the CHAs ability to provide health services effectively. The respondents highlighted infrequent supervision, lack of medical and non-medical supplies for outreach services, and challenges with the mobile data reporting system.
Conclusions
The study shows that to optimize the impact of CHAs or other CHWs system-level, support systems need to be functioning effectively, including supervision, community surveillance systems, supplies, and reporting. This study contributes to the evidence base on the introduction of formalized of CHW cadres in other countries.

O5:

Challenges of Community Health Workers in sustaining maternal and child health program in Indonesia

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BMC Proceedings 2017, **11(Suppl 6):**O5:

Background
Community Health Workers (CHWs) locally called kader play a crucial role in the delivery of maternal and child health services in Indonesia. Kader are trained to work in the Posyandu, a community-integrated service, and perform the tasks of registration, weighing women and children, health counselling and report writing. In addition, they do referral of pregnant women to the village midwife. We explored the challenges they face while voluntarily contributing to the Posyandu services.
Methods
Data was collected in Southwest Sumba and Cianjur district using semi-structured interviews and focus group discussions (FGDs) in three time periods: 1) September to November 2013 in both districts; 2) November 2014 and September 2015 in Cianjur district only. A total of 185 semi-structured interviews and 13 FGDs covering village

midwives, kader, community (men and women), and key district health and community stakeholders were conducted. All interviews were recorded, transcribed, translated into English, coded and analysed using NVivo10.

Results

The kader indicated several challenges they faced in delivering their work: 1) the strong cultural belief that women must obey their husbands disempowered women to make decisions about their pregnancy and delivery, and it hindered kader's referral of women for facility delivery; 2) limited training opportunities for kader lead to suboptimal quality of service; 3) favouritism in kader's recruitment and retention deterred the continuity of their work in the Posyandu.

Conclusions

Even though kader have a vital role in sustaining the maternal and child health program, their services are challenged by gender inequality influences on decision making, and training and recruitment limitations. These conditions indicate less responsiveness of the issues facing by kader. Greater recognition of kader competencies and interest on kader's work by the local government and community leaders has potential to improve their services as CHWs.

O6:

Functionality assessment of selected community health units across ten counties in Kenya

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BMC Proceedings 2017, **11(Suppl 6):**O6:

Background

In seeking to improve health outcomes in Kenya, the government developed the community health strategy (CHS) which aims to develop linkages between the households and the peripheral healthcare system. Through the implementation of the strategy, community health units (CHUs) are established to serve a catchment population of 5000 people. Service provision within a CHU is undertaken by community health volunteers (CHVs), supervised by community health extension workers (CHEWs) and governed by community health committees (CHC). A total of 48 CHUs across ten counties in Kenya were assessed. The purpose of the assessment was to obtain baseline data on the functionality of the CHUs in order to track their performance upon partnering with Familia Nawiri, a Novartis social venture in Kenya.

Methods

The assessment of the CHUs was done using an AMREF functionality scorecard with 17 key elements (performance and process indicators and cardinal elements) needed for a functional CHU. CHUs scoring 0-49% were graded as non-functional, 50% to 79% semi-functional and 80% and above as functional. In addition, CHUs had to meet three cardinal elements to be graded as functional (reporting rate >80, holding dialogue and action days). The CHUs assessed were selected from Familia Nawiri program sites. The assessment team comprised of sub county CHS representative, a CHEW, a CHV and a Familia Nawiri representative.

Results

Overall only 15% of the 48 CHUs assessed were found to be functional, 42% were rated as semi functional and 44% non-functional. 94% of the CHUs reported having trained CHVs, 70% had trained CHEWs, 54% had trained CHCs, 67% had reporting tools, and 67% reported getting supervision by the district health management team during the past 6 months. Only 23% of the CHUs were providing stipends to the CHVs and 20% had provided bicycles for CHVs transport.

Conclusion

Only 15% of the CHUs assessed were found to be functional. This highlights gaps in the implementation of community health strategy across different regions. Interventions are required to improve the functionality of the CHUs.

O7:

Close-to-community health providers in the complex adaptive health system in Bangladesh

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BMC Proceedings 2017, **11(Suppl 6):**O7:

Background

Close-to-community (CTC) health providers play an important role in providing sexual and reproductive health services to women of Bangladesh through bridging the community to health facilities. REACHOUT is a five-year multi-country implementation research project which aims to understand the role of CTCs. In this project, the Bangladesh team led by James P. Grant School of Public Health (JPGSPH), BRAC University, is focusing on CTC providers involved in menstrual regulation (MR). MR is manual vacuum aspiration to safely establish non-pregnancy up to 8-10 weeks after a missed menstruation period. Partners of REACHOUT consortium reviewed the complex adaptive health system in which CTCs perform, aiming to identify inter-dependent actors and possible interactions at multiple levels which shape health outcome.

Method

Policy makers, researchers and professionals participated in the review held in 2016, in Bangladesh. Complex adaptive health system was reviewed through literature review and participatory workshop.

Result

A range of health service providers including government, non-government organization (NGO) and private providers co-exist in Bangladesh. CTC providers may be formally affiliated to institutions and have recognized qualification; or informal such as drug seller or traditional birth attendants - with or without formal training or institutional affiliation operating outside the formal rules regulating the practice. Formal CTC providers are trained to refer clients to low cost appropriate health facilities. Informal CTC providers often refer clients to private sectors. Moreover, informal CTCs driven by financial interest refer women to unsafe services provided by clandestine operators. Inter-facility referrals also take place across public, private and NGO facilities. Pluralistic nature of health system makes the health sector complex for women to choose appropriate service. Contextual factors such as regulation, policies, social & cultural norms, economics and politics, affect this complex adaptive health system. The interaction between multiple actors affects the health outcome.

Conclusion

CTC providers can act as referral hub and play a critical role in appropriate and safe referral. Coordination among different health professionals is critical. Access to information is crucial to ensure equity for poor women.

Session 2: Training models for CHW programmes

O8:

Open Deliver: a mobile digital content management system providing an equitable approach to achieve universal Community Health Worker training

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BMC Proceedings 2017, **11(Suppl 6):**O8:

Background

The Ministry of Health acknowledges that 75% of the disease burden in Uganda is preventable and it is the Village Health Teams (VHTs)

that are primarily responsible for addressing this burden. In Uganda, there is a shortage of health workers that perform per expectations because they lack the skill mix to effectively respond to the country's health needs.

Approach

Digital resources providing the basis for high impact health interventions and responses to epidemics can be organized within a single digital content management system designed for rapid publication to mobile devices for VHT access. Use of mobile devices for instruction is consistent with recognition that traditional techniques involving a single exposure to content to improve provider performance "result in very low effect size" and fail to address Sustainable Development Goals related to equitable access to training.

Conclusion

Open Deliver is a proven process for adapting, storing and delivering multimedia digital content onto mobiles. The principle component of this process is Orb - the content sharing platform that will allow NGOs and Governments alike to store, share and coordinate digital resources for programs such as FamilyConnect and mTrac. Scaling proven technologies to create a centralized content delivery and data collection system in Uganda will help ensure that services, content and functions are implemented in accordance with international standards and result in savings through the elimination of duplicate systems.

O9:

Cascading Training Model for scaling up access to community based family planning services through Village Health Teams in Iganga and Kumi districts of Uganda

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BMC Proceedings 2017, **11(Suppl 6):**O9:

Background

Various models of engaging and training Village Health Teams (VHTs) have been used by implementing partners in Uganda. WellShare International used a Cascading Training Model (CTM) in training VHTs in Iganga and Kumi districts. WellShare engaged Ministry of Health approved master trainers to train the District Health Team (DHT) and Health Workers, who in turn trained the VHTs to offer Community Based Family Planning (CBFP) Services. The purpose of the study was to document and inform implementing partners about the success of the model.

Methods

In 2015, WellShare collected qualitative data through purposively sampled key informant interviews with stakeholders (6 DHT, 8 health workers and 16 VHTs) to document processes and inputs needed for implementation, identify advantages and challenges of the model, and document lessons learned and recommendations for scale up. Assessment reports from project start-up, district-level Health Management Information System (HMIS) data, and project-level databases over the life of project were also reviewed. Qualitative data was synthesized thematically and by stakeholder group.

Results

Key informants perceived CTM to be more cost-effective, efficient, and sustainable compared to other training models. Informants felt VHT performance increased due to close working relationships between health worker supervisors and VHTs. The health workers perceived VHTs as partners who greatly reduce their workload, while the supervision approach improved communication and quality of services. The cost of training and ongoing supervision of VHTs is substantial (around $200 per person) and would require allocation in district health budgets. The model requires a substantial time commitment from the DHT.

Conclusions

The CTM, requires initial investment in funding and time, but is more sustainable, inclusive, and strengthens communication between providers and quality of VHT services. This model enables direct ownership of the districts of CBFP services and was highly recommended for use in other districts.

O10:

Cascade training model: a sustainable village health team training approach to increase uptake of modern family planning methods

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BMC Proceedings 2017, **11(Suppl 6):**O10:

Background

The Salvation Army Integrated Family Planning (SAIFaP) Project integrated family planning services into the existing Sustainable, Comprehensive Responses for vulnerable children and their families (SCORE) Project in Eastern and North Eastern Uganda. SAIFaP used a cascade training model to train 280 of SAIFaP's 378 village health team members (VHTs) to provide injectable contraception or community-based access to injectables (CBA2I). This model has contributed to the sustainability of CBA2I services in the seven project districts.

Methods

After visiting WellShare International Uganda's CBA2I project in Iganga district, the SAIFaP project replicated WellShare's cascade training model. Using this model, Ministry of Health master trainers and District Health Team members worked together to train two midwives from each district for five days to become trainers of trainers in CBA2I. These fourteen midwives went back to their respective districts and trained 24 midwives from 16 health facilities across the seven project districts, who in turn trained VHTs affiliated with their health facilities for ten days. Following this training, midwives have continued to provide supportive supervision for the VHTs' CBA2I. VHTs receive their resupply of methods and safety boxes from the midwives who trained them and bring back monthly community-based family planning (CBFP) service delivery reports to include in the general HMIS reporting to the district.

Results

As of May 2016, the project achieved more than 7,500 couple-years protection. This included 7,139 new acceptors of modern contraception, of which 3,685 were CBA2I clients. Midwives feel confident to provide refresher training to VHTs and to train new VHTs when there is VHT turnover. Midwife turnover has been inconsequential.

Conclusion

The cascade training model strengthens midwife-VHT rapport and the sustainability of CBFP and CBA2I services. After the SAIFaP project ended in May 2016, VHTs continued to provide CBFP services in their homes and the midwives continued to provide supportive supervision.

O11:

Community health workers' training in Uganda: The Living Goods model

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BMC Proceedings 2017, **11(Suppl 6):**O11:

Background

The critical shortage of qualified health workforce for the growing population with diverse health care needs continues to pose a great challenge to developing countries. Community Health Workers (CHWs) serve as a good alternative to improve health care access and outcomes, and enhance quality of life for people in diverse communities. CHWs' ability to achieve this depends on the training, continuous monitoring and support provided. In this paper, we present the training model used for Living goods community health promoters (CHPs).

Training model
Living Goods uses a highly-selective screening process that includes references, tests, and role-playing to choose candidate trainees for the CHP's role. Once selected, the trainees undergo a one month intensive training. The training includes: integrated Community Case Management (iCCM), maternal and new-born care, use of android phones in health care reporting and business skills. Various methods are incorporated in the training including: lecture presentations, role plays, group discussions, and practical sessions both in class and hospitals. Trainees undergo certification, with a required passing score of 75% and above. Successful candidates graduate, in presence of officials from the district health office, Living Goods and local community authorities. Once the CHPs commence their duties, they are given monthly in service trainings as well as an annual exam which they should pass with a minimum score of 85%. On average, over 95% of the trainees achieve the required passing scores. Post training evaluation usually shows that the course content and experience is well perceived, with over 98% of the trainees rating it as very good. Consequently, our CHPs usually conduct their duties in a professional manner, with less chances of dropout.
Conclusion
Our training model is practical and effective. This makes it replicable especially for CHW training programs in rural communities.

O12:

Timed and Targeted Counselling - A village health team model for Maternal new-born and child Health

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Introduction
World Vision is implementing Maternal Newborn and Child Health (MNCH) projects using a system strengthening approach with an aim of contributing to the continuum of care. One of the core models used is timed and targeted Counselling (ttC) where village health teams (VHTs) play a fundamental role in conducting household visits during which all the pregnant women and children under 2 years are mapped out.
The Model
ttC is a community based MNCH model aimed at extending primary health care, behavioral change communication counselling to the household level through the 1000 days (from conception to the time the child is two years). After obtaining updated village maps, VHTs follow up all the pregnant women and children under 2 years in their catchment areas. Specific messages depending on the gestation period are passed on during counseling session to ensure that pregnant, breastfeeding mothers and key decision makers in the households receive essential health and nutrition information to influence sustainable behavioral change at specific timelines till the child makes 2 years. Furthermore, before another counselling session is conducted, previous action points are first reviewed to ensure they were worked upon by the mothers.
Timeliness being key in this model, messages are carefully delivered so that a woman has sufficient time to act on the given messages. It is targeted because each message is delivered at a particular time and space. In addition, the information is individualized, with messages focusing on the circumstances of each specific family. It is Counselling because VHT engages in a discussion with the family to identify barriers to preferred health practices after which feasible shifts are negotiated towards these preferred practices based on individual circumstances.
Conclusion
ttC as a model has shown great potential in contributing towards the improvement of MNCH mainly through behavior change and it sits well in the existing VHT structure.

O13:

Enhancing Village Health Teams' knowledge and skills through radio distance learning: experience of World Vision in Amuru district, Uganda

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Background
Ministry of Health with financial Support from World Vision Uganda (WVU) developed 12 timed and targeted counseling (ttC) audio dramatic but educative episodes. The episodes were run through radio. The major objective of radio distance learning (RDL) for ttC was to provide refresher training for VHTs on a regular, sustainable and cost effective way. ttC is a package of key health and nutrition messages that is disseminated by VHTs to pregnant and breastfeeding mothers to cause sustainable behavioral change at specific timelines in the first 1,000 days of life. ttC contributes to ending of preventable deaths of newborns and children below 5 years which is a focus of the Sustainable Development Goals.
Methods
RDL program in Amuru was implemented by WVU through a well-established VHT structure. Overall leadership was the responsibility of the District Health Office. Three hundred VHTs were formed into 26 groups of 5 members. Gulu FM was contracted to run the 12 episodes every Sunday at 4:00pm to 4:30pm with a repeat on Wednesday. Each group was given a radio while each VHT was given a Listener's guide and Handbook. Health Assistants provided regular technical support supervision and mentoring. The results presented here were extracted from the RDL assessment for ttC, April, 2016.
Results
RDL was well received by the district health team and VHTs. The findings indicated that VHT knowledge for ttC improved from 53.4% to 85.4%. Episode 3 (malaria during pregnancy), 9 (baby supplementary feeding) and 12 (managing diarrhea) were best performed while episode 10 (baby immunization) and 11 (balanced diet) were least known by VHTs. The assessment conducted in 2015 indicated that VHTs had more knowledge on episode 2 at 77% which improved to 95.8% by 2016. VHTs had least knowledge on episode 11 (balanced diet) at 21% and episode 6 (care for newborn babies) at 36%, which improved to 64.0% and 77.1% respectively.
Conclusions
RDL is one of the most cost effective capacity building models that can be utilized to enhance VHT's knowledge in basic primary health care.

Session 3: Performance, motivation and satisfaction of CHWs

O14:

Recruiting, training and retaining of Community Volunteers: Experience from rural Bangladesh

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Background
USAID supported MaMoni Health Systems Strengthening Project deployed 24,000 unpaid Community Volunteers (CVs) in 4 districts to support the Ministry of Health and Family Welfare's (MOHFW) health promotion activities. They were trained for 8 days with on job feedback and support. Annual dropout rate was 19% during pilot phase.

Methods
The study examined the causes of dropout/retention of CVs. It analyzed routine Management Information System (MIS) data from January 2014 – December 2016 and conducted unstructured interviews with key stakeholders (MOHFW staff, elected representatives, project staff and dropout CVs). It also analyzed the process of CV recruitment, deployment, their monthly participation in group meetings, and Expanded Program on Immunization (EPI) sessions, and inquired about satisfiers/dissatisfiers. The analysis was fed into modifications of the project interaction with the CVs.
Results
Local government representatives and MOHFW staff were involved in selecting and recruiting CVs. All CVs participated in community group meeting and EPI sessions in their assigned areas. In qualitative interviews, factors for becoming a CV cited were diverse and not related to income. Thus, several project initiatives were introduced (providing registers, bags, and job aids, formalizing their role in the community). The main factors for attrition were: migration to other places (for job opportunity, marriage, and higher education) and involvement in other business. They also cited initial family opposition that they gradually overcame. In 2014, annual dropout rate of CVs was around 12%, it increased to 34% as the project matured in 2015. However, in 2016, the annual rate was close to 8%, and less than 1% in the final three months.
Conclusion
The retention rate compared to other studies in Bangladesh is high. The project has shown that it is possible to retain completely unpaid volunteers by focusing on well-being of the community, desire for self-development, contribution in betterment of health, better utilization of free time, acceptance/honor of CV position and future career advancement.

O15:

Factors influencing motivation of health extension workers in Sidama zone, south Ethiopia: A qualitative study

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Background
In 2004, Ethiopia introduced the health extension program (HEP), comprising a package of basic community health services. A perennial challenge in community health worker (CHW) programs is the question of how to motivate CHWs. This study explored factors that influence motivation and performance of the Health Extension Workers (HEWs).
Methods
The study was conducted in six districts of Sidama Zone, South Ethiopia, employing focus group discussions (FGDs) and in-depth interviews (IDIs). FGDs and IDIs were tape recorded and transcribed verbatim into English. The transcripts were independently read in pairs by four researchers to identify key themes and develop a coding framework. Transcripts were coded using Nvivo (v.10) software, analyzed and summarized in narratives for each theme and sub-theme.
Results
Factors influencing the motivation of HEWs interplay at individual (interest to the profession, sense of belongingness, positive changes, and worthiness of the service), community (trust of the community, community satisfaction, recognition from community volunteers), organizational and administrative or political level. De-motivators from community side were lack/minimal support from village administrators and expectation of curative services. Organizational de-motivators: unsupportive supervision, rude behavior of health workers, low salary, workload, lack of career advancement, educational opportunities, opportunities to transfer, favoritism, inadequate pre-service and in-service training, lack of logistics and basic facilities. Support from district health office was mentioned as a motivator. Little or preferential support from political leaders/administrators and engagement of HEWs on political matters/affairs (de-motivators) were observed at administrative/political level.
Conclusions
Multiple factors influence motivation of HEWs. Supportive supervision, referral and community engagement were the priority areas identified for the introduction of quality improvement intervention to improve motivation and performance of HEWs. The health system needs to address context based de-motivators as the HEWs are the first point of contact for community based health services.

O16:

High retention of Community Health Workers in a rural district in Southwestern Uganda

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BMC Proceedings 2017, **11(Suppl 6):**O16:

Background
Despite evidence suggesting the effectiveness of community health worker (CHW) programs in improving maternal, new-born, and child health (MNCH) in low-to-middle-income countries, attrition of CHW is a global problem. We aimed to evaluate the characteristics and retention of volunteer CHWs who were trained and supervised in Bushenyi district, rural Uganda.
Methods
Between July 2012 and August 2014, Healthy Child Uganda facilitated a district-led scale up and training of CHWs in Bushenyi district. CHW demographics was collected at enrolment and ongoing participation monitored through CHW quarterly meetings. Existing project databases were analyzed. Retention rates and reasons for exiting the CHW program were presented by demographic variables. A multivariable logistic regression model was created to examine predictors of two-year retention.
Results
A total of 1,669 CHWs in all 64 parishes (563 villages) were selected and supervised in Bushenyi district. The majority of CHWs were female (75%); mean age was 38 years (SD: ±9.7). Retention was high, with 97% and 95% of CHWs being active after one and two years respectively. Of the 84 CHWs who exited the program, approximately 70% left for logistical reasons including moving to a new village (n = 20) and being offered a new job (n = 18). In unadjusted analysis, being male (OR = 1.66; 95% CI: 1.04-2.64) and having completed secondary education (O-Level) or more (OR = 1.77; 95% CI: 1.10-2.85) were associated with exiting the CHW program before two years. Sex (OR = 1.57; 95% CI: 0.95-2.60) and education (OR = 1.61; 95% CI: 0.97-2.65) remained significant predictors of 2-year retention in multivariable modelling, controlling for age at enrolment.
Conclusions
In our study, most reported attrition was due to logistical reasons that were unrelated to the CHW role or selection/program factors. Addressing CHW attrition, particularly for males and those with higher education, may improve retention for CHW programming over the longer term.

O17:

Evaluation of the effectiveness of community based health services in the North West Province, South Africa

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Background
South Africa faces a high burden of avoidable mortality but has weak preventive and promotive strategies to address this burden. In response, government is strengthening community based health services through primary health care (PHC) Ward Based Outreach Teams (WBOTs). This team includes trained Community Health Workers (CHWs) providing basic services at household level. The North-West Province (NWP) was an early adopter of, and had the highest coverage by teams by the end of 2015. This presentation describes a mixed method evaluation of the WBOTs in NWP conducted in 2015/16.
Methods
The performance of PHC facilities with and without WBOTs was compared using routine facility indicators, comparing changes from before (2010/2011) to four years after implementation (2014/2015). Indicators identified as sensitive to WBOT activity included: couple year protection rate (CYPR); antenatal care coverage; childhood immunization and Vitamin A coverage; under-5 (U5) diarrhoea with dehydration rate; and U5 healthcare utilisation rates. In-depth interviews and focus-group discussions were conducted with a purposeful sample of 60 participants, representing stakeholders from provincial to local levels.
Results
Measles coverage, CYPR and severe diarrhoea rates showed significantly greater improvement, and U5 utilisation and antenatal coverage declined at lower levels, in facilities with WBOTs compared to those without WBOTs; Vitamin A coverage improved equally in all facilities. On qualitative analysis, persistent weaknesses include integration into and acceptance of CHWs by PHC clinic staff. Enabling factors include strong stewardship by provincial and district management, and the positive role of retired nurses as team leaders.
Conclusion
WBOTs appear to have had effects on some PHC indicators, suggesting population level impacts of South Africa's CHW programme. However, these need to be confirmed in repeat assessments over time. Structured systems of supervision that involve both communities and facilities, and the integration of the community based health services with the formal PHC system remain key challenges and need to be addressed as priorities.

O18:

Recognition and sustained support of Community Health Workers in Sierra Leone, Lesotho, Malawi and Mozambique

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BMC Proceedings 2017, **11(Suppl 6):**O18:

Background
Responding to staff shortages in sub-Saharan Africa, task shifting occurred at different levels. Most clinical care in the countries studied is provided by mid-level cadres. Specific tasks including malaria diagnosis and treatment, HIV-testing and treatment support are often delegated to lay providers or CHWs, but there are concerns around recognition and sustainability.
Methods
Review of role, level of recognition and sustained support of CHW or lay provider cadres in Sierra Leone, Malawi, Mozambique, Lesotho and analysis of context specific factors; where available, effects on health service provision at community and health facility level was included.
Results
non-communicable diseases. Often compensating for critical health staff shortages, improved access to and quality of care was noted. However, these lay cadres face similar problems as regular qualified health staff: inadequate remuneration, lack of supervision and support, lack of harmonized training packages and job profiles. While some differences exist in levels of recognition, overall absorption of health workers into formal health system is slow, leading to many unpaid volunteers running the health services.
Conclusion
The renewed interest in CHWs should include efforts to formalize their role and accredited training packages. Moreover, recurring obstacles to absorption in the public health system and to adequate financial and technical support need to be tackled. Donors increasingly defer funding of staff remuneration to rely on domestic resources. However, in most countries this is not a realistic option; wage bill restrictions won't allow pay adjustments or staff expansion necessary to fill vacancies in staff establishment. Without a significant shift in mindset and practical measures to allow absorption and adequate support of CHWs in the public sector, reaching adequate service provision and health Sustainable Development Goals will remain out-of-reach for most communities.

O19:

Exploring factors that motivate Palliative Care Volunteers and their experiences as they carry out this role

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Background
Goal number 3 of the Sustainable Development Goals (SDGs) is to improve Health and Well-being with one of the targets being the recruitment, development, training and retention of the health workforce in developing countries. With the rising incidence of non-communicable disease (NCDs), there is an increasing need for good palliative care services. Holistic care involves the community even when delivered within the hospital setting because hospitals become communities of care for short or long term stay. Since 2011, Makerere Palliative Care Unit (MPCU) has recruited and trained 25 volunteers, and integrated them into palliative care service provision. Between 2012 and 2015, volunteers have offered pastoral and social services to 1007 patients and made 4532 patient visits. However, less is understood about what motivates them in their role, hence the need to explore these factors.
Methods
A qualitative exploratory study using semi-structured interviews was used with the 11 MPCU volunteers to collect data.
Results
Volunteers felt motivated by good teamwork, a chance for career development through acquiring new skills, compassionate/humanitarian contribution, training, and mentorship. Despite this, volunteers identified several challenges within their work that included high level of expectation from patients and families, as well as lack of mutual respect.
Conclusion
For them to perform their role well and remain motivated, volunteers should be appreciated, have good relations with all staff involved in patient care, and start income generating activities to sustain their valuable service to patients. Many of the volunteers have used this experience to move on to other roles in their communities.

Session 4: Delivery of health services

O20:

Human Centered Design for rapid results: improving quality in close to the community health systems in four villages in Kenya

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BMC Proceedings 2017, **11(Suppl 6):**O20:

Background
Health professionals have struggled to create systems-level quality improvement to influence household interactions that improve population health. We show how a Human Centered Design stakeholder-driven quality improvement process has made rapid change within a complex system across four Kenyan villages.
Methods
Our process, SALT (Stimulate-Appreciate-Learn-Transfer), begins with community health workers (CHWs) who have a critically-important "bridging" role to households. SALT (3 day workshop and follow-up) involves intensive coaching, helping CHWs uncover unarticulated needs and assumptions of communities to engage households in behavior change.
One community health unit with 27 CHWs formed four groups in four villages to address diverse public health issues (immunization, composting toilets, neonatal health, and public gardening). They achieved process and impact results over 7 months (March - September 2016) for projects they conceived, with no external funding for implementation.
Results
All groups achieved process goals (planning stage, assigned roles, innovated to solve problems, tracked to work plan, created independently functioning teams and documented improvements) and developed and implemented action plans with at least partial completion of desired impact goals. Two developed an additional Plan-Do-Study-Act (PDSA) cycle and one moved to scale. Moreover, all four groups also implemented both a household and community teaching component. Group A created 11 kitchen gardens, engaging 174 households and 2 churches. Group B visited all households with pregnant and postnatal women in their geographic region (N = 35) and continued home visits while adding education/demonstration kitchen gardens (cross learning from colleagues). Group C consistently increased targets, resulting in composting toilets (N = 4) and hand wash facilities (N = 120). Group D mobilized intensive community resources toward immunization defaulters (N = 6).
Conclusions
CHWs can design, lead and implement community driven PDSA cycles and iterate to achieve positive health gains.

O21:

Low utilization and service delivery challenges: results from a qualitative study of Mali's Community Essential Care Package

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BMC Proceedings 2017, **11(Suppl 6):**O21:

Background
Community health services in Mali are delivered through a decentralized network of ~900 health centers (CSCom), owned and operated by *Associations de Santé Communautaire*. As a pro-equity strategy, the Ministry of Health and partners held a national forum in 2009 to define a package of high-impact services for mothers, newborns, and children living more than 5km from a CSCom. Known as *Soins Essentiels dans la Communauté* (SEC), the package is delivered by a new cadre of community health worker (CHW), the *Agent de Santé Communautaire*. To explore challenges of service delivery and low SEC utilization, we conducted a qualitative study in four districts of Southern Mali.
Methods
The study applied three qualitative data collection methods: focus group discussions, triads/dyads, and one-on-one interviews. We summarized the data collected thematically and presented it based on components of the Phase 4 Ronald M. Anderson Health Utilization Model.
Results
SEC users appreciated improved access and availability of curative services provided close to home but expressed preference for an expanded package that offered injections and care for adult family members. Non-users included families where illness recognition was poor and/or mothers disempowered to make care-seeking decisions. CHWs reported feeling demotivated by poor working conditions, erratic supervision, weak community and health system support, and a low stipend paid irregularly. Housing, healthcare and livelihood options in remote communities were limited. Female CHWs reported widespread psychological and sexual harassment that contributed to attrition and went unexamined and unpunished. CHWs were outfitted with bicycles unsuited to difficult road conditions. Chronic stock outs of essential drugs and supplies threatened the failure of the entire SEC strategy.
Conclusions
Poor CHW working conditions, weak motivation, low job satisfaction and erratic supervision challenge delivery of quality services. Factors related to illness recognition, care-seeking, household decision-making, and user preferences constitute barriers to full utilization of high-impact services.

O22:

Referral to health facilities in Kenya: factors that support community health volunteers in linking the community and health systems

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BMC Proceedings 2017, **11(Suppl 6):**O22:

Background
The Kenyan Community Health Strategy outlines referral as a core function of Community Health Volunteers (CHVs) under direct supervision of Community Health Extension Workers (CHEWs). We sought to find out the factors influencing CHV referral from community to health facility level following a supportive supervision intervention that aimed at improving performance of CHVs and CHEWs in Nairobi (urban) and Kitui (rural) region.
Methods
Qualitative and quantitative data was collected before and after the intervention through eight programme assessment workshops, twelve focus group discussions, 92 interviewer-administered questionnaires and 98 in-depth interviews with the community, CHVs and CHV supervisors. Qualitative data was coded and analyzed using Nvivo while quantitative data was analyzed in MS Excel.
Results
CHVs reported they knew how to refer but only 2% of them reported having all items required in their work. Qualitative data noted

persistent stockouts of standardized CHV referral forms which tracks referrals. Community members identified factors promoting referral uptake as recognition of the importance of the referral, belief that by attending the health facility they can be helped and treated, and expectation of quality low cost services. Barriers to uptake of referral included distance to facility, lack of funds for transport, lack of drugs at health facility, poor attitude of health workers and long queues. Health facility staff who were not aware of the referral form, either lost or ignored it making it difficult for CHVs to obtain feedback. The community expected monetary support and preferential treatment following a CHV referral.

Conclusions

CHVs need relevant tools to refer appropriately. Health centres need to provide quality care to patients and feedback to CHVs in addition to working in partnership with CHVs and CHEWs to address barriers to referral uptake. CHVs and CHEWs should clarify community expectations to enhance uptake of referrals.

O23:

Perceptions of communities and health workers on the role of Community Health Workers screening and referring children with suspected tuberculosis and HIV infection, using the WHO/UNICEF Integrated Management of Childhood Illness guidelines, in three rural communities Uganda

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Background

Over the past century, community health workers (CHWs) have been identified as a growing platform for improving the survival of children under five. The potential for CHWs to improve pediatric tuberculosis and HIV care in sub-Saharan Africa is not well understood. Before introducing the recently launched WHO/UNICEF integrated community case management (ICCM) guidelines, which includes tuberculosis (TB) and HIV, we conducted a study to assess provider and community perceptions regarding the role of CHWs.

Methods

In 2016, four focus group discussions with female and male caregivers, 46 key informant interviews with CHWs, health facility staff and management committee members, community leaders, mothers who previously consulted a CHW for sick child illness were conducted in Kayunga, Sheema and Wakiso district in Uganda. Data was analyzed for content in respect to acceptability and capability of CHWs to implement ICCM/TB/HIV guidelines.

Results

Overall, TB and HIV are perceived as rare and checking for these diseases would not affect iCCM. Varied views however emerged regarding the ability and role of CHWs. Mothers with previous experience with CHWs felt that, if trained properly CHWs are capable of implementing ICCM/TB/HIV guidelines and caregivers are willing to be referred to health facilities. CHW viewed TB/ HIV as complicated problems requiring "very good" training. Most CHWs had little previous encounter with referrals. Health workers (HWs) considered CHWs of lower skills mostly meant to promote prevention of these diseases. Both CHWs and HWs thought facilities may not handle the additional patient load. Lack of incentives and facilitation such as gloves, torches, gumboots to provide better services, stigma associated with HIV and TB were some of the constraining factors for CHWs.

Conclusions

This study highlights the potential of CHWs integrated into a functioning local health system in TB/HIV care. Efforts are needed to ensure competencies of CHW, facilitated referral system and motivating CHWs.

O24:

Development of community skilled birth attendants in hard-to-reach areas of Bangladesh

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Background

Reaching mothers during prenatal period is a critical intervention for Bangladesh. National data shows that ANC and delivery coverage has not increased sufficiently to meet the targets in last 10 years. MaMoni HSS, a USAID supported health systems strengthening project, started work in 6 districts from 2013 to improve maternal care services through increased skilled attendance both at facility and community levels. Project trained 56 local women in a six month community skilled birth attendant (CSBA) course accredited by the Bangladesh Nursing Council. Local women from respective communities were selected as private CSBAs (pCSBA) by a team consisting of Ministry of Health, MaMoni and Obstetrical and Gynecological Society of Bangladesh (OGSB). The project supported them to establish their services in the community, mobilize the support of the local government to popularize their services with reasonable service charges. This analysis aimed to capture the performance of community skilled birth attendances and how they are sustaining in the community.

Methods

A secondary analysis of routine program data from private CSBAs was conducted in three sub districts of Habiganj, a northeastern district of Bangladesh, between April 2015 and March 2016 that included delivery and post delivery services.

Results

pCSBAs performed about 33-41% of all deliveries in their respective working areas. They referred 9-15% women during antenatal and delivery period in nearer referral facilities. They also visited 44-56% recently delivered women and the newborn within 3 days of birth. The monthly income of pCSBAs ranged from USD 2.6 to USD 79.0. 7-10% stopped services after two years. Getting cash payment from poorer communities was challenging for them.

Conclusion

Private CSBA increased coverage of skilled care at the community level. To maximize the utilization, community resources for offsetting operating costs, ensuring skill retention with supportive supervision, proper allocation of work areas and recognition mechanism from the community need special attention.

O25:

Factors affecting effectiveness of Integrated Community Case Management of malaria, pneumonia and diarrhoea by Village Health Teams in Napak district, Uganda

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Background

Despite of being easily preventable and treatable, malaria, pneumonia, and diarrhoea continue to be the major killers of children in Napak district. Recent years have seen a development of a new generation of programmes called Integrated Community Case management (ICCM) of fever, pneumonia and diarrhoea recommended by WHO and UNICEF to address the inequitable gap of accessing effective treatment. ICCM programme was rolled out in Napak district in 2010 in which 440 Village Health Teams (VHTs) were selected, trained and supported with supplies and medicines to treat children less than five years in the community. This study aimed to establish the factors that contributed to the success of ICCM program in Napak district and the limitations.

Methods
This was a cross sectional study of 166 VHTs and employed both quantitative and qualitative methods of data collection. Data analysis was by SPSS.
Results
There was high (96.4%) retention of VHTs in Napak district due to the community involvement in their selection. A good number of respondents (66.9%) had never gone to school where a correlation test revealed younger illiterate VHTs performed better. The program had challenges in maintaining adequate stocks of medicines where it was found that VHTs did not have adequate quantities on the day of the visit. There was no consistency in assessment, classification, and treatment of malaria, pneumonia, and diarrhoea. A significant number had gaps in knowledge and competence where only 59% of the VHTs had adequate knowledge. The main area of weakness was in counting respiratory rate of which (30.7%) could not count respiratory breaths within three breaths of those counted by the qualified Research Assistants.
Conclusions
ICCM programme is improving access and coverage of treatment to children less than five years with noticeable reduction of workload in health units. However, there are still challenges in management of some conditions and irregularities in training, supervision, and constant supply of commodities which should be addressed.

O26:

Evaluating adherence to testing and treatment procedures by Community Health Volunteers in Community Case Management of Malaria, Bungoma County, Kenya

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Background
For prompt diagnosis and treatment of malaria cases, the World Health Organization recommended Community Case Management of Malaria (CCMM). In CCMM, community health volunteers (CHVs) are trained in management of uncomplicated malaria at household level while referring severe malaria cases or other ailments to health facility. We evaluated adherence to testing and treatment procedures using rapid diagnostic test kits (RDTs) and artemether lumefantrine (AL) respectively.
Method
A cross sectional study was conducted among 147 CHVs in Bungoma County who were randomly selected from those trained on CCMM. An observational checklist and structured questionnaire was used to evaluate the testing and treatment procedures, where a series of steps were systematically evaluated as they carried out testing and treatment. CHVs scoring an average of 80% or more were considered to adhere to testing while an average score of 100% was considered adherence to treatment. Data was analyzed using both descriptive and bivariate analysis.
Results
Of the 147 CHVs, the mean age was 40 and 39% were female. Majority of CHVs (89%) had attained post primary education. A total of 452 clients were tested for malaria at the household level. 65% of CHVs were considered to adhere to testing procedures while 85% of CHVs with a positive malaria test managed treatment correctly. Frequency of using gloves (COR 2.02 (95% CI 0.78- 5.25) and rapid diagnostic test (RDT) availability (COR 6.08 (95% CI 1.12- 33.1) were significantly associated with adherence to testing. 67% CHVs who had received supportive supervision (131) adhered to testing.
Conclusion
A considerable number of CHVs tested and treated clients correctly per the required guidelines for CCMM. Availability of commodities such as gloves and RDTs influences adherence to testing and treatment procedures. Level one health service is essential in the fight against Malaria.

O27:

Caregivers' adherence to Community Health Workers referral advice after treatment with rectal artesunate for severe malaria at health facility level in three sub-Saharan countries - Burkina Faso, Uganda and Nigeria

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BMC Proceedings 2017, **11(Suppl 6):**O27:

Background
Malaria as a preventable and easily treatable infection remains a real public health challenge in sub-saharan Africa (SSA). Young children living in SSA especially in rural areas are at an increased risk of developing severe illness or dying from malaria due to the poorer access to prompt and adequate treatment. World Health Organization recommends that patients in this condition could be treated with a single dose of rectal artesunate (RA) as pre-referral treatment which can reduce the risk of death or permanent disability in young children. Children aged under 5 years were enrolled in a large study in 3 countries of SSA because they had danger signs preventing them from being able to take oral medication. We examined adherence and factors associated with adherence to referral advise for those who were treated with RA.
Methods
Patient demographic data, speed of accessing treatment after danger signs were recognized, clinical symptoms, malaria microscopy, treatment-seeking behavior, and adherence with referral advise were obtained from case record forms of 179 children treated with pre-referral rectal artesunate in a multi-country study. We held focus group discussions and key informant interviews with parents, community health workers (CHWs), and facility staff to understand the factors that deterred or facilitated adherence to referral advise. Content analysis was used and emerging themes were manually coded.
Results
There was very high level of adherence (90%) among patients treated with pre-referral RA. Age, symptoms at baseline (prostration, impaired consciousness, convulsions, coma) and malaria status were not related to referral compliance in the analysis.
Conclusion
Teaching CHWs to diagnose and treat young children with pre-referral rectal artesunate is feasible in remote communities of Africa, and high adherence with referral advise can be achieved.
Trial registration: ISRCTN13858170

O28:

Action research to assess the effect of a supportive supervision training intervention targeting supervisors of Community Health Workers in Kenya

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BMC Proceedings 2017, **11(Suppl 6):**O28:

Background
Supervision of Community Health Workers (CHWs) contributes to improved performance, motivation and retention in community health services. Inadequate supervision is a weakness in many community health programmes. Research shows that supervision of CHWs is perceived as controlling, fault-finding and primarily focuses on report collection. There is limited documentation of how quality of supervision can be improved. This action research aimed at improving the quality of CHW supervision in Kenya by training their supervisors in supportive supervision and provision of supervision checklists.
Methods
In this action research, 61 supervisors of CHWs from 4 community units were trained in rural (Kitui County) and urban slum (Nairobi County) settings. They were trained on supportive supervision, focusing on educative, administrative and supportive components, non-judgemental problem solving, and advocacy using experiential and participatory approaches. This six-day training was adopted from the Kenyan supportive supervision curriculum for community-level HIV counsellors. Supervision activity questionnaires were administered to supervisors twice to assess changes in frequency and approaches to supervision 6 months after the training. Qualitative interviews were conducted with CHWs and their supervisors to explore perspectives and experiences with supervision. Data on supervision were collected before the training and after 6 months.
Results
Following training, the focus of supervision sessions shifted from controlling and administrative approaches to coaching, mentorship and problem-solving. There was also an increase in the frequency of supervision in one community unit in Nairobi only. All supervisors and CHWs reported that the intervention was helpful and it responded to capacity gaps in supervision and sharing structured feedback to CHWs. Supervisors found the curriculum acceptable and useful in improving their skills.
Conclusion
This 6-day intervention responded to capacity gaps in supervision and was attributed to improved supervision capacity of supervisors. This intervention demonstrated the importance of scaling up training in supervision and investment in operational support for CHWs' supervisors.

O29:

Development of midwifery skills for Community Health Extension Workers in Northern Nigeria

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BMC Proceedings 2017, **11(Suppl 6):**O29:

Background
In northern Nigeria, maternal and newborn mortality remain high. Community Health Extension Workers (CHEWs) are often the only health workers in rural health posts. With training and support they could save more lives. To facilitate CHEW task shifting, we conducted a pilot of a post-service midwifery skills mentoring program.
Methods
1196 CHEW mentees from rural posts in three states received: 1) intensive didactic training (1 week) 2) clinical attachment (1 week), and 3) on-the-job mentoring (3 months). Pre- and post-tests were administered, and mentees self-rated competencies for 16 key midwifery skills at baseline and endline. They also gave feedback on program elements. Bi-variate and multi-variate significance tests were used to identify predictors of high levels of competency.
Results
Most mentees were female (89%), averaging 12 years as a health worker, with 4 at their current facility. Mean knowledge score after didactic training rose from 33.9 to 50.8 ($t = 43.1$, $p < .001$), after clinical attachment practical skills awareness rose from 14.6 to 20.8 ($t = 25.1$, $p < .001$), and after mentoring actual performance of 15 skills from 24.5 to 41.9 ($t = 27.8$, $p < .001$). Key relational skills mentoring included developing reputations and inspiring confidence in the community and building teamwork with traditional birth attendants (TBAs), village health workers (VHWs). Significant predictors of endline total confidence level were management of complications; development of teamwork with TBAs, VHWs, and other clinical staff at the clinic; management of hospital referrals; and establishment of good relations with the community (Adj. R-squared = .85).
Conclusions
All three elements of the mentoring program increased knowledge, awareness, and practice of the key midwifery skills, with mentoring contributing greatest gains in competency on key lifesaving skills. Expansion of the mentoring program to more CHEWs can contribute to reducing preventable deaths while the national task-shifting program is being implemented through pre-service changes to CHEW training.

O30:

The quality, safety and acceptability of task shifting injectable contraceptive services to Community Health Workers in Tanzania

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Background
In Tanzania, high fertility and unmet need for family planning have emerged as salient problems for health and development. The highest levels of fertility and unmet need for family planning occur in rural areas. Rural women have a total fertility rate of 6.1 births and the use of modern contraceptive remains low while unmet need for family planning is escalating. The range of methods available in rural distribution lacks Depot-medroxyprogesterone acetate (DMPA), the most popular method amongst Tanzanian women. Lack of expanded range of contraceptive is contributed to by shortage of staff to administer injectable contraceptive. Community-based injectable contraceptive can increase method mix, create wide range and increase access to contraceptives. This was a feasibility study to assess ability of CHW to safely administer DMPA to create evidence for task shifting injectable contraceptive to CHW.
Method
The project trained 31 CHWs in Kilombero district to provide injectable DMPA in addition to condoms and pills. We collected data on service statistics using structure observation medical checklist and exit interview to clients served by CHWs in community settings of 17 selected villages that are CHW service catchment area of Kilombero district from June 2015 to February 2016.
Results
In the nine months' study duration, CHWs provided DMPA service procedures to 1704 women. Most CHWs adequately performed all steps of safe DMPA injection procedures except few 196 (11.5%) who didn't, whereby steps of checking the vials for expiry date and shaking the vial to homogenize DMPA solution were inadequately

performed, and CHWs inadequately performed the step of filling the DMPA solution in only 175 (10%) procedures. Among 1304 women who participated in exit interview, 950 (94%) accepted services provided by CHW and 901 (89%) users were satisfied with these services, while general community acceptance was at 790 (78%).

Conclusion

The use of CHW to administer DMPA in the rural community setting is safe, feasible and acceptable in Tanzania.

O31:

Community Health Workers: task sharing of Implanon insertion in Ethiopia

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Background

In 2007 the Federal Ministry of Health of Ethiopia (FMOH) established a new cadre of health extension workers (HEWs) who would be responsible for providing a 16-element health package. In 2009, the FMOH noting a total fertility rate (TFR) of 5.1, mandated that the training and service provision of implant insertions by HEWs would be a key strategy in increasing availability of long-acting reversible contraceptives (LARCs) in the community. The aim of this abstract is to highlight the task sharing of Implanon insertion by HEWs in Ethiopia.

Methods

Through USAID funding, the Integrated Family Health Program (IFHP) led by Pathfinder International and JSI, implemented a program to train HEWs to perform Implanon insertions at the community level health posts (HP). Competency-based trainings were performed for HEWs, followed by mentoring and supervisory visits post-training. In addition, several strategies were integrated to provide for timely implant removals, including trainings of providers on proper removal and providing back-up support where trained providers would regularly visit HPs to perform removals. The program was scaled-up to include more than 5000 HPs in the Amhara, Tigray, Oromia, SNNP regions.

Results

As of 2015, approximately 9518 HEWs had been trained on Implanon insertion. Approximately 83% of the HPs in the IFHP regions had at least one HEW capable of inserting Implanon. In addition, there has been a gradual transition of the program implementation to the FMOH, with technical assistance from IFHP as needed. Across all methods and cadres in 2015, 20% of total couple years of protection (CYPs) came from HEW/HP implant insertions.

Conclusions

Community health workers (CHWs) can be successfully trained to provide implant contraceptive insertion at the community level, as has been shown in Ethiopia with HEWs. CHWs can be an important part of increasing access to LARCs at the community level.

O32:

The development and implementation of a lung health awareness programme for Community Health Workers in the rural district Masindi of Uganda

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BMC Proceedings 2017, **11(Suppl 6):**O32:

Background

Chronic lung disease is common but under-reported in sub-Saharan Africa. Following a survey in rural Uganda which found 16% of the adult population had chronic obstructive pulmonary disease (COPD), we developed a tailored lung health awareness programme about the local risk factors for COPD and common chronic lung diseases. This project was a two-year train-the-trainer programme conducted by healthcare workers (HCWs) and community health workers (CHWs) in Masindi district of Uganda.

Methods

Working with HCWs who had conducted the FRESH AIR Uganda survey, and therefore had a commitment to the project aims, we taught HCWs how to teach CHWs about lung health and how they could teach their communities. We held a series of meetings with stakeholders to develop the project strategy and contents of the education materials. Draft education materials were shared with senior clinicians, administrators including the Secretary for Health and District Health Officer in Masindi, through all grades of clinicians to CHWs and villagers. Incorporating all feedback, we designed a training programme with HCWs who were taught how to train other HCWs to deliver the programme to CHWs. The CHWs then taught people in their villages. Radio programmes and radio hits were run for three consecutive months on the local radio station in 3 languages.

Results

Educational materials for use in training HCWs and CHWs using desk-aid flip-over charts and posters have been designed and approved by the Ministry of Health. To date, we have trained 12 HCWs who then trained 47 HCWs and 100 CHWs. We tested knowledge questionnaires. Approximately 15,000 people have received the messages directly and thousands more through mass media messages.

Conclusions

Using the local health system, we developed an effective lung health awareness programme for CHWs to teach the communities about the damaging effects of biomass smoke and tobacco smoking.

O33:

Community Health Workers: an essential but challenging component of an integrated agriculture-health program

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Background

The potential of pro-vitamin A (VA) rich orange-fleshed sweet potato (OFSP) to improve VA intakes of women and children and child VA status is known. The Mama SASHA project implemented in western Kenya, assessed whether integrating access to OFSP into public health services for pregnant women results in improved ante-natal clinic (ANC) service utilization, nutritional and caregiving knowledge, frequency of VA intakes and nutritional status among their children.

Methods

ANC nurses were trained in nutrition messages. Pregnant women were encouraged to join women's clubs led by Community Health Workers (CHWs) monthly. Each facility had "volunteer" CHWs (ranging from 11-40) who encouraged women to attend ANC, supported nurses with filling in vouchers to be redeemed for OFSP vines or conducting group nutrition education sessions at facilities. Initially (April 2011), each CHW received a 1000 Ksh ($11.8 USD) a month, plus a 500 Ksh stipend to cover transport to the monthly meeting. In May 2012, that stipend was halved by the Ministry. CHW motivation dropped significantly when stipends were halved. Operational research (twice) and cross-sectional baseline (2011) and endline (2014) surveys were conducted in intent-to-treat intervention and control areas to capture changes in knowledge and uptake of OFSP by caregivers of children under two years of age and biological outcomes among those children.

Results
Sixty-three percent of vouchers issued were redeemed by 3,281 women. Knowledge of nutrition, child-care and health seeking behaviors were significantly higher among women who fully participated than those who partially participated or resided in control areas. Enhanced maternal and child health and improved food security were the most recognized benefits by participants. Nurses perceived higher ANC attendance. CHWs were essential for success, having key roles in identifying mothers early in their pregnancy and encouraging them to attend ANC, providing message reinforcement in monthly pregnant women's club meetings at the community level, and facilitating voucher redemption.
Conclusions
Full participation in the intervention was critical for achieving impact on nutritional status. CHWs were essential for ensuring this multisector integration.

O34:

Sustainable implementation of Integrated Community Case Management: the way to achieving Sustainable Development Goal 3 - good health and well-being

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Background
In the year 2006 Community Health Strategy was inducted in Kenya. An evaluation done in October 2010 indicated that the strategy had failed to meet its objectives due to lack of sustainability, inadequate training, supervision challenges and incomplete Community Health Volunteers (CHVs) kits. UNICEF and WHO guidelines for ICCM by CHVs at household level recommends treatment for childhood pneumonia with antibiotics, treatment for diarrhoea with zinc and Oral Rehydration Solution, treatment for malaria with Artemisinin-Combination Therapy and New born care.
Methods
Living Goods Kenya (LG) in conjunction with the Busia County Government has implemented ICCM in the last one year with great impact and improvement in the Health metrics. The target group being children under 5 years and pregnant women. LG Kenya recruits the already existing CHVs and capacity build them on ICCM and LG Integrated curriculum with focus on assessment, treatment, referrals and follow ups of under 5 with Pneumonia, Malaria, Diarrhoea, and Malnutrition, Pregnancy and New born care. The trained CHVs are certified for competence, graduate and are issued with kits ready to serve their communities with the support of LG field staff.
Results
Living Goods model operates as a social enterprise that responds to poverty and health. Its philosophy calls for no stipends to volunteers, instead it fosters the empowerment of CHVs to do business while providing medicine and other lifesaving health products delivering them to the community's door steps making them cheaper than free. CHVs make a small margin that sustains them, making the model sustainable. The work of CHVs is simplified by use of a smart phone which also support the daily digital data reporting.
Conclusion
To ensure sustainable ICCM implementation in Kenya and regionally, Living Goods is leading the way. However, more support from Governments and like-minded development partners is highly needed.

Session 5: Maternal, New-born and Child health

O35:

The role of Community Health Workers in improving child health, maternal and newborn health in Midwestern Uganda

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BMC Proceedings 2017, **11(Suppl 6):**O35:

Background
Uganda's highest disease burden is from child health conditions. In mid-2015, Malaria Consortium introduced integrated Community Case Management - Maternal and Child Survival (iCCM-MaCS) project as an approach in reducing Uganda's child health burden using Village Health Teams (VHTs). In March 2016, 5,886 VHTs were trained for six days and 7,055 more oriented in 17 mid-western districts in management of pneumonia, malaria, and diarrhoea in under-fives, giving advice to mothers on routine new-born care, ANC, and delivery and to recognize and refer children under five with danger signs. This abstract demonstrates improvements to date in access to effective community based health care through this project.
Methods
Annual maternal and new-born data for 2014 (baseline year) and 2016 (midline year) was assembled from Uganda's District Health Information System (DHIS2) while under-five data for the same period was assembled through project routine data collection database. Both datasets were extracted from the databases and exported to Excel where frequency distribution, aggregation and comparisons were done.
Results
The project has had significant positive effects on key indicators ($p < 0.05$). The percentage of children under-five treated within 24 hours improved between baseline (57.1%) and midline (86.3%) while newborns visited at home by VHTs also improved (baseline, 13.8%; midline, 15.9%). Children under five referred to health units reduced between baseline (4.5%) and midline (2.5%) while home deliveries reduced between baseline (12.2%) and midline (10.6%).
Conclusion
In addition to provision of routine iCCM activities for sick children under five years, VHTs could combine this with other activities which increased access to maternal and new-born health services. There has been reduction in referrals, attributed to no stock-outs of VHT drugs compared to the baseline year when most cases were being referred due to high stock-outs.

O36:

Role of Village Health Teams in improving maternal and new-born health outcomes in remote South Western Uganda

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Background
Community Health Workers are widely utilised in low- and middle-income countries to provide health education and sensitisation to improve population well-being. In Uganda, Village Health Teams (VHTs) are widely involved in programmes to reduce maternal and child mortality. They represent the first line of modern health care "health centre 1". This paper provides an analysis of the impact of VHTs' work in Kanungu district in improving maternal and child health (MCH) outcomes between September, 2013 and September, 2016.
Methods
Bwindi Community Hospital targeted reducing under-5 mortality by 20% and maternal mortality by 15% in a catchment area population of 70,000 in three years. 502 VHTs were systematically trained and supported by community health nurses to provide sensitisation and collect health data about MCH activities in 101 villages. The interventions targeted identifying and visiting every pregnant women, promoting institutional deliveries through individualised birth-planning, registering birth outcomes and all-births follow-up for new-born care sensitisation. 5283 deliveries, 306 child and 12 maternal deaths were reported. Over three years, every village was visited every 28 days by the nurses to collect health reports and visit pregnant women. All pregnancies, births, deaths, and follow-ups entered in an electronic population database were analysed in this cross sectional study using Ms Excel.

Results
During the intervention, institutional deliveries in the three Sub-Counties increased from 74% in 2013 to 89% in 2016. 6112 (3 fold increment) complete VHT referrals made, complete routine child (1-4 years) immunisation coverage increased from 74% to 99%, demand for 4th ANC and long-term contraception increased by 13% and 16.4% respectively. Under-5 mortality rates reduced by 45%, neonatal mortality rates by 30%, infant mortality rates by 25%, and maternal mortality by 30%.
Conclusions
Village Health Teams are essential in improving MNCH outcomes and reducing Child and Maternal Mortality rates in rural communities.

O37:

Contribution of Community Health Workers' improvement plan in maternal, child health and nutrition service uptake in Kilindi district, Tanzania

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Background
Implementing a Community health worker (CHW) program improvement plan is critical for increasing the uptake of maternal and child health services in the community. With intent to improve maternal child health and nutrition through strengthening facility and community health systems, World Vision implemented a project in Mgera and Kimbe divisions of Kilindi district in Tanzania. This paper provides findings on the contribution of CHW improvement plan on the uptake of maternal, child health and nutrition services.
Methods
The method employed for this study involved an assessment of CHW program functionality in Kimbe and Mgera divisions, measured by community health workers (CHW) Assessment Improvement Matrix (CHW-AIM) tool, against 15 key programmatic elements that CHW programs should consider as important to successfully support CHWs. Baseline assessment was conducted in October 2012 and follow up was done in October 2014 and April 2016. In addition, a pre- and post-intervention care giver survey was employed among 682 pregnant women or mothers with children under the age of two years.
Results
In 2012 the overall CHW functionality score was 0.2 (a non-functional system). At this time, recruitment, CHW role and individual performance evaluation was found to be a rate of 3 and all the other components were zero. After three years of implementation of the improvement plan, the overall score increased to 1.9 (a functional system). Referral system, community involvement, program performance and evaluation, and country ownership increased to 1 and the rest of the components were at 2 and 3. Thus, 4 ante-natal care visits increased from 59% to 77%, institutional delivery increased from 37% to 44%, and exclusive breast feeding increased from 10% to 40%.
Conclusions
Frequent monitoring of the improvement plan was key to the overall success of the CHW program in Kilindi district.

O38:

Community Health Workers' contribution to the utilisation of maternal health services among women in Kakumiro district, Uganda

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Background
Community Health Workers (CHWs) have played generalist health roles and the findings show that they have widened the coverage of many health services. CHWs enhance access, increase the use of primary health care services acting as a conduit between patients in need and the required health care services. The main objective of the study was to assess the contribution of CHWs to the utilisation of maternal health services among women in Bugangaizi West County, Kakumiro District, Uganda.
Methods
Literature review, and a cross sectional quantitative study supplemented with qualitative inquiry was conducted among postpartum mothers. Structured interviews were carried out on 384 post-partum mothers. Quantitative data was entered into Epidata version 3.2 and exported to SPSS version 16 for analysis. The key informant data was analyzed using Nvivo 7 software.
Results
Qualitative data analysis revealed that the respondents appreciated the services provided by CHWs. The level of utilization of post-natal services was higher (n = 219, 57%) than the national average of 33%. In addition, a majority of the women delivered in the health facility (n = 349, 90.9%) which is much higher than national average of 54%. Seven CHW activities had a statistically significant contribution to the utilisation of maternal health services. Key ones are: education of women ($p = 0.001$), assessment of mothers for height and weight ($p = 0.006$), education about the disadvantages and advantages of TBA services ($p = 0.027$), accompanying women to deliver in facilities ($p = 0.010$), promotion of healthy behaviour during pregnancy and the postpartum period ($p = 0.028$).
Conclusion
The measured level of maternal health was that 6 out of every 10 mothers utilised three major maternal health services. It is only the CHW activities related to reproductive health education, health promotion, and accompaniment to the facility for delivery and home visits and assessment that significantly contributed to the utilisation of maternal health services.

O39:

Tracking of pregnant women to enhance utilization of skilled maternal and new-born child services: lessons learned from Nyagonge Community Health Unit, Migori County

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BMC Proceedings 2017, **11(Suppl 6):**O39:

Background
Kenya adopted a Community Health Strategy (CHS) in 2007 to accelerate achievement of Millennium Development Goals by strengthening community facility linkage. Nyagonge Community Unit (CU) in Migori County Kenya, was established in 2012 to improve the deteriorating MNCH indicators in the catchment population and is linked to Nyagonge health center. The CU serves 4,505 people in 685 households.
Methods
Nyagonge CHWs stimulate MNCH service demand at house hold and community level by promoting access and utilization of skilled care in order to improve maternal and newborn outcomes. Each CHV conducts continuous household mapping to identify pregnant women and maintains an up to date client tracking log register for tracking outcomes for key indicators. Household visits are conducted to remind clients on their clinic appointments, track and record dates and place of 4th antenatal visits, delivery, postnatal clinic visits, family planning uptake and new-born child welfare clinic attendance to ensure completion of immunization schedule. The vibrant community based referral and linkage system using motor bike and motor vehicle vendors supports maternal, child and other referrals from household level to the health center up to level 4 of care. This is enabled by monthly contributions of 0.09 dollars (Ksh 10/-) per household, collected by CHVs and deposited in a commercial bank account operated by the CU with excellent accounting structures in place.

Results
There is consistent improvement in MNCH yearly service utilization and outcomes from 2012 to 2016. First ANC visit increased from 88 to 313, 4th visit 8 to 100, skilled health facility deliveries 53 to 128, and Modern family planning uptake 27 to 158, maternal deaths reduced from 5 to 1 in 2012 - 2016, 133 beneficiaries of community referral kitty.
Conclusion
CHWs have capacity to influence communities' access, utilization of MNCH services that are sustainable and responsive to the needs of the community.

O40:

Community Engagement for Maternal Health: Lessons Learned from Southern Ethiopia

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BMC Proceedings 2017, **11(Suppl 6):**O40:

Background
Ethiopia has a unique approach for community participation, embedded in its health policy. Within the Health Extension Program, two community participation structures have been established: the health development army (HDA) and the pregnant women forum (PWF). As part of a quality improvement intervention HEWs received trainings, guidance and supervision focused on facilitation of these meeting. This study aimed to evaluate the intervention and explore the perceptions of involved stakeholders regarding efforts to enhance community participation.
Methods
We conducted a mixed method study in Shebedino district, Sidama Zone, south Ethiopia. We explored the perceptions of different stakeholders on the content and functionality of the HDA meetings and PWFs using in-depth interviews with HEWs (32), HEW supervisors and managers (8) and focus group discussions (FGDs) with community members (8). The interviews and FGDs were recorded, transcribed, translated, coded and thematically analysed. In addition, we collected data related to the outputs of the intervention and service utilization and were analysed.
Results
The proportion of pregnant women attending the PWF increased by 71%, while the proportion of HDA leaders attending HDA meetings increased by 34%. The percentage of pregnant women who came for care and were identified by the HDA increased from 43% to 85%. Generally, the antenatal care utilization figures went up, from 73% to 77%. Institutional delivery increased from 79% to 83.3%. All stakeholders felt that both meetings had led to increased health seeking behaviour. The functionality of the meetings was hindered by unmet expectations regarding incentives for HDA leaders, absentees, lack of reporting formats and lack of support from the *kebele* administration.
Conclusion
With focused training, facilitation guidelines and regular supportive supervision, HEWs can stimulate community participation, resulting in better maternal health service utilization.

O41:

Community initiatives enhance illness recognition and care seeking for maternal and new-born complications. A case study of the Expanded Quality Management Using Information Power project experience in rural Eastern Uganda

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BMC Proceedings 2017, **11(Suppl 6):**O41:

Background
Despite various evidence-based, affordable and appropriate interventions used in ensuring that mothers and their new-borns survive in Uganda, maternal and new-born health coverage indicators remain poor. During the Expanded Quality Management Using Information Power (EQUIP) intervention, Community Health workers (CHWs) from different villages formed Quality improvement teams (QITs). These QITs mentored by the district health team developed and implemented change ideas such as registration of all pregnant women, home visits, helping spouses make birth preparedness plans, sensitization on maternal and new-born danger signs, referral of women and babies and formation of women's savings groups. This study assessed how community initiatives influenced maternal and new-born illness recognition, decision making during illness, and care seeking in rural eastern Uganda.
Methods
This was a cross sectional study using qualitative methods. We conducted 48 event narratives: maternal deaths and illnesses as well as new-born deaths and illnesses. Additionally, we conducted 6 focus group discussions (FGDs) with women's savings groups and community leaders. Qualitative data were analysed thematically using Atlas ti software.
Results
Results show that only about 15% of the maternal and new-born deaths in the intervention district first sought care from informal care givers as compared to 60% in the comparison district. Up to 80% of the respondents for maternal and new-born illnesses in the intervention district reported having received health education at the household level as compared to only 30% in the control. 70% of the responses from the FGDs in the intervention district reported an improvement in the health services delivery even at the community level as compared to only 10% in the control.
Conclusion
Community approaches such as CHW quality improvement activities and women's savings groups can facilitate illness recognition, decision making and care seeking for maternal and new-born illness. However, there is need to strengthen the supply side by improving the quality of basic and comprehensive emergency obstetric and new-born care in response to community demand.

Session 6: Challenges, lessons learnt and opportunities

O42:

Implementation of a new Community Health Worker Programme in a decentralised health system: Lessons from a South African District

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BMC Proceedings 2017, **11(Suppl 6):**O42:

Background
To achieve the Sustainable Development Goals, South Africa embarked on a strategy to re-engineer the Primary Healthcare (PHC) system in 2011, which includes the creation of Ward-based Community Health Workers Outreach Teams (WBOT). Each team comprises of six CHWs led by a professional nurse. The national policy prescribes that each community (ward) has at least one WBOT so as to improve access to healthcare, thus strengthening the decentralized district health system. We explored WBOT members' and managers' views on implementation of the policy in the Ekurhuleni district.
Methods
We conducted an in-depth qualitative evaluation consisting of five focus group discussions and 19 in-depth interviews with CHWs and team leaders/managers respectively. Using framework analysis approach, data was coded and themes drawn as per the National Implementation Research Network's Implementation Drivers' Framework

(which identifies competency, leadership and organizational factors as drivers of implementation processes).

Results

We found competence to perform role was compromised by poor WBOT selection and inadequate training / coaching. Weak organizational process compounded by poor planning, budgeting and rushed implementation resulted in problems with procurement of resources, precarious working conditions, payment delays and uncertainty of employment contracts. Poor communication between teams and key actors, insufficient support for data management revealed leadership deficiencies at the national and implementation level, further compounded by confusion of the ownership of the program, and poor integration of WBOTs amongst staff and in the delivery of services. This affected the embeddedness and acceptance of the program in clinics and the community, impacting on implementation fidelity.

Conclusion

Our study highlights the importance of health systems readiness when implementing top down policies in decentralised systems. Sustainable systemic change requires clear, detailed planning guidelines, defined leadership structures, earmarked budgetary commitment, and continuous communication strategies. Furthermore, adaptation to local contexts must be emphasized in policy processes.

O43:

Village Health Teams as Effective Agents in Community Case Management Programmes: A Case Study in Masindi District, Uganda

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BMC Proceedings 2017, **11(Suppl 6):**O43:

Background

Village health teams have worked for integrated case management programmes in Masindi district since 2010. The purposes of this study were; to generate knowledge, document evidence, and to strengthen the effectiveness of village health teams through improving work environment.

Methods

This study applied a qualitative research method. Data were collected from the district health office, coordinators, supervisors and village health teams. Recorded data were transcribed and triangulated with information from written notes to ensure completeness and validity. Themes were generated and data analysed using qualitative software, Nvivo 10. Ethical approval number: SS3307.

Results

Village health teams were selected in a participatory and transparent process involving all stakeholders. They were given basic health training and logistics to manage uncomplicated illnesses and refer complicated ones to health centres. They brought health services nearer to communities, and reduced health care seeking costs and childhood deaths. Challenges included non-functional logistics and frequent medicines stock outs. The basic health training and erratic support supervision received were inadequate to build competences for them to manage patients effectively. Potential misuse and development of drug resistance were prominent. Continuous medical education and regular support supervision were vital to strengthen competences and to mitigate associated problems.

Conclusions

Village health teams registered positive achievements. They could achieve more if better trained and sustainably equipped. In addition, they were acceptable to communities and leadership. These offer an opportunity to tap locally available resources to maintain logistics and medicines stock, motivation and sustainability of activities village health teams.

O44:

Community Health Workers as frontline health responders in complex environments: insights and lessons from Nepal and Pakistan

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Background

Countries buffeted by the unexpected, such as natural disasters and political unrest, offer strategies for adapting community health systems to respond to local needs, and lessons for other countries to sustain and safeguard health gains. Using innovative approaches, Nepal and Pakistan adapted community health worker (CHW) programs to address challenges, increase program resilience, and improve services in complex environments. This paper discusses: Engaging CHWs in recovery efforts after Nepal's 2015 earthquake and strengthening routine immunization in Pakistan within a challenging political environment.

Results

For nearly 30 years, Nepal's female community health volunteer (FCHV) program has prevented and treated key diseases; increased modern health service use; and reduced infant, child and maternal mortality. After the 2015 earthquake, Nepal mobilized 50,000 existing FCHVs as a critical component of recovery efforts to ensure uninterrupted community health services. In the nine districts, most affected by the earthquake, FCHVs were trained to deliver an integrated service package including chlorhexidine (CHX) for umbilical cord care to prevent neonatal sepsis; emergency nutrition; water, sanitation and hygiene; and mental and psychosocial counselling. Pakistan's Sindh province has dangerously low child vaccination rates (29 percent) and a difficult political environment. The Health Department identified challenges for immunization delivery that impeded the mobility of vaccinators, including security issues, frequent vaccinator strikes, and lack of vehicles and fuel. In response, several innovative health systems strengthening approaches were identified: organizing and training community immunization champions including Lady Health Workers; using SMS technology to improve reporting, transparency and vaccinator accountability; and increasing community awareness of the immunization program. As a result, immunization registration doubled between 2015 and 2016 and the percentage of children and pregnant women receiving routine vaccines increased.

Conclusion

Lessons from the successful and resilient programs in Nepal and Pakistan can be applied to contexts experiencing similar setbacks in health services, environmental disasters, and political upheaval.

Session 7: Communicable diseases (HIV/AIDS, Tuberculosis)

O45:

Increasing access to chronic HIV care: the value of Community Health Workers in models of differentiated care

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Background

From 2004, HIV positive patients were officially started on ART in Cape Town, South Africa. Health facilities in high prevalence areas quickly became overburdened with HIV positive patients. This led to congestion, concerns about poor quality of care and patients being

lost to follow up. In response, differentiated care options were developed, including Adherence Clubs. These provided ART support to groups of approximately 30 stable patients who would meet every 8 weeks and were managed by either facility-based or community-based community health workers (CHWs). By the end of March 2016, approximately 32% of 142,000 ART patients in Cape Town were in clubs. The combined study showed that CHWs can provide high quality care more effectively for chronic stable HIV positive patients.

Methods

An epidemiological analysis focussing on retention-in-care (RIC) and viral load (VL) suppression was conducted to check the quality of care in the CHW-managed adherence clubs. A qualitative study focused on factors influencing implementation of this model. Management, staff and clients in a sample of 15 clinics were interviewed and observed.

Results

The quantitative results from a sample of 3,216 patients showed comparable RIC (over 90%) and VL suppression (95%) for patients in clubs compared to those managed by nurses and doctors. The task-shifting to CHWs enabled quicker through-put of stable patients through the club system while an acceptable quality of care was maintained. The qualitative study identified several innovations that have contributed to this success including: mobile messaging within club groups and for tracing of poorly adherent patients, information systems, and decentralised pre-packaged drug distribution mechanisms.

Conclusions

Task-shifting to CHWs has enabled a differentiated care model that allows stable HIV positive people to receive quicker and more efficient routine management in clinic and community settings. Lessons have already been transferred to programmes for care of other chronic conditions.

O46:

Partnership with Community Health Workers using community based delivery models to achieve viral suppression for people living with: A TASO Uganda experience

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Background

The AIDS Support Organization (TASO) in the effort to improve the quality of lives of people infected and affected with HIV developed a strategy of partnering with lay workers using the community based models to deliver HIV care services. This was also aimed at contributing towards the UNAIDS target of 90% of people living with HIV should be identified, 90% linked to care and 90% achieving virological suppression.

Methods

Lay workers are identified, trained in the delivery of Antiretroviral Therapy (ART) to HIV positive persons through the task shifting approach. Patients who complete six months on ART are mapped, clustered and consented to accessing services from community. The patients identify the most appropriate location for receiving their drugs called community drug distribution point (CDDP). The team leaders who are expert patients also called Community ART support agents (CASAs) and Client community ART delivery (CCLAD) leaders participate in drug delivery. Groups of 30 – 50 for CASAs and 10 for CCLAD groups at Parish/ Cell and group leader distributes drugs on agreed upon schedules.

Results

Data extracted from the TASO information management system (MIS) reflected a total of 90,118 clients under care at both Centers of excellence and supported public health facilities, 72,995 TASO Centre of excellence (CoE), 17,123 from supported public health facilities (PHFS), and 19% with an average viral suppression of 81%. Of the 90,118, TASO has 85,141 patients on ART 94.5%, 15,577 supported PHFS - 18.3%. Viral suppression results between the two arms was Facility 85% for clients at facility, 92% CASAs model and 92% at CCLAD model.

Conclusion

HIV service organizations and public health facilities should engage lay workers using the community based delivery models in ensuring effective attainment of 90% Viral Load suppression for clients enrolled on ART.

O47:

Community client led Antiretroviral Therapy delivery model for improving retention of HIV positive patients in care

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Background

Retention of HIV positive persons in care improves Antiretroviral Therapy (ART) outcomes, yet it remains a challenge for many HIV care and treatment programmes. TASO Uganda has developed a Community Client-Led ART Delivery (CCLAD) model as a strategy to address this challenge. TASO Soroti, one of the 11 TASO HIV clinics adopted a CCLAD Model that involves Expert patients (Community Health workers) in the provision and monitoring of ART and thereby maximizing retention in care. This paper shares experiences from the implementation of this model at TASO Soroti, Uganda.

Methods

The TASO CCLAD model begins with identification of leaders from the existing Community Drug Distribution Points – points where ARV drugs are delivered every two to three months. These leaders will have undergone training in peer to peer counselling and basics of ART. The patients receiving drugs from the community drug distribution point are grouped in number of 10 from the same community. A TASO counsellor delivers drugs to the distribution point and then the CCLAD leader receives the drugs on behalf of the other 10 patients and delivers them to his peers in the group either at their home or at the nearest point.

Results

A total of 3867 received ART through the CCLAD model and retention in care after 24 months 91.3% compared to retention nationally which was at 71.0%. 91% of these are virologically suppressed (<1000 copies/ML). We found that 80% of the non-suppressing patients were receiving ART through the facility model. Task shifting and capacity building of clients in leadership has increased clients' ownership of the ART program.

Conclusion

The model is sustainable for improving retention and achieving sustained viral load suppression among patients on ART while promoting ownership of HIV/AIDS interventions by People Living with HIV and AIDS. This model can also be replicated for other fields other than HIV/AIDS.

O48:

A pilot study of the integration of HIV prevention and treatment adherence messages into maternal and child health promotion activities of community health workers in Cote d'Ivoire

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Background
In Côte d'Ivoire (CI) anti-retroviral treatment (ART) retention in 2012 was well below 80%, despite deployment of peer-educator community health workers (CHW). Therefore, we adapted the Integrated Management of Newborn and Childhood Illnesses (IMNCI-C) protocol to include HIV-related topics when making routine home visits.
Methods
102 CHWs were recruited from their villages in four districts with HIV testing and treatment services. The CHWs did not know the HIV status of individuals they contacted. We piloted three alternatives: a) CHW-Basic: Modified IMNCI program including the HIV-related topics; b) CHW-Peer: Same as CHW-Basic except CHWs are ART adherent and able to serve as peer educators if someone discloses their HIV status; c) CHW-Coach: Same as CHW-Basic but adds an experienced CHW who coaches the CHWs weekly. A nearby rural district served as the control. The evaluation design was a pre/post comparison of key process and health outcomes. Data collected during the pre-pilot period (January-June 2014) were compared to data collected at six months after the start of the pilot (July 2014 - December 2014).
Results
The CHW made 31,812 home visits in the 6-month period, the most by CHW-Coach and CHW-Peer CHWs. HIV-related topics represented 35% of topics discussed. The number of pregnant women tested for HIV increased across all three models, more than in the control sites. Infant HIV testing increased 2-5 times in all three models. At CHW-Coach and CHW-Peer sites ART retention increased, but not more than at control sites.
Conclusions
Embedding HIV-related messages into the IMNCI-C protocol increased HIV-related outcomes, specifically testing, PMTCT, and to a lesser extent, ART adherence. CHWs with coaches performed best, then CHW-Peer. Therefore, we recommend further expansion of the CHW-Coach model, with one or two CHW-Peers per team.

O49:

Community Health Workers in tuberculosis control in the Free State Province, South Africa: pointers for service improvement

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Background
Around the world – and not least in South Africa – epidemic control is highly reliant on the involvement of community health workers (CHWs). Particularly, CHWs are indispensable in achieving early TB diagnosis and systematic screening of household contacts of index cases. While there is general appreciation for this cadre of health workers, their effective deployment remains a (TB) programmatic challenge. This paper describes preconditions for successful utilisation of CHWs in systematic household contact TB investigation (SHCI) to inform TB policy and practice and, more broadly, health systems strengthening in the Free State Province.
Method
In 2015, a cross-sectional survey was conducted among facility-based TB contact persons (mostly nurses) (n = 41) and CHWs (n = 47) in the Mangaung Metropolitan in the Free State. Structured face-to-face interviews were used to collect information on: demographics, general TB and SHCI training, SHCI services, and perceived barriers to and facilitators of SCHI. Data were descriptively analysed.
Results
Almost three-quarters (n = 35; 74.5%) of CHWs had post-high school education and almost as many (n = 34; 72.3%) had undergone general TB training. However, less than one-third of the CHWs (n = 13; 27.7%) had received training on SHCI specifically. Consequently, no SHCI was conducted at almost one-third (n = 12; 29.3%) of primary healthcare (PHC) facilities. At 27 facilities where SHCI did take place, CHWs were reportedly the most active health workers (n = 21; 77.8%). More than half (n = 23; 56.1%) of PHC facilities did not record household contact TB screening. Incorrect home addresses/telephone provided by patients (n = 16; 26.8%) and lack of transport to patients' homes (n = 8; 14.3%) were frequently cited barriers to SHCI. Thereupon, the most-mentioned facilitator was adequate resourcing of CHWs (n = 17; 40.0%).
Conclusion
Major pointers for service improvement include equitable deployment of 'SHCI-capacitated' and trained CHWs and concerted efforts to reassure TB patients to provide correct household addresses and contact information.

O50:

Improvement of Tuberculosis treatment success rate in Kampala district through community linkage facilitators

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Background
Kampala accounts for the biggest national TB burden yet it had low treatment success rate (TSR) compared to WHO target by 2013. To improve Tuberculosis TSR in the district, a community based directly observed treatment short course (CBDOTs) strategy was strengthened through implementation of Urban DOTs model. Part of this model involved follow up of patients in the community by the community linkage facilitators (CLFs). This was under tripartite agreement with Track TB project (MSH), Aids information centre and Kampala Capital City Authority. The objective of this intervention was to improve TSR in Kampala to meet the national targets through strengthening community linkage to health facilities. We share experiences and progress in improving TSR through CLFs in Kampala.
Methods
40 CLFs supervised by six community supervisors were attached to 20 health facilities that notify 80% of the TB burden in Kampala. These were to support implementation of urban DOTS, carry out health education, tracing TB contacts and treatment interrupters. In addition, CLFs provided support to update TB records and TB screening at major facility entry points. They were provided with recording and reporting tools for community based activities which included community TB register, contact tracing register and referral forms for presumptive cases. They also received transport refund, cell phones, airtime and protective wears. Regular mentorships and review meetings were conducted for continuous capacity building.
Results
Following this intervention, TB treatment success rate in Kampala rose from 70% in 2013 to 85% by March 2015 and most notably Stop TB partnership awarded it an accolade of being the most improved district in Uganda in 2014. Cure rates improved from 56% -77% and lost to follow-up from 14% to 5% by September 2016.
Conclusion
Implementation of TB control through CLFs can greatly impact on treatment success rates in an urban setting like Kampala.

O51:

Perceived barriers to early detection of breast cancer among Community Health Workers in Uganda using a socioecological framework

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Background
Although early detection is known to improve breast cancer prognosis, women in Uganda and other parts of sub-Saharan Africa detect this disease late, thereby reducing their chances of survival. Late detection of breast cancer is attributed to several complex but interacting factors. However, these factors cannot be adequately explained at the individual level. Hence a socioecological framework was adopted to investigate the perceived barriers to early detection of breast cancer in Uganda. This framework consists of five levels- individual, interpersonal, community, organizational and policy levels. Community health workers (CHWs) are placed within the community and organizational levels of this framework as they act as an interface between community members and the health system.
Methods
Data collection was conducted in Ssisa sub county, Wakiso district using a qualitative approach comprising of interviews, focus groups and document review. The interviews included 5 semi-structured interviews conducted among community members while 2 focus groups were conducted among women's group and CHWs. Also, 7 key informant interviews were conducted among health professionals, policy makers and public health researchers. Additionally, Ugandan health policy documents were reviewed.
Results
Generally, the study showed that CHWs played a minimal role in early detection of breast cancer as they lacked training in this regard. Prominent barriers pertaining to CHWs cut across the community and organization levels of the socioecological framework. These included weak primary health care capacity to deliver early detection services; low knowledge among CHWs; and prioritization of infectious diseases such as malaria and HIV/AIDs.
Conclusions
Although CHWs are instrumental for promoting health in relation to infectious diseases, their role in early detection of breast cancer is minimal. In view of these findings, further studies are required to explore the potential of community health workers to facilitate early detection of breast cancer especially through awareness creation.

Session 8: Communicable diseases (malaria, pneumonia and diarrhoea)

O52:

The role of Community Health Workers in improving referral and management of severe malaria among children in a rural district in Eastern Uganda

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Background
Until the end of 2011, there was no formal referral system for severely ill patients from the community to health facilities in Eastern Uganda. In 2012, Malaria Consortium in collaboration with Mbale district trained a total of 3,046 Village Health Teams (VHTs) across the district to identify and refer children under five years with severe disease, mostly severe malaria, to health facilities. The referrals were through a 'community-to-health facility' motorcycle (locally known as boda-boda) transport referral system. On receipt of a severely ill child, the VHT calls a boda boda rider licensed and assigned to the village by Mbale district which covers the cost of the referral.
Methods
Baseline and endline cross-sectional surveys were conducted in June 2012 and May 2015 respectively. Questionnaires were based on the Demographic Health Surveys and Malaria Indicator Survey modules. The evaluation targeted 1,040 households for each survey round and achieved 99% response rate in each.
Results
Treatment seeking within 24 hours of onset of fever improved from 42% at baseline to 61% at end-line (p-value <0.001). Of all children under five with severe malaria who sought treatment, the proportion that received appropriate treatment within 24 hours of onset of symptoms significantly improved from 48% to 70% (p-value = 0.001). Completion of referral to a health facility among children with severe malaria was 60% at endline. Treatment of severe malaria by a skilled health provider improved from 68% at baseline to 79% at endline (p-value = 0.002). From routine project data, by the third year, more than 6,000 severely ill children had been referred by VHTs and 84% of them reached the referral sites through the boda-bodas.
Conclusion
Trained VHTs and introduction of community referral system using motorcycles contributed to improved healthcare seeking practices and management of children with severe malaria

O53:

Utilization of Community Health Workers for treatment of Malaria, Diarrhea and Pneumonia: Bringing treatments closer to home

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Background
Despite a remarkable reduction of under-five mortality around the globe, World Health Organization reports that more than half of under-five deaths remain as a result of a handful of causes, specifically malaria, diarrhoea and pneumonia. Facility-based services alone do not provide adequate access to treatment due to accessibility challenges, low staffing levels in addition to limited health facilities. International Rescue Committee (IRC) implemented a three-year UKAID funded Global Poverty Action Fund (GPAF) maternal and child health project in 7 districts of Acholi and 5 districts of Karamoja, Uganda. The project focused on delivery of integrated Community Case Management (iCCM) by Village Health Teams (VHT), a significant intervention in combating child mortality.
Methods
Concurrent mixed methods design was used to evaluate the GPAF project's effectiveness of strategies used to increase utilization of maternal and child health services. Data were collected through a two-stage cluster household survey, client exit interviews, focus group discussions and key informant interviews in addition to review of project performance data.
Results
In three years, VHTs delivered a total of 465,708 treatments for fever, 41,385 treatments for diarrhoea and 67,752 treatments for pneumonia. Of the children who received healthcare, 50.4% (95% CI: 34.7, 66.1) had VHTs as the first point of care despite challenges of drug stock outs, perceived low knowledge of VHTs and inappropriateness of treatments. 80.8% (95% CI: 65.6, 96.1) of sick children's caregivers sought treatment for fever within 24 hours of onset. More than 90% of treatments for fever, diarrhoea and pneumonia were correctly delivered by VHTs.
Conclusions
VHTs appeared to increase coverage of appropriate treatment of key childhood illnesses. Effective iCCM implementation by VHTs significantly increases access to quality health services within communities and is pivotal in achieving Sustainable Development Goal 3: ensuring health and well-being for all, at every stage of life.

O54:

Community Health Workers' role in improving child health through proven low cost interventions in underserved areas of Burundi

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Background
Concern has been implementing a health and nutrition project from 2014 to 2016 in Cibitoke, a rural, underserved province in northwest Burundi. The objective is to implement and manage proven, low-cost interventions to reduce child illness and death at community level, whilst simultaneously increasing families' capacity and resources to sustain improved health at the household level. The aim of this paper is to share evidence on how Community Health Workers (CHWs) can contribute to health system strengthening by improving health service coverage and community access to life saving treatment.
Methods
Concern launched a train-the-trainer programme involving 3,984 health personnel. The methodology is a "cascade" approach, whereby Concern and the Burundian Ministry of Health train 7 district health team members, who in turn train 37 health facility staff, who train 393 CHWs, who finally train 3,547 Care Group Volunteers (CGV). CGV are mothers from the community who visit households to disseminate mother, young infant and child caring practices and refer sick cases to CHWs.
Results
Employing this approach, Concern implemented "community case management" (CCM), a globally-recognized strategy to increase access to treatment. Working with 393 CHWs, 58,036 children under-five were examined and treated for malaria, pneumonia and diarrhoea in one year (October 2015 - 2016). Among those who were treated, 35,703 (61.5%) visited the CHW within 24 hours following sensitisation through home visits by CGVs and 37,320 (64.3%) were treated by CHWs at home.
Conclusion
Monitoring results of our 2014 - 2016 project demonstrate that community interventions can contribute to timely and adequate case management for greater than half of the under 5 children in Cibitoke. CCM and Care Groups reduce the distance mothers must walk to seek life-saving curative services for children, which has increased timely health care-seeking behaviours, further saving lives.

O55:

Implementation of the integrated community case management strategy: experience of the Bugoye Integrated Management Initiative, Kasese, district

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Background
In Uganda under the integrated Community Case Management (iCCM) Strategy, Village Health Teams (VHTs) are involved in diagnosis and treatment of: malaria, pneumonia, and diarrhoea in children less than 5 years of age at the community level. The Bugoye Integrated Management Initiative (BIMI) uses 38 VHT members in 8 villages of Bugoye sub-county, Kasese district to implement this government strategy. This paper presents treatment outcomes under BIMI over a 4-year period (2013 – 2016).
Methods
A review of records (VHT monthly reports) from March 2013 to June 2016 was conducted in Bugoye sub-county in July 2016. The records reviewed report numbers of children evaluated with cases of malaria, diarrhea and pneumonia treated, and referrals made all disaggregated by year.
Results
The total number of children evaluated by the VHT members over the 4-year period was 12,070, with children presenting with fever constituting the largest proportion (41%). Of all the children evaluated, 94% were treated for the 3 conditions of: malaria, diarrhoea and pneumonia. Six percent (6%) of the all children evaluated were referred to a health facility. In 2013, 2822 children were treated for the 3 conditions and increased to 3,694 in 2015. The number of children referred by the VHT members slightly decreased in 2015 compared to 2013.
Conclusion
Children evaluated and treated by Community Health Workers increased over the years of implementation with malaria cases being the highest at 41%. This suggests that the community has developed more confidence in the VHT/iCCM strategy.

O56:

Community Health Workers as household distributors and monitors of Insecticide Treated Mosquito Nets: Lessons learnt in Mukono district, Central Uganda

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Background
Malaria remains a leading cause of death in Uganda accounting for 42 under-five-year deaths daily despite promotion of an effective preventive strategy - Insecticide Treated Nets (ITNs) particularly in rural communities. We aimed to describe challenges and successes encountered in monitoring households given free ITNs outside the national ITN campaign.
Methods
In June 2015, seven Community Volunteer Health Team (CVHTs) members trained by Omni-Med, across two villages in Bunakijja Parish, Ntenjeru sub-county were used as assessors, health advisors and promoters. Initially in June 2015, CVHTs visited 301 households and assessed using a checklist; if a child or pregnant mother had slept in a net the previous night, whether a net was hanging over a bed, hang properly, damaged or stolen. Additional information on children malaria rates was collected anecdotally in informal interviews. A week later 280 ITNs were distributed preferentially to households with children and pregnant mothers that had either damaged or no nets.
Results
Prior assessment in June 2015 showed majority (192/301) of households (40 pregnant and 360 children) had old unusable nets totalling 306. Following 6 months of distribution and monitoring, just over 60% (170/280) ITNs still hang over household beds. Of those, 97.6% (166/170) had ITNs properly hanging. With regard to having slept in a net the previous night, 72.7% (8/11) and 77% (161/209) of pregnant mothers and children were found compliant at the 6 months' visit. Overall, these parameters were highest on the second assessment two months after distribution. CHWs reported much relocation of families making it difficult to track some mothers or children and ITN use. Selected interviewees confessed reduction in both malaria episodes and out of pocket expenditures.

Conclusion
ITN monitoring by CVHTs provides additional information and value addition to ITN distribution and Malaria prevention. Closer monitoring schedules could give a better retention of usable ITNs

Session 9: Performance, motivation and satisfaction of CHWs

O57:

Can stakeholder engagement with community-level health data improve performance of volunteer Community Health Workers? An experience from the slums of Freetown, Sierra Leone

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BMC Proceedings 2017, **11(Suppl 6):**O57:

Background
Community Health Workers (CHWs) are essential to building robust health systems and their meaningful involvement is a prerequisite to achieving the Sustainable Development Goals (SDGs). However, documentation of community participation and its influence on CHW performance is scarce. Project *Al Pikin fo Liv,* being implemented in ten slums of Freetown, Sierra Leone from October 2011 – June 2017, aims to reduce maternal, newborn and child morbidity and mortality. The operations research study is testing a participatory community-based health information system to determine if and how communities can use CHW gathered surveillance data and verbal autopsy (VA) outcomes for decision making, and whether this can improve health behaviors and outcomes.
Methods
Employing a pre-post quasi-experimental study design, 1,325 volunteer CHWs and Peer Supervisors (PSs) were trained using Ministry of Health and Sanitation materials. CHWs were assigned 25 households to visit monthly to disseminate health messages, check for danger signs, and collect vital event and morbidity data. In the intervention area, bimonthly community health data review (CHDR) meetings are conducted where local Health Management Committees, Ward Development Committees and other community stakeholders review CHW performance data, aggregated household health data, and VA outcomes. Baseline data was collected from May 2014 to June 2015, prior to the start of CHDRs.
Results
Compared to baseline, the CHW reporting rate from July 2015 to September 2016 increased significantly in the intervention communities (+36%; $p < 0.01$), while the rate decreased significantly in the comparison communities (-6%; $p < 0.01$). The PS reporting rate increased significantly in the intervention communities (+10%; $p < 0.01$) with no significant change in the comparison communities.
Conclusions
Our findings indicate that community stakeholders can interact with data and enact strategies to improve CHW performance. A quality CHW intervention can contribute to optimal health system performance and is a keystone to achieving the SDGs.

O58:

Perception and experience of supportive supervision as quality improvement intervention to improve performance of health extension workers on maternal health in Sidama Zone, South Ethiopia

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BMC Proceedings 2017, **11(Suppl 6):**O58:

Background
Community Health Workers (CHWs) in Ethiopia are known as health extension workers (HEWs) and are key actors in providing maternal health care in rural communities. As part of quality improvement (QI) intervention, HEWs' supervisors were trained on supervision curriculum, provided with supervision checklist and group supervision facilitation guideline. REACHOUT has been implementing QI intervention for one year, to enhance quality of maternal health service delivery by HEWs. The aim of this study was to understand the perceptions on and experiences with group supervision of HEWs.
Methods
The study was carried out in Shebedino district of Sidama zone, South Ethiopia. A mixed research methodology using record review and in-depth interview (IDIs) was employed. Forty IDIs were conducted with HEWs, HEWs' supervisors and coordinators. The interviews were recorded, translated, transcribed and thematically analyzed.
Results
HEWs mentioned that the group supervision improved their motivation. The participation of HEWs in group supervision and regularity of the meetings increased from 2.3% to 61% and 4% to 70.4% respectively. Improvement on utilization of antenatal care was also observed as result of supportive supervision interventions introduced in the district. The proportion of mothers who attended the first and fourth antenatal care (ANC) improved from 73% to 76% and 56% to 70 respectively. Notwithstanding the positive results of the intervention, HEWs and their supervisors also reported barriers to supervision: in some cases focused on fault finding and checking registers, supervisors felt unsupported and high turnover of supervisors.
Conclusion
Group supervision was found to improve motivation of HEWs and utilization of maternal health services. The health system has to take the initiatives to support HEWs' supervisors to strengthen group supervision and tackle the challenges that hamper the implementation of group supervision.

O59:

Village Health Teams, performance-based incentives, and expansion of rural community-based access to contraceptive services: Lessons from Kasese district, Uganda for achieving the SDGs

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Background
Uganda has prioritized reducing its high rates of maternal and infant mortality, adolescent pregnancy-related school dropout, unintended fertility, and unmet need for contraception. Expanding contraceptive access is key to achieving these health and other Sustainable Development Goals (SDGs). Particularly in rural areas, Village Health Team (VHT) involvement can help overcome weak health infrastructure that has historically limited programmatic reach.
Methods
Action for Community Development (ACODEV) has collaborated for over ten years with VHTs in Kasese District to improve their communities' well-being. In July 2016, ACODEV and the District Health Office (DHO) launched an initiative in four sub-counties to expand rural access to life-saving reproductive health services through VHTs and health centres. This multi-method research used a baseline survey, service statistic collection, and key informant interviews with community leaders. ACODEV and the DHO trained 120 VHTs to provide contraceptive counselling, supply condoms, pills and injectables, and refer clients for longer acting and permanent methods (LAPM) at their nearest health centre. They strengthened VHT - health centre coordination by training 20 health providers on LAPM and VHT management, and by facilitating contraceptive supply. They also

introduced performance-based financial incentives for VHTs and health centres. Beyond training, supplies, and social recognition from their community, VHTs are eligible for two monthly incentives: (1) for 25 household visits and provision of 12 contraceptive services (23000 Uganda shillings ~ 6.5 US dollars); (2) for each client they counsel who later opts for a LAPM (6600 Uganda shillings ~ 2.0 US dollars). Health facilities receive medical equipment if they provide services for women referred by VHTs.

Results

In their first three months of work, 80 VHTs have received 125 incentives for household visits, counselling and provision of short term methods and 337 for LAPM referrals, and have provided 1675 couple years of protection, including growing numbers of injectable services for women.

Conclusions

Incentivizing health workers based on performance and strengthening links between community and facility-based health workers shows promise for expanding rural access to services.

O60:

Obuntism in Relation to Community Health Work in Southwestern Uganda

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BMC Proceedings 2017, **11(Suppl 6):**O60:

Background

Obuntu is an African concept of "being human" that means to value the good of the community above the interest of an individual. Healthy Child Uganda established CHWs in Kashari county, Mbarara district, South Western Uganda in 2004, retention of volunteer CHWs in these areas stood at 80% after five years. The purpose of this study was to find out the contribution of Obuntu to the high retention among CHWs in HCU areas.

Methods

An exploratory qualitative study was conducted in Kashari County, Mbarara district in the parishes of Katyazo, Ruhunga and Mitoozo. It involved 3 CHW and community member focus group discussions (FGDs) and 6 key informant interviews. Thematic content analysis was used. Data were transcribed together with notes taken during interviews. Major themes were constructed depending on the most emerging responses from the different categories and were compared with FGD and in-depth interview guide themes.

Results

The study showed that the concept of Obuntu is understood differently. Study participants acknowledged common characteristics like good behavior, helping and sharing, supporting the weak and vulnerable, showing love, responsibility and living harmoniously. Obuntu is hereditary through actions such as okusharanaahanda (bonding), storytelling, use of parables and proverbs. Findings indicated that "genuine Obuntu" guided selection of CHWs, but Obuntu has decreased due to false promises and that "everything" is about money today. CHWs reported that Obuntu motivates them to mobilize households for improved hygiene, community improvements and immunization. CHWs noted boundaries to Obuntu, for example, if they are asked to train others or work outside their home village, then these are not voluntary Obuntu activities.

Conclusion

Obuntu drives volunteerism which is of great value in the African setting. The study recommends orientation of young generation and others to appreciate the concept and to respect the boundaries of Obuntu.

O61:

Supportive supervision in Ethiopia's Health Extension Programme

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Background

In response to challenges in the supervision of Ethiopia's national cohort of over 38,000 health extension workers (HEWs), the Ministry of Health began implementing a system of supportive supervision for HEWs in 2012. This qualitative study explored the perceptions and experiences of supportive supervision among HEWs, supervisors, and health system managers.

Methods

Interview guides were developed based on four domains of inquiry: context, implementation, outcomes, and challenges. Semi-structured interviews were conducted with 33 participants, including HEWs ($n = 10$), supervisors ($n = 13$), and health system managers ($n = 10$). Interviews took place in southern Ethiopia and in Addis Ababa. Data were analysed using constant comparative analysis to identify categories within each of the domains of inquiry.

Results

The context of supportive supervision was characterised by a strong sense of job satisfaction among HEWs, alongside deep frustration with barriers to their work. The implementation of supportive supervision involved a one-day orientation for supervisors, supervisory visits taking place one to five times per week, and supervisors being held accountable for HEWs' performance. Outcomes included supervisors providing health services alongside HEWs, the development of close and trusting supervisory relationships, and perceived increases in HEWs' satisfaction, motivation, and performance (when compared to the previous system of supervision) due to respectful engagement in the supervisory relationship. Challenges to supportive supervision included the need for further training for supervisors, work overload among both HEWs and supervisors, and lack of transportation for supervisors.

Conclusions

Across all participant groups there was a consistent perception that the effectiveness of supportive supervision was dependent on respectful engagement in the supervisory relationship. This finding has important practical implications for community health worker programmes. Community health worker supervision systems could enable relationship-building through frequent supervisory visits and structured supportive feedback, and supervision training could facilitate respectful engagement through role-play focusing on communication skills.

Session 10: Sexual and Reproductive Health

O62:

Use of Village Health Teams to increase access to family planning services in hard to reach populations of Mayuge and Wakiso districts

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Background

Community Health Workers can increase use of family planning services, particularly where unmet need is high, access is low, and geographic or social barriers to use of services exist. Pathfinder International began

implementing the Health and People of Lake Victoria Basin (HoPE-LVB) project in 2011 in rural areas of the LVB in Mayuge and Wakiso districts of Uganda. These vulnerable, hard-to-reach populations have high fertility rates of 7.6 children and low rates of contraceptive use. The aim of the abstract was to share the programmatic results of FP service provision through the use of trained VHTs in settings with no community-based distribution of FP methods.

Methods

The HoPE-LVB project implemented an integrated approach to increase access to FP services in these communities. The project trained a total of 188 Village Health Team (VHT) workers on FP counselling, method provision (cycle beads, condoms, pill cycles, injectables, and emergency contraceptives) and referral to health facilities for long acting and permanent methods. The project also trained 337 other community group members (fishers, model farmers and households, young mothers clubs, and youth groups) in peer education for the promotion, counselling and referral for FP services. Performance monitoring data were analysed to assess programmatic results.

Results

From June 2012 to September 2016, a total of 24,676 new FP clients were supported by the HoPE-LVB project. A two-and-a-half-fold increase in average monthly FP service contacts was seen from the first to final year of the project. In Year 1, the project had an average of 416 FP service contacts per month. In Year 6, this increased to an average of 1,085 FP service contacts per month.

Conclusion

The HoPE-LVB project has demonstrated that trained VHTs can play a critical role in increasing access to FP services in vulnerable and hard-to-reach populations.

O63:

Making a Difference: Community Volunteers contributing to increasing use of effective family planning in Bangladesh

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Background

Bangladesh's population has reached 160 million. Despite the country's impressive reduction of total fertility rate (TFR) to 2.3 and increasing contraception prevalence rate (CPR) to 61%, there are several remaining challenges. There are regional variations among Bangladesh eight Regions. Sylhet Region is particularly lagging where the TFR is 3.1, CPR is 45%, and the unmet need for family planning (FP) is 16%, more than the 12% national average. The use of Long Acting Reversible Contraception and Permanent Methods (LARC/PM) is only 8% of FP users.

Methods

To boost the use of LARC/PM, MaMoni Health Systems Strengthening Project funded by USAID has supported the Ministry of Health and Family Welfare in recruiting and empowering community volunteers (CVs) in Habiganj district in Sylhet Region. CVs are semi-literate or literate mostly female members of the community. Each covers 300 population. They received training in FP counseling and volunteer 8 to 12 hours every month to convene a Community Action Group, track newly eligible couples, and provide FP counselling and referral of community members who desire to use LARC/PM to the suitable health facility to receive services. The CVs also regularly interface with the government appointed frontline health workers through monthly microplanning meetings, where the information is shared and follow up actions defined.

Results

Thus, in 2015, the use of LARC/PM has increased in Habiganj district with CVs referring 22% of new users. The few hours of volunteering requirement, the status gained by their training, and empowerment to work in the community led to achieving a high retention rate of CVs. The retention rate was 83% among CVs recruited in Habiganj district in 2015.

Conclusions

Empowering CVs by training and assigning them to a few hours of community work each month proved effective and sustainable in increasing referral of LARC/PM users.

O64:

Building the capacity of Community Health Workers using the Healthcare Quality Improvement model: A case for Community Based Family Planning in Busia district, Eastern Uganda

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Background

In June 2015, Advancing Partners and Communities (APC) project together with Uganda's Ministry of Health embarked on efforts geared at establishing the first community-based family planning (CBFP) Center of Excellence (COE) in Busia district. This Community Health Worker (CHW) led Quality Improvement (QI) initiative aims at increasing uptake and continuation rate of quality FP services among women of reproductive age. APC aims at demonstrating how the technical capacity of CHWs is enhanced through the application of the Health Care QI model for increased access to CBFP services.

Methods

APC adopted a collaborative Quality Improvement educative model where QI teams (3 in June 2015 and 7 by March 2016), each has four CHWs trained as internal QI coaches and midwife as mentor. Monthly QI coaching sessions are conducted and the focus is on CBFP service standards, generating change ideas, FP compliance requirements, QI principles, data review, plotting run charts and interpretation of results. CHW home visits are also conducted regularly.

Results

CHW QI service data shows that from June 2015 to December 2016, the percentage of female clients adequately counselled increased from 27% to 85%, rate of returning clients increased from 28% to 71%, CHWs given side effect counselling support increased from 0 to 67 and clients counselled as a couple increased from 2% to 10%. The CBFP retention rate is higher than the national rate which is currently at 53% (FP - CIP 2014).

Conclusion

CBFP QI complements continuous medical education which improves the capability and competence of CHWs and midwives to offer quality control CBFP services. Building a quality improvement culture led by CHWs at community level, with the oversight by facility health workers and involvement of clients increases community confidence in CHW services, strengthens the relationship between midwives and CHWs which has the potential of strengthening the bigger Health service system.

Session 11: Gender and Ethics in CHWs work / Non-communicable diseases

O65:

Policy and discourse on Community Health Workers: a gender and equity analysis

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Background
Community Health Workers (CHWs) have a unique interface role linking communities and the health system and are a key cadre to advance universal health coverage. A growing body of evidence highlights how gender roles and relations shape the opportunities and challenges CHWs face in realising their role. This study aims to understand from a global perspective the current discourse around CHW policy and the extent to which national CHW policies and guidelines are gender equitable.
Methods
We conducted a *policy analysis* of national human resources for health (HRH) and CHW policy documents from the 6 REACHOUT consortium countries (Malawi, Mozambique, Kenya, Ethiopia, Bangladesh, Indonesia) to assess the extent to which gender is addressed in current policy documents; and a series of *qualitative in-depth interviews* with national and international stakeholders to explore gender and CHW policy and its development from the perspective of policy actors, makers and key informants. Data are being analysed inductively using thematic analysis.
Results
The policy analysis revealed that gender is rarely mentioned in the context of CHWs although some national HRH policies and guidelines recognise the importance of gender responsiveness at the higher levels of the health system. Policy documents from Malawi, Kenya and Ethiopia do cite gender in wider HRH policy but little, or no detail is given on how the policies are gender sensitive or responsive. Further, only Kenya and Ethiopia have included indicators to measure this. Ongoing iterative data analysis follows the framework approach.
Conclusion
Minimal attention has been paid to the influence of gender on CHW programmes from a health systems policy perspective. This is a missed opportunity to promote gender transformative approaches at different levels of the health system. However, action is needed at all levels to appropriately support and engage CHWs, and overcome the inequities they are uniquely positioned to address.

O66:

Promoting gender equitable norms and male participation in family planning and HIV services through a Community Health Workers led education model; "Emanzi" in Kanungu and Kasese districts of Uganda

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Background
Advancing Partners and Communities (APC) project has been implementing a community male education program (*Emanzi*) through a revised 9 sessions curriculum since August 2015 in Kanungu and Kasese districts. The curriculum is modeled after the Men as Partners (MAP) curriculum designed by Engender Health.
Methods
APC through Trainers of Trainers (TOTs) comprised of District Health Educators (DHEs) and Health Inspectors trained the CHWs who later formed groups of about 10 to 15 men who attended the *Emanzi* community education sessions on various health topics. These sessions are aimed at changing the behavior of men 18 - 45 years of age to be able to discuss with their wives about family planning services, seeking HIV services, attitude changes towards gender norms among others. In Kasese district, APC also conducted an evaluation on the effectiveness of the *Emanzi* sessions with a cohort of 250 participants and their wives over a six-month period.
Results
By September 2016, the *Emanzi* CHWs had trained and graduated 1,279 men after completing all the nine sessions. Among the changes testified by beneficiary couples were: improved attitudes towards family planning, better health seeking behavior, shared decision making, couple HIV testing, reduction in gender based violence and starting joint income generating activities (IGAs). Preliminary results from the evaluation in Kasese show that acquired positive gender attitudes by men were retained six months' post training.
Conclusion
The *Emanzi* community education model that is championed by CHWs has demonstrated that men can be targeted for gender transformation and reproductive health dialogue with trained male CHWs as peer educators. The attained positive changes in attitudes on gender and couple communication can also be sustained several months after the sessions. The CHW led Emanzi intervention therefore has potential to promote equitable gender norms and male involvement in reproductive health services.

O67:

The lived experience of Village Health Team Members: A survey in Kinoni Health Sub-District in Uganda

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Introduction
The role of Community Health Workers (CHWs) became pronounced after the Alma Ata Declaration of 1978, and in Uganda after Ministry of Health launch of Village Health Teams (VHTs) in 2003. By March 2015, Uganda had over 170,000 VHTs trained throughout the country. There is limited evidence of studies that looked at VHTs in respect to who they are, what they go through as they serve, and voluntarism implications related to their needs, feelings and perceptions.
Methods
This was a qualitative study to describe lived experiences of VHTs. It used descriptive phenomenological approach that involved in-depth inquiry, 6 focus group discussions with selected VHT members and 6 key informant interviews among local leaders and VHT trainers. Data were analyzed using themes.
Results
VHTs have a mixture of understanding voluntarism, where some say that it that it is working wholeheartedly with no pay, others understand it as looking good in public. Despite VHT impact in the community, they face challenges such as negative attitude and hostility being labeled as salaried employees. They spend a lot of time volunteering which affects their family and social responsibilities in addition to working under harsh weather condition. However, there are number of motivations such as pride of improvements in hygiene and sanitation, and knowledge from trainings.
Conclusions
Although VHT members work as volunteers and are motivated to serve due to personal, family and community benefits, their spirit of volunteerism is threatened by several challenges.

O68:

Barriers and facilitators of female Community Health Workers when performing their roles: a study in Ssisa Sub County, Wakiso District, Uganda

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Background
Since the Alma-Ata declaration in 1978, Community Health Workers (CHWs) have become a global phenomenon, particularly in sub-Sahara Africa. When performing their roles, CHWs encounter certain barriers that demotivate and impact negatively on job performance. There are also facilitators known to motivate CHWs to increase their performance and job satisfaction. While there is varied research on this topic, this study captures the views, opinions and feelings of female CHWs as most CHW programmes are heavily populated by female volunteers compared to male.
Methods
Data was collected using focus groups and key informant interviews. 18 Female Community Health Workers (FCHWs) were randomly selected and were divided into three focus groups consisting of six participants. Selected Key informants included three female CHW coordinators and two CHW focal persons based at the local health facilities. Data was transcribed, and developed into codes to detect arising themes and present results.
Results
The lack of important resources like medication and contraceptives due to stock outs impacted negatively on the performance of FCHW. Without stock, FCHWs felt demotivated and this resulted in poor job performance. The importance of spousal support was another significant finding. FCHWs valued this factor, it allowed them to perform their roles freely and effectively. The findings also showed that as FCHWs, they are more susceptible to harassment particularly from the men in their communities. The availability of medication, non-financial incentives and motherhood experiences facilitated FCHWs and increased performance in their roles.
Conclusions
This study has uncovered that there are several barriers that prevent FCHWs from performing their roles effectively and efficiently. While there are several facilitators that enable them to perform their role and ultimately improve the health and well-being of their community.

Session 12: Challenges, lessons learnt and opportunities

O69:

National scale up of Integrated Community Case Management in Uganda under the new Global Fund funding mechanism: Implementation and early lessons learnt

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Background
Although under 5 mortality in Uganda has reduced (55 deaths per 1000 live births), children still die from preventable conditions mainly pneumonia, malaria and diarrhoea. The Ministry of Health (MoH) Integrated Community Case Management (iCCM) program that uses well trained, supervised and supplied VHTs to deliver timely accessible management and referral to under 5's with malaria, pneumonia and diarrhoea has been a major contributor to this achievement amidst national funding shortfalls. In 2013, the Global Fund to fight against AIDS, TB and Malaria (GFATM) announced a strong endorsement for iCCM allowing countries to apply for funding to support the iCCM package. In January 2015, the government of Uganda received a 2 year grant totalling US $4.6 million from the malaria disease component of the GF to support the expansion of the iCCM program to 33 additional districts.
Methodology
In anticipation of the GF assessment, the MOH and key partners supported a rapid assessment of the GF funded iCCM program in the initial 15 districts to identify successes, lessons learnt and implementation challenges.
Results
To achieve at least 90% coverage of villages with 2 VHTs implementing iCCM, the program has procured and printed training materials, trained district master trainers, trained facility level supervisors & trainers and has supported the selection and training of 17559 VHTs. To ensure that at least 60% of VHTs trained on iCCM have zero stock outs of any iCCM medicines, the program has procured and supplied commodities however not all have received job aides, training on stock control and management and been supervised on rational use of iCCM drugs. To increase to at least 80% the proportion of care givers who know at least 2 danger signs in sick children, the program has disseminated guidelines for sensitisation and mobilisation for iCCM at all levels and conducted sensitisation meetings at community level. To conduct at least one operational research that will inform the scaling-up of iCCM in the country, the program has started the proposal development process and it yet to commence the research.
Conclusion
Strong MoH leadership, policy support and close collaboration with development partners like UNICEF has enabled a successful initial implementation however for all program objectives to be met within the current funding mechanism and timelines, it is important that commodities procurement be streamlined and immediate support supervision be conducted to assess and ensure compliance to nationally set implementation standards and guidelines.

O70:

Use of Interactive Radio Distance Learning Programs for Community Health Workers' capacity building

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Background
World Vision piloted an Interactive Radio Distance Learning (iRDL) Programme for Community Health Workers (CHWs) in four sub-counties in Kiboga district (Ddwaniro, Mulagi, Muwanga and Kiboga) from 2012 to 2015. The programme sought to supplement existing training efforts of Village Health Teams (VHTs) by providing them with continuing education and refresher training. iRDL training processes and materials used were Weekly Episodes, Listeners Groups and Listener's Guides. The project developed 12 radio episodes on integrated community case management (ICCM), a learner's work book and an SMS system for tracking immediate learning and uptake of knowledge outcomes for individual VHTs. The programme aimed to positively impact on the ability of VHTs to identify and provide treatment or referral for key illnesses.
Methods
The study design was a cross-sectional, mixed methods study. Methods included interviews, focus group discussions (FGDs), observation, facility mapping and document review. Over 200 people participated including VHTs, community members, district leaders and other key informants.
Results
Average weekly VHT attendance per episode was 95%, while the average question completion rate was 77%. Technical challenges including poor network signals caused interruptions in the learning process. Most of the positive impact the iRDL programme had is in spillover effects. Other results included improved VHT capacity to bring about better household health practices e.g. use of insecticide treated nets, better detection and management of malaria, access to treatment and better hygiene and sanitation practices. iRDL encouraged social cohesion among VHTs, enhanced ICT skills and improved relationships between VHTs and health workers.
Conclusion
iRDL is a proven cost-effective and innovative methodology that has potential to bring about desired positive changes. Even with the observed limitations, iRDL can go a long way in continuing to build CHW capacity, improve community health and contribute to health system strengthening.

Session 13: Research priorities and gaps

O71:

From research to policy: How recommendations from the Village Health Team assessment led to the development of the Community Health Extension Worker strategy in Uganda

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BMC Proceedings 2017, **11(Suppl 6):**O71:

Background
In 2001, the Ugandan Ministry of Health (MoH) recommended the establishment of Village Health Teams (VHTs) to bridge the gap between the community and the health system. VHTs are an informal community structure established mainly to promote health and cross-cutting development issues. The country has implemented the VHT strategy over the last 15 years and the program has encountered challenges which merit a review of the strategy. Many partners have been involved in VHT implementation and have realized the lack of standardization in program implementation and scale-up. The MoH in partnership with Pathfinder International and key stakeholders determined that evidence-based guidance was needed to support the Uganda MoH in identifying VHT programmatic challenges.
Methods
Pathfinder International, in partnership with MoH, UNFPA, WHO and UNICEF, conducted a national VHT assessment from November 2014 to January 2015. The mixed-methods study was comprised of a cross-sectional survey among VHTs, and focus group discussions and in-depth interviews with community representatives, implementing partners, and government officials in all 112 districts in Uganda.
Results
The results from the VHT assessment showed the urgent need to review the VHT strategy, including refinements to the VHT policy, coordination, monitoring and supervision structures, in addition to clarity in regards to the selection, training, roles and responsibilities of VHTs. Furthermore, the VHT assessment recommended that the government should have a clear commitment to institutionalize the VHT strategy and ensure regular payments of VHTs for the long-term sustainability of the program.
Conclusion
Because of the findings and recommendations from the VHT assessment, the national Community Health Extension Worker (CHEW) strategy was developed and approved by MoH exemplifying how research can be used to inform health policy.

O72:

Technology Innovation in Mentoring and Supervision of Community Health Workers in Zanzibar

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BMC Proceedings 2017, **11(Suppl 6):**O72:

Background
Community Health Workers (CHWs) are increasingly being trained to provide maternal & neonatal health services in rural settings and have the potential to improve maternal and child health outcomes. Trainings for CHWs are conducted every now and then but implementation of what is taught during training is a big challenge. For CHWs to do what they have been trained, close follow up with not only supervision but also mentoring is required.
Methods
In Zanzibar, D-tree International implements the 'Uzazi Salama' project where CHWs are being trained to counsel pregnant women on health issues, screen and detect pregnancy danger signs, to assist women to make a birth plan to deliver in a health facility, and check up on mother and child after delivery. Two innovations have made this project so far a great success: All work tools (registering clients, reference tool, reporting, monitoring) are designed as mobile applications and kept on a phone, and a system of mentorship using champion-CHWs.
Results
The mentor supports the newly trained CHWs in getting familiar with the program and application. CHW does this by sitting in during the first three weeks or more visits to a client. By using a mobile application, the mentor is reminded to bring up specific issues, note observations, and at the same time the CHWs performance is automatically recorded and available on the program dashboard and supervisory application. CHW Supervisors can follow their progress and act when needed. In the same way the supervisors performance is monitored that project staff can support when needed.
Conclusion
This innovation has proved a great success due to the real-time data captured whereby CHW performance can be viewed on the program dashboard and acted upon. Overall, close mentoring and supervision has proved to be a crucial element in performance of CHWs.

Session 14: Human Resources for Health

O73:

Health Surveillance Assistants continue to fill critical health workforce gaps in Malawi

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BMC Proceedings 2017, **11(Suppl 6):**O73:

Background
From 2006 on, deployment of Malawi's CHW cadre, Health Surveillance Assistants (HSAs), has been boosted, partially in response to increased HIV needs. Funding from Global Fund Round 5 health systems strengthening proposal was dedicated to employment of over 4,000 new HSAs. In 2016, nearly 9,200 HSAs make up about half of the current health staff levels. This review assesses history, role, benefits, limitations and sustainability of the HSA scale-up.
Method
Interviews with key informants and analysis of policy, programmatic and budget documents took place.
Results
Initially HSAs were meant to be working in the community. In the context of severe health staff shortages with just 36 health workers per 100,000 population, HSAs have played a critical role in reducing the burden of high patient numbers on professional medical staff and filling service delivery gaps in health facilities; tasks such as vaccination, malaria or HIV testing are often shifted to HSAs. Compared to 2009, staff level ratio per population has reduced. With numbers of qualified staff in public services not keeping up with population growth, HSAs are expected to compensate for persisting personnel gaps. In rural areas burden on HSAs is more important, due to uneven urban-rural distribution of qualified staff. National task shifting guidelines for HSAs are now developed and endorsed. However, HSA numbers stagnate or reduce too. With limited supervision and expectations to take on multiple tasks, concerns exist about quality of care.

Conclusion
With persisting severe staff shortages in Malawi's public services, HSAs remain a critical cadre. Without significant investment by donors and government in training of professional staff, measures to ease absorption into public services' payroll and deployment in areas where needs are highest, CHW cadres alone cannot mitigate health workforce shortfalls and service provision gaps.

O74:

How risky are the innovative strategies that involve community health volunteers in sputum sample collection, packaging and transportation? a cross sectional study in Mombasa, Kenya

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BMC Proceedings 2017, **11(Suppl 6):**O74:

Background
Kenya notified 89,211 TB cases in 2014, 80% of World Health Organization estimates. Mombasa County notified 4,726 TB cases with TB case notification rate of 469 per 100,000 populations compared to the national average of 208/100,000. With Global Fund support AMREF Health Africa implemented active TB case finding in Mombasa. Community health volunteers (CHVs) supported implementation under Kenya's "*Strategy for Community Health*".
Methods
CHVs were trained and mentored on community education, TB screening, referral of presumptive TB cases, sputum collection and transportation, and infection prevention. They instructed clients on sputum collection in poly pots and placement in safety containers. CHVs transported the samples to laboratories in carrier boxes. A structured questionnaire to assess the risk of CHVs contaminating themselves with sputum was administered to 37 CHVs at 14 months of implementation. This was a representative sample of 114 active CHVs from July 2014 to September 2015. Risk based on frequency of negative practice occurring was classified as: None (never); low (1 in $\geq$ 10); High (1 in 3 to 9); Very high (1 in 1 to 2 times). Data was analyzed descriptively.
Results
Of the 16,226 sputum samples analysed, 5% (870) were positive for TB. Only 73% of CHVs applied hand sanitizer despite 94% wearing gloves all the time when handling sputum. Client contaminating poly pots had the highest risk with 35% of CHV reporting no risk compared to 62.2% and 59.5% for spillage during transportation and contamination of containers during packaging respectively. Laboratory personnel never assisted 45.9% of CHVs to disinfect their containers and 48.6% of CHVs used only safety container to transport sputum due to stigma.
Conclusions
With training, mentorship and safety commodities, CHVs can adopt personal safety practices. Significant risks of contamination still exist and more safety interventions and technical assistance from laboratory personnel are required.

Session 15: Nutrition

O75:

Community Health Workers Promote Nutrition among mothers and children using High Vitamin A Orange Sweet Potato (OSP) - 4 Year Experience

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BMC Proceedings 2017, **11(Suppl 6):**O75:

Background
CHWs distribute bio fortified crops of Orange Sweet Potatoes (OSP) and High Iron Beans (HIB) to address hidden hunger among under-fives and women in reproductive age.
Methods
Households with under-fives and women in reproductive are targeted to receive HIB and OSP vines and after harvest share both crops with at least two households. 2 people in a household (2500HH on average) are trained by CHWs in nutrition and agronomy. 16/25 parishes in Rwampara with 490 CHWs are growing OSP and HIB. CHWs conduct health education through cooking demonstrations, drama contests, spot adverts and school gardens.
Results
5384 farmers and 4992 care givers educated in agronomy for both OSP and Iron beans and nutrition respectively. 11051 and 9132 households grow HIB and OSP respectively and 9837 children have been reached with nutrient dense crops and mothers access better nutrition through improved household crops. Additional benefits were: 9 Community gardens established by CHWs, Land for communal gardens donated by local government, churches, schools and health services, Sales of OSP help maintain CHW group cohesion, ensuring CHWs remain active and available in the community, School districts assume responsibility for 34 school gardens for OSP and HIB. CHWs combine health care with farming.
Conclusion
Nutritional education works effectively and efficiently when linked with skills, tools and action as mothers 'learn & do' simultaneously. As introducers of bio fortified crops, CHW function as purveyors of nutritional change for under five mothers. CHWs can be change agents for innovations in rural communities.

O76:

Improving child undernutrition in rural Ghanaian communities: the magic of multipronged roles among Community Health Workers

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BMC Proceedings 2017, **11(Suppl 6):**O76:

Background
Ghana has made some gains in the reduction of under-nutrition among children under-five years old. From 1993 to 2014, stunting-34%, wasting-15% and underweight-25% decreased to 18.8%, 4.7% and 11% respectively. Despite this progress, Ghana's East Mamprusi district is challenged with child-undernutrition (stunting-17%, underweight-43% and wasting-26%). To help address this challenge, Catholic Relief Services and Ghana Health Services implemented the Encouraging Positive Practices for Improving Child Survival (EPPICS) Project.
Methods
Pretest-posttest implementation design were employed. 1680 Community Health Workers – Model Mothers (MMs), Link Providers (LPs), Council of Champions (CoCs) and Community Health Data Leads (CHDLs) in 240 communities were trained to engage mothers/caregivers to: consume weanimix (*ablaaba*), animal source foods, moringa and used treated bed nets. Also, MMs mothers/caregivers with nutrition education while CoCs helped modify unfriendly infant and young child feeding practices (IYCF) practices and taboos. LPs counselled mothers/caregivers on IYCF and referred sick children to health facilities. CHDLs used community giant scoreboards to track nutrition indicators-dietary diversity, IYCF and child undernutrition.
Results
Data on key indicators at baseline (October 2011) and endline (September 2015) were compared: initiation of breastfeeding increased from 50% to 75% ($p < 0.001$); exclusive breastfeeding improved from 47% to 70% - $p > 0.001$; proportion of children (6-23months) fed on appropriate IYCF increased from 55% to 78%: $p < 0.000$); proportion of children (0-23 months) with diarrhea who received ORS/home fluids increased from 48% to 65%; $p = 0.005$). Among children 0-23 months,

stunting rates reduced from 17% to 3%, p > 0.001; underweight reduced from 43% to 11% and wasting reduced from 26% to 8%; p < 0.001. Key rituals on suboptimal IYCF were identified and modified; offering of *waligu (liquids prepared from the verses of the Quran) and Tinygacom (water soaked in herbs)* and restrictions of eggs consumption.
Conclusions
Multipronged roles of CHWs provided a synergy that impacted positively on improvement of child under-nutrition and contributes to achieving SDG 2 and 3.

O77:

Last mile delivery of Micro Nutrient Powders by Village Health Teams in Namutumba district

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BMC Proceedings 2017, **11(Suppl 6):**O77:

Background
Like many other countries in sub-Saharan Africa, Uganda suffers from high rates of malnutrition manifesting as chronic malnutrition and micronutrient deficiencies among children under 5 and mothers. Malnutrition in most of its forms remains a "hidden problem" because it's rarely diagnosed. To address this problem, the Ugandan Ministry of Health (MoH) with partners are piloting home fortification program in highly affected districts. One of the pilot objectives is to determine the most cost effective way of distributing Micro Nutrient Powders (MNPs) by testing two distribution mechanisms: facility versus community through Village Health Teams (VHTs). This abstract documents the process and accomplishments of distributing MNPs through VHTs.
Methods
Working with SPRING project, MoH piloted the delivery mechanism in Namutumba district, first through community mobilization and sensitization, training of VHTs and supplying them with necessary tools. MNPs were stored in all health facilities where VHTs would pick them for community distribution. At the end of the month, VHTs compiled monthly reports summarizing the number of children reached, counseling provided, stock management, and discharges. For purposes of continuous capacity building, program team met VHTs every two months to review progress, provide feedback and technical assistance on documentation and activity implementation.
Results
The program reached 11,856 children (97% of the eligible children aged 6-23months). Upon enrollment, VHTs provided caretakers with adequate counselling on MNP usage, complementary feeding and other health services. After seven months, 3,771 children exited the program among whom 3,199 (85% aged out of the program, (9%) defaulted, 3% wrongfully admitted and 3% lost to follow-up. There were cases of poor adherence due to low male support, outward migration, misconceptions and myths.
Conclusions
Increased proximity and contact of VHTs with people in the community improves coverage and retention into health programs up to the exit age thus improving program outcomes.

O78

Exploring the role of community health work within South Africa's healthcare referral systems for children with malnutrition

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BMC Proceedings 2017, **11(Suppl 6):**O78

Background
Sustainable development goal (SDG) 3 includes ending preventable deaths of children by reducing under-five mortality to 25 per 1,000 live births. In South Africa (SA), severe acute malnutrition (SAM) is associated with 30% of all child deaths. Avoidable factors from in-facility management of SAM are known, while the healthcare referral process especially the role of Community Health Workers (CHWs) within ward based outreach teams (WBOTs) are under explored. The aim was to explore the role of WBOTs and CHWs in the process of referring (to primary healthcare centres [PHC] facilities) and receiving back referrals (from PHC facilities) of children with SAM in rural SA.
Methods
Guided by the policy analysis triangle, a qualitative case study was conducted in 2 rural sub-districts of North West province of SA. Data collected from 20 patient file reviews and 15 in-depth interviews with WBOT leaders (n = 4) and CHWs (n = 11) was analysed to themes portraying CHWs content, context, and processes when referring SAM cases.
Results
Where referral levels were not by-passed, CHWs were the first and last contact with SAM cases by first conducting community-based examination followed by referring to clinics and lastly foreseeing post-discharge rehabilitation. However, the CHWs had limited content [guidelines] to support practice due to restrictive manuals and referral policies with pathways that excluded their role. CHWs referral processes were also hindered by poor skills resulting into inappropriate examination which led to missed opportunities and poor rehabilitation ending in re-lapse of SAM. Additionally, WBOTs were under-resourced to effectively execute successful referrals.
Conclusion
If CHWs are going to contribute to SDG 3 by preventing SAM mortality in SA, there is need for clear definition of their roles in child health, skills improvement and reliable resources provision.

Session 16: Community Level Innovations

O79:

The role of Community Health Workers in supporting the implementation of community health innovations

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BMC Proceedings 2017, **11(Suppl 6):**O79:

Background
Communities can overcome recurring health challenges by leveraging on the knowledge and creativity that exists in local settings through innovations. In order to have substantial effect on the target populations, innovations should be scalable, transformative and evidence based. Community Health Workers (CHWs) make a significant contribution to improving people's health in the community. They are the first point of contact to the health system for people living in rural communities and play a central role in informing community health innovations. This sub activity aimed at understanding the roles of CHWs in supporting implementation of community health innovations.
Methods
One Health Central and Eastern Africa (OHCEA) granted research grants to multidisciplinary teams of students to implement community health innovations. They involved working closely with the community resourceful persons including leaders and CHWs to identify community challenges and develop local innovative solutions. Each of the teams carried out a situation analysis in the respective communities and identified entry points for community level innovations. CHWs' experiences were captured through interviews during evaluation of the one health approach.

Results
CHWs were integrated into the multidisciplinary teams of innovators and played a very crucial role in supporting the implementation of these innovations. They were involved in linking the students to the community, providing information about the existing health problems in the community, participated in prioritising community needs and local solutions, and monitoring progress during implementation. CHWs also faced some challenges including; absence of clarity about their roles and responsibilities, poor facilitation and a lack of basic resources that hinder their full involvement during implementation.
Conclusions
CHWs are paramount in successful implementation and uptake of community health innovations. There is need to build their capacity as well as involving them in the implementation of such innovations.

O80:

Community Micro Planning - an innovative approach of MaMoni Health Systems Strengthen project to strengthen public sector Community Health Workers service delivery in Bangladesh

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Background
In Bangladesh, the household visit for domiciliary service by public sector CHW is low (20%); care seeking for maternal and newborn health is also low (18% from satellite clinic, 23% from community clinic). Ministry of Health & Family Welfare (MOHFW) has employed multiple CHWs under oral presentations service delivery structures, which poses several coordination and data sharing challenges. MaMoni HSS project has introduced *community Micro Planning (cMP)* to strengthen coordination and task sharing among the government appointed CHWs and community volunteers, thereby improving the delivery of essential services.
Methods
Between 2010 and 2015, in Habiganj district, MaMoni HSS recruited, oriented and supported 8225 community volunteers (CVs), each CV for 250 population. Orientation module, record keeping tool and job aid was developed. During monthly *cMP*, the government appointed CHWs interact with CVs and do status check, update info in HMIS, receiving community perspective and plan to reach vulnerable. CV, the peer lead, also interact with community through a monthly community action/support group participatory meeting.
Results
More than 90% of monthly *cMP* meetings are held consistently which have improved and streamlined HMIS. Maternal and neonatal death reporting by MOHFW CHWs have become realistic. CV also contributed to the CHWs with the information of 1114 Eligible Couple, 4982 new pregnant women, 813 MNH referral, and 25% (average) of all Long Acting Permanent Method client.
Conclusions
cMP is an effective intervention to strengthen community level service delivery where multiple providers are set to interact among themselves as well as engage community effectively to achieve high coverage of priority interventions, providing real time, reliable, population data in the catchment area.

O81:

Micro-entrepreneur based community health delivery program demonstrates significant reduction in under-five mortality in Uganda at less than $2 per capita

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BMC Proceedings 2017, **11(Suppl 6):**O81:

Background
Community health systems—often comprised of unpaid, volunteer workers—have been largely ineffective at reducing child mortality. Weak incentives and performance management are cited as major limiting factors. Living Goods strives to strengthen community health systems by training, equipping, and managing CHWs who provide integrated community case management (iCCM) and maternal, new-born and child health services—while earning a small income from performance-based incentives and sales of impactful products. From 2011-2013, external researchers conducted a randomized controlled trial (RCT) to evaluate the impact of an incentives-based community health delivery model on reducing under-five child mortality.
Methods
Study included 214 rural villages across 10 districts in Uganda, involving a total sample size of over 8,000 households. In treatment villages, Living Goods and partner BRAC CHWs conducted home visits—educating households on essential health behaviours and selling impactful products.
Results
27 percent reduction in under-five mortality for less than $2 annually per capita in Living Goods and BRAC treatment areas compared to control areas. The effects are supported by changes in health knowledge, preventive behaviour, community case management, and follow-up visits.
Conclusions
Integrated, well-managed, and incentive-driven models of community health delivery can drive significant reductions in new born and under-five child mortality. Country governments and funders can support scale-up of these kinds of effective community health models to improve health outcomes.
Trial registration: PACTR201308000601715

O82:

Innovating to Save Lives: The case of upgraded leaky tins production by Community Health Volunteers of Moheto Community Unit, Migori-Kenya

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BMC Proceedings 2017, **11(Suppl 6):**O82:

Background
Migori County in Kenya has a population of 1,028,579 people, 2449 villages of which 163 are certified Open Defecation free (ODF). 159 Community units and 1660 CHWs. Hand washing facilities coverage is 43%. Moheto sub location with a population of 712 households has no ODF village. Two waves of cholera outbreak affected Migori County in 2015 and 1463 positive cases were identified. Moheto sub location was affected and one of the key response intervention for control was hygiene promotion through hand washing with soap and water at critical times in schools, communities and public eating places. This abstract aims to demonstrate how CHVs averted cholera deaths by enhancing access to appropriate and affordable hand washing facilities in the community
Methods
The County community health department accelerated hygiene promotion through Moheto community unit (CU). UNICEF supported training of 500 CHVs on cholera preparedness and response, provided WASH commodities and IEC materials to enhance hygiene promotion. The CU was provoked to design a simple appropriate hand washing facility to address the hand washing needs of the community. The CHWs fabricated an upgraded version of 'leaky tin' hand washing device using 10 and 20 litre jericans. The device has an easily rotatable outlet pipe with interlocking holes to provide on-off flow of water and named it '***ighisabhero kia amabhoko***' It quickly became popular and was purchased by schools, health facilities, food premises, churches and households as its cheap and easy to use.
Results
The 'ighisabhero *kia amabhoko'* innovation has benefitted 35 schools, 5 dispensaries, 122 food premises, 536 households, 12 churches and

1716 devices have been purchased by organizations and no cholera case has been detected again. The innovation has enhanced community participation and ownership of hand hygiene at critical times, accelerated attainment of a self-propelling hygiene momentum and strengthened a social norm for behavior change and provided a reliable income for CHVs.

Conclusions

Health interventions at household level by CHVs is key in improving quality of life for communities.

Session 17: Financing of CHWs programmes and sustainability

O83:

Cost-Effectiveness of Alternative Models of Community Health Workers for Promotion of Maternal, Newborn and Child Health in Northern Nigeria

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Background

There are many different models for Community Health Workers (CHWs) with varying degrees of responsibility, connection to the health system, resource support, as well as overall cost-effectiveness. As Nigeria moves towards adopting a national model for CHWs, it is important to consider the cost-effectiveness of three possible CHW models for promoting maternal and child health.

Method

Using a quasi-experimental design, we compare the costs and health outcomes of three alternative CHW models: Community Volunteer (CV), SURE-P MCH Village Health Worker (VHW), and Junior Community Health Extension Worker providing community-based service delivery (JCHEW-CBSD). The unit costs, consultation patterns, health benefit-cost ratios, and incremental cost-effectiveness ratios were calculated for the three CHW models. Outcomes were compared to those for clinics with no CHWs.

Results

Compared to the CVs, the VHWs and the JCHEWs had the most interactions in the community, each helping to educate 120-130 pregnant women each year. JCHEWs made the most referrals (220) for ante-natal care (ANC) and skilled birth attendance (SBA) (122). However, women visited by VHWs increased ANC visits the most, with 92% having at least one and 70% having 4+ ANC visits. The unit cost of the CVs was lowest at NGN20, 509 ($115) versus NGN512,183 ($2863) for the VHW model and NGN716,641 ($4006) for the JCHEW model. The benefit-cost ratios were highest for the VHW model. For every 1000 Naira ($5.50) invested in the VHW, there were 8.7 ANC 4 + visits and 15.5 deliveries attended by a SBA. The Incremental Cost-Effectiveness Ratios for the VHW model were also lower than for JCHEW-CBSD model, an additional NGN4005 ($22.37) per incremental ANC visits and NGN24,506 ($136.91) for increments in attended deliveries, the latter amount three times lower than for the JCHEW-CBSD model.

Conclusion

This cost-effectiveness study of CHW models in Northern Nigeria shows that the SURE-P VHW model was most cost-effective. The VHW model, an enhanced volunteer model, promises the greatest return on investment if scaled up in northern Nigeria.

O84:

Analysis of financial remuneration models for Community Health Workers in Siaya County in Kenya by the County Government and Non- Governmental Organizations

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BMC Proceedings 2017, **11(Suppl 6):**O84:

Background

The aim of this study is to analyse the different payment models for community health workers in Siaya County in Kenya and to see if there's an effect on their performance and retention. According to WHO, the question as to whether CHWs should be volunteers or paid in some form remains controversial and a need to learn from successful programs which constitutes: improving performance, incentive systems and remuneration. In Kenya, the policy on remuneration of CHWs is still not clear. Siaya County government is one of the first counties in Kenya to pay CHWs with other non- governmental organizations also paying the same CHWs.

Methods

Retrospective case study design using both quantitative and descriptive analysis methods.

Results

The county government is paying 2148 CHWs approximately 20 pounds in all the 6 regions in the county through county legislation and monitoring all government health indicators in a more sustainable model. The two other NGOs, Maternal and Child Health Integrated Program is paying 363 CHWs approximately 20 pounds in 3 regions and monitoring maternal and child health indicators, Family Health Options Kenya is paying 187 CHWs approximately 15 pounds in 4 regions in the county monitoring family planning indicators and both are donor dependent. To monitor retention of CHWs and using their monthly reporting as a proxy indicator, there is no difference in reporting of community health workers before and after implementation of payment by the county government. However, in regions that were supported by the 2 NGOs, the reporting and performance of community health workers over 4 years improved in the specific health indicators that they supported.

Conclusion

Having different modalities of paying CHWs can create fragmentation as shown from the different models of paying CHWs. The government and implementing partners supporting CHW programs through an appropriate governance model, must harmonize incentives and reporting to reduce duplicative costs and improve capacity to enhance sustainability.

O85:

Valuing time: the impact of increased community access to malaria diagnosis and treatment on time spent by Community Health Workers

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BMC Proceedings 2017, **11(Suppl 6):**O85:

Background
Community health workers (CHWs) reside in their communities and are chosen by these communities as first-line, volunteer health workers. The time CHWs spend providing health care, and the value of this time to improve health is often not evaluated. Our aim was to quantify the time CHWs spent before and after the implementation of rapid diagnostic tests (RDTs) and artemisinin-based combination therapy (ACT) or rectal artesunate (RAS) for community treatment of malaria fevers of varying degrees in three African countries.
Methods
A programme of increased access to community treatment of malaria fever was implemented in Burkina Faso, Nigeria and Uganda. The programme included training of CHWs to assess and manage febrile patients in keeping with integrated management of childhood illness recommendations and provide them with RDTs, ACT and RAS for treatment of malaria of varying severity. All CHWs worked only on health care of children under 5 years old, and daily time allocation of CHWs to child care was documented for 1 day before training and at several points during the implementation of the intervention.
Results
Among all CHWs providing data during the intervention, the average time for healthcare was 55.8 minutes in Burkina Faso, 77.4 in Nigeria and 72.2 in Uganda. Among CHWs who provided data both before and during the intervention during high malaria season the time doubled because, from 39.3 before and 81.6 minutes during the intervention. Valuing this time at minimum monthly salary in the respective country, the value of CHW's time spent for a year was about USD 52 in Burkina Faso, 295 in Nigeria and 141 in Uganda.
Conclusion
CHWs spent about an hour or more daily in providing healthcare to their communities. The present and other data should inform designing a reward system that incentivizes them to continue providing good quality services.
Trial registration: ISRCTN13858170

O86:
Business Models for incentivising Community Health Workers in post conflict Uganda and South Sudan

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Introduction
Maternal mortality rates in Uganda and South Sudan are relatively high and access to health services is still a challenge especially for women. The Ministries of Health of Uganda and South Sudan, BRAC (a non-governmental organization) and Cape Breton University developed innovative research to understand the most cost-effective ways that Community Health Workers (CHWs) (often volunteers) can be incentivized to extend the reach of the existing health interventions to underserved communities. Our innovation is in exploring the effectiveness of how four different social enterprise business models can generate incomes for CHWs (typically women) to improve their livelihoods and supplement extremely limited government health funding.
Methods
The study will use mixed methods. Phase one will be a qualitative study of Community Health Worker systems, incentives and opportunities for social enterprise. Phase 2 will include a quantitative study (Randomized Control Trial) of the impact of four social enterprise models on health outcomes - Revenue from sale of medicines; Outreach from social purpose private clinics; Revenue from individual enterprise; Revenue from community run enterprise.
Relevance
The study findings will help us in addressing gaps in knowledge and understanding which of the income-generating social enterprise business models would be ultimately financially self-sustaining and scalable. Also, which models will simultaneously motivate community health workers to reduce maternal and child mortality in post-conflict contexts.
Conclusion
The study will directly inform, strengthen and scale CHW programme efforts implemented by Ministries of Health in developing countries and BRAC in Uganda, Sierra Leone, Liberia and South Sudan.

O87:
Motivating Community Health Workers using Economic Strengthening Activities: Lessons Learned from Rural Cameroon

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Background
Investment in Community Health Workers (CHWs) is a requirement for attaining several Sustainable Development Goals. Financial incentives for CHWs play an important role in the provision of quality services and worker retention. CHW programs integrated into national health programs and funded by governments are often sustainable. Unfortunately, most CHW programs are implemented by non-profit organizations, often for short periods, and with limited funding. Consequently, identifying feasible and sustainable strategies to motivate CHWs remains critical. Medicines for Humanity (MFH) uses economic strengthening activities (ESAs) to motivate and sustain CHWs participating in maternal and child programs. Implemented across 13 sites in West Cameroon, these programs build capacity, establish business training, seed funding and monitoring and supervision.
Methods
An analysis of process and outcome indicators and program reports from 10/2014 to 09/2016 was conducted. Excel spreadsheet was used to analyse data.
Results
Results show improved CHW performance when ESAs were implemented. There was a 22% increase in the number of home visits, a 32% improvement in CHW performance, and a 28% increase in retention rates. ESAs which included cash crops, rearing small animals, processing foodstuff and small business activities were the most successful. ESAs strengthened social cohesion, communication and collaboration among members. In addition, groups often contributed money for other community activities, such as school tuition for orphans, donation of medical supplies and purchasing construction materials for local buildings.
Conclusion
ESAs can sustain CHWs in resource limited settings over the long term and lead to improved performance and community engagement in health-related programs. Additionally, investment for ESAs is often a one-time expenditure that significantly impacts health indicators. Governments and non-profit organizations should incorporate ESAs into CHW programs, not only as a method of investment at the community level, but also to long-term cost savings and sustainability.

Session 18: Health Management Information System

O88:
Making a difference – Health Extension Workers bring innovation to improve Community Health Information System in Ethiopia

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Background
Ethiopia is implementing a family-centered Community Health Information System (CHIS) with Family Folder as its center piece and designed to assist the Health Extension Workers (HEW) deliver an integrated primary health care package. However, facing difficulties to use CHIS for follow-up of pregnant women, children for immunization, or family planning clients, a few HEWs introduced innovative ways such as using wall hanging cloth pockets to arrange small paper chits with household numbers of clients requiring follow-up services. These innovations led to the introduction of tickler file boxes with twelve monthly slots to organize client cards by the month of next follow-up. This report explores evidences of service delivery improvement at the community linked to the introduction of the CHIS package.
Methods
Electronic Health Management Information System, supervisory visit reports and relevant publications in the Quarterly Health Bulletins of Federal Ministry of Health, Ethiopia were used as data sources.
Results
CHIS helped build HEWs confidence. In their words, *"Previously we didn't know who would come and when for family planning services because of the workload, but now we know."* and, *"this has helped to build the community's trust in me"*. Similarly, one community leader expressed that *"(we) feel more attached to the Health Post, because HEW now maintains our records."* Follow-up for services by HEWs improved in places where the overall performance was good. For example, in one sub-district of Duna district in Southern region, women who received first and fourth antenatal care visits and early postnatal care visits, 59%, 56% and 75% respectively did so from the HEWs; in another sub-district, it was 22%, 44% and 67% respectively.
Conclusion
Paper-based CHIS played an important role in improving information use at service delivery site and, at aggregate level, provided truer reflection of the situation. Digitized CHIS could augment its usefulness.

O89:

Community Health Workers' perspectives on the use of mobile health to improve access to information on maternal, newborn and child health in a rural community in Uganda

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BMC Proceedings 2017, **11(Suppl 6):**O89:

Background
According to the World Health Organisation (WHO), maternal and infant mortality is highest in sub-Saharan Africa (SSA) and Community Health Workers (CHWs) play an important role in the provision of essential primary health care. With an increase in the use of mobile phones, CHWs now have an innovative tool to educate communities on Maternal, Newborn and Child Health (MNCH) hence reduce related deaths. This research explores CHWs' perspectives on the use of mobile health (mhealth) to improve access to information on MNCH in rural Uganda.
Methods
Data was collected using a multiple method qualitative approach consisting of 01 female CHW, 01 female CHW supervisor and 01 male CHW key informant interviews carried out remotely through Skype video calls. A critical review of past literature, and a Focus Group Discussion (FGD) with CHWs was also held in Ssisa sub-county, Wakiso district. The FGD was carried out in the local language, translated into English and transcribed. Data was then analysed using thematic analysis at a latent level.
Results
CHWs noted that the use of mhealth has the potential to increase attendance of antenatal clinics, remind new mothers of immunisation dates and venues, increase births attended by professionals and reduce emergency response time. However, some challenges that affect the use of mhealth include husbands restricting women from owning and using mobile phones, high illiteracy rates among women and inability to use mobile phones. Intermittent electric supply and network access charges also limit CHWs from harnessing the potential of mhealth.
Conclusion
CHWs' use of mhealth could enhance access to information and change the face of MNCH in low-income settings thereby contributing to the Sustainable Development Goals (SDGs). Nevertheless, stakeholders concerned with MNCH need to overcome barriers to using mobile phones.

O90:

Exploring data quality in Community Health Information Systems in Kenya: a mixed method study

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Background
The quality of community health data generated by Routine Health Information Systems in low-resource settings is often low. This limits its use in monitoring and evaluation, as well as policy- and decision-making. In Kenya, little is known about the quality of data reported by Community Health Volunteers to their immediate supervisors, named Community Health Extension Workers, and how these in turn relate to the data reported in the national Health Information System.
Methods
We used mixed methods to assess data quality and explore perceptions of the factors affecting it. Four Community Health Units across urban (Nairobi) and rural (Kitui) Kenya were included. Each Community Health Unit had 14-50 Community Health Volunteers. Focus Group Discussions were conducted with a total of 52 Community Health Volunteers. In-depth interviews were conducted with a total of 13 Community Health Extension Workers and other key informants from the Community Health Strategy programme. Data verification ratios were calculated to measure the consistency of values reported for selected indicators at the different reporting levels.
Results
There were significant discrepancies in the values reported by Community Health Volunteers, Community Health Extension Workers and in the national Health Information System with data verification ratios ranging from 0-260%. Factors perceived to adversely affect data quality included lack of data collection tools, inconsistent and incomplete data, limited supportive supervision, unreliable data management procedures and poor linkage with primary healthcare facilities.
Conclusion
The data generated by the Community Health Units studied is not considered to be high quality. Recommendations to improve the functionality and quality of routine data generated by Community Units in Kenya include: provision of data collection and reporting tools directly to Community Health Units; facilitation of training sessions and supportive supervision/data review meetings; translation of data collection and reporting tools into Kiswahili; and regular data quality assessments.

O91:

Using mHealth to strengthen continuity of care in primary health care services in low-income settings: A case study from rural South Africa

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Background
Continuity of client care is challenging in primary care. In resource constrained settings, Community Health Workers (CHWs) can facilitate this by ensuring that clients visit health services timeously. We implemented and evaluated a mHealth system used by clinic staff and CHWs to improve the continuity of client care in two rural subdistricts in South Africa.
Methods
The intervention worked as follows: A mHealth clerk received a request from a health professional to recall a client to the clinic. The clerk issued the request via a tablet to the CHW, who received the request instantaneously on a mobile phone. Ensuing text messaging between the CHW and clerk recorded the progress with delivering the request to the client. The clerk closed the recall as *Successful* when the client attended the clinic, or *Failed*, when the client failed to attend. We used a mixed method approach to evaluate the intervention. Qualitative interviews with participating clinic staff and CHWs, and in-field observations were conducted and the data analysed thematically. We also collected data on the percentage of clients successfully recalled and is currently analysed.
Results
Users see the system as improving continuity of care because: health professionals receive timely information on whether clients have been recalled successfully; it shortens the recall turnaround time; and the system facilitates real-time communication between the clinic and CHWs. The system was seen to increase the clerk's workload, and recording client visits to the clinic was difficult.
Conclusion
mHealth interventions have the potential to strengthen the continuity of client care in primary health care, but more work on how best to implement these is needed.

O92:

Experiences from field implementation of an m-health innovation for community health workers

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BMC Proceedings 2017, **11(Suppl 6):**O92:

Background
World Vision (WV) has invested in the development of a set of applications built within the mHealth solution; the MoTECH Suite (MTS). The solution aligns with context-specific strategies on Community Health Worker (CHW) programming and offers an open-source software solution tailored to meet the needs of community health approaches. WV Uganda implemented a mobile technology project in Kabale and Busia districts. VHTs made scheduled counseling visits to households ensuring that mothers utilized MCH services as required with emphasis on the 1000-day window. To support effective transmission of timely data on mother-child pairs an innovation around mHealth for CHWs was implemented. The project trained 896 VHTs on mHealth technology and equipped them with MTS enabled mobile phones. The project run from 2013 - 2015 and conducted an end term situation analysis in November 2015.
Methods
The evaluation team applied qualitative and quantitative research methodologies, capturing data from Village Health Teams (VHTs), direct beneficiaries, district and health facility representatives. A total of 210 VHTs and 92 households participated in the study.
Results
By September 2014, only 238 VHTs submitted at least one complete client case form using the mobile platform representing a 27% reporting rate. Those who had not submitted a case form cited internet connectivity as the main reason followed by poor battery status. 784 VHTs were supervised at least once per quarter. Increasing the number of VHTs supervised increased the number of timely case submissions. By September 2015, 773 VHTs had submitted at least one client case form without any inconsistencies representing 87.5% reporting rate. 769 VHTs managed to access the mobile platform on a quarterly basis representing 86.7% of the target.
Conclusions
This intervention provided a basis for learning and adapting to the changing requirements for technology based innovations for CHWs. mHealth bridges the gap between households, CHWs and health facility providers.

O93:

Usability of the community health information management system by Community Health Workers in Ruhaama, Ntungamo District

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Background
The use of mobile and wireless technologies to support the achievement of health objectives in communities (m-Health) has the potential to transform the face of health service delivery across the globe. We pilot tested the ability of community Health Workers (CHWs) to adapt to and use mobile smart phone technology for community health data collection and reporting, as part of the national e-health strategic framework.
Methods
CHWs were selected and trained over 4 days to use a smart phone based Community Health Management System platform to collect household data in Ruhaama subcounty, Ntungamo District and report to the Ministry of Health. We documented their ability to learn to use smart phones and the ease of collecting and reporting household data with this technology.
Results
A total of 150 CHWs, 2 from each of the 75 villages in Ruhaama Sub-county were targeted. None of the CHWs had owned a smart phone previously. Of the 149 CHWs who attended the training, 136 CHWs (90%) successfully completed the initial 4 day training and received mobile smart phone sets with solar powered chargers. Thirteen CHWs did not pass the test after the initial four days training; 12 of them passed the assessment and received phones after 6 weeks of mentorship and support by peer CHWs. Within 2 weeks following training, all CHWs had electronically registered homesteads and household health data and submitted their first report to the internet server at the Ministry of Health. All except one mobile smart-phone handset were in good condition 3 months later.
Conclusions
CHWs very easily adapted to the use of mobile smart phone technology based platform to collect and report household data to the

Ministry of Health. Peer support was a strong component during and after the training and proved effective for those who had not passed the initial test during training.

Session 19: Leadership, governance and accountability/multisectoral collaboration

O94:

Governance of Community Health Worker programs at community level: A tool for assessing the functionality of Community Health Committee programs

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Background
Community-level governance of Community Health Worker (CHW) programs in the form of Community Health Committees (CHCs) is part of health policy in many countries, helping to ensure that CHWs are accountable to and supported by not only the formal health system but also the communities that they serve. While many Ministry of Health community health strategies include CHCs, the reality on the ground shows that these groups are often weak and poorly supported. Literature and field experience suggest that there are fundamental programmatic, structural and policy elements that must be in place in order for CHC programs to function effectively. Ministries and partners would benefit from a tool that lists and describes the recommended programming elements, to use for assessment and programming improvements.
Description
A taskforce from World Vision International and the CORE Group has developed the *Community Health Management Committee Assessment and Improvement Matrix (CHMC-AIM)* to assist ministries and supporting organizations to assess CHC program functionality against 14 elements identified as key for program success. The 14 elements include: strategic description of CHC programming; CHC formation; member recruitment; organization and structure; training; budget; supervision; incentives; community support; support of the referral system; communication and information management; linkages to the broader health system; country ownership; and program performance evaluation. Each element is rated using a four-point descriptive scale ranging from non-functional to highly functional; enabling users to identify existing program strengths and to address elements assessed as weak. The tool also reviews the roles and responsibilities intended for the CHCs. First piloted in Kenya and subsequently taken up in Lesotho, the tool is now available for wider use.
Conclusion
CHCs can be effective mechanisms for community-level governance of CHW programs. The CHMC-AIM tool will assist Ministries of Health and partners to assess, plan and budget for CHC programming success.

O95:

Client satisfaction with Community Case Management of Uncomplicated Malaria in Bungoma County, Kenya

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Background
Owing to the burden of malaria in Kenya, community case management of Malaria (CCMM) has been adopted to overcome barriers to prompt access to Malaria treatment as recommended by World Health Organisation. This initiative is part of the contributions to achieving malaria eradication. Community members' feedback is essential in evaluating the process as implemented by Amref Health Africa. This study therefore sought to evaluate the extent to which clients were satisfied with Community Case Management of Malaria.
Method
A cross-sectional study was conducted whereby a client satisfaction tool was administered to 381 clients offered CCMM services at household level. All suspected malaria tested by Community Health Volunteers (CHVs) were asked to consent to participate in the assessment. The inclusion criteria included individual or child must have been sick or presented with a new health problem or does not require urgent referral. Parameters used to measure satisfaction were availability of CHVs, convenience of getting CCMM service and promptness to respond to a call by CHVs. Data was analysed using descriptive statistics.
Results
Average age of the respondents was 40 years, 81% were female and majority practised farming (61%). Majority (93%, 94% and 91%) of the clients were satisfied with availability (obtainability/readiness), convenience (suitability/ease) and promptness (timeliness/punctuality) to respond to a call by CHVs. They further felt that the time taken to conduct the test, explanations given on treatment and friendliness during CCMM was good (94%, 90%, and 95% respectively). Most (98%) of the clients considered CHVs a regular source of basic healthcare on Malaria. Health education received was highly perceived to be helpful (93%).
Conclusion
The community was satisfied with CCMM due to accessibility to diagnosis and treatment of uncomplicated malaria in relation to convenience, promptness and additional health education services received.

O96:

Community perceptions and participation in health in the context of the Community Health Strategy in Kenya

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Background
In Kenya, task sharing to improve health service delivery at community level is achieved by implementing the Community Health Strategy (CHS) and this mainly entails community health volunteers (CHVs) offering basic health services to community members. CHS is founded on enhancing community participation, implemented through monthly Community Health Committee (CHC) meetings, monthly action days and quarterly dialogue days. We sought to assess the implementation of community meetings in four selected community health units in Kitui and Nairobi Counties of Kenya.
Methods
The study was implemented between March and December of 2015. Participants were purposively selected community members, CHVs and Community Health Extension Workers (CHEWS). Data collection methods were questionnaire interviews (quantitative) and in-depth interviews (qualitative). Data were collected on frequency of CHC meetings, action days and dialogue days held in each community health unit and perceptions of respondents towards community participation through community meetings.
Results
Study findings showed that community meetings do not occur as stipulated in CHS in the four community units. Dialogue days were reported to occur more frequently compared to action days and CHC meetings. Interestingly, chief *barazas* (community meetings convened by the local administration) were reported to be an avenue informally utilized by CHVs to enhance community participation in matters health. The study also showed that there is lack of leadership and support from relevant stakeholders to facilitate and support the implementation of community feedback forums.

Conclusion
Local communities must adequately participate in health systems for them to be considered responsive. Our findings revealed that the community is not adequately involved in the CHS implementation through the avenues provided by the CHS. Consequently, there is need for stakeholders in CHS to coordinate efforts at enhancing community participation in health to ensure sustained functionality of the community health strategy in Kenya.

O97:

Meeting the Sustainable Development Goals through multisectoral collaboration for CHW scale up in Ghana

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Background
Ghana has since 2013 recruited, trained, incentivized and deployed over 20,000 Community Health Workers (CHWs) through multisectoral collaboration facilitated by One Million Community Health Workers Campaign (1mCHW). CHWs offer a powerful base and affordable primary healthcare for integrating health interventions at the community level. This paper demonstrates the effectiveness of multisectoral collaboration in CHW rollout in Ghana.
Methods
The Campaign used stakeholders' consultative meetings and workshops to engage stakeholders from public and private sector for their buy-in and active participation. A multisectoral Technical Working Group (TWG) was constituted to support the CHW rollout. The CHWs Programme is integrated into the existing Ghana Health Service (GHS) system where activities are coordinated from the national to regional, district, sub-district and community levels. Community Health Officers, Managers of Ghana's Community-based Health Planning and Services (CHPS), are the direct supervisors of CHWs at the community level.
Results
Through these engagements, stakeholders got deeply involved and actively supported the entire program rollout. They mobilized domestic and international resources to provide CHWs with smart phones, uniforms, and backpacks for their operations. The TWG facilitated the development of a National CHW Roadmap and a National CHW Implementation Guidelines, which defines the CHW selection criteria, roles and responsibilities, performance tracking and remuneration. The CHW Curriculum and Training Manual ensured the harmonized training of CHWs on defined package of services across the country.
Conclusion
In Ghana, multisectoral collaboration promoted participation, enhanced resource mobilization and created a harmonized CHW system to meet the SDGs.

O98:

Strengthening collaboration and coordination to inform future scale up of Community Health Extension Worker programing in Uganda

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Background
Globally, there is robust evidence that Community Health Extension Workers (CHEWs) in low income countries can improve clients' health and well-being. However, evidence on strengthening collaboration and coordination to inform the introduction of a new cadre that can be scaled and sustained is limited. Nevertheless, government agencies, implementing partners and the private sector need to innovate and align efforts in order to strengthen collaboration and coordination.
Methods
Based on a literature review from high impact practices in low and middle income countries, and consultations with multiple stakeholders in Eastern Africa, key processes and approaches that will strengthen existing coordination practices to support the Ministry of Health in its plan for scaling up CHEW program in Uganda were identified.
Results
Civil society networks, interdepartmental collaboration within government sectors and implementing partner linkages are critical aspects that will be needed to ensure successful implementation and scale-up of the CHEW program. To strengthen collaboration and coordination for the CHEW program, the following approaches will be required by key actors and players: establishment of coordination committees with clearly modified mandates, execution of memorandum of understanding, hosting co-planning meetings, conducting joint tool development workshops, implementing multi-partner review meetings, and ensuring shared learning platforms. All these approaches for improved collaboration and coordination are essential for creating functional and effective health and community systems that enable organizations and actors to fulfil their role of contributing to improved health outcomes in Uganda.
Conclusion
Striving for an effective relationship while deepening collaboration and coordination with key actors and players is a major task in designing, implementing, and scaling up CHEW programming in Uganda.

Session 20: WASH / Alcohol abuse

O99:

Improvement of Urban slum Water Sanitation and Hygiene in Kampala Central Division through the Community Cluster Heads approach

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Background
Water, Sanitation and Hygiene (WASH) is a major challenge in the urban poor communities especially in developing countries of the sub Saharan Africa. In Kampala, the slums are characterized by communities with low socioeconomic status, multicultural settings and poor housing conditions and WASH is one of the major challenges. In 2016, Integrated Community Health Initiative Organization (ICHIO) - Uganda through the Gwanga Mujje Tweyonjje Project in collaboration with Central Urban Division, Kampala Capital City Authority (KCCA) pilot tested an approach in Kakajjo zone with the aim of eliminating open defecation (OD) and improving general WASH situation in urban slums through the use of Community Cluster Heads (CCH).
Methods
Pilot test of the CCH approach was carried out in Kakajjo zone, Kisenyi II parish in Central Division, Kampala district. Every ten household, there was selection of one community volunteer known as CCH who was nominated by fellow members in the households. CCH were trained on WASH aspects and were responsible for overseeing and reporting about the WASH situation in their respective areas, mentoring of members on WASH, also had close monitoring and continuous mentoring from the ICHIO project officers thus capacity building. The CCH also acted as linkages between the community and other stakeholders.

Results
There was elimination of OD in all the 5 hotspots of Kakajjo zone at the end of 6 months. General cleanliness and sanitation also improved due to community participation, increased reporting on WASH with CCH reporting a drop-in sanitation related cases in Kakajjo zone and better Community linkage to key stakeholders.
Conclusion
The use of CCH can affect improvement and sustainability of the urban WASH interventions especially in congested communities like the slums. They are therefore crucial in ensuring the achievement of Sustainable Development Goals 3, 6 and 11.

O100:

Roles of Village Health Teams in alcohol control: a case of Community alcohol control project in Uganda

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Background
The sustainable development agenda suggests efforts focused on strengthening the prevention and treatment of substance abuse, including harmful use of alcohol. However, limited human resource capacities in mental health in Uganda remain a key obstacle to these efforts. Community health workers have been suggested in low income resource settings with limited human resource capacities to bridge this gap. The alcohol control project explored the use of Village Health Teams (VHTs) in community interventions in alcohol control in areas where harmful use of alcohol is highly prevalent.
Methods
Using purposive sampling, 54 VHTs in Jinja and Masindi districts in Uganda were selected in 2013. The main selection criterion was having undertaken the initial VHT training offered by Ministry of Health. VHTs were trained on how to conduct community sensitization campaigns, counselling, identification of alcohol dependent victims and their referral to rehabilitation and treatment services. A pre and post evaluation employing qualitative methods in the communities was then carried out to determine effectiveness of the strategy.
Results
Roles of VHTs included offering psychosocial support to individuals on recovery, linking to care and treatment and information sharing. Results indicated an increased awareness on alcohol related harm among communities, improved economic well-being and reduced alcohol related domestic violence in communities where VHTs operated. VHTs had an increased ability to identify alcohol related victims and refer them to care.
Conclusion
The strategy of working with VHTs in alcohol interventions is of benefit to communities and should be extended to other areas with high levels of alcohol consumption.

Conclusion

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During the three days of 117 oral and 27 poster presentations, 3 keynote addresses, 13 panel discussions, 2 workshops and 15 exhibitions, it was noted that systematic planning, multi-sectoral collaboration and support at national level are key for the success of CHW programmes. It was evident from the symposium that CHWs contribute to attainment of at least 7 SDGs (health and well-being - SDG 3, ending poverty - SDG 1, zero hunger - SDG 2, gender equality - SDG 5, improving water and sanitation - SDG 6, reducing inequalities - SDG 10, and global partnerships - SDG 17). It emerged at the symposium that CHWs should be institutionalised, incentivised and integrated into formal health system structures. In addition, CHW programmes should be tailored in a manner that is contextually and culturally appropriate to meet local needs and priorities while considering issues of equity, disability, gender as well as reproductive health among adolescents. Regular evaluation and review of CHW programmes was proposed as key for ensuring that they work optimally. It became apparent from the symposium that there is a strong need to continue the dialogue between local, national and global stakeholders involved in CHW programmes. It was proposed at the symposium that such events be held every two years.