THE Soap Box COLLABORATIVE

CELEBRATING OUR ACHIEVEMENTS

2012 - 2019

Contents

Opening Message

There are an estimated 135 million babies delivered each year in the world, with just over three-quarters of these occurring with trained care providers in healthcare institutions[1]. In the 21st century it would be reasonable to expect that the majority of births occurring in health facilities receive safe and respectful care from the providers and the environment. This is sadly not the case, with too many women and babies facing risks owing to care, the environment, or to what we call iatrogenic factors. Occasions where unintended and avoidable harm arises from healthcare delivery occur all over the world, irrespective of income, education, culture, or health system capacity. However, the greatest burden of unsafe care is borne in low-income countries and amongst the most marginalised populations. These women and babies have been the main target group for the work of The Soapbox Collaborative over the last seven years. We have focused on one important dimension of unintended harm at the time of birth – infection-related risks owing to poor hygiene in terms of practices and the care environment. Awareness of these risks is not new – indeed, some of the earliest work on the consequences of unhygienic birth practises can be traced back to 1795 and the City of Aberdeen in North East Scotland with Dr Alexander Gordon[2] – ironically also the UK base of Soapbox. Whether this is mere coincidence or not is unimportant, but it is clearly a stark reminder of the long lag-time between discovery of risks and the practise of prevention to reduce harm. Two centuries after Gordon's work, women and babies are still being delivered where infection risks are unacceptably high. And this insult is all the more problematic given that the solutions are well established and known.

The Soapbox Collaborative has focused on finding fundamental root-causes and interventions – and has demonstrated the value of important, evidence based hand hygiene and cleaning activities, combined with working collaboratively with those able to put these benefits into action – at both provider, manager and policy-maker levels. This 2019 report is our final one and tells a story of partnership, discovery and opportunity. And as we close Soapbox just a few weeks after the new World Health Resolution to prioritise water, sanitation and hygiene (WASH), infection prevention and patient safety in healthcare facilities, and having been one of the actors pushing for this, we are ending on a high note. We hope you will enjoy this story of a small Non-Governmental Organisation with a big collaborative mission.

Professor Wendy J Graham

Chief Scientific Adviser

Miss Elsie Duguid

Soapbox's Benefactor - Miss Elsie Duguid

Miss Elsie Duguid is the primary benefactor of The Soapbox Collaborative. She was born in Upper Deeside into a family with a long history of farming in the North East of Scotland, where she grew up on farms in Torphins and Elrick. The hard work, determination and commitment required of such farming families prepared her well for her chosen career in nursing and midwifery – a career which has spanned over 40 years. Miss Duguid has had a long and interesting career in nursing and midwifery. In 1940, she started nurse training at Aberdeen Royal Infirmary (ARI). After passing her exams to become a Registered General Nurse (RGN), Miss Duguid worked for a year as staff nurse in a medical ward at ARI. She then undertook midwifery training at Aberdeen Maternity Hospital (AMH) and qualified as a Registered Midwife in 1945, working as a staff midwife at AMH until 1947 when she returned to ARI to work in the professorial surgical unit. Here she experienced first hand the crucial importance of asepsis and good hygiene practises. She continued her career by training as a Public Health Nurse, qualifying in 1960. She served the community of Aberdeen City in this capacity for over ten years, retiring in 1981.

Legal Advisor and Trustee of The Soapbox Collaborative, Mr Alastair Robertson, first met Miss Duguid when she was working as a district nurse for the Fonthill Maternity Home in Aberdeen. Alastair assisted Miss Duguid with a charity she had set up in memory of her brother, The William Duguid Memorial Trust, whose object was to provide funding to enable deserving rurally based pupils with strong academic potential but limited family resources to benefit from the private education. After the sale of her family's farmland there remained additional funds under her control which Miss Duguid kindly donated towards establishing a new charity focussing on maternal health—The Soapbox Collaborative.

"Knowing of her lifelong interest in midwifery and nursing I suggested to her the she might consider establishing a separate charity devoted to tackling maternal mortality which was a concern close to her heart. She agreed and I then sought to enlist the aid of my good friend, Alec Cumming, sometime Chief Executive at ARI whose knowledge of the hospital and the workings of Grampian Health Board is encyclopaedic. He quickly put the proposition to Professor Wendy Graham, then Professor of Obstetrics and Gynaecology at ARI. Professor Graham had long sought to have the opportunity to put into practice ideas which she had contrived and developed over the years to help overcome the huge numbers of maternal deaths in developing countries due to sepsis and failures in hygiene. Miss Duguid's proposed new charity provided the long wished for opportunity to put her theories into practise.

The rapid and wide spread of Soapbox's activities over the relatively short period of its existence is a source of considerable pride to Miss Duguid who has tremendous admiration for what has been achieved to date and trusts that the solid foundations and groundwork already established can be spread and further developed by a suitable successor with similar influence and ethic."

- Mr Alastair Robertson, Trustee of The Soapbox Collaborative

Miss Elsie Duguid with the Soapbox team and some of our amazing supporters

FRONT: © 2010 United Nations
T-B: © 2012 United Nations, © 2006 Abhijit Dey, © 2012 UNAMID all courtesy of Flickr

Global Maternal and Newborn Health & the Need for The Soapbox Collaborative

- 830 women die from pregnancy- or childbirth-related complications around the world every day; 99% of all maternal deaths occur in low and middle income countries (LMICs)[3]
- 40% of neonatal deaths could be averted with key interventions around the time of birth[4]
- Between 2016 and 2030, as part of the Sustainable Development Goals, the target is to reduce the global maternal mortality ratio to less than 70 per 100,000 live births[5]
- Sepsis is a leading cause of maternal and newborn death, making up between 4 and 56% of all causes of death among hospital born babies[6]
- 38% of healthcare facilities in LMICs do not have an 'improved' water source, 19% do not have 'improved' sanitation and 35% do not have water and soap for handwashing[7]
- Current estimates suggest that more than 200,000 newborns die each year from infections that do not respond to available drugs[8]
- Just 4 out of 125 countries surveyed as part of the WHO/UNICEF JMP report on WASH in healthcare facilities had sufficient data to estimate coverage of basic environmental cleaning services[9]

About The Soapbox Collaborative

Soapbox's strategic aim has been to inform and influence action by policy-makers, managers and the health workforce to reduce healthcare associated infections (HAIs) and deaths in mothers and newborns delivered in hospitals in low and middle-income countries.

Our work is evidence-based; we undertake research to strengthen understanding of HAIs and develop effective interventions to support quality improvement of hygiene standards in maternity units. Our vision is a world where all mothers and babies have access to clean safe care – a sensitive marker of quality care.

Three hub institutions in the UK – the University of Aberdeen, London School of Hygiene and Tropical Medicine and NHS Grampian, have generously hosted Soapbox. The Soapbox team, led by Professor Wendy Graham, have collectively provided skills in epidemiological & intervention research, behavioural science, microbiology, obstetrics, public health, action research including implementation research (Quality Improvement) and measurement (tools development, information management). The Soapbox Trustees have brought additional expertise in health services and hospital management, quality improvement, infectious diseases, and then further skills and experience have been supported by Soapbox Associates and consultants.



(L) Team members at the Soapbox retreat in September 2017; (Middle) The Soapbox team wear red for sepsis (R) Members of the Aberdeen– Bahir Dar Partnership meet in Aberdeen in 2017

How a tiny charity brought about a big change in infection prevention at birth

Over the last seven years, the Soapbox team have used their experience and influence to affect change in knowledge and behaviours towards infection prevention and control (IPC) at the time of birth in low and middle income countries (LMICs), by:

Improving understanding on the state and the determinants of hygiene in facilities, by:

- Developing new assessment tools to gather data on hygiene in facilities and working with local partners to conduct situation analyses in eight countries
- Analysing existing survey data sets to show patterns of water, sanitation and hygiene (WASH) capacity in health facilities across LMICs
- Undertaking an in-depth study on the determinants of hand hygiene in maternity facilities in Zanzibar
- Developing a simple protocol on using environmental microbiology to assess the presence of potential pathogens on maternity wards, and applying in Bangladesh, India, Myanmar and Zanzibar
- Synthesizing the published literature on the global burden of maternal sepsis
- Refining audit tools on wound infections after caesarean section & applying these in hospitals in Ethiopia, Gambia and India
- Exploring the seasonality of births in Ethiopia and seasonal surges in deliveries in a major maternity hospital
- Assessing the water requirements for normal delivery of births in Ethiopia and a UK maternity hospital

Contributing to local solutions and action to improve hygiene at birth in healthcare facilities, by:

- Developing and implementing a training package for facility cleaning staff
- Supporting local quality improvement programmes to increase attention to WASH, IPC and antimicrobial resistance (AMR) in The Gambia, Ethiopia, India, Bangladesh, Zimbabwe
- Undertaking hand hygiene audits on maternity wards in Ethiopia, The Gambia, and Zanzibar to inform local improvements in practice
- Participating in problem-identification-and-solving workshops in The Gambia, Malawi and Zanzibar
- Piloting clean birth kits for use in health facilities in The Gambia
- Working in partnership to strengthen quality of care in Ethiopia
- Supporting IPC training in Zimbabwe

Increasing awareness of the needs, opportunities and challenges of reducing healthcare-associated infections in maternity units, by:

- Participating in two international Call to Actions on WASH in healthcare facilities and on antimicrobial resistance
- Co-publication with WaterAid UK of Hand Hygiene in Healthcare Facility Briefing Note
- Publishing multiple peer-reviewed publications
- Involving the next generation through Soapbox Student Ambassadors
- Hosting public engagement events and active social media platforms
- Participating in major conferences, events and international workshops
- Promoting the power of image evidence, through the use of PechaKucha, participatory photography methods, videos and pictograms for training

Strengthening the network and community of actors addressing hygiene at birth, by:

- Forming strong partnerships with local and international stakeholders & organisations
- Identifying opportunities for student engagements through elective and summer projects
- Helping to bring together actors from different fields, such as WASH and infectious diseases experts via our links to the Global Maternal and Neonatal Sepsis Initiative
- Engaging with diverse actors, including NHS hospital estates managers, microbiologists, policy analysts, plumbers, service planners, electricians, architects and hospital cleaning staff
- Linking academic researchers with service implementers to support evidence-based improvements at the point of care in LMIC settings, whilst also encouraging the important quality improvement perspective of 'no change is too small'

Where We Have Worked

Read on for summaries of our country activities and more information on the tools and training materials Soapbox has developed to support quality improvement.

Needs Assessments in Zimbabwe (2012—2015)

In 2012, Soapbox entered a partnership with Geneva–based charity, ZimHealth to support infection prevention and control (IPC) training at healthcare facilities in the Kadoma and Kwekwe regions of Zimbabwe. Soapbox assisted with a multi-tool needs assessment in Rimuka Maternity Home and Kwekwe General Hospital to discover and prioritise areas for improvement and identify the most effective interventions to improve cleanliness and hygiene across these facilities.

Participatory training in IPC was delivered to over 90 healthcare workers, including midwives, doctors, environmental health technicians and ambulance drivers. New IPC equipment was also supplied based on the needs of each hospital and the state of the infrastructure. The Soapbox-led evaluation found a positive impact on hygiene behaviour at Rimuka Maternity Home - with all objectives of the training met and positive feedback from mothers on the cleanliness of the labour wards. The four council clinics in Kwekwe also made an outstanding impact on improving IPC at each facility, with an IPC committee established to monitor improvements.

Soapbox also supported the development of an observational hand hygiene audit tool, and hand hygiene workshops for skilled and non-skilled workers were developed and implemented in these facilities using a 'Training The Trainer' approach.

The needs assessment was supported by our partners, including ZimHealth, Rimuka Maternity Home and Kwekew General Hospital.

The Deliver Life Project in Malawi (2016—2018)

As part of the Deliver Life Project, funded by DFID under the UK Aid Match Scheme, Soapbox provided technical support to improve access to, and use of, sustainable water, sanitation and hygiene (WASH) services in communities and health facilities in marginalised districts of Malawi. Soapbox Research Fellow, Dr Sandra Virgo, assisted with needs assessments conducted in 16 facilities across Malawi, along with data collectors and collaborators from WaterAid. Questionnaires, checklists and interview questions were constructed and adapted to suit the local requirements, with local data collectors

Dr Sandra Virgo working with the Deliver Life team in Malawi

trained to collect information using qualitative and quantitative techniques. This led to a rich set of results, comprising findings on infrastructure, equipment and supplies, cleanliness and IPC programmes, and training supervision.

The data collected was passed to WaterAid to inform the requirements for building work and changes to infrastructure at these facilities. This has led to valuable improvements in these areas, helping to improve the quality of care and lower the risk of potentially fatal infections, such a sepsis, in mothers and newborns.

The Deliver Life Project was supported by our partner WaterAid and was funded by the UK Department for International Development

Collaborations in Ghana (2017)

Dr Jolene Moore (NHS Grampian) visited Tema General Hospital on behalf of Soapbox to conduct observational assessments on the maternity and neonatal units. Tema's maternity unit sees around 7000 deliveries each year, with a notable seasonality to births. Challenges to providing quality care, such as limited staffing and resources, were found to be compounded by overcrowding during these busy periods. Jolene also met with Tema's biomedical scientists to pilot Soapbox's laboratory questionnaire. The questionnaire was developed to assess a facility's capacity to design and implement microbiology-based projects in order to assess, monitor and improve environmental cleanliness. Following the visit, Tema was established as a host for University of Aberdeen students conducting elective projects.

The neonatal unit at Tema General Hospital, Ghana

(Top) Interviews with cleaning staff explored their perceptions of hygiene & IPC (Bottom) WASH & CLEAN dissemination meeting, Bangladesh, 2014

WASH & CLEAN in the labour ward: A situational analysis in India & Bangladesh (2013-2015)

Environmental cleaning is an essential part of infection prevention and control (IPC). Assessing whether an area is considered "clean" is very subjective, and visibly clean is very different from microbiologically safe.

In 2013 and 2014, Soapbox collaborated with colleagues in the UK, India and Bangladesh to develop and implement novel research methods for capturing evidence on cleanliness and the relationship to water, sanitation and hygiene (WASH) conditions and IPC in health facilities as part of the WASH & CLEAN Study. The aim was to improve understanding of the determinants of cleaning practices and so inform improvements in the state of cleanliness and safety in maternity units.

A suite of data collection tools were developed to capture levels of cleanliness and the determinants, processes and outcomes of cleaning on the maternity unit. The study also sought to understand the knowledge, attitudes and practices of stakeholders involved in maintaining cleanliness and their interrelationships. In addition, the satisfaction of women and healthcare providers was also explored.

The tools combine to allow medical facilities to perform a robust 'situational analysis' of the state of WASH and IPC on their maternity units. For more information on the WASH & CLEAN toolkit and how to access it see page 15.

The WASH & CLEAN Toolkit was then piloted in two maternity units in Gujarat, India and two in Dhaka, Bangladesh. The suite of tools was then applied to a further seven maternity units in Gurujat and eight maternity units in Dhaka. To ensure a representative sample, maternity units were purposively selected to include public and private facilities, high and low caseloads and facilities offering either Comprehensive Emergency Obstetric Care (CEmOC) or Basic Emergency Obstetric Care (BEmOC).

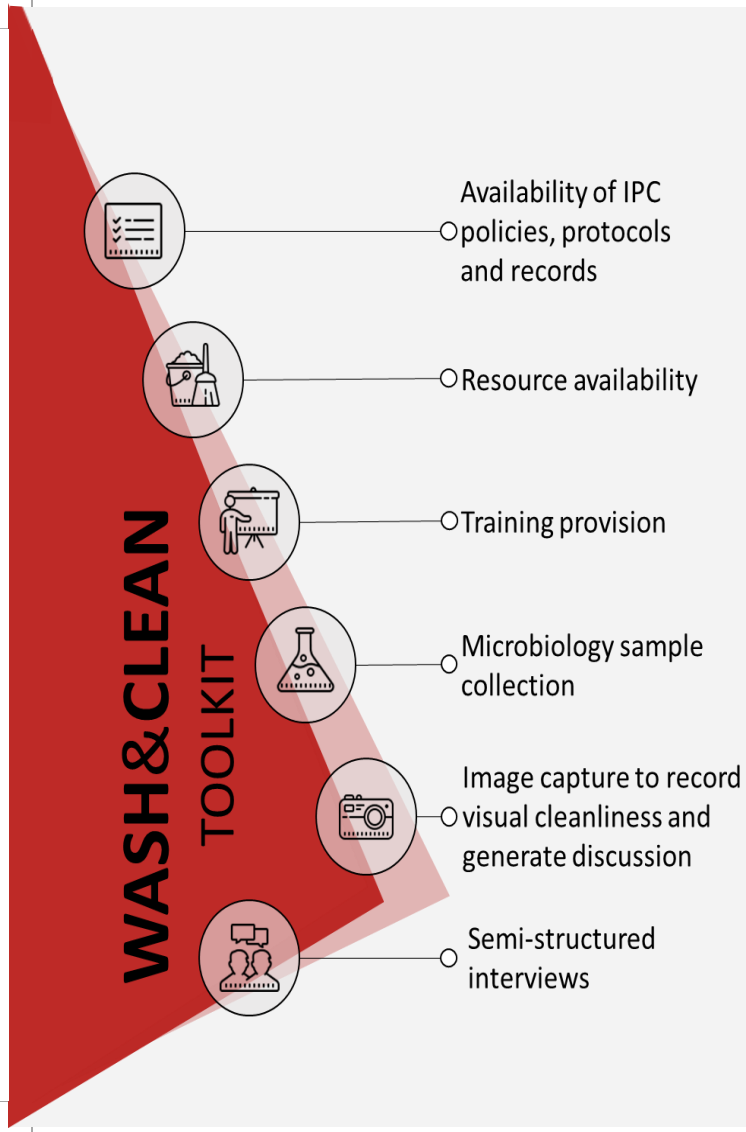
The study found no clear relationship between visually assessed cleanliness and the presence of pathogens, indicating that visual assessment alone is an inadequate marker for 'safety' in terms of the presence of potential pathogens and the associated risk of infection. Routine environmental screening of high-risk touch sites using simple surface microbiology could improve detection and control of pathogens.

Findings from qualitative interviews and the facility questionnaire found inadequacies in IPC training for healthcare providers and no formal training at all for ward cleaners.

Lack of written policies and protocols, and poor monitoring and supervision also contributed to suboptimal IPC standards. IPC training for both healthcare providers and ward cleaners represents an important opportunity for quality improvement. This should occur in conjunction with broader systems changes, including the establishment of functioning IPC committees, implementing standard policies and protocols, and improving health management information systems to capture evidence on maternal and newborn healthcare associated infections.

For more information on the WASH & CLEAN study: Cross *et al* (2016) Hygiene on maternity units: lessons from a needs assessment in Bangladesh and India Global Health Action, 9(1), 32541

The WASH & CLEAN study was funded by UK Aid from the Department for International Development (DFID) as part of the SHARE Research Programme, the Water, Sanitation and Supply Collaborative Council, and The Soapbox Collaborative. The project was supported by our partners BRAC & IIPHG



The WASH & CLEAN Toolkit

The WASH & CLEAN Toolkit is a free set of tools developed by Soapbox and partners as part of the funded research study '*WASH & CLEAN on the Labour Ward: A situation analysis in India and Bangladesh*'.

The Toolkit is designed to be used to perform a situation analysis of the state of hygiene (outcomes) on the maternity unit, as measured by visual cleanliness and the detection of potential pathogens by surface microbiology. It comprises of seven tools which can be used together or independently depending on the purpose of the data collection, and allows users to perform a thorough situational analysis of the state of hygiene in each maternity unit.

The Toolkit can be used in several ways, including as part of an internal audit process, as part of a continuous improvement cycle, or as part of a wider research study. Application of the tools should be undertaken by health facility IPC Committees (or equivalent), researchers, or external agencies as commissioned for the purpose.

Data gathered is for use by health facility senior management and, with appropriate permissions and anonymizing of the data, with district and regional health management teams, policy makers and research institutes, to identify priority areas and inform intervention, provide indicators to support performance and information to inform policy.

The WASH & CLEAN Toolkit Includes:	
1. Facility Needs Assessment Tool	Tool 1 consists of eleven sections gathering information on utilities, training, resource availability, IPC policies and routine practices, to develop a better understanding of the maternity unit and health facility context. The results of tool application are used to provide guidance for improving IPC protocols and practices by identifying WASH & IPC weaknesses and gaps.
2. Document Availability Checklist	Tool 2 contains a checklist of key documents relevant to WASH & IPC, for example, policy documents on staff training in IPC, waste disposal and contracting of cleaning services, to help to identify gaps in key documents relevant to WASH & IPC.
3. Walkthrough Checklist	Tool 3 involves capturing data through observation, the collection of swab samples and taking of photographs at specific moments and locations, during a walkthrough of the maternity unit. The checklist assesses hygiene, general cleanliness, the state of repair of infrastructure and equipment, and aspects of WASH and IPC, and composite scores as summary measures are created regarding the state of visual cleanliness and the determinants of hygiene.
4-7. Semi-Structured Interviews	Tools 4 – 7 contain a series of semi-structured interview questions for health facility managers, healthcare providers, cleaning staff and recently delivered women and use photo-prompts to generate discussion. A series of questions are asked of facility staff to explore their views and perceptions regarding the determinants of hygiene and the state of hygiene on the maternity unit at an individual and systems level. A series of questions for recently delivered women explore their understanding of IPC and their impression of the state of hygiene on the maternity unit in which they delivered.

Instructions on how to download and use the toolkit can be found at www.soapboxcollaborative.org

The HANDS Project in Zanzibar (2016 - 2017)

The link between hand hygiene and maternal genital tract sepsis in healthcare facilities was established well over a century ago[10], and more recent evidence exists on the association between hand hygiene and healthcare associated infections (HAIs) in infants[11]. Cleanliness of birth attendants' hands is fundamental to ensure a clean delivery, especially when hands are in direct contact with entry sites for potential pathogens, but also to ensure cleanliness of other procedures. For example, a clean cord-cut requires clean blades and cord clamps, but hands also need to be clean; otherwise, they might contaminate the cord-cutting instruments. With an increasing number of women delivering in healthcare facilities in low and middle income countries (LMICs), appropriate hand hygiene compliance of healthcare workers on the labour wards is pivotal to preventing infections.

The HANDS Project, funded by the Medical Research Council, was a cross-sectional study investigating the barriers and facilitators of compliance to hand washing across 10 high-volume maternity units in Zanzibar. Local midwives were trained as investigators to collect data across the focus maternity units. 103 birth attendants were closely observed and everything they did with their hands during their eight hour shift was recorded on a tablet using time-&-motion methods. Our investigators worked incredibly hard to gather the required data, staying for 24 hour periods for at least five days at each facility.

Following detailed analysis of the data collected, results highlighted the importance of focusing not only on improving hand washing/rubbing but also that much of the failure to comply to WHO hand hygiene guidelines was driven by recontamination of hands or gloves on potentially contaminated surfaces after hand washing/rubbing[12].

A two day workshop was held in March 2017 to further interpret the findings, with participants including the Ministry of Health and Social Welfare (MoH), JHPIEGO and WaterAid Tanzania. The workshop included group discussions about how results could be used to promote good hand hygiene practices. Two focus groups were also held with orderlies where discussions were had about the maternity ward layout and how restructuring could improve workflow, making practicing good hygiene easier.

Dr Giorgia Gon with colleagues in Zanzibar

Following the workshops, the next stage of the project was to implement the changes discussed. The results were fed back directly to each participating facility. Importantly, the MoH focused the celebratory and educational activities of International Day of the Midwife to discuss hand hygiene. In addition, pilot interventions were tested to improve hand hygiene compliance. Delivery kits (including cord clamps, scissors, gauzes and cotton) were introduced in the second largest hospital, along with hand gel to improve hand hygiene at one of the main referral hospitals.

The results of HANDS study have yielded valuable insights into birth attendants' hand hygiene, but also lessons around hand recontamination and hand hygiene monitoring using time-&-motion methods that could have implications in the wider healthcare environment. Soapbox's Giorgia Gon also earned her PhD for her work on this project. For more information see Publications on page 41.

The HANDS Project was funded by The Medical Research Council. Project partners in Zanzibar include the Ministry of Health and Social Welfare Zanzibar, JHPIEGO, WaterAid Tanzania and the University of Aberdeen.

The Maternal Health Cleanliness Champions Initiative - The Gambia (2013—2014)

In 2013, Soapbox began a partnership with Horizons Trust Gambia (HTG) and the Gambian Ministry of Health to create the Maternal Health Cleanliness Champions Initiative (MCCi).

The focus of this initiative was to create and support a network of health champions to reduce healthcare associated infections (HAIs) at the time of birth in The Gambia. Training materials, resources and needs assessment tools were developed and shared to identify effective and affordable interventions to reduce the risks of HAIs.

The desired outcomes of the MCCi were:

- To improve the knowledge, attitudes and practice of care providers and support workers, including cleaning staff
- To evoke a stronger advocacy for infection prevention and control (IPC) at all levels
- To improve the monitoring and evaluation of progress to reducing preventable infections at birth
- To create safer, woman-centred maternity care

A Soapbox-designed needs assessment questionnaire was delivered at six participating healthcare facilities and a wide range of practices and conditions on maternity units were highlighted - including a lack of training and knowledge around IPC, resource shortages and the poor cleaning and maintenance of delivery beds.

Health teams and labour ward staff from the six participating facilities attended a 4-day IPC intervention training workshop led by Soapbox and Horizons. The workshop enabled facilities to address some of the challenges identified in the needs assessment by equipping them with the knowledge and skills to revise and strengthen existing hygiene policies and practices to support quality care for mothers and their newborns.

'Cleaning Champions' practice good IPC after training in The Gambia.

Addressing the Gap in Participatory Training in Basic IPC & Environmental Hygiene for Cleaning Staff in LMICs — Piloting Soapbox's training manual in The Gambia (2016-2017)

One striking finding of the WASH and IPC needs assessments carried out by Soapbox in maternity units in low income countries has been the critical lack of formal training for staff with cleaning responsibilities despite their key role in maintaining environmental hygiene and IPC. To help address this gap, Soapbox developed a training manual, in consultation with experts and with reference to existing national and international guidelines on hygiene and IPC.

A pilot was conducted in The Gambia in April 2016. Nine participants from four focus maternity units took part in a week-long Training of Trainers (ToT) workshop. A 'CLEAN Box' approach was used to deliver training, with each box containing instructions and practical resources required to deliver training on one of the seven key training modules. Training was participatory in nature and aimed towards staff with limited literacy skills. These 'Cleaning Champions' also learned techniques for training the cleaners and healthcare workers at their own facilities. With support from the IPC Task Group and HTG, the Cleaning Champions rolled out training to cleaning staff at the respective facilities - resulting in the further training of 50 staff.

Results from the training were overwhelmingly positive - changes were made to IPC knowledge and practice of both trainers and trained cleaning staff and the empowerment of cleaning staff through knowledge acquisition and targeting of resources was evident.

Following the pilot, Soapbox have revised and updated the training manual and in November 2018 launched the Training in Environmental Hygiene and Cleaning in Healthcare (**TEACH CLEAN**) package.

Visit our YouTube channel for a short film which follows the roll out of TEACH CLEAN in The Gambia.

HORIZONS

Project partners include The Horizons Trust Gambia, Epidemiology Disease and Control Unit - The Gambian Ministry of Health and Social Welfare

Health workers who clean are environmental health champions

TEACH CLEAN helps address a lack of formal training for those who clean and promotes IPC and WASH standards for a safer environment. It underpins quality health for all.

Environmental cleaning is known to play a key role in reducing the global burden of healthcare associated infections and antimicrobial resistance. In line with WHO and UNICEF recommendations[13], system wide changes are necessary to establish improvements in environmental hygiene to strengthen IPC and achieve global goals. The TEACH CLEAN package is a resource designed to address the training of health facility cleaning staff in low and middle income countries.

TEACH CLEAN presents information and materials required to deliver comprehensive, participatory training on safe environmental cleaning, applying aspects of essential IPC for these tasks. The package is tailored towards use with cleaning staff with limited literacy skills but can be applied to wider facility staff.

The TEACH CLEAN Package

The TEACH CLEAN package presents information and materials required to deliver comprehensive, participatory training in environmental hygiene and IPC in healthcare facilities.

Tailored towards use within low-resource settings, TEACH CLEAN is a freely available, evidence and best practice based resource which is:

- Intended for use by organisations & individuals who want to improve knowledge & practices of those who clean
- Accessible for staff with limited literacy skills through its participatory approach to training
- Adaptable to the local context
- Suitable for a cascade approach to training (Training of Trainers, ToT)

The TEACH CLEAN package contains:

1. **A 'How to Train' instruction document and ToT modules on Supportive Supervision & Quality Improvement**
2. **Seven essential Clean Box training modules addressing IPC and environmental hygiene**
3. **Competency Assessment Checklists**
4. **Written and Illustrated Cleaning Procedure Guidelines**
5. **An Advocacy & Communications Resource Pack**

To access the TEACH CLEAN package please visit www.soapboxcollaborative.org

Tanzania and Zanzibar (2014—2019)

Since 2014, Soapbox has been working with partners in Tanzania and Zanzibar to improve health service quality and contribute towards efforts to improve maternal health and reduce infection rates. In 2014, a water, sanitation and hygiene (WASH) needs assessment was carried out at all 37 facilities providing maternity services in Zanzibar in collaboration with the Pemba Public Health Laboratory (PHL-IdC), the Ministry of Health (MoH) and WaterAid Tanzania. The results highlighted gaps in key resources and knowledge around hand hygiene at the time of delivery.

TEACH CLEAN Implementation and Evaluation in Tanzania

Results of our needs assessments in a variety of countries, including Zanzibar, identified a lack of infection prevention training available for staff. They also commonly found bacterial contamination on high-risk sites such as door handles and maternity ward beds. Studies in LMICs have shown that gross contamination of environmental surfaces is a potential source of infection during outbreaks in neonatal units[6,14]. Evidence from the UK demonstrates reduced infection following improved hospital cleaning[15].

TEACH CLEAN is currently being implemented in 3 maternity units in Dar Es Salaam as part of the CLEAN study.

CLEAN study orientation meeting, September 2018

Experienced trainers at Muhimbili University of Health and Allied Science (MUHAS) assessed the needs of the focus hospitals and then adapted TEACH CLEAN to fit the Tanzanian setting, ensuring consistency with national cleaning guidelines and local context. During the four-day Training The Trainers workshop, eighteen supervisors earned the title of 'Cleaning Champions' as they were trained in IPC and environmental hygiene theory, best cleaning practice, participatory training methodology and supportive supervision. On completion of this training, the Champions were ready to train healthcare staff with cleaning responsibilities at their own facilities. In these particular hospitals, it is not only cleaning staff who deal with ward

hygiene, but also Medical Attendants and Nursing Officers as well as those who handle used linen. To date, 58 members of staff have been trained in IPC and environmental hygiene across the 3 facilities. As the Champions train these members of staff, best cleaning practices spreads throughout the hospitals.

MUHAS are keen to start rolling out training to other hospitals across Tanzania:
"As part of CLEAN study team, I would like to thank you and appreciate your trust to us as the implementer of this very useful intervention study targeting improving the environment in maternity units for better maternal and newborn outcome."

- Dr. Dickson A Mkoka, CLEAN Study-Intervention Arm

Cleaning staff are trained in IPC and environmental hygiene thanks to the TEACH CLEAN package.

The CLEAN Study in Tanzania

The CLEAN study is the first formal evaluation of the TEACH CLEAN package, and investigates whether training Cleaning Champions to educate hospital cleaners improves environmental hygiene in maternity and newborn units. The study is funded by Joint Global Health Trials and is delivered by a multi-disciplinary partnership composed of researchers from London School of Hygiene and Tropical Medicine, Ifakara Health Institute and Soapbox. The study evaluates the TEACH CLEAN package on a number of levels - as well as measuring cleanliness before and after the training, changes in staff attitude and knowledge of cleaning are also assessed.

Dr Susannah Woodd is leading an add-on study which is investigating self-reported infections among newborns and mothers using telephone surveillance. Research nurses are recruiting up to 900 women who they'll then follow up at 1 and 4 weeks post-birth. Dissemination of the CLEAN Study's findings will begin in July 2019.

Our Project funders are JGHT & Soapbox. Project partners include The London School of Hygiene & Tropical Medicine and Ifakara Health Institute.

Supporting Safe Births in Myanmar (2018 - 2019)

In partnership with WaterAid Myanmar, Jhpiego, and Myanmar's Ministry of Health and Sport (MoHS), the 'Supporting Safe Births in Myanmar' project is funded by the Australian Government's Water for Women Fund and seeks to improve the quality and safety of healthcare at the time of birth.

The project, which will run until 2023, is being carried out in five township hospitals in the Ayeyarwady region of Myanmar and is focusing on good hygiene practices and cleanliness, and addressing current gaps in infection prevention and control (IPC). Soapbox's main focus is the training and supervision of the hospital cleaning staff, although we have also been involved in other related aspects of the project such as quality improvement mechanisms.

Dr Thinn Myat Mon demonstrates the TEACH CLEAN Illustrated Cleaning Guidelines.

TEACH CLEAN Implementation in Myanmar

In early 2019, Soapbox's Dr Liz Goodburn and Professor Wendy Graham travelled to Yangon, Myanmar from the UK to lead an orientation workshop for project partners on the TEACH CLEAN package to share knowledge required to plan, adapt, implement and evaluate training of cleaning staff in healthcare facilities.

Materials for the CLEAN boxes were sourced locally by Soapbox-WaterAid Project Officer Dr Thinn Myat Mon, and the workshop included demonstrations from Liz, Wendy and Thinn to highlight the participatory approach of the training. It also provided an opportunity for partners to raise queries.

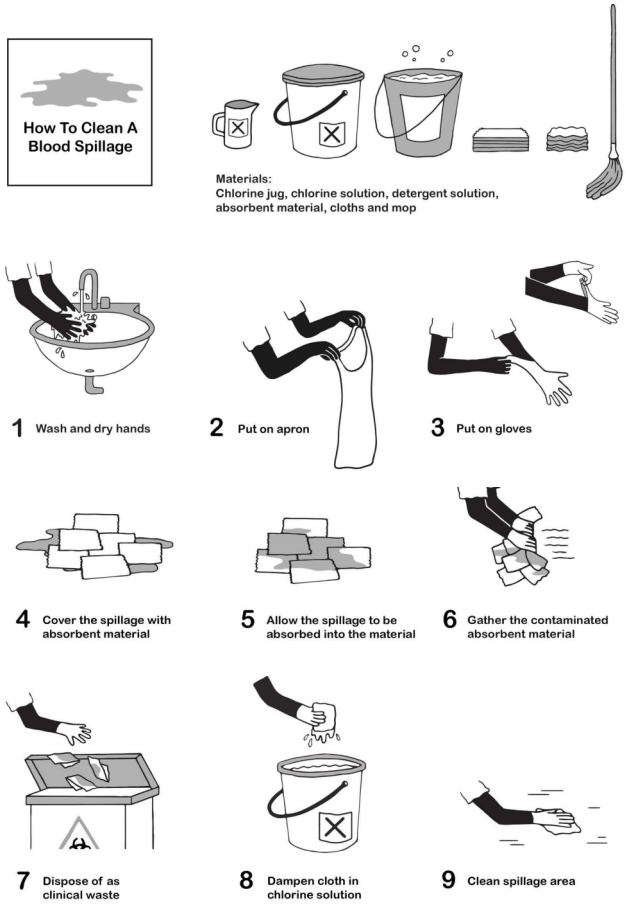
Wendy demonstrated cleaning of a blood spill following the visual prompts on the TEACH CLEAN Illustrated Cleaning Guidelines. She also highlighted the pros and cons of different mop types, which led to her subsequently being referred to as Professor Mop de Bucket!

TEACH CLEAN emphasises the importance of continual supportive supervision to enable monitoring of standards, highlight areas in need of improvement, and ensure that cleaning staff have the required knowledge and skills to perform their role. Liz and WaterAid Health Co-ordinator Dr So Pyay Naing performed a role play during the workshop to demonstrate the difference between unsupportive and supportive supervision.

"The workshop was very well received and participants all agreed that it was an excellent opportunity to familiarise themselves with both the practical aspects of healthcare facility cleaning and the interactive style of training that is used in TEACH CLEAN." – Dr Liz Goodburn

Relevant parts of the package have now been translated into Burmese and the teaching modules have been reviewed to emphasise the practical nature of the training. A formal Training of Trainers workshop with the Regional Training Team and senior staff from the five township hospitals is planned for late-2019.

The Supporting Safe Births Project is funded by the Australian Government's Water for Women Fund. Partners included WaterAid, Jhpiego and Myanmar's Ministry of Health and Sport.



The TEACH CLEAN Illustrated Cleaning Guidelines provide an accessible reference manual for staff with limited literacy skills.

Global Dissemination of the TEACH CLEAN Package

In 2018, the Secretary General of the United Nations (UN) issued a Global Call to Action to elevate the importance of and prioritize action on water, sanitation and hygiene (WASH) in all healthcare facilities, including primary, secondary and tertiary facilities in both the public and private sectors. The call recognises the important role WASH plays in preventing infections, saving lives, and improving quality of care.

Those who clean are the front line health workers in environmental hygiene and infection prevention control (IPC). They are often neglected within facilities, untrained and lack real knowledge of IPC. Soapbox's TEACH CLEAN package helps to address a lack of formal training for those who clean and promotes WASH and IPC standards for a safer environment, so supporting quality healthcare for all. TEACH CLEAN features in a number of global documents released in 2019 which aim to reduce the burden of healthcare associated infections (HAIs):

WHO and UNICEF have released two companion reports which provide baselines for WASH in healthcare facilities (the Joint Monitoring Programme (JMP) report) and outline a set of eight practical actions that countries can take to improve WASH services – providing some inspiring practical case studies including TEACH CLEAN training in Tanzania.

(Published April 2019, available at www.washinhcf.org).

WHO's implementation manual to prevent and control the spread of carbapenem-resistant organisms (CROs) at the national and health care facility level highlights TEACH CLEAN as an example of a tool that is available to support the implementation of environmental cleaning and strengthen a facility's approach to the prevention and control of CROs. (Published May 2019, available at www.who.int)

World Health Organization

Soapbox have also had the pleasure of working with colleagues in Infection Control Africa Network (ICAN) and the US Centers for Disease Control and Prevention (CDC) who are currently developing a comprehensive manual outlining the *Best Practices for Environmental Cleaning in Healthcare Facilities for Limited-Resource Settings*. The purpose of this new manual is to improve & standardize the implementation of environmental cleaning procedures and programs in patient care areas in all healthcare facilities in limited-resource settings. (Official launch planned for September 2019, for more information visit www.icanetwork.co.za)

Soapbox has received requests from a diverse range of stakeholders including Ministries of Health, IPC societies, training institutions and NGOs and locations for proposed rollout are shown above.

"No one wants to stay in a contaminated room - It is important to realize that the best product, equipment or intervention is worthless without well-trained, responsible and compliant staff. They must realize that being a hospital "cleaner" is not a job but a profession & invest in their workforce"

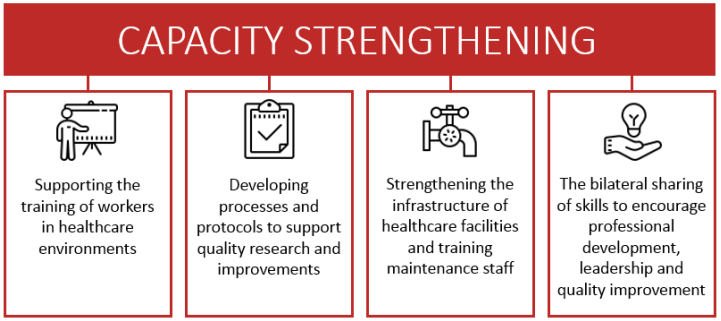
- Professor Didier Pittet, Director, Infection Control Programme & WHO Collaborating Centre on Patient Safety

WASH in Healthcare Facilities Initiative

Soapbox's Professor Wendy Graham, Emma Morrison and Claire Kilpatrick were invited by the WASH in Healthcare Facilities Initiative to present a webinar on 'The Role of Cleaners: Neglected Frontline WASH Workers in Healthcare Facilities'.
A recording of the webinar is available on the WASH in HCF YouTube channel.

Aberdeen - Bahir Dar Knowledge Exchange Partnership (2014 - 2019)

Since 2014, Soapbox and NHS Grampian (NHSG) have worked with Felege Hiwot Comprehensive Specialized Hospital (FHCSH) and Bahir Dar University (BDU) to improve quality of care, particularly maternal and newborn health, and infection prevention and control (IPC) in Bahir Dar, Ethiopia. The aims of the Aberdeen - Bahir Dar Knowledge Exchange Partnership are built around capacity strengthening; the four main agendas to improve quality of care are shown below:



Training Aberdeen partners have volunteered their time to travel to Bahir Dar to deliver training with their counterparts to support the expansion of services, and quality of care improvements. Examples of training include high-risk obstetric care, post-operative recovery care, maternal sepsis management, IPC, anaesthesia curriculum development and training, pain assessment and management, and Intensive Care Unit care.


Jennie Spence with colleagues in Bahir Dar.

Audit and Quality Improvement FHCSH is dedicated to quality improvement of services in order to achieve the vision of becoming a centre of excellence in Ethiopia, providing evidence-based health services, education and research. In 2015, FHCSH established a Quality Assurance, Audit and Research Department to gather and analyse data from across the hospital. Soapbox provided financial support to recruit key staff to assist in the creation and development of quality improvement protocols, processes and cycles. The Partnership also supported the establishment of an audit process, forms and a database and the creation of an Audit Committee to assist in project identification, promotion and development to help drive hospital wide, multi-disciplinary improvement of care. The Partnership has found that short student projects are ideal for base data collection and promotion

of the audit process, and to date twenty four students have undertaken a variety of audit and quality improvement projects that have provided valuable data and monitoring and evaluation for ongoing projects. More information on student projects can be found on page 31.

Strengthening Infrastructure Following water, sanitation and hygiene (WASH) and IPC needs assessments carried out in 2014 and 2015, the Partnership quickly prioritised improvements to hospital infrastructure to support IPC practices. In 2015, NHSG's Director of Acute Services, Gary Mortimer, and hospital engineers Graham Davidson and Malcom Ewen, travelled to Bahir Dar to assist hospital maintenance staff. During their visit, the NHSG team carried out repairs, provided training and drafted maintenance policies and procedures for the Felege Hiwot team to implement going forward. In subsequent visits, partners have been delighted to see that the maintenance team have continued to implement and indeed develop policies to improve infrastructure. However challenges remain given the growing case-load of patients and difficulties of sustaining change and coping with breakdowns, for example the availability of water on the wards.

NHSG maintenance team working with staff in FHCSH to restore running water .

Management & Leadership Skills Sharing In 2015, FHCSH's Chief Executive Officer, Mr Bizuayehu Gashaw and Medical Director, Dr Siyoum Enkubahiri, paid a 7-day visit to Aberdeen to meet with partners, senior NHSG staff and teams including the Quality Improvement (QI) and Health Intelligence & Research teams. Practicing clinicians from Bahir Dar have also had the opportunity to come to Aberdeen to support professional development - for example Dr Bazezew, Consultant Obstetrician and Gynaecologist at FHCSH, spent 10-days in Aberdeen in 2016 to attend a QI course for consultants, spending time with local IPC and QI teams.

Clinician from FHCSH visiting Aberdeen.

The Knowledge Exchange Partnership has been supported by Felege Hiwot Comprehensive Specialized Hospital, Bahir Dar University, The University of Aberdeen and NHS Grampian.

Students form the next generation of healthcare providers, researchers & global health champions

Meeting the challenges to health in low-resource settings requires building strength and resilience in the next generation of healthcare professionals. Expanding global health learning opportunities for students enables them to learn about health in different global settings, whilst at the same time they can bring enthusiasm, commitment and the chance to develop inclusive relationships with their fellow students.

Conducting a medical elective is a key component of the MBChB curriculum in UK medical schools, providing students with the opportunity to develop a range of skills through project work, often conducted in a non-NHS setting. Increasingly, students are opting for attachments in low-income countries, largely reflecting the growing demand among UK medical students for learning on global health[16].

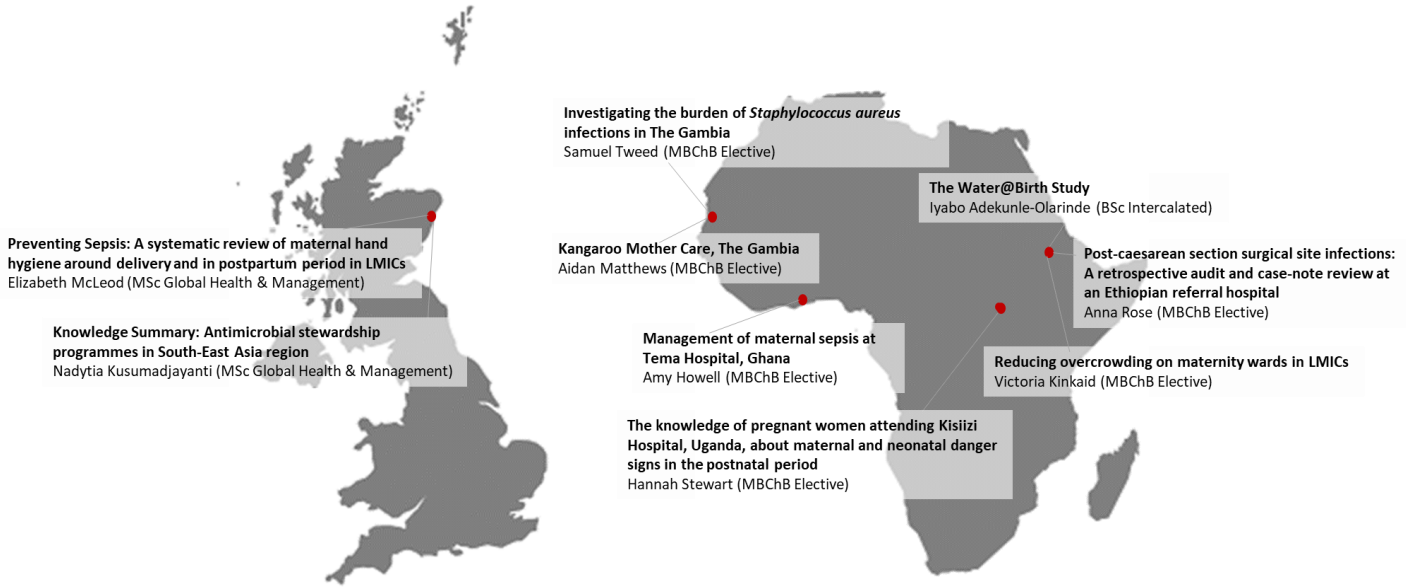
From 2014-2019, Soapbox has supported a total of 43 student projects in the UK, Ethiopia, Ghana, The Gambia and Uganda - including summer, BSc Intercalated, MSc and MBChB Elective research projects. The broad range of topics covered by the students reflect the wide scope of issues raised in improving hygiene at birth in healthcare facilities, from bed spacing to hand hygiene audits to misuse of antibiotics to the volume of water needed to enable effective infection prevention.

In addition to supporting students to conduct research projects in the UK and in LMICs, Soapbox has also contributed the University of Aberdeen's and LSHTM's Global Health & Humanities teaching programmes – helping students to explore why global health is more than a medical issue.

Advocating the Role of Students in Health Partnerships

In 2018, the Tropical Health and Education Trust (THET) and Students for Global Health (formerly Medsin) joined forces to create a toolkit on Students in Health Partnerships which promotes the concept of health partnerships and describes the important role students can play. The Aberdeen – Bahir Dar Knowledge Exchange Partnership features as a case example for student involvement. The toolkit can be accessed at www.thet.org.

Illustrative example of the breadth of student projects:



A list of student publications can be found on page 41

The World Health Assembly 2019 – Calling for a Clean Revolution

Every year thousands of people pour into Geneva, Switzerland to attend the World Health Assembly (WHA) held at the UN Headquarters.

WHA is the decision-making body of World Health Organisation (WHO). It is about people, namely delegations from both Member States and civil society, aiming to influence and also determine the policies and country led action that will help meet "health for all", or as otherwise known Universal Health Coverage. And it's about resolutions, which drive national policies.

Two resolutions were discussed at this year's WHA that will be critical in driving progress against the Sustainable Development Goals and importantly water, sanitation and hygiene (WASH). Progress that means demonstrable commitment which will lead to improvements that will affect patient and health worker safety due to higher standards of WASH. These were A72/26 '*Patient Safety: Global action on patient safety*' and A72/27 '*Patient Safety: Water, sanitation and hygiene in health care facilities*'. Both were unanimously passed by Member States on 25 May.

Attending the WHA provides an opportunity to meet with WHO country representatives and Ministers for Health, attending plenary sessions, and importantly technical briefings and side events where participants from across the health community can come together to meet people who share their passions for strengthening health for all.

This year, WaterAid supported the WASH in healthcare facilities side event. Side events are always challenging – with such a packed Assembly agenda, hitting the right note with the topic and engaging participants to attend can takes months of preparation. Happily, on 22 May, a packed room listened to a range of presentations describing the progress and challenges of WASH in healthcare. Having worked closely with WaterAid for a number of years, Soapbox's Chief Scientific Adviser Professor Wendy Graham was delighted to participate in the event – calling for a 'back to basics' approach and a clean revolution.

Wendy's 'Mop Moment'.—Wendy Graham presented the General Director of WHO with a mop at the World Health Assembly 2019.

Then there was the ‘mop moment’! Dr Tedros, Director General of WHO, arrived to give his input to the debate just as Wendy was inviting interventions from the floor. Cleanliness champions witnessed possibly the best example of awareness raising for environmental cleaning that they could have hoped for when Wendy had the opportunity to explain to Dr Tedros and the whole audience why cleaning and the role of cleaners is such a vital part of WASH and patient safety in healthcare. Wendy then very visually emphasized this message by presenting Dr Tedros with the mop she had brought along with her to stress the point. What followed was an engaged room where many vocalized their outrage, commitment and support for improved WASH now.

Lucy Singh at the 72nd WHA

Soapbox Ambassador Lucy Singh (MBChB Student, University of Aberdeen) also attended the side event. Lucy spoke of her own experience of working in health systems across the world, having witnessed first hand the effect of challenges to WASH infrastructure in healthcare facilities. Lucy highlighted her time in Felege Hiwot, Ethiopia, where a hospital which serves more than 12 million people was without water in the Maternal and Child Health building during her visit.

Sometimes we need complicated solutions but Lucy echoed Wendy’s call for a back to basics approach. Lucy has seen the frustration of her colleagues across the world, working in these challenging conditions day after day. The inequalities are stark and are having far reaching consequences, from the immediate affects at the bedside and patient safety, to further impacting the already prevalent, critical, healthcare worker shortages that we are currently seeing. Lucy ended her speech by reiterating that access to WASH in healthcare facilities is a human right, not a privilege.

Rather than focusing on presenting new information, this side event focused on generating a discussion that would stimulate action and keep WASH in healthcare facilities on the global and national agendas. We don't truly know what these next years will bring for WASH in healthcare but the 72nd WHA was another step in the right direction - the direction of ensuring that leaders, in fact everyone, truly accepts WASH as fundamental to quality healthcare.

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The Soapbox Legacy: Looking back, moving forwards

We are closing Soapbox on a high note. The catalytic role we set-out to play in 2012, in raising awareness of the scope and drivers of poor hygiene at birth and of the potential for infection prevention and safe delivery improvements, has been achieved. We have confidence that the community of actors now engaged in infection prevention at birth will continue to fill the remaining evidence gaps and adapt the tools developed by Soapbox to support context-specific solutions. As part of this legacy, this final report gives details of the lessons learnt along the way. So how to sum-up the key messages from across seven years of work? Perhaps three memorable phrases that has impacted on global health can capture our experience.

A picture speaks a 1000 words:

Soapbox has used powerful image evidence from the outset. In the development of the WASH & CLEAN Toolkit, we combined participatory photography and photo elicitation techniques both expressing the views of a range of practitioners committed to infection prevention – from cleaners to doctors to managers, on the barriers and opportunities to improved hygiene at birth. Our work to raise awareness among national and global stakeholders has made maximum use of images of the harsh reality of maternity wards in some of the poorest parts of the world – including through use of the novel technique of PechaKucha. The medical students involved with Soapbox have been encouraged to use ethical images in their projects, including testing the value of images to stimulate action in a referral hospital around overcrowding. And in our training package for cleaners – TEACH CLEAN – photographs and pictorial messages play an important part. But what of the future? Images will always have a part to play in advocacy and reminders/prompts in the work place, but further robust exploration of how such imagery could specify work within the delivery setting is worthy of attention.

What you count is what you do:

Soapbox has worked with partners to raise not only awareness of the poor state of hygiene practises and environment at birth, but also the health-related consequences. From audits of wound infections after caesarean section to phone-based surveillance of self-reported symptoms of infection by mothers, Soapbox has acknowledged the importance of "counting for doing" – meaning without meaningful, hard evidence of the adverse consequences of poor hygiene on maternal and

newborn health and survival, improvement efforts are thwarted. The difficulties of active infection surveillance in low-income settings are well-known. Soapbox therefore explored the use of techniques to show hygiene failures (using gel dots) as well as the burden of avoidable infections caused by harmful organisms living in high risk areas, such as the delivery beds, using reliable approaches to understanding what lives on these surfaces and as such what needs to be managed to protect this vulnerable community. We have learnt that in practical terms environmental surveillance is underdeveloped in terms of laboratory capacity and expertise in LMICs, and recommend this as an area for further research and development. However, options for improving the diagnostics and markers of pre- & current infections, the detection and management of maternal and newborn risk factors, and active follow-up of at risk groups in the community using mobile technology , also represent interesting avenues for scientific advancement and investment.

No change is too small:

This is a key phrase in the science and practice of quality improvement. It captures Soapbox's journey into highly-context specific, and local solutions, from replacing batteries in taps on the maternity ward in order for water to flow, to understanding the need for replacing the laundry machine in a major hospital, to training cleaners in correct storage of mops, to revealing the risk of re-contamination after hand hygiene. Given the enormity of the problem of poor IPC and WASH in many of the healthcare facilities delivering newborns in low-income countries, these interventions may seem a "drop in the ocean" relative to need. But our experience is also a clear reminder of the unfinished agenda in these settings for what might be considered fundamental or basic interventions, but which must not be forgotten in the rush for innovation and new technologies. Of course, going to scale with any intervention in order to achieve a population level effect is also key, and here there is room for robust evaluations of composite interventions delivered in the real world – and requiring effective collaboration between researchers and implementers. Soapbox has had the privilege of playing both these roles by working with partners. Such multidisciplinary collaboration leaves us with optimism for a future of clean, safe birth for all mothers and babies.

Professor Wendy J Graham

Chief Scientific Adviser

A final message on behalf of Trustees

In 2012, as the IMMPACT research project was reaching its end, Professor Wendy Graham shared with me her frustration that the very clear research messages from IMMPACT on what were the causes of maternal and neonatal mortality and morbidity in low-income countries and on the measures which could reduce their incidence, might be lost in the absence of any champion to ensure implementation. This was especially the case in relation to control of infection and the sadly neglected role of the humble cleaner.

Imagine our delight then, when out of the blue Alastair Robertson contacted us to say that his client, Miss Elsie Duguid, had been very impressed by what she had heard about our work, and, as a former nurse/midwife herself, wanted to offer some of the funds which had been generated by the sale of her family farm to further our work. We thought long and hard about this, and initially thought we should work through an established charity/aid organisation to achieve our aims, but we found that there was no organisation which wholeheartedly focussed on what we thought were the key neglected issues – control of infection and in particular, ensuring a clean birthing environment.

It has been a huge privilege to see our messages taken up at the highest level at WHO, and the procedures we have developed adopted by partner organisation who will ensure that they are widely implemented. It has also, as part of that process, been very rewarding to see the enthusiasm and altruism of NHS staff who have given so much time to deliver the practical aspects of partnership which again should ensure that sustainable improvements are made which will save the lives of mothers and babies.

On a personal level, I have enjoyed working with our dedicated and resourceful staff, in Aberdeen and London, and treasure the memories of productive visits to and from our partners in Ethiopia and The Gambia.

Mr Alec Cumming, Soapbox Trustee

Acknowledgements

Volunteers have played a key part in Soapbox's success over the years. Our team of **Soapbox Ambassadors** have assisted us at a number of public events, helping us to raise awareness, and funds, to support global maternal and newborn health. We have also been incredibly fortunate to receive support from a team of **Soapbox Professionals**, skilled professionals who have helped us to build capacity with our overseas healthcare partners – all giving their time to support colleagues working in challenging healthcare environments with limited resources.

We would also like to thank all those individuals and groups who have made **donations** big and small to Soapbox - including the Batchworth Trust, Professor David Reid, Shell, Students for Global Health (formerly Medsin) and the University of Aberdeen's Obstetrics & Gynaecology Society.

Thank you!

Our Publications

Soapbox are proud to have written and co-authored a number of publications in our field. A full list of these can be found below:

Soapbox Led Publications

An Invisible workforce: the neglected role of cleaners in patient safety on maternity units
Cross, S. et al. (2019) An Invisible workforce: the neglected role of cleaners in patient safety on maternity units. Global Health Action, DOI: 10.1080/16549716.2018.1480085

Handwashing Glove Use and avoiding recontamination before aseptic procedures at birth: a multicentre time and motion study conducted in Zanzibar
Gon, G. et al. Handwashing glove use and avoiding recontamination before aseptic procedures at birth: a multicentre time and motion study conducted in Zanzibar. American Journal of Infection Control. Vo(0) 2018.

Unpacking the enabling factors for hand, cord, and birth surface hygiene in Zanzibar maternity units
Gon, G. et al. (2017) Unpacking the enabling factors for hand, cord, and birth surface hygiene in Zanzibar maternity units. Health Policy and Planning. doi: 10.1093/heapol/czx081

Global Health Action: Hygiene on maternity units: lessons from a needs assessment in Bangladesh and India
Cross, S., et al. Hygiene on maternity units: lessons from a needs assessment in Bangladesh and India. Global Health Action, [S.l.], v. 9, dec. 2016. ISSN 1654-9880.

Global Health Action: What are the threats from antimicrobial resistance for maternity units in LMICs?
Graham, W. et al. What are the threats from antimicrobial resistance for maternity units in low- and middle- income countries?. Global Health Action, [S.l.], v. 9, sep. 2016. ISSN 1654-9880.

Soapbox Co-authored Publications

The Water@Birth Study: an exploratory study on the requirements of water for hand hygiene during labour and delivery in low-income countries
Adekunle-Olarinde I., Graham W J., Cross S., & Moore J. 2018. The Water @ Birth Study. Journal of Obstetrics and Gynaecology

The Frequency of Maternal Morbidity: A Systematic Review of Systematic Reviews.
Gon, G. et al. (2018) The frequency of maternal morbidity: A systematic review of systematic reviews. International Journal of Gynaecology and Obstetrics.

Who Delivers Where? The effect of obstetric risk on facility delivery in East Africa.
Virgo, S., Gon, G., Cavallaro, F. L., Graham, W. and Woodd, S. (2017), Who Delivers Where? The effect of obstetric risk on facility delivery in East Africa. Trop Med Int Health. Accepted Author Manuscript. doi:10.1111/tmi.12910

Clinical audit of post-caesarean wound infections in a tertiary referral hospital in The Gambia
Aulakh A, Idoko P, Anderson S, Graham WJ. Clinical audit of post-caesarean wound infections in a tertiary referral hospital in The Gambia. Tropical Doctor 2017.

Maternal sepsis: Opportunity for improvement
Firoz, T. and Woodd, S.L., 2017. Maternal sepsis: Opportunity for improvement. *Obstetric medicine*, *10*(4), pp.174-176.

The Lancet: Drivers of maternity care in high-income countries: can health systems support woman-centred care?
Shaw, Dorothy et al. (2016) Drivers of maternity care in high-income countries: can health systems support woman-centred care? *The Lancet* , 388 , Issue 10057 , 2282 – 2295

The Lancet: Diversity and divergence: the dynamic burden of poor maternal health.
Graham, W., et al. (2016). Diversity and divergence: the dynamic burden of poor maternal health. *The Lancet*. 722 (Issue 54490), 6508 – 2175.

The Lancet: Maternity Care for Every Woman, Everywhere
Koblinsky K, Moyer CA, Calvert C, Campbell J, Campbell OMR, Feigl AB, Graham WJ, Hatt L, Hodgins S, Matthews Z, McDougall L, Moran AC, Nandakumar AK, Langer A. (2016) Quality maternity care for every woman, everywhere: A call to action. Lancet .Volume 388, No. 10057, p2307–2320, 5 November 2016. doi.org/10.1016/S0140-6736 (16)31333-2

PLos ONE: Who Delivers without Water?
Gon G, Restrepo-Méndez MC, Campbell OMR, Barros AJD, Woodd S, Benova L, et al. (2016) Who Delivers without Water? A Multi Country Analysis of Water and Sanitation in the Childbirth Environment. PLoS ONE 11(8): e0160572. doi:10.1371/journal.pone.0160572

Getting the basics right—The role of water, sanitation and hygiene in maternal and reproductive health: A conceptual framework
Campbell, O.M., Benova, L., Gon, G., Afsana, K. and Cumming, O., 2015. Getting the basic rights–the role of water, sanitation and hygiene in maternal and reproductive health: a conceptual framework. *Tropical medicine & international health*, *20*(3), pp.252-267.

Childbed fever: history repeats itself?
Graham WJ, Dancer SJ, Gould IM, Stones W. (2015) Childbed fever: history repeats itself? BJOG; DOI: 10.1111/1471-0528.13189.122:156–159

PubMed: The contribution of unimproved water and toilet facilities to pregnancy-related mortality in Afghanistan: analysis of the Afghan Mortality Survey.
Gon, G., Monzon-Llamas, L., Benova, L., Willey, B. and Campbell, O. M. R. (2014), The contribution of unimproved water and toilet facilities to pregnancy-related mortality in Afghanistan: analysis of the Afghan Mortality Survey. Trop Med Int Health, 19: 1488–1499.

From Joint Thinking to Joint Action
Velleman Y, Mason E, Graham W, et al. 2014. From joint thinking to joint action: a call to action on improving water, sanitation, and hygiene for maternal and newborn health. PLoS Medicine. 11(12), e1001771. doi:10.1371/journal.pmed.1001771

Soapbox Featured Articles

BMJ: Wendy J Graham : Health and hygiene from birth
BMJ 2018;362:k2921 August 2018.

The Longitude Prize: Global Handwashing Day
Hand Hygiene in Resource-Poor Maternity Settings. Giorgia Gon. October 2017.

The Lancet: Wendy Graham and Oona Campbell: Maternal Health Mavericks
Read about the three-decades of collaborative work of 'maternal health mavericks', Wendy Graham and Oona Campbell in their Lancet profile piece by Jocelyn Clark. November 2016.

BMJ: Improving Surgical Anaesthesia Practise
Dr Ryan Ellis, Dr Jolene Moore and Izzuddin Nor. October 2016.

News Deeply: Why The Fight Against Maternal Mortality is All About the Details
Written by Flora Bagenal. September 2016.

BMJ: The Global Push for Institutional Childbirths- in unhygienic facilities
Jocalyn Clark. March 2016.

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