



## **The 13 UN Life-saving Commodities for Maternal, Newborn and Child Health: Knowledge, Attitudes and Practices in Uganda**

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### **Authors' contributions**

*This work was carried out in collaboration between all authors. Authors GS and PW designed the study with support from all authors. Authors GS and CN analyzed the data and wrote first draft of the manuscript. All authors read, edited and approved the final manuscript.*

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### **ABSTRACT**

**Background:** Life Saving Commodities (LSC) are medicines, medical devices and health supplies that effectively address leading avoidable causes of death during pregnancy, childbirth and childhood. In 2012 the United Nations put priority on globally promoting 13 priority LSC across the reproductive, maternal, newborn and child health (RMNCH) continuum of care. We assessed barriers to demand, access and utilization of these 13 LSC.

**Methods:** This was a mixed methods cross-sectional study using both quantitative and qualitative approaches. The quantitative component was a health facility survey while the qualitative one was community-based. A blend of simple random and purposive sampling was undertaken to recruit study participants in four regions of Uganda. A total of 125 health facilities were surveyed and 513 people interviewed. Descriptive and bivariate analysis was done for quantitative data while the

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qualitative strand employed thematic analysis. This paper presents descriptive findings on knowledge, attitudes and practices (KAP) pertaining to the 13 LSC.

**Results:** There was a variation in knowledge of LSC. Knowledge on child health commodities (ORS and Zinc) was higher among community members compared to the other commodities which are largely hospital-based (injectable antibiotics, antenatal corticosteroids, chlorhexidine, oxytocin, misoprostol and magnesium sulphate). Although health workers were knowledgeable on most LSC they also demonstrated limited comprehensive knowledge some, particularly those relating to reproductive and newborn health (48% and 42.4% respectively). For instance only 37.6% had comprehensive knowledge on management of preterm labour; only 44.8% health facilities had health workers knowledgeable on use of antenatal corticosteroids for preterm labour and only 30.4% reported to give antibiotics. Perceptions on some commodities, particularly the female condom and emergency contraception, were largely negative and health workers practiced selective recommendation or use. Explanatory factors for this could be traced at individual, household, community, facility and macro levels. Constrained by system-related issues like medicine stock-outs, majority of health workers were improvising and using available alternatives to LSC.

**Conclusion:** The concept “lifesaving commodities” for maternal, newborn and child health was not well understood by both health workers as caregivers and community as service users. As a result they have not been demanded for, made available or utilized as originally intended. Alongside improved LSC availability, their overlooked, complementary nature and efficacy should continuously be emphasized to the various stakeholders for optimum results.

*Keywords: Lifesaving commodities; maternal and child health; newborn health; reproductive health; MNCH; RMNCAH; maternal and child survival; Uganda.*

## 1. INTRODUCTION

Poor reproductive, maternal, newborn and child health (RMNCH) outcomes remain a great challenge in low and middle income countries (LMICs). In 2015, 303,000 maternal deaths occurred globally, 99% of these in LMICs [1]. Global under five mortality rate is 42.5/1000 live births [2] but much higher in sub-Saharan countries like Uganda (66/1000) [3] and of all under-five deaths in 2015, 2.6 million were still births [4]. Obstetric haemorrhage, hypertension, abortion and sepsis are still the key maternal mortality causes [5] while pneumonia, diarrhea, neonatal sepsis, complications from pre-term births and birth asphyxia are top causes for under five mortality [6].

A plethora of national and global initiatives have been established over the years to abate maternal, newborn and child mortality. In 2000, the millennium development goals (MDGs) were instituted by UN member states. And the targets set included 75% reduction of maternal mortality and 67% reduction in child mortality from the 1990 base figures [7]. Some LMICs made substantial progress and even achieved the targets; however, the majority of LMICs did not [8]. In a bid to increase the momentum towards

achieving these goals, the global strategy for women’s and children’s health 2010-2015 was launched by the UN Secretary General in 2010. Its primary goal was to rally global partners to support the achievement of MDGs 4 and 5 and improve the health and wellbeing of populations in the poorest countries. A movement, “*Every woman Every child*”, was built and a Commission on Life Saving Commodities for women’s and children’s health instituted in 2012 with a mission to accelerate progress in the reduction of death of women and children [9].

The 13 UN Lifesaving commodities, shown in Table 1, were identified by the Commission and believed to be the key for saving 6 million children’s and women’s lives if widely accessed and properly used [10].

These commodities, used across the RMNCH continuum, were flagged off in eight countries including Tanzania, DR. Congo and Uganda [9]. A recent multi-country assessment of the progress of the UN lifesaving commodities found more than 50% of facilities with stock outs of majority of the lifesaving commodities [11]. However, stock outs are not the only bottleneck for the use of lifesaving commodities; in low income countries, the lack of enough skilled

**Table 1. LSC across the reproductive, maternal, newborn and child health (RMNCH) continuum**

United Nation’s list of 13 life saving commodities	
Reproductive health commodities	Female condom Contraceptive implant Emergency contraception
Maternal health commodities	Oxytocin Misoprostol Magnesium sulphate
Newborn health commodities	Antenatal corticosteroids Injectable antibiotics Chlorhexidine Resuscitation devices (RDs)
Child health commodities	Amoxicillin Oral Rehydration Salts Zinc

labour [12], community acceptance and critical infrastructure hinder the accessibility and use of these commodities. The evidence also shows that use of interventions like zinc, ORS and antibiotics for pneumonia is low partly because they require availability of functional health facilities to be utilized [13]. The few studies encountered in our literature review focused on reproductive health commodities – the implant and emergency contraceptives. A systematic review by Dawson et al. [14] highlighted existing knowledge, attitudes and practices (KAP) of providers regarding emergency contraception that could explain its low use. Dawson’s study revealed varying knowledge levels and noted that some providers believe it is dangerous, has long term effects like cancer and promotes promiscuity especially among the youth. Another Ugandan KAP study showed fair to good knowledge about the contraceptive implant and a desire for more information especially on side effects. This same study also showed that 48% of women believe contraceptive choice should be made by their spouses [15].

Uganda has a robust policy framework including the availability of a Sharpened RMNCAH Plan to accelerate progress towards achievement of the relatively ambitious SDG targets on maternal, newborn and child health. However the country still has an unacceptable burden; while the infant and child mortality rates have reduced faster

than the maternal mortality ratio, they are still unacceptably high. The maternal mortality ratio is high, estimated at 336 per 100,000 live births; the infant mortality rate is at 43 per 1,000 live births while the under 5 mortality rate is 64 per 1000 live births [16]. The 2016 UDHS results show that there has been no progress on neonatal mortality which has remained at 27 per 1,000 live births for over 15 years, a high number of stillbirths as well as other pregnancy and birth-related complications [17-20]. Apart from poor RMNCH outcomes, a wide information gap exists and little is known on the rationale, uptake and impact of the legion RMNCH initiatives in Uganda, including the UN-endorsed 13 lifesaving commodities for RMNCH. This study set out to establish the barriers to the access and use of the 13 lifesaving commodities in Uganda focusing on issues around affordability, acceptability, utilisation and sustainability.

**2. METHODS**

The study was conducted in four geographical regions of Uganda (Central, Eastern, Western, and Northern) to ensure geographical representation. In each region, one rural and one urban district with a regional referral hospital was purposively selected. The selected districts in each region, which also had several ongoing robust RMNCH programmes, are shown in Table 2 below:

**Table 2. Study area**

Region	Northern	Central	Eastern	Western
Districts	Gulu Nebbi	Wakiso Rakai	Tororo Luuka	Kabale Masindi

**Table 3a. Number of participants per data collection method from the 8 districts**

Method	Participant no. per district	Total in 8 districts
Focus group discussions	16	128
In-depth interviews	8	64
Key informant interviews	6	48
<b>Total</b>		<b>240</b>

**Table 3b. Summary of study participants**

Sample size per study objectives	
Objective	Sample size
Availability, prices, affordability and level of utilization of LSC	- 40 Public health facilities - 40 Private-not-for-Profit (PNFP) facilities - 40 Private-for Profit (PFP) facilities - 120 health workers (one per facility – mostly those directly involved in maternal and child health e.g. midwives and nurses)
Knowledge, attitudes and practices (KAP) on LSC	For qualitative strand a total of 240 participants (x30 per district) were recruited. The breakdown per district was: Focus Group Discussions (FGD) = 16 (x2 FGD, 8 participants in each), In-depth Interviews = 8, Key informant interviews = 6.
Barriers to access and utilization	Key informant interviews (KIIs) = 48 Focus Group Discussion (FGD) = 128 Indepth interviews (IDIs) = 64 Total = 240

The design was a mixed methods cross-sectional study utilizing both quantitative and qualitative approaches. The quantitative component was a health facility survey which involved 125 health facilities, while the qualitative component was a community-based survey using focus group discussions, key informant interviews and in-depth interviews with diverse study participants. A mix of random and purposive sampling was used to select study facilities and participants. Study participants included women of child-bearing age, men and health workers as well as other key informants including service providers (e.g. from Marie Stopes), district political and administrative leaders, community leaders and national-level key informants. A total 513 participants were recruited, 240 of whom were for the qualitative part as shown in Table 3.

While descriptive and bivariate analysis was done for quantitative data, thematic analysis was undertaken for the qualitative data guided by the study objectives. The study was approved by Makerere University School of Public Health Higher Degrees Research and Ethics Committee (MakSPH-HDREC) and the Uganda National Council of Science and Technology (UNCST). Permission was also sought from the district authorities and management of the selected health facilities. Informed consent was obtained from study participants after comprehensive explanation of the study and its objectives.

Participants were informed of their rights to refuse or withdraw at any time during the interview. Anonymity was guaranteed by not writing participants' names and confidentiality maintained by only study team members having access to the research data.

### 3. FINDINGS

#### 3.1 Knowledge on Life Saving Commodities (LSCs)

There was a **variation in knowledge about LSC** among study participants who were also diverse in terms of sociodemographic characteristics. Below is a breakdown of study findings on existing knowledge, attitudes and practices (KAP) regarding the different LSCs across the reproductive, maternal, newborn and child health (RMNCH) continuum.

##### 3.1.1 Family planning / reproductive health commodities

Study participants were generally found to be more knowledgeable about the pill and implant than the female condom or emergency contraception. Study findings revealed limited knowledge on the female condom and emergency contraception. These knowledge gaps were not only among community members

but also health workers as shown in the excerpt below:

*Although I have been telling women about family planning and I am also a woman but I can tell you sincerely I do not know how that female condom is used. I cannot demonstrate it to you so for that one I don't teach about it*  
(Health worker, Masindi)

There was some awareness about the implant although this was tainted by a number of myths:

*Those things [FP] are hurting women ... pills and implants are hurting them, they become weak and after just two children ... you hear them [women] say they have a lot of pain and a human being discharges blood for a whole month non-stop, you can even be ashamed to associate with other people and cannot do any productive work ... another thing is that the women start becoming very [sexually] active ... this can even lead to divorce. Even cancer is common these days. Sincerely this family planning thing is very bad...*  
(Mixed community FGD, Gulu)

Although some form of contraceptive use was favourably regarded amongst female study participants, there was a mix-up of certain contraceptive methods:

**Betty**<sup>1</sup>: *I was still breastfeeding so when I went to the health facility I told them I needed an injection because I thought that the pills might bring me fibroids and putting a coil here [pointing to the arm] might also treat me badly...*

**Int:** *Betty, can you please describe for me what you call a coil?*

**Betty:** *They put it in the arm*

**Int:** *Oh, but what they put in the arm is called implant; a coil is inserted through your female organs. So do you mean the one insert in the arm or...?*

**Betty:** *The one in the arm, that is the coil*

A number of fears were found to exist regarding contraception for example some participants feared that ARVs tamper with the efficacy of contraception, that family planning causes cancers especially cervical and also causes the birth of abnormal babies citing an example of a

woman who gave birth to a baby with three heads. The **implant was mostly feared on grounds of associated side effects** such as weight gain, heavy bleeding and inflexibility due to its long-term nature. It was also deemed more expensive than the rest:

*I heard that the implant moves in the body and even disappears totally after some time ... that when someone becomes fat their flesh covers it [implant] and it moves ... so some people fear and have resorted to the injection ... the truth is that knowledge [on LSC] is lacking*  
(VHT, Rakai)

*When you put it is for free but to remove you have to pay a lot of money... which I might not have... but also removing means it did not work because why are you even getting pregnant if you did family planning?*  
(Male, Gulu)

**The female condom largely evoked feelings of anxiety and frustration;** it generally came across as extremely unpopular and not user-friendly while the implant was reported to cause severe bleeding as shown below:

*The female condom is the worst; the few people who know about it have failed to use it. Many people don't want it because you have to keep on holding it when having sex. It has a lot of work; many people are complaining about holding it, so even if you give them to people they will just keep it under the pillow*  
(VHT-2, Rakai)

*As a man I don't think I am comfortable with this female condom and its way of use. It is risky and could end up going into the woman or cause transmission of diseases incase one is not careful*  
(Male, Masindi)

*There is what we call "anii" [myth and gossip] ... at one time it was on the female condom. They used to say it makes a lot of noise but currently as I talk there is a new one which does not make noise but most women don't know this. Then also for the implant, if someone hears it causes a lot of bleeding she fears to use it which has been the case*  
(Senior Principal Nursing Officer, District F – Northern Region)

<sup>1</sup> Note: All names used in this report are pseudonyms and not real names of study participants.

It important to note, however, that this study found most of the rather strong negative attitudes towards the female condom (Fig. 3) and its associated limitations or risks to be based on proxy knowledge or second-hand information as nearly all of this study's participants had never used a female condom.

### **3.1.2 Maternal health commodities**

Knowledge about maternal health<sup>2</sup> LSCs was also found to be extremely low among community members. This can possibly be explained by the fact that they are largely facility-based and administered by health workers. Community members bemoaned the reluctance of health workers to discuss their diagnosis, treatment or instructions. The resulting knowledge gap was used by community as a basis to speculate or reject modern healthcare and turn to other alternatives like local remedies:

*We are not doctors so we cannot understand those things. We only see them giving us these things but they do not explain anything to us, we just take. But is annoying that doctors just treat us but do not explain to us what we are suffering from, or even what they have given us. That is why when we get these problems [perceived side effects] we just start looking for our own explanations*  
(Women FGD, Tororo)

We assessed health worker's knowledge to see whether it was comprehensive by asking about the correct action taken during heavy bleeding after delivery, those who referred or did not know were taken as lack of knowledge. We found that comprehensive knowledge was low (48.1%) for correct actions taken during bleeding after delivery. Knowledge varied by different levels of health facilities with health workers in the regional referral hospital being more knowledgeable than health workers at lower levels.

We also assessed health workers on their knowledge of clinical services associated with the use of maternal health commodities. Knowledge on use of oxytocin for managing postpartum haemorrhage was universal or high in regional (100%) and general hospitals (92.3%), and also in Health Centre (HC) IV (86.7%), but poor in HCIIIs (38.1%). The findings

on knowledge for use of magnesium sulphate for pre-eclampsia management mirrored that of oxytocin: 100% in regional hospitals, 92.3% in the general hospitals, 88.2% in the HCIVs, 64.4% in the HCIIIs, 28.6% in HCIIIs and 24% in the clinics and drug shops. In other words, we noted lower levels of health workers' knowledge on these critical commodities as we go down facility levels, in spite of delivery care being provided at all levels. Table 4 illustrates this further.

Gaps in knowledge on maternal health commodities were associated with different factors such as level of seniority on the policy or clinical side (for example policy managers and senior clinicians were more knowledgeable than midwives); exposure to these commodities (for example store managers, dispensers and drugshop owners are actively involved in the procurement, storage and dispensing of these commodities) and type of facility (Private-for-Profit or PFP health workers were less knowledgeable than their public facility counterparts). Generally, knowledge gaps were significant across all health facility levels especially lower level health facilities. Overall, government health workers were more knowledgeable (77.8% use of oxytocin, 77.8% use of magnesium sulphate) compared to Private-Not-for-Profit or PNFP (76% use of oxytocin, 56.4% use of magnesium sulphate) and Private-for-Profit facility health workers (55% use of oxytocin and 35% use of magnesium sulphate). As can be seen, PFP health workers recorded the lowest level of knowledge scores as shown in Fig. 1. Although we were unable to assess health workers' skills, we posit that this translates to the practices at the different facility types.

Few (48.1%) health workers had comprehensive knowledge on the correct action taken during bleeding after delivery. However, knowledge varied in the different regions and the western region had the lowest (29.0%) as shown in Table 5.

### **3.1.3 Newborn health commodities**

Like maternal health commodities, LSC for newborn health were largely unknown by community members. Knowledge of health workers varied with ownership of the facility with healthworkers in public and PNFP facilities being more knowledgeable than those in PFP facilities as shown in Fig. 2.

<sup>2</sup>Maternal health commodities include oxytocin, misoprostol and magnesium sulphate

**Table 4. Health workers' knowledge on clinical services associated with the use of maternal health commodities**

Area of assessment	Level of health facility						
	Total n(%)	RRH n(%)	Hosp n(%)	HC IV n(%)	HC III n(%)	HC II n(%)	C&D n(%)
<b>Correct action during heavy bleeding after delivery</b>							
<b>Comprehensive knowledge</b>	<b>48.1%</b>	89.3%	69.2%	63.9%	60.6%	25.2%	16.6%
Massage the fundus	55 (44.0)	4 (100.0)	6 (46.2)	12 (70.6)	27 (60.0)	4 (19.1)	2 (8.0)
Give ergometrine or oxytocin	87 (69.6)	4 (100.0)	12 (92.3)	14 (82.4)	39 (86.7)	8 (38.1)	10 (40.0)
Begin IV fluids	64 (51.2)	3 (75.0)	8 (61.5)	11 (64.7)	30 (66.7)	7 (33.3)	5 (20.0)
Empty full bladder	55 (44.0)	4 (100.0)	10 (76.9)	9 (52.9)	26 (57.8)	4 (19.1)	2 (8.0)
Take blood for hemoglobin and cross-matching	33 (26.4)	3 (75.0)	7 (53.9)	6 (35.3)	14 (31.1)	2 (9.5)	1 (4.0)
Examine woman for lacerations	61 (48.8)	4 (100.0)	10 (76.9)	11 (64.7)	26 (57.8)	5 (23.8)	5 (20.0)
Manually remove retained products	66 (52.8)	3 (75.0)	10 (76.9)	13 (76.5)	29 (64.4)	7 (33.3)	4 (16.0)
Refer	52 (41.6)	0 (0.0)	3 (23.1)	8 (47.1)	25 (55.6)	13 (61.9)	3 (12.0)
Don't know	5 (4.0)	0 (0.0)	1 (7.7)	0 (0.0)	0 (0.0)	2 (9.5)	2 (8.0)
<b>Convulsion in hypersensitive pregnant women</b>							
Give Magnesium sulphate	72 (57.6)	4 (100.0)	12 (92.3)	15 (88.2)	29 (64.4)	6 (28.6)	6 (24.0)
Don't know	6 (4.8)	0 (0.0)	0 (0.0)	1 (5.9)	1 (2.2)	2 (9.5)	2 (8.0)

\*RRH – Regional Referral Hospital, Hosp – General Hospital; HC – Health Center; C&amp;D – Clinics and Drug shops

**Table 5. Health workers' knowledge on maternal health commodities by region**

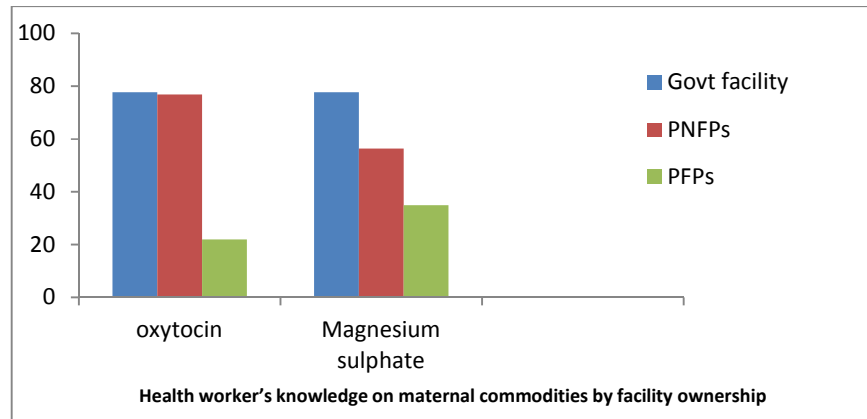
	Health workers' knowledge on maternal commodities by region				
	North n (%)	East n (%)	West n (%)	Central n (%)	Total n (%)
<b>Comprehensive knowledge</b>	<b>36.0%</b>	<b>54.9%</b>	<b>29.0%</b>	<b>72.4%</b>	<b>48.1%</b>
<b>Correct action taken during heavy bleeding after delivery</b>					
Massage the fundus	9 (29.0)	17 (53.1)	7 (22.6)	22 (71.0)	55 (44.0)
Give ergometrine or oxytocin	19 (61.3)	23 (71.9)	18 (58.1)	27 (87.1)	87 (69.6)
Begin IV fluids	10 (32.3)	21 (65.6)	10 (32.3)	23 (74.2)	64 (51.2)
Empty full bladder	10 (32.3)	16 (50.0)	9 (29.0)	20 (64.5)	55 (44.0)
Take blood for hemoglobin and cross-matching	4 (12.9)	7 (21.9)	4 (12.9)	18 (58.1)	33 (26.4)
Examine woman for lacerations	11 (35.5)	19 (59.4)	7 (22.6)	24 (77.4)	61 (48.8)
Manually remove retained products	15 (48.4)	20 (62.5)	8 (25.8)	23 (74.2)	66 (52.8)
Refer	13 (41.9)	13 (40.6)	7 (22.6)	19 (61.3)	52 (41.6)
Don't know	1 (3.2)	0 (0.0)	3 (9.7)	1 (3.2)	5 (4.0)

**Table 6. Knowledge of health workers on use of newborn commodities**

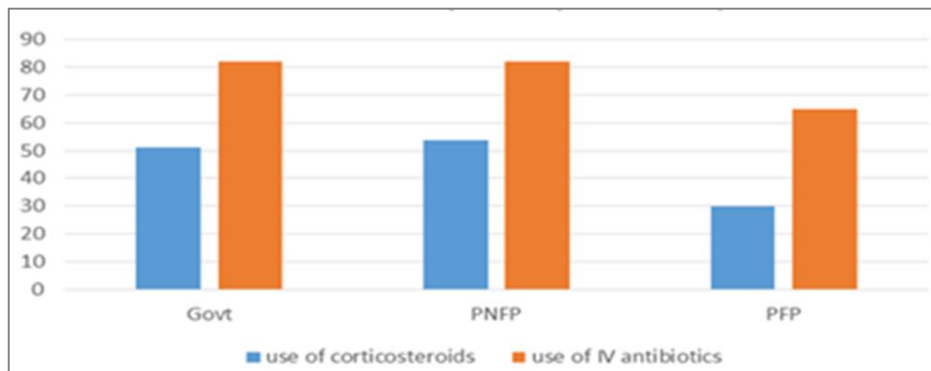
Area of assessment	Level of health Facility						
	Total n (%)	RRH n (%)	Hosp N (%)	HC IV N (%)	HC III n (%)	HC II n(%)	C&D n(%)
<b>Management of a pregnant woman (&lt;34 weeks) who goes into preterm labour</b>							
Give antenatal corticosteroids	56 (44.8)	4 (100.0)	10 (76.9)	14 (82.4)	24 (53.3)	2 (9.5)	2 (8.0)
Give antibiotics for premature rapture of membranes	38 (30.4)	3 (75.0)	4 (30.7)	6 (35.3)	23 (51.1)	1 (4.8)	1 (4.0)
Don't Know	16 (12.8)	0 (0.0)	1 (7.7)	0(0.0)	2(4.4)	7(33.3)	6(24.0)
<b>Steps taken when the newborn presents signs of infection</b>							
Explain the situation to the mother/care giver	43 (34.4)	2 (50.0)	6 (46.2)	7 (41.2)	19 (42.2)	6 (28.6)	3 (12.0)
Continue to breastfed	36 (28.8)	4 (100.0)	7 (53.9)	6 (35.3)	14 (31.1)	3 (14.3)	2 (8.0)
Keep airways open	37 (29.6)	2 (50.0)	5 (38.5)	7 (41.2)	18 (40.0)	3 (14.3)	2 (8.0)
Begin IV antibiotics	96(76.8)	4 (100.0)	11(84.6)	15(88.2)	41(91.1)	10(47.6)	15(60.0)
Refer	55(44.0)	2 (50.0)	5 (38.5)	5 (29.4)	21(46.7)	12(57.1)	10(40.0)
Don't know	4(3.2)	0 (0.0)	0 (0.0)	0 (0.0)	1(2.2)	2(9.5)	1(4.0)

\*RRH – Regional Referral Hospital, Hosp – General Hospital; HC – Health Center; C&amp;D – Clinics and Drug shops





**Fig. 1. Knowledge of health workers on maternal health commodities by region**



**Fig. 2. Health worker's knowledge on newborn commodities by facility ownership**

There was poor comprehensive knowledge of health workers on newborn care. For instance only 37.6% of the health workers assessed had comprehensive knowledge on management of preterm labour. Less than half (44.8%) of health facilities had health workers with knowledge on use of antenatal corticosteroids for preterm labour and only 30.4% give antibiotics. Health workers at higher level facilities were more knowledgeable than those in lower facilities. We also found that just more than a third (42.4%) of health workers had comprehensive knowledge on the steps taken when the newborn presents with signs of infection as Table 6 illustrates.

Health workers also reported operational difficulties in the use of certain newborn commodities as shown below:

*For antenatal corticosteroids, some health workers need to be taught about it... sometimes even the midwife might not be knowledgeable about it; in fact many midwives don't know about it. Then for*

*magnesium sulphate not everybody knows how to prepare it, it is not easy to prepare it ... and it can cause danger*

(Senior Nursing Officer, District A – Northern/West Nile Region)

### **3.1.4 Child health commodities**

Community members had fairly high levels of knowledge on child-health LSCs especially ORS and zinc and most could describe these LSCs as well as their associated procedures:

*Whenever my children get diarrhoea I take them to the health facility and they give me tablets. There is also a sachet they give, inside it has some powder which tastes like salt ... they give it to you with some tablets, then they instruct me to boil water, leave it to cool and then mix that sachet and give the child frequently. I give the child one tablet everyday*

(Female, Pakwach)

The relative variation in knowledge levels for antibiotics could be attributed to the fact that they are also largely health facility-based and administered by health workers.

### 3.2 Attitudes towards Lifesaving Commodities

Most of the study participants were found to have **negative attitudes towards LSCs related to reproductive health**. The general perception was that nearly all reproductive health commodities are associated with negative health conditions like cancers or fibroids as well as immediate side effects like heavy bleeding, general weakness and changes in libido:

*We like family planning but fear the side effects*

(Women FGD, Tororo)

A number of fears exist regarding contraception for example some participants feared that ARVs tamper with the efficacy of contraception, that family planning causes cancers especially cervical cancers and also causes the birth of abnormal babies citing an example of a woman in Mela (Tororo) who gave birth to a baby with three heads.

Some **LSCs are largely perceived as complex not user-friendly** which limits their utilisation. One such example is magnesium sulphate and the female condom as seen in the excerpts below:

*Magnesium sulphate has its own issues. People [clinicians] need to be reminded over and over about the protocols and the way it is administered ...either they do it the wrong way or they are not sure on how to do it.*

(SPNO, District G – Eastern Region)

*The female condom is difficult to insert... at least for the male condom you can see what you are doing and can even dress your partner without much trouble. They should make for us another version of the female condom which doesn't require us to keep holding on when having sex because how can you enjoy when you have to keep holding it? Maybe if they brought one which you wear like knickers then people can start using but this one has many problems*

(Female, Rakai)



**Fig. 3. A health worker displaying how a female condom is used**

The **female condom largely evoked feelings of anxiety and frustration**; it generally came across as extremely unpopular and not user-friendly while the implant was reported to cause severe bleeding as shown below:

*As a man I don't think I am comfortable with this female condom and its way of use. It is risky and could end up going into the woman or cause transmission of STIs in case one is not careful*

(Male, Masindi)

Furthermore the **female condom was associated with promiscuity** and the lifestyle of perceived wayward female members of society for example "over- emancipated" women and prostitutes; as such attitudes towards it were largely negative. As one study participant said:

*Sincerely the way I hear you have to use the that [female condom], it is a lot of work and you have to have some goal or something to prove. For married women how can you even start, what do you tell your husband – it is for those people like the "malayas" [prostitutes] who can use it*

(Female, Kabale)

*In my experience those who use the female condom are normally the sex workers... the ordinary woman in my village does not know anything about the female condom and the few who know do not even want to be associated with it*

(Clinical KI, Gulu)

The same attitude was projected on **emergency contraception which was not only largely unknown but also rarely used** and its use

largely initiated by health workers in particular situations such as court cases involving rape. Access to emergency contraception was feared to promote promiscuity and other related issues like teenage pregnancies, etc. as shown in the excerpt below:

*It [emergency contraception] is there but we rarely use it; we mainly use it when we have like defilement cases, there we give it to these young girls who have been raped. I think that is good that it is not common because you imagine if it was everywhere and everybody knew about it, all our young girls in school would stop fearing sugar daddies and early sexual activity because they know they have a solution, so it is good*  
(Midwife, Wakiso)

Widespread mistrust of LSCs was partly because health workers themselves do not actively promote or use them which affects their eventual uptake by community. Besides healthworkers' relationships with communities were reported to be frosty due to a number of reasons as seen below:

*... health workers have motivational issues – some have not been paid, some are on probation, some are overworked ... so there is already a problem. Then when you add that to not having the tools to use it becomes worse... government tells people that through its policy “these things are there [at health facilities] and they are free...” and all that nonsense yet in reality supplies are not enough and mothers who come to deliver have to bring their own kits ... That has caused problems of conflicts between the community and the staff*  
(DHO of one district)

In spite of all the above sentiments however, there was a **general feeling that reproductive health commodities are playing a useful role** and was attested to even by those not using them. Generally there are fewer doubts on their efficacy; rather concerns are expressed on the aftermath of their utilisation. The excerpts below demonstrate the level of faith people have in LSC:

*For us we have had a bad experience with family planning methods until we decided to give up. But for those who use them without any problems it is good. Most women use oxytocin and it is good. The amoxicillin*

*tablets are good and commonly used to treat many diseases. The implant, despite its side effects, is used by many women because it is a long term method compared to other options*

(Interview with a middle-aged couple, Masindi)

*They [community members] have a positive attitude [towards LSC] because for example they know that if a bleeding mother is brought to the hospital the bleeding will be stopped*

(ADHO, District D - Western Region)

### **3.2.1 Lifesaving or “normal” commodities?**

Among health workers lifesaving commodities were not considered as such; instead they were seen as part of a larger menu of supplies used in their day-to-day work and not different from other supplies they need or use daily. This gap in conceptualisation of the term LSC was found both at the strategic and frontline levels of service delivery as seen in the excerpts below:

*Well, this lifesaving thing is a new thing ... I think it is about 2-3 months ago when it was launched so we [policymakers] know a bit and some midwives know but not all. I don't know how much the community knows...we have not had the opportunity to sensitise them*

(DHO, District A – Northern/West Nile Region)

*I am just hearing now that you are calling these things Life Saving Commodities. It is my first time to hear that there is such a package... where did that come from? For us we just use these things here and yes they are helping us but I didn't know that is what they are called*

(Midwife, Nebbi)

This sentiment was echoed by another key category of HRH who is also involved in the procurement, storage and distribution chain:

*Although you are calling them LSC for us we know them as part of our essential list of medicines and supplies. We get [NMS] deliveries and also our partners supply them but calling them LSCs is new to me, in fact that list [of LSC] can be expanded to include some other items which I don't see there yet*

*they are essential and always being demanded by the facilities*  
(DHO Stores Assistant, District B - Central Region)

*can get. In fact... allocate more funding to make sure everybody gets it. Otherwise all this is mouth talk*  
(District Health Officer)

A possible explanation for low conceptualisation of the LSC agenda was given as:

*LSC is more of a political or advocacy term so that focus can be put on these items; but in reality these are not the only items to "save" mothers and children... There are gaps in availability of these particular commodities so that's why they are called LSC but many people don't know about this*  
(KI, National level)

### 3.2.2 A hidden agenda?

Some study participants expressed **pessimism over LSC intentions and modalities**. Their argument was two-fold; some perceived LSC as a political gimmick whose intentions were not about achieving positive health outcomes or even addressing real needs of community members:

*This government is not serious - how do you go around popularising something as unpopular as the female condom? It is not viable and is against our cultural values; in fact that is why the women are rejecting it because it was not their expressed need*  
(Community leader, Pakwach)

Related to this was **concern on issues of equity** whereby some study participants thought the LSC agenda was mere rhetoric. Participants highlighted the incongruence between LSC intentions and the existing national medicines distribution strategy which was perceived to exacerbate health inequalities due to availability disparities, particularly between public and private facilities. Furthermore, the limited budgetary allocations were also perceived to be incongruent with promoting the LSC agenda:

*...if it is a lifesaving commodity why start separating people, saying "these ones can get but these ones must not get"? [sarcastic laugh]. For reasons best known to the government, about seven [PNFP-faith based] facilities in this district do not receive these supplies ... I think two things: first this segregation should stop ... we need to create another outlet for these so-called lifesaving commodities so that everybody*

### **3.3 Community and Health Worker Practices**

**Health-seeking behaviour was diverse in regard to different LSC**; while the majority of study participants reported a preference for seeking healthcare for newborn and child health in health facilities; the same cannot be said for maternal and reproductive health where the practice of seeking care from alternative/traditional outlets was found to be common. Reasons given were that children are too precious to risk in the hands of Traditional Birth Attendants (TBAs) or herbalists. However these alternative service providers are perceived as not only experienced with antenatal care and deliveries but also provided good care to expectant mothers. Furthermore, proximity was another factor whereby TBAs are closer (geographically and socially) to mothers than health facilities:

*TBAs exist and by virtue of them living in the community some people have more faith in them because in the past they have delivered so many children. So the community finds it strange for a biomedical health worker saying "no, she does not know what she is doing" and yet there are some children who have been delivered by her*  
(DHO, District E – Eastern Region)

*Children, especially the very young ones, do not respond well to herbs sometimes so it is better to take them to hospital ... But for us adults our bodies can handle... these old women [TBAs] are like mothers and treat women very well; also they are known here - they delivered all the babies you see as adults in the community today so there is no fear*

(Female, Gulu)

Although it is standard practice to use LSCs in their day-to-day frontline work, health workers were also found to improvise and use alternative to some LSCs not readily available. This was noted to be particularly the case for newborn health-related LSCs; for example chlorhexidine was largely substituted by saline and salty water for umbilical cord care. Another example is the resuscitation device which were lacking in most

health facilities and health workers were using alternatives such as airbags and oxygen:

*We don't have a resuscitation device here so we use oxygen instead ... if it is really needed then we just refer*

(Midwife, HCIII – Wakiso)

It was reported that **emergency contraceptives are sought after more in the private sector**, partly because of the need for privacy which cannot be guaranteed at public health facilities:

*People who come for emergency contraceptive are thought to be promiscuous ...so they go to private clinics*

(SPNO, District C - Western Region)

*I find it safer and easier to buy whatever I need at a drugshop without being asked many questions*

(Female, Kabale)

Furthermore some health workers at public facilities reported providing **emergency contraception only in exceptional cases like rape**. Also reports of stockouts for health commodities, LSCs inclusive, encourage the practice of seeking LSC from outlets like Marie Stopes and other private clinics.

This study found a myriad of **local practices as alternatives to LSCs**; for example herbs used to treat some maternal and newborn illnesses while other practices existed as alternatives to umbilical cord care and reproductive health.

For umbilical cord care communities were found to use a number of things, and the purpose was mainly for the cord to dry up and fall off as quickly as possible instead of general good health for the newborn. Some of the **local practices for umbilical cord care** include applying “gonja” [banana] soot, “kakugwa”, powder, “kyogero” [herbal bath water], vaseline, cow dung, onion and pumpkin leaves, water with soap, ash from banana peels or papyrus, paraffin and lizard droppings. Because some of the local remedies applied on the umbilical cord cause extreme dryness some communities had remedies for moisturising including saliva, cooked simsim oil, normal cooking oil and dairy products like cow ghee, blue band and other types of butter. Some of the above practices were reported to bring dangers to newborns as seen in excerpt below:

*For us we encourage the use of chlorhexidine ... but the community uses other things. Like one woman told me she uses lizard's droppings. Actually she came here when the baby's cord had developed spasms – they present like tetanus - and we didn't have any machines to handle the issue so we referred them to Kitovu [a higher facility]*

(Health worker, PNFP HCIII – Rakai)

In regards to reproductive health, communities were reported to also have a number of alternatives to products outlined in LSCs:

*They [community] have their own methods of controlling childbirth. Sometimes we ask them that “are you on any family planning because we can see that you are getting tired”, they always tell us that they are on something and we insist “like which one?” That is when they tell you things that you do not understand! One woman told me she gets the cord of a young newborn goat [kid], ties it in a piece of cloth which she then wraps around her waist and she will never conceive ... Another one told me that when she delivers she bends and looks behind with her head between the thighs and she will not get another child until she wants one. Then another one told me that after you have delivered you get the first soiled pad, wrap it properly and put it in the “kamooli” [ventilator] and you will never conceive but yet she conceived when her baby was four months so clearly it was not working. Ofcourse you can be mad at them but just wonder whether this is not the devil at work because ... where is the connection between all these things and pregnancy?*

(Health worker, Rakai)

Contrary to widespread perception that Catholics do not use family planning at all, they do but strongly recommend using natural methods. When this is the case, some service providers also reported making referrals as seen below:

*We do not work around family planning. A few who come to the facility asking for it are referred to places where they can get those services after we have delivered them*

(Midwife, PNFP HCIII – Wakiso)

In addition to the local alternatives, some modern alternatives were found to be more widespread than LSCs, for example under reproductive

health the injectaplan was the most commonly used contraceptive method; also pills were widely used with most women using those available at health facilities and on the market. A rare case was found of a woman using a Chinese contraceptive pill (see Figs. 4,5 and 6) whose name she did not know but liked it because of its perceived convenience (one pill taken every four months) and efficacy. That the user did not know the product name or side effects and that she also did not know what to do

when her current strip ran out is a demonstration of a lax attitude among some community members which has implications for RMNCH.

The main service providers and partners or actors in ensuring access to and utilisation of LSC across the country were cited as Marie Stopes, Pace, Star EC, Red Cross, TASO, IDI, ACCORD, Plan Uganda, World Vision, Uganda IRS project, Frama, UNICEF and Malaria Consortium as shown in Table 7.



**Figs. 4, 5 and 6. The contraceptive pill found in use by a woman in Wakiso district**

**Table 7. Summary of this study’s findings on LSC knowledge, attitudes and practices**

Continuum of care	LSC	Comment on KAP
Reproductive Health <i>Predominantly negative attitudes</i>	Female condom	Low awareness among community and some health workers, low acceptance, extremely unpopular
	Implant	Fairly known but sometimes confused with other family planning methods like coil/IUD. Largely feared due to inflexible and long-term nature + related side effects
	Emergency contraceptives	Low awareness levels, related to promiscuity, health worker-initiated e.g. for rape cases
Maternal Health <i>Largely hospital-based</i>	Oxytocin	Well known by health workers, perceived v. useful and part of standard practice in management of maternal health
	Misoprostal	Well known by health workers, perceived v. useful and part of standard practice in management of maternal health
	Magnesium Sulphate	Variations in knowledge and among health workers on use; perceived as complex to mix and administer
Newborn Health <i>Largely hospital-based</i>	Injectable Antibiotics	Known – mainly health workers but also community
	Antenatal Corticosteroids	Known among health workers
	Chlorhexidine	Limited knowledge among both community and health workers who recommend saline or salty water for umbilical cord care
	Resuscitation Devices	Known among health workers, substituted for by oxygen, etc
Child Health <i>Community intersection</i>	Amoxicillin	Known, appreciated
	ORS	Highly known and appreciated
	Zinc	Highly known and appreciated

**Table 8. An overview of study findings on barriers to LSC access and utilization**

<b>Barriers to access and utilisation of LSC</b>	
<b>Barriers to access</b>	<b>Barriers to utilisation</b>
Patriarchy (male dominance over female preference)	Knowledge gaps on LSC existence and benefits
Socioeconomic factors (unstable incomes, unemployment)	Widespread mistrust for known LSC
High costs associated with direct purchases	Sociocultural beliefs and practices
Transport costs	Poor health worker – community relationships
Infrastructural challenges	Information asymmetry: health workers and clients
Insufficient resources allocated to LSC	Selective LSC promotion/ use by health workers
Unresponsive or weak administrative systems	Perceived side effects
Stockouts of medicines and related commodities	Some LSCs complex and not user-friendly
Lack of refrigeration services	Structural design and facility environment – privacy issues
Insufficient storage space	Political expediency, interference and the influence of leaders
Long waiting time at many health facilities	
Insufficient human resources	
Lack of perceived credibility in service delivery	

#### 4. DISCUSSION

The conceptualization and packaging of the 13 lifesaving commodities points to a number of key issues that could have impacted on their access and utilisation in Uganda. Field experiences suggest a largely top-down approach in the design and implementation of the LSC agenda where key stakeholders were not sufficiently informed and engaged. This can be seen through the existing knowledge gaps among key actors in the health sector at both strategic (e.g. District health teams and hospital management teams) and frontline levels (e.g. midwives); as well as the community as end-users of these products.

This study found knowledge on the use of oxytocin for managing postpartum haemorrhage to be low among the lower level health facilities. The implications for this could limited utilisation, even in the face of commodity availability, if this knowledge gap is not addressed. This is consistent with what other studies reported for resource constrained settings [21,22]. The hierarchical referral structure of the Ugandan health system is such that most mothers can access health care at the lower level of health facilities including deliveries. Not all pregnant mothers seek care at regional or HCIVs because they are not easily accessible in terms of many required resources and this means most deliveries happen in facilities that are ill equipped in both expertise and commodities like oxytocin which controls bleeding during delivery. Postpartum haemorrhage accounts for 34% of all maternal deaths [23]; therefore availability and proper administration of oxytocin is important to

reduce this statistic. The same could be said of magnesium sulphate on which health workers at lower-level facilities had limited knowledge (28.6 in HCIVs and only 24% in private clinics where the majority of the Uganda population receives their care). Yet at least four women die per day due to pre-eclampsia and it is responsible for 8% of admissions of pregnant women at Uganda's National Referral Hospital [24]. This could partly explain the slow and stagnant progress on maternal and newborn health.

Some LSCs such as the ones for maternal and newborn health are largely hospital-based so their utilisation depends on not only availability at service delivery points but also promotion by health workers. It is important for the roles of various stakeholders to be highlighted across the continuum of care and a realisation made that some LSC are outside the orbit of the community which entrenches the dangers of asymmetric information between health workers and service users. This study found the boundary lines on meaningful patient involvement against health worker autonomy to be largely blurred and needing clarity. The relational landscape between the health workers, community and the government was noted to be tense and characterised with power issues, a communication disconnect, and limited community involvement; which ultimately affects the patients' decision making and utilisation of services at facilities [25]. It presents a clear gap and highlights the critical role of issues such the policy framework governing RMNCH including financing, supply chain as well as HRH issues including knowledge, motivation and supervision

of health workers. However it is imperative that thought is given to mechanisms to increase awareness and demand for the LSC which are hospital-based without necessarily “crossing into the doctor’s territory”. These factors ultimately impact on access and uptake.

The selective approach in the use of some LSC by health workers points to a key practice issue in service delivery; frontline workers – even those working in the most rule-bound environments – have some discretion in how they deal with their clients [26]. And sometimes it is not an issue of autonomy but rather improvising with what is available, for instance a health worker’s use of saline instead of chlorhexidine is because the latter is not in stock and saline the next best alternative. It is therefore important that the architects of any agenda in healthcare secure their buy-in or unwavering support to positively impact on service access to and utilisation. Study findings suggest that LSC were generally not pitched to what health workers knew and practiced; they are not looked at in isolation of other RMNCH items – therefore the shift in focus to just a few items needs explanation and more meaningful involvement of the diverse stakeholders. A stronger dissemination and engagement focus for LSCs is both lacking and required.

There has been increase in attention towards newborn survival and a comprehensive policy change in Uganda. However, there is still much to be done at implementation level. Study findings highlighted poor comprehensive knowledge of health workers on newborn care. For instance only 37.6% of the health workers assessed had comprehensive knowledge on management of preterm labour. Less than half (44.8%) of health facilities had health workers with knowledge on use of antenatal corticosteroids for preterm labour and only 30.4% give antibiotics. With a high neonatal mortality of 27 deaths per 1,000 live births [27-28] a lot of capacity building for health workers closer to the community will be required.

Acceptability for some LSCs can be linked to sociocultural norms, values and the place of women in society. Take the female condom for instance (pointed out as the most contentious and unpopular among all LSCs) also an issue of debate for different researchers [29,30]: Most sub-Saharan communities are inherently patriarchal and sexuality a sensitive or forbidden topic; penetrating through such entrenched

systems to enable women play a greater role in their sexuality will take more than a product – it will require significant structural adjustment and a paradigm shift before the product can make sense and be utilised. Male dominance cannot be underestimated; most women are still powerless and voiceless. Yet the use of the female condom presents a clash between social values entrenched by status quo against basic tenets of family planning on key issues such as family size. Patriarchy will inevitably clash with any notions or products that have feminist undertones such as the female condom. Therefore the process of achieving its access and utilisation will require going beyond the females themselves to engaging the significant males in their lives – fathers, husbands, leaders, etc. And it will be a reiterative process that requires time before significant changes can be realised. The female condom has undergone design changes following complaints of “noise making”; however this is not known amongst end users – who are few and most likely have access to the old version.

## 5. CONCLUSION

Despite its good intentions, the concept of “Lifesaving Commodities” was not well understood at district, facility and community level. It appears to have been a top-down strategy characterized by limited consultation with frontline (health workers) and grassroot (community) stakeholders. System barriers to access and use of the 13 LSC are exacerbated by the lack of male involvement, negative perceptions and sociocultural beliefs, poverty, distance, perceived poor quality and selective use by health workers. Addressing these pertinent issues should be the key area of focus in trying to create demand as well as improve access and utilization of the UN’s 13 lifesaving commodities.

The limited understanding and appreciation of the LSC concept can partly be attributed to an important element in conceptualisation and rationale for their commissioning. The UN commissioned these commodities not as substitutes but rather as an addition - complementary to existing commodities already in use for reproductive, maternal, newborn and child health; the rationale for this was that these particular items are overlooked ([9]). It appears that this UN – endorsed message “a list of 13 *overlooked* lifesaving commodities” got lost in translation at the dissemination stage and could



partly explain the mixed reactions, particularly the negative ones (for example among health workers), which seemed to have perceived these commodities as a lifesaving replacement or substitute of other commodities. The message therefore needs to be repackaged for better understanding and acceptance by critical stakeholders such as frontline health workers and communities as service users. A cross-cutting recommendation for all LSC, in addition to securing availability, is the need to not only emphasise continuously their overlooked and complementary nature but also efficacy to all stakeholders.

### CONSENT

As per international standard or university standard, participant written consent has been collected and preserved by the authors.

### ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the authors.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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