Guideline Development Group for
WHO and UNICEF joint
Guidelines on Hand Hygiene in the Community Setting

May 2022
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Background

Hand hygiene is critical to infection prevention and control and public health, contributing to a wide range of health outcomes. However, most low- and middle-income countries have insufficient coverage, in terms of resources and behaviours, and improvements are off-track. Recent estimates suggest that to achieve Sustainable Development target 6.2.1 a four-fold increase in the current rate of progress is needed.

The COVID-19 pandemic has highlighted this long-standing public health challenge and mobilised political will to address it. With increased attention across the global community has come heightened demand for intervention and implementation guidance. However, while robust international guidelines on effective hand hygiene improvement in the healthcare setting are available, normative guidance on hand hygiene in the community setting – defined as a setting for which the primary purpose is not medical care – is lacking. Key contexts within the community setting include households, public spaces and non-healthcare institutional settings. Public spaces are areas or places open and accessible to all peoples and include but are not limited to plazas, squares, parks, markets, transport hubs. Non-healthcare institutional settings include among others schools, workplaces and detention centres.

As part of its mandate to address demand for guidance on clinical or public health areas where there is uncertainty, the World Health Organization is developing a set of new Guidelines on hand hygiene in the community setting. The Guidelines will provide evidence-based recommendations to governments on how to improve hand hygiene in the community setting, focusing in particular on areas of persistent uncertainty or controversy in what constitutes effective hand hygiene and what government measures can be implemented to rapidly improve it.

Guideline Development Group – composition and role

WHO follows internationally recognized methods and standards for guideline development to ensure that its guidelines are of the highest quality. These are outlined in the WHO Handbook on Guideline Development. When producing WHO guidelines, a number of contributor groups must be established, including a Guideline Development Group (GDG). The GDG is made up of external experts whose central task is to develop evidence-based recommendations. The members of the GDG are not commissioned and do not receive any financial compensation other than for direct expenses associated with their work on the guideline.

The GDG is multidisciplinary and composed of individuals from all WHO regions likely to use the guideline. Its membership should be balanced in terms of gender and geography.

The role of the GDG is to:

- provide input into the scope of the guideline;
- assist the steering group in developing the key questions in PICO format;

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• choose and rank priority outcomes that will guide the evidence reviews and focus the recommendations;
• examine the Grading of Recommendations Assessment, Development and Evaluation (GRADE) evidence profiles or other assessments of the quality of the evidence used to inform the recommendations and provide input;
• interpret the evidence, with explicit consideration of the overall balance of benefits and harms;
• formulate recommendations taking into account benefits, harms, values and preferences, feasibility, equity, acceptability, resource requirements and other factors, as appropriate; and
• review and approve the final guideline document before submission to the GRC.

Proposed GDG members for public notice and comment

The following 23 experts are proposed to join the GDG. The names and biographies of these individuals are posted online for the next two weeks to allow the public to provide information on any interests or biases relating to the individuals being considered for appointment.

In order to enhance its management of conflicts of interest as well as strengthen public trust and transparency in connection with WHO meetings and activities involving the provision of technical/normative advice, the names and brief biographies of individuals (“Published Information”) being considered for participation in a WHO-convened Guideline Development Group are disclosed for public notice and comment.

The Published Information is provided by the experts themselves and is the sole responsibility of the individuals concerned. WHO is not responsible for the accuracy, veracity and completeness of the Published Information provided. Furthermore, in no event will WHO be responsible or liable for damages in relation to the use of, and reliance upon, the Published Information.

The comments received by WHO through the public notice and comment process are treated confidentially and their receipt will be acknowledged through a generic email notification to the sender. Comments brought to the attention of WHO through this process are an integral component of WHO’s conflict of interest assessment process and are carefully reviewed. WHO reserves the right to discuss information received through this process with the relevant expert and disclose to this expert the name and affiliation of the provider of such information. Upon review and assessment of the information received through this process, WHO, in its sole discretion, may take appropriate management action in accordance with its policies.

Guideline Development Groups provide technical and/or normative advice and recommendations to WHO. Participation in a Guideline Development Group convened by WHO does not necessarily mean that the views expressed by the expert concerned are shared by WHO and/or represent the decisions or stated policy of WHO.

The list of participating experts, a summary of relevant interests disclosed by such experts, and any appropriate mitigation measures taken by WHO relating to the management of conflicts of interests, will be reported publicly in accordance with WHO policies.

Akpa, Oluyemisi

Institutional affiliation(s) [current and in the prior four years]: Federal Ministry of Water Resources, Nigeria

Academic degrees: Doctor of Philosophy degree in Environmental Resource Management
City and country of primary residence: Lagos, Nigeria

Biography
Oluyemisi Akpa is an Assistant Director at the Federal Ministry of Water Resources, Nigeria. She holds a Doctor of Philosophy degree in Environmental Resource Management and heads the secretariat team of the National Task Group on Sanitation (NTGS), a coordinating platform for sanitation and hygiene at the national level. She has been involved in and contributed to the development of sector policy documents, capacity building, as well as the design, planning, administration and monitoring of Water, Sanitation and Hygiene (WASH) programmes and projects. She also provides technical support to the ‘Clean Nigeria: Use the Toilet’ Campaign Secretariat.

Aunger, Robert V

Institutional affiliation(s) [current and in the prior four years]: London School of Hygiene and Tropical Medicine

Academic degrees: Ph.D. (Biological Anthropology) University of California at Los Angeles; M.U.P. (Urban Planning) University of Southern California; B.A., magna cum laude (History) University of South Florida

City and country of primary residence: London, UK

Biography
Robert Aunger is Associate Professor in Evolutionary Public Health at the London School of Hygiene and Tropical Medicine. He has a Masters in Urban Planning from the University of Southern California, a PhD in biological anthropology from the University of California, Los Angeles, and did post-doctoral work in psychology at the University of Chicago and King’s College, Cambridge. He has published books on cultural evolution, the evolution of human behaviour, and ethnographic methods. He is the lead developer of a novel approach to behaviour change called ‘Behaviour Centred Design’ which has its origins in evolutionary biology, ecological psychology and commercial marketing. For over a decade, he has helped implement public health projects in water, sanitation, hygiene, nutrition and HIV using this approach in multiple countries on the African and Asian continents, including designing creative materials for mass media and community activation. He has held grants from the Economic and Social Research Council, the Medical Research Council, the National Science Foundation, the Hygiene Council and the Department for International Development and has also consulted on behaviour change for the World Bank, UNICEF, the Global Alliance for Improved Nutrition, Unilever, Procter and Gamble, Kimberly Clark, and GoJo Industries.

Bawa, Kitch G.

Institutional affiliation(s) [current and in the prior four years]: AMCOW

Academic degrees: BSc Geology and Mining; MSc Global Management

City and country of primary residence: Abuja, Nigeria

Biography [Kitch Bawa is the pioneer Sanitation Project Manager of African Ministers’ Council on Water (AMCOW) since 2013. He has more than 14 years’ experience in international development working in Nigeria and across the continent at different levels. His career started at WaterAid Nigeria where he worked in different capacities, among which are: State Program Manager; Sanitation and Hygiene Lead. He has also served from 2015 to 2020 as the member representing West, Central and Northern Africa in the Steering Committee of the Water Supply and Sanitation Collaborative Council (WSSCC) now Sanitation and Hygiene Fund (SHF). The SHF is hosted by United Nations Office of Project Services (UNOPS) in Geneva, Switzerland. Some of the achievements of the Sanitation Unit he leads are: a strategic pillar on Ensuring Access to Safely Managed Sanitation and Hygiene for
AMCOW Strategy 2018 – 2030. Others are AfricaSan Ngor Commitments for Sanitation and Hygiene 2015, which measures progress in improving the enabling environment for sanitation and hygiene; and the African Sanitation Policy Guidelines (ASPG) 2021 which helps countries improve the sanitation and hygiene policy environment. The AMCOW Sanitation Unit leads and coordinates the AfricaSan initiative which is the major knowledge sharing and political commitments setting platform for sanitation and hygiene in Africa.

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**Bellissimo-Rodrigues, Fernando**

**Institutional affiliation(s) [current and in the prior four years]:** Ribeirão Preto Medical School, University of São Paulo

**Academic degrees:** M.D., Ph.D. in Infectious Diseases

**City and country of primary residence:** Ribeirão Preto, Brazil

**Biography**

Fernando Bellissimo-Rodrigues holds a degree in medicine and a Ph.D. in Infectious Diseases from the Ribeirão Preto Medical School, University of São Paulo, in Brazil. He also attended medical residency in Internal Medicine and Infectious Diseases, at the same institution. From 2014 to 2015, he attended a post-doctoral fellowship at the University of Geneva Hospitals, under the supervision of Prof. Didier Pittet. During this period, he performed experiments addressing hand hygiene evaluation and promotion, both in the microbiology laboratory as well as in the clinical field. Currently, he works as an Associate Professor of Medicine and Public Health at the Ribeirão Preto Medical School, University of São Paulo, in Brazil. His primary research interests are the epidemiology and prevention of healthcare-associated infections, focusing on hand hygiene and oral hygiene.

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**Cardoso Thuzine, Ana Paula**

**Institutional affiliation(s) [current and in the prior four years]:** Director of Environmental Health, Ministry of Health, Government of Mozambique

**Academic degrees:** Master in Food Technology, University of New South Wales (UNSW)

**City and country of primary residence:** Maputo, Mozambique

**Biography**

Ana Paula Cardoso Thuzine is a Chemical Engineer and Head of the Department of Environmental Health at the Ministry of Health in Mozambique.

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**Caruso, Bethany**

**Institutional affiliation(s) [current and in the prior four years]:**

**Academic degrees:** Doctor of Philosophy, Emory University; Master of Public Health, Emory University; Bachelor of Arts, Wesleyan University

**City and country of primary residence:** Atlanta, Georgia, United States of America

**Biography**

Bethany Caruso is an Assistant Professor in the Hubert Department of Global Health at the Rollins School of Public Health at Emory University. She is a social and behavioral scientist with over a
decade of water, sanitation, and hygiene (WASH) sectoral research experience in low and middle income settings. She employs mixed methods approaches to understand how compromised WASH conditions impact physical and mental health, behavior, education, and empowerment, with a specific focus on girls and women throughout their life course. Dr. Caruso is also interested in how water and sanitation environments can impact the practices and behaviors that women perform because of their sex or are expected to perform because of their gender—including menstrual hygiene, child and infant feeding, and the safe disposal of child feces—and how these behaviors and practices may impact varied health outcomes.

Dr. Caruso’s work includes application of qualitative methods, measurement development, theory-based intervention design, and impact and process evaluation. In her work, she emphasizes translation to policy and practice through public scholarship and engagement with policy-makers. She has led research in Bolivia, India, Kenya, Philippines, Rwanda, Senegal, Sierra Leone, Uganda and Zambia, and has supported research in over a dozen additional countries.

Chase, Claire

Institutional affiliation(s) [current and in the prior four years]: World Bank

Academic degrees: MSc in Population and International Health Economics, Harvard University School of Public Health

City and country of primary residence: Washington DC, United States of America

Biography

Claire Chase is a Senior Economist in the World Bank’s Water Global Practice in the East and Southern Africa region where she supports research, policy and investment financing at the intersection of water and human development. She is the practice focal point for health and nutrition, leading efforts to integrate water and nutrition in World Bank lending and scale up investments for WASH in schools and health care facilities globally. Prior to joining the World Bank in 2008, she was a Visiting Researcher with the Barcelona Centre for International Health Research in Mozambique where she worked on economic analysis of malaria treatment and prevention. She holds a master’s degree in Population and International Health Economics from Harvard University School of Public Health.

Chidziwisano, Kondwani R.

Institutional affiliation(s) [current and in the prior four years]: Malawi University of Business and Applied Sciences (former University of Malawi’s Polytechnic)

Academic degrees: PhD Civil and Environmental Engineering – Social and Behavioural Sciences; MSc Environmental Health; BSc Environmental Health

City and country of primary residence: Blantyre, Malawi

Biography

Kondwani is a researcher and an academic member in the Department of Environmental Health and WASHTED at Malawi University of Business and Applied Sciences. Working with a number of partners globally, he is focused on promoting the importance of transdisciplinary research in addressing sustainable development for all. His professional interests focus on understanding the behavioural determinants of Water, Sanitation and Hygiene (WASH) in households, communities and institutions in low-income settings. His recent research work includes the Sanitation and Hygiene Applied Research for Equity (SHARE) which designed and tested scalable intervention to improve
WASH and food hygiene behaviours among child caregivers in rural communities; the Drivers of Antimicrobial Resistance in Uganda and Malawi (DRUM) project that identified WASH behaviours and associated determinants facilitating spread of antimicrobial resistant bacteria in low income settings; Improving hygiene in Guardian Waiting Shelters and communities in Malawi; an intervention development and feasibility study. He is part of a team of technical advisors under the COVID–19 hygiene hub that plays an advisory role on COVID–19 pandemic to Governments and organizations. Kondwani holds a PhD in Civil and Environmental Engineering – Social and Behavioural Interventions and MSc in Environmental Health, both from University of Strathclyde, UK.

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**Chipungu, Jenala**

**Institutional affiliation(s) [current and in the prior four years]:** Centre for Infectious Disease Research in Zambia; London School of Hygiene and Tropical Medicine (LSHTM) Reckitt Fellow; Athena Infonomics LLS Consultant.

**Academic degrees:** PhD candidate, LSHTM; Master of Public Health (MPH) University of Liverpool (U.K.); Bachelor of Arts Degree Development Studies (B.A)

**City and country of primary residence:** Lusaka, Zambia

**Biography**

Ms Jenala Chipungu is a Social Behavioural Scientist with a wealth of experience (7 years) developing and implementing behavioural research in rural and peri-urban areas of Lusaka. She has led various social behavioural studies around WASH, menstrual hygiene management and adolescent health. Her experience in WASH involves the development of behavioural change interventions, underpinned by behavioural theory, to improve behaviours including hand washing with soap, household water treatment, toilet improvement and safe menstrual practices. Along with colleagues from LSHTM, she had co-led two randomised control trials, both published in the Lancet, that provided new insights into the implementation and evaluation of complex multi-behaviour interventions. Recently, she was an expert reviewer for an index measuring urban sanitation and empowerment and is now working with colleagues from Emory University, LSHTM and World Vision to explore the validity of the existing Sanitation Quality of Life measure in rural Zambia. In the fight against COVID-19, she plays an active role in the Risk Communication and Community Engagement (RCCE) National Committee advising on strategies to improve behaviours for the prevention of coronavirus and is a Technical Advisor on the COVID-19 Hygiene Hub (https://hygienehub.info/en/covid-19) a global platform bringing together evidence-based interventions to combat COVID-19.

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**Dreibelbis, Robert S.**

**Institutional affiliation(s) [current and in the prior four years]:** London School of Hygiene and Tropical Medicine (LSHTM)

**Academic degrees:** PhD

**City and country of primary residence:** London, United Kingdom

**Biography**

Robert is an Associate Professor in the Department of Disease Control at the London School of Hygiene and Tropical Medicine. He received his MPH in Global Environmental Health from the Rollins School of Public Health at Emory University and his PhD in International Health – Social and Behavioural Interventions from the Johns Hopkins Bloomberg School of Public Health. For over 15
years, Robert has worked in the field of water, sanitation, and hygiene research. Specifically, his work has focused on understanding the determinants and impacts of hygiene behaviours and the design and evaluation of hygiene behaviour change interventions in both domestic and institutional contexts. Current and past research include the evaluation of school-based hygiene interventions in Kenya, Ethiopia, and the Philippines; the design and evaluation of healthcare facility-based hygiene interventions in Nigeria and Cambodia, and research on the determinants of domestic hygiene behaviours in Kenya, Zambia, Malawi, and India.

Graczyk, Halshka

Institutional affiliation(s) [current and in the prior four years]: International Labour Organization (Geneva, Switzerland); Institute for Work and Health/Unisanté (Lausanne, Switzerland)

Academic degrees: Bachelors in Public Health (Johns Hopkins University); Masters of Science in Public Health (Johns Hopkins University); Professional certifications in Risk Sciences and Public Policy (Johns Hopkins University); Doctorate (PhD) in Health Sciences, specialization in Occupational Safety and Health (University of Lausanne, Switzerland)

City and country of primary residence: Geneva, Switzerland

Biography

Dr. Halshka Graczyk is a safety and health professional, currently Technical Specialist on Occupational Safety and Health (OSH) at the International Labour Organization (ILO) in Geneva, Switzerland. In this role, Halshka manages and coordinates a number of technical OSH areas, including the portfolio on chemical hazards; prevention of major industrial accidents; and water, sanitation and hygiene (WASH) in the world of work. As the ILO OSH team focal point on WASH, Halshka coordinates global WASH activities and leads international training efforts, focusing on the integration of WASH issues into existing OSH management systems, which can leverage the strength of International Labour Standards. Halshka brings together a multidisciplinary academic and professional background from her work in academia, private OSH institutes, government, and international organizations. This experience has allowed her to apply her public health and occupational safety and health training into the development of evidence-based international and national policies, programmes and strategies. Halshka holds a Bachelors in Public Health and Masters of Science in Public Health from the Johns Hopkins University; and a Doctorate (PhD) with a specialization in occupational safety and health, focused on the evaluation of novel and emerging OSH risks and hazards, from the University of Lausanne, Switzerland.

Hickling, Sophie

Institutional affiliation(s) [current and in the prior four years]: WaterAid

Academic Degrees: MSc Public Health in Developing Countries (London School of Hygiene and Tropical Medicine, UK); MSC Water and Environmental Engineering (University of Surrey, UK); BSc Environmental Science (University of Sussex, UK)

City and country of primary residence: Taunton, U.K.

Biography

Sophie Hickling is a sanitation and hygiene specialist with a specific interest in institutional arrangements and capacity development for sustained universal access to sanitation and hygiene. She has more than 20 years professional experience working on sanitation and hygiene approaches, programmes and enabling environment strengthening. Sophie has worked alongside national and
local governments across different contexts, and has worked with different organisations including WaterAid, World Bank, and AMCOW.

Ho, Beverly Lorraine C.

**Institutional affiliation(s) [current and in the prior four years]:** Maurice R. Greenberg World Fellows Program, Yale University; Atlantic Senior Fellows Award Atlantic Institute & Rhodes Trust, University of Oxford; Equity Initiative for Southeast Asia, China Medical Board & Atlantic Philanthropies; Scientific Council, Global Burden of Disease, Institute of Health Metrics & Evaluation, University of Washington, Seattle, Washington, USA; Strategic Group, Health Equity Commission in Asia, Convened by the China Medical Board, Hong Kong University and Harvard FXB Center; Future of Global Health Procurement Working Group, Center for Global Development, Washington District of Columbia, USA; Expert Group, Stagnation in Universal Health Coverage Implementation (UNGA High Level Meeting for UHC Background Paper), National Health Security Office, Government of Thailand

**Academic degrees:** Master in Public Health, Harvard T.H. Chan School of Public Health; Doctor of Medicine, University of the Philippines – Manila; Bachelor of Science, Major in Biology, University of the Philippines - Diliman

**City and country of primary residence:** Manila, Philippines

**Biography**

Beverly Lorraine Ho is the concurrent Director for Disease Prevention and Control and Health Promotion at the Department of Health - Philippines. As DPCB Director, she is at the forefront of implementing major primary care reforms such as technical and systems integration of traditionally disease-based health programs. These efforts have resulted in innovations such as the Omnibus Guidelines for health across the life stages, unified standards of care, among others. Similarly, as HPB Director, she leads cross-cutting teams for healthy settings that develop policies, campaigns, and customizable tools for local governments such as playbooks for scalable WaSH interventions in schools and communities.

Prior to this, she was Chief of Research Division of the Health Policy Development and Planning Bureau, where her efforts led to the development of the department’s first national practice guidelines and setting up of its complementary governance structure for both government and private sector led guidelines development.

Bev is a fellow of the Maurice Greenberg World Fellows Program at Yale University, the Equity Initiative and the Atlantic Institute. She holds an MD from the University of the Philippines and an MPH in Health Policy and Management from the Harvard T.H. Chan School of Public Health as a Fulbright Scholar.

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Howard, Guy

**Institutional affiliation(s) [current and in the prior four years]:** University of Bristol

**Academic degrees:** BSc (Hons), PhD

**City and country of primary residence:** Glasgow, UK

**Biography**

Professor Guy Howard is the Director of the Cabot Institute for the Environment at the University of Bristol and also holds the Global Research Chair in Infrastructure and Environmental Resilience in the Department of Civil Engineering. Professor Howard’s research focuses on climate resilience of water and sanitation services and health systems, provision of water and sanitation services, and environmental influences on public health. All Professor Howard’s research focuses on
low- and middle-income countries. Current work includes research into improving environmental hygiene across agricultural value chains, including in markets and transportation hubs. He is the author of the WHO guidance on domestic water quantity, and 30 years of experience in the WASH sector in a variety of roles. Before joining Bristol, Professor Howard spent 16 years at DFID in a variety of roles as a climate and environment advisor, infrastructure advisor, and policy manager. He was the DFID policy lead on WASH 2012-2019 overseeing the UKAid programmes on WASH. He recently published a review on the role of WASH in COVID-19, which involved consideration of hygiene in public places. He has published widely on issues related to WASH and environmental health.

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Islam, Md. Khairul

Institutional affiliation(s) [current and in the prior four years]: WaterAid

Academic degrees: MBBS, MPhil

City and country of primary residence Dhaka, Bangladesh

Biography
Md Khairul Islam is one of the leading public health professionals of Bangladesh. He is a Medical Doctor with Master of Philosophy in Preventive Social Medicine. Dr Islam has worked in various capacities in different organizations in Bangladesh and Africa in leadership and managerial positions. Before assuming the role of the Regional Director of WaterAid, South Asia about two years ago, he had served as the Country Representative of WaterAid in Bangladesh for eleven years. Dr Islam has contributed to the formulation of the national health policy and national population policy of Bangladesh as a member of the drafting committee. He sits in different national and regional committees; and served in the executive board of different CSOs including the World Federation of Public Health Association. He masterminded the first national hygiene baseline survey 2013 in Bangladesh. During Covid 19 pandemic, he helped design the hygiene response plan of WaterAid globally; supported studies on hygiene behaviour in the countries of South Asia region; contributed to designing BCC materials in different country programs of WaterAid; and organized CSO platform on promoting hand hygiene in South Asia with WHO, UNICEF, SWA, etc. He has co-authored several papers on hygiene in peer reviewed journals.

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Kuria, Wanjiku

Institutional affiliation(s) [current and in the prior four years]: World Vision Kenya

Academic degrees: MPH; BSc. Environmental Health (Public Health); Post graduate certificate-Global Health

City and country of primary residence: Nairobi, Kenya

Biography
I am currently working as an Advisor-Sanitation and Hygiene for World Vision Kenya. I have over 18 years experience in the Water, Sanitation and Hygiene (WASH) sector having worked in both refugee and development set ups in various non-profit organizations. My education background is in public health at both undergraduate and graduate levels. I also hold a post-graduate certificate in global health from Drexel University. I also have professional competencies in Gender and social inclusion in WASH, menstrual hygiene management, sanitation marketing and various behavioural change methodologies such as Design for Behaviour change (DBC), Community Led Total Sanitation (CLTS) and Nurturing Care Groups. I also represent World Vision Kenya as the co-chair of the Kenya National Hygiene promotion Technical Working Group, handwashing being a key focus of this TWG.
Makhafola, Belinda Mphela

**Institutional affiliation(s) [current and in the prior four years]:** National Department of Health, South Africa.

**Academic studies:** B-Tech in Environmental Health; National Diploma in Environmental Health; National Diploma in Public Management

**City and country of primary residence:** Pretoria, Gauteng Province, South Africa

**Biography**

I am an Environmental Health Practitioner by training and have worked as an Environmental Health Practitioner at a district level for 9 years, where I was at the implementation level responsible for monitoring conditions in the environment that may constitute a health hazard and conducting risk assessments in this regard. I thereafter moved to the National Department of Health where my key performance area was policy development. I am currently coordinating the Water, Sanitation and Hygiene programmes within the National Department of Health and have spearheaded and led the development of various Environmental Health policies and strategies, including the National Environmental Health Policy and Strategy, 2013 and 2015, the National Environmental Health Norms and Standards, 2015 and the National Hand Hygiene Behaviour Change Strategy 2015. I have presented South Africa’s work on hand hygiene and was a panel member the in various international conferences/webinars, including the Africa-SAN and the Virtual Africa Water and Sanitation Week 2021. During the COVID-19 pandemic, I was a member of the National CoVID-19 Joint Operations Structure and led the development of the COVID-19 Public Hygiene Strategy, June 2020, including various other COVID-19 protocols for public places. I have worked very closely with various other disciplines such as Health Promotion on various strategies and approaches to improving hand hygiene behaviour and performance in the country, including the Hand Hygiene WASH-BAT with the support of UNICEF. I sit in various platforms/Task Teams for Sanitation and Hygiene in the country and am currently the South Africa GLAAS focal point.

Michie, Susan

**Institutional affiliation(s) [current and in the prior four years]:** University College London

**Academic degrees:** Doctorate, Doctor of Philosophy; Master of Philosophy; Bachelor of Arts

**City and country of primary residence:** London, United Kingdom

**Biography**

Susan is Professor of Health Psychology and Director of the Centre for Behaviour Change at University College London ([www.ucl.ac.uk/behaviour-change](http://www.ucl.ac.uk/behaviour-change)).

Professor Michie’s research focuses on human behaviour change in relation to health and the environment: how to understand it theoretically and apply theory and evidence to intervention and policy development, evaluation and implementation.

She is an investigator on >15 research projects, including three addressing behaviour and the Covid-19 pandemic. She has published >500 journal articles and several books, including the Behaviour Change Wheel: A Guide to Designing Interventions.

She serves as an expert advisor on the UK’s Scientific Pandemic Insights Group on Behavioural Science (Covid-19), the Lancet’s Covid-19 Commission and a member of the UK’s Independent SAGE. She serves on WHO’s Behavioural Insights and Sciences Technical Advisory Group, is Chair of the UK Food Standard Agency’s Advisory Committee for Social Sciences, is part of NIHR’s Behavioural
Ogden, Stephanie

Institutional affiliation(s) [current and in the prior four years]: Care International

Academic degrees: Master of Public Policy (MPP) in International Environmental Policy, Focus on Water Conflict and Transformation; Bachelor of Arts in Humanities

City and country of primary residence: Leavenworth (Seattle), Washington, USA

Biography
Stephanie has worked in water, sanitation, hygiene and integrated water resources management for more than 18 years, since serving as a Peace Corps Volunteer in rural water and sanitation in El Salvador. As the Director of CARE’s Water Team, Stephanie leads CARE’s water and development work, which focuses on systems strengthening and institutional development to ensure sustainable and equitable water and sanitation services for all. She leads a global portfolio that encompasses programs in sustainable WASH services and sustained behavior change, water for multiple and productive uses, water security and resilience, and water in nexus and conflict settings. Stephanie has a master’s degree in International Environmental Policy, with a focus on Water Conflict Management and Transformation. She has lived and worked in Latin America, East Africa, and Central Asia. Prior to assuming the role of Water Team Director, Stephanie held roles, including: Senior Water Policy Advisor with CARE’s Water Team; Coordinator for WASH and Neglected Tropical Diseases at the Task Force for Global Health; and Research Fellow for WASH in Schools with Emory University and UNICEF.

Pickering, Amy J.

Institutional affiliation(s) [current and in the prior four years]: Assistant Professor, Civil and Environmental Engineering and Blum Center Distinguished Chair in Global Poverty and Practice, University of California, Berkeley

Academic degrees: BS Biological and Environmental Engineering, Cornell University; MS Environmental Engineering, UC Berkeley; PhD Environment and Resources, Stanford University

City and country of primary residence: Berkeley, California, United States

Biography
Amy J. Pickering, Ph.D. is an Assistant Professor jointly appointed in Civil and Environmental Engineering and the Blum Center for Developing Economies at the University of California, Berkeley. Dr. Pickering’s lab designs and evaluates novel water and sanitation technologies and interventions to improve well-being in low-income countries, with a focus on products that minimize the user burden for adoption. Her lab also leverages advanced tools in molecular microbiology to better understand how to interrupt environmental transmission pathways of enteric pathogens and drug resistant bacteria in resource constrained settings. Dr. Pickering has >15 years of experience working on hand hygiene in low-resource settings. She helped pioneer new methods to quantitatively assess fecal contamination and pathogens on hands, understand sources of hand contamination, and established hand contamination as an understudied and important transmission pathway for enteric pathogens. She has also led numerous field trials of hand hygiene interventions in community settings and schools. Recently she has led the development of a novel foaming soap dispenser, which drastically reduces the amount of soap needed to effectively wash hands in non-piped
water settings. Her research has informed US Centers for Disease Control technical guidance on the use of alcohol-based hand sanitizer in community settings and on low probability of fomite transmission of SARS-CoV-2.

Dr. Pickering received her B.S. from Cornell University, M.S. from the University of California, Berkeley, and Ph.D. from Stanford University. Previously she was the Tiampo Family Assistant Professor in the Civil and Environmental Engineering Department at Tufts University and core faculty in the Tufts Center for Integrated Management of Antibiotic Resistance (CIMAR). She has also held positions as a senior fellow and research engineer at Stanford University, an environmental engineer at the U.S. Environmental Protection Agency, and Fulbright Fellow in Malaysia.

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**Pittet, Didier**

**Institutional affiliation(s) [current and in the prior four years]:** Director, Infection Control Programme, University of Geneva Hospitals and Faculty of Medicine, University of Geneva, Switzerland; Professor of Medicine, Faculty of Medicine, University of Geneva, Switzerland, Director, Infection Control Programme and World Health Organization (WHO) Collaborating Centre on Patient Safety, University of Geneva Hospitals and Faculty of Medicine, University of Geneva, Switzerland

**Academic degrees:** MD, MS, CBE

**City and country of primary residence:** Geneva, Switzerland

**Biography**

Head of Infection Prevention and Control at HUG and Faculty of Medicine of Geneva, Director of the WHO Collaborating Centre (patient safety). Honorary Professor at Imperial College (London), Polytechnic University (Hong Kong) and 1st Medical School of the Fu (Shanghai), and Fellow of the Royal Medical Association (Ireland), honorary member of the Russian Academy of Sciences and the French Academy of Surgery, member of the editorial boards of numerous scientific journals, including *Lancet Infectious Diseases*, editorial consultant for *The Lancet*. National and international recognition, Society for Healthcare Epidemiology of America Lectureship (2008), European Society of Clinical Microbiology and Infectious Diseases Award for Excellence (2009), American Society for Microbiology (2016), Robert Koch Award (2017). Since 2005, he is collaborating with the WHO, responsible for the *Clean Care is Safer Care* program active in nearly 180 of the 194 member states of the United Nations. 2007, he was appointed Commander of the Order of the British Empire. In June 2020, he was appointed by the President of the French Republic to chair an independent mission set up to evaluate the management of the COVID-19 crisis and better address the risks posed by the pandemic.

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**Sax, Hugo**

**Institutional affiliation(s) [current and in the prior four years]:** Department of Infectious Diseases Bern University Hospital, University of Bern; Owner and CEO of sax.health.design AG; Department of Infectious Diseases and Hospital Epidemiology, University Hospital Zurich

**Academic degrees:** Medical Doctor

**City and country of primary residence:** Zurich, Switzerland

**Biography**

Prof Hugo Sax is a medical doctor, board certified in Internal Medicine and Infectious Diseases with over 20 years of experience in Infection Prevention and Control. He is currently a Senior Research
Fellow at Department of Infectious Diseases, Bern University Hospital and University of Bern, Bern, Switzerland, Chief Medical Boarder Officer at Zurich Airport, and founder and owner of sax.health.design Inc (www.saxhealthdesign.com). Until 2021, he was Head of Infection Prevention Program and ID Consultant at the University Hospital Zurich, Switzerland. He is a board member and ex-president of the Swiss National Center for Infection Prevention Swissnoso and a member of the First Challenge on Patient Safety at WHO. His research interests focus on human factors and systems thinking in healthcare – making use of epidemiology, qualitative research, and data science. The user centered ‘My five moments for hand hygiene’ concept he created has become a global standard. He published over 100 original papers on many aspects of infection prevention (https://orcid.org/0000-0002-1532-2198) and teaches infection prevention human factors to medical students and much enjoys flying vintage aerobatic aircraft as a private pilot.

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Biography

Sheillah is a Public health researcher based at the African Population and Health Research Center (APHRC) in Nairobi. Her research interests and skills are in Water, Sanitation and Hygiene (WASH), Behaviour change, and public/community health in developing countries. She has previously led and/or been involved in qualitative and quantitative research work in Africa on faecal waste management, indicators and management of shared sanitation facilities, and developing and implementing food hygiene interventions in low-income areas. At APHRC she leads WASH-related research on enteric disease transmission among children, and water and sanitation in low-income settlements. Specific to hygiene, her research work focuses on evaluation of hygiene interventions among disadvantaged groups, on testing the effectiveness of handwashing interventions in humanitarian settings in Kenya and Uganda; and in designing, implementing and evaluating community-based hand hygiene interventions in low income settlements. Through the Hygiene hub at LSHTM, she led the technical group tasked with developing a research agenda for hand hygiene in public spaces. Aside from research, she has been involved in lecturing and mentoring students at bachelors and postgraduate levels. Sheillah has a degree in Environmental studies, a Master’s degree in Public Health, and a PhD in Public and Development Management.