



COMMONWEALTH
SCHOLARSHIPS

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A resilient future

Building back stronger in a post-COVID-19 world

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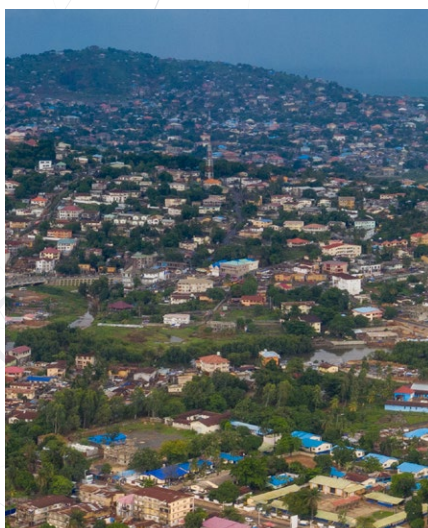
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The first word

What do we mean by the word ‘resilient’, and why have we decided that it should be the theme of this edition of *Common Knowledge*?

Resilience is often referred to as the ability to ‘bounce back’ or ‘recover quickly’. In international development this can be expanded to the ability to positively adapt and evolve our practices in the face of challenging adverse circumstances. Our Commonwealth Scholars frequently talk about how the experience of their Scholarships equips them for adaptability in changing times.

An obvious example of adaptation to changing circumstances, and the re-evaluation of priorities and goals, would be the ways in which our Scholars have tackled aspects of the COVID-19 pandemic and identified the impact of the crisis on development. The question becomes not just how we should bounce back but also what we should bounce back towards, as COVID-19 has directly and indirectly had an impact across the UN’s Sustainable Development Goals. As the All-Party Parliamentary Group on the Sustainable Development Goals’ September 2020 report warns, a wide range of ongoing commitments and other crises are at risk of being deprioritised due to the pandemic response, including those related to climate change, biodiversity loss, or conflict. As such, global targets may need reassessment in response to the ongoing challenges we will face in 2021.

Commonwealth Scholarships equip our Scholars to adapt to changing circumstances through the ability to be flexible, to be aware of specific vulnerabilities and to be innovative and creative in the face of threats to humanity. Scholars also have access to a wide network of alumni to bolster their own resilience and pool of ideas.

Our previous edition of *Common Knowledge* highlighted the need for inclusive communities, collaboration, and the value of influence on development impact. In this edition we commissioned articles which explore various development challenges which the COVID-19 pandemic has highlighted, exacerbated, and accelerated. You will read a host of articles from Commonwealth Scholars and Alumni demonstrating how they are helping to build resilient communities, nations, and ultimately global networks to tackle crises which have far-reaching ramifications.

In the article ‘Collaborative Power’, Dr Keneth Iceland Kasozi explains the work he has undertaken in Uganda against COVID-19, using multi-disciplinary and cross-sectoral ‘One Health’ approaches across organisations to implement solutions. Margaret Atimango describes her work with ‘Save the Children’ on community adaptation and resilience against climate change, alongside disaster risk reduction. Marlene Attzs, in her article ‘Supporting Small Island States’, shares the impact of COVID-19 on pre-existing vulnerabilities within these states, and the necessity of developing resilient strategies for future progress. And in Alpha Forna’s article, ‘From epidemics to a pandemic’, Alpha talks of how his work in geostatistical and machine learning approaches can be adapted for use in COVID-19 research, and how the memorandum of understanding between the organisation ‘Statistics Sierra Leone’ and Imperial College London is supporting the COVID-19 response in Sierra Leone.

The Commonwealth Scholarship Commission is proud that Commonwealth Scholars consistently demonstrate this exceptional commitment to risk identification, consultation, collaboration, innovation and change implementation – all vital skills to put into practice as we look ahead to reshaping a world which is better for all.

Professor Paul Jackson

CSC Commissioner

Common Knowledge

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Collaborative power



Dr Keneth Iceland Kasozi, joined by Professor Susan Christina Welburn, Chair of Medical and Veterinary Molecular Epidemiology at the University of Edinburgh, describe the impact of One Health approaches in finding solutions to disease outbreaks.



“Working with medical officers, community leaders, community development officers, and local leaders during RVF, Brucellosis, Marburg, rabies and most recently COVID-19 community campaigns has helped reduce duplication of limited resources and helped maximise utilisation of human resources in resource-limited settings.”



One Health (OH) is a collaborative, multisectoral, and transdisciplinary approach — working at the local, regional, national, and global levels — which aims to achieve optimal health outcomes. It recognises that people, animals, and the environment in which they exist are interconnected and that solutions to global challenges, including diseases and emerging pandemics, demand a holistic and interdisciplinary approach. Most infectious diseases are spread to humans from wild or domestic animals. As such, local, regional, national, and international collaborations across disciplines are needed to find solutions within our complex ecosystem.

The One Health Global Network promotes a collaborative multidisciplinary and cross-sectoral approach to address potential and existing risks that originate at the animal-human-environment interface and brings together a broad range of stakeholders to respond to and control local outbreaks, regional epidemics, and global pandemics.

The Manhattan Principles

In the 21st century, the emergence of several acute respiratory diseases, including SARS, MERS, influenzas, and most recently COVID-19, has shown the importance of global cooperation as defined by the 'Manhattan Principles', a product organised by the 'One World, One Health' event in 2008, which lists 12 recommendations to establish a more holistic approach to prevent epidemic disease and maintain ecosystem integrity for the benefit of humans, domesticated animals, and biodiversity. This product recognises the intimate link between human and animal health and the threat of disease to food security and economies. OH approaches are appealing to address these societal challenges. This includes mitigating risks to humans from pathogens (often viruses) that can make the species jump to humans by working with communities to preserve and protect wildlife, and mitigating risks arising from the misuse and overuse of antibiotics in humans and animals that has led to the emergence of antimicrobial resistance.

New emerging infectious diseases arising from animals are joining the growing list of tropical diseases, such as Ebola, malaria, Japanese encephalitis, and dengue fever, which kill millions of people each year. A combined effort from medical, public health, social, and basic and environmental scientists will lead to sustainable mitigation strategies. However,

support for the concept from human medical professionals continues to be poor, especially in low and middle income countries. Possible reasons for this include underfunding for public health initiatives to prevent disease outbreaks, differences in medical language between veterinarians and medical doctors, and a lack of visibility of OH approaches.

A major public health risk in Uganda

I undertake clinical veterinary practice in large and small animal medicine in Uganda and have experience of working on zoonosis including Brucellosis (caused by ingestion of unpasteurised milk or undercooked meat from infected animals), Rift Valley Fever (RVF), Marburg, and now COVID-19 with both local and international institutions.

Uganda has a 31.8% prevalence of Brucellosis, a bacterial infection that spreads from animals to people, with 55% prevalence in cattle herds and 43% in small ruminants (herbivorous animals with four-part stomachs). This poses a major public health risk, as many Ugandans rely on livestock for their livelihoods. The prevalence of RVF in animals and humans is between 12-13%, although a prevalence of 24% in Ugandan livestock shows that it continues to infect humans, with a case fatality of 44%. These diseases not only cause death and disrupt livelihoods in affected communities but can also disrupt livestock production with fatal consequences.

Supporting local communities

I have been involved in several community disease campaigns and interventions based on the OH concept in the Ibanda district in the western region of Uganda. This has entailed working in collaboration with colleagues from the Ministry of Health, Ministry of Agriculture Animal Industry and Fisheries,



and local government administrators to minimise community transmission of these infections.

A key responsibility of mine includes supporting local communities. This includes educating members on the threat of diseases and conducting community surveillance activities. I am involved in collecting animal samples for laboratory diagnosis of infections and prepare farmer feedback reports and monthly and quarterly reports to the Ministry to advise policy on animal health in the district. I am also responsible for making veterinary prescriptions, treatments, and spearheading disease control activities, including routine surveillance and periodic enforcement of quarantine measures to prevent the spread of diseases. Furthermore, I conduct community training to increase the farmers' knowledge on disease to improve community vigilance and compliance to help control and prevent spread of infections in the villages.

Experiencing OH through my work with the Ibanda district local government has informed me how effective and cost-effective multidisciplinary collaborations can be. Working with medical officers, community leaders, community development officers, and local leaders during RVF, Brucellosis, Marburg, rabies, and most recently COVID-19 community campaigns has helped reduce duplication of limited resources and helped maximise utilisation of human resources in resource-limited settings. Since gaining my MSc in International Animal Health, I have advanced my interests in OH research and participated in chemical hazard training, an opportunity which brought me in close collaboration with food scientists, toxicologists, pharmacists, social scientists, politicians, and environmental specialists. This has been of great importance due to the low availability of scientific studies on food safety from many African countries to date.

COVID-19 in Uganda

Currently, I am leading multidisciplinary collaborations and community surveillance activities on COVID-19 in Uganda. Together with partners under the Welburn research group at the College of Medicine and Veterinary Medicine (University of Edinburgh), and Professor Kevin Bardosh at the Center for One Health Research, School of Public Health (University of Washington), we are assessing the impacts of COVID-19 amongst livestock communities in eastern and western Uganda and the availability of household food for consumption. Community surveys on knowledge, attitudes, and practices amongst Ugandans have been conducted and we have assessed the role of academicians in the control of COVID-19. This approach has helped us work closely with professionals from a range of disciplines within the Ministry of Health in Uganda to generate basic information to guide policy. Currently, we are running a study to identify potential challenges associated with COVID-19 clinical trials amongst Ugandans following rising discord between policymakers and scientists.

Our multidisciplinary team has adapted to working remotely, communicating via online platforms due to social distancing restrictions, but ironically this has brought us closer together. My personal interests in OH and infectious disease have strengthened my desire to work with multidisciplinary teams, and I believe interdisciplinarity will continue to play a crucial role in the fight against the global pandemic. **CK**

Youth action

Margaret Atimango (2006 Distance Learning Scholar) and **Gilbert Atuhe** (a National Resilience Coordinator) discuss their work with *Save the Children* (a global children's charity which aims to help every child reach their full potential) and explain how they are supporting communities and youth at risk of climate-led disasters in southwestern Uganda.



Margaret Atimango

2006 Distance Learning Scholar from Uganda

MSc Development Management

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The impact of climate change has had an immediate effect on Ugandans, and this effect is anticipated to worsen in the future. The UN Food and Agriculture Organisation (FAO) has attributed the drop in Uganda's economic growth primarily to the variability of the weather and its impact on agriculture, a key sector in Uganda's economy.

Within rural communities, the devastating effects of climate change is ruining livelihoods, threatening food security, economic stability, and increasing poverty. In May 2020, floods washed away homes and property in the Kasese District in southwestern Uganda (located at the foothills of Mt Kilimanjaro). The main hospital was damaged, and the floods resulted in at least 8 reported deaths. An estimated 173,000 people were affected in total. Children have not escaped the impact of these natural disasters, with many suffering from a lack of food, adequate housing, and social instability.

Safeguarding development from disasters

As the Head of Child Protection and Child Rights Governance at Save the Children in Uganda, I worked with National Resilience Coordinators such as Gilbert Atuhe, community members, children and local leaders to help build community resilience against the shocks of natural disasters. It is important that children are included in this work as key members of their communities, and so Save the Children's climate change and disaster risk reduction (DRR) programmes include youth-centred approaches. The programmes are guided by Uganda's National Development Plan 2, and the Sendai Framework for DRR 2015-2030, which provides UN member states with targets and priorities for action to prevent new and reduce existing disaster risks.

The programmes have three youth-centred pathways through which we implement and mainstream climate change adaptation and disaster risk interventions. The pathways include comprehensive school safety, using the Safe Schools approach, child and community-centred disaster risk reduction initiatives, and life skills for youths and adolescents.

The Safe Schools approach

Many children are not safe in and around school. Children's

safety is threatened by violence, natural and everyday hazards, and conflict which affects their learning and wellbeing. The Safe Schools Common Approach (SSCA) draws from decades of experience, learning, and research from across the globe and is developed from evidence in and beyond Save the Children International (SCI). It brings together proven interventions, such as comprehensive school safety, that address challenges facing children in and around school. The SSCA is an all-inclusive, all-hazards approach which empowers boys and girls to stay safe.

The SSCA focuses on keeping children protected at, and when travelling to and from school, and improves their right to education and protection. It seeks to raise awareness amongst children of the immediate risks they may face, such as those related to child protection, as well as Disaster Risk Reduction (DRR) and climate change adaptation. Through extra-curricular activities, children are encouraged to participate in hazard, vulnerability, and capacity assessments to identify risks and mitigation measures for risks which may affect their learning and safety.

The inclusive risk analysis and planning enables children of all ages and abilities to inform teachers, parents, and caregivers of any risks they identify which have the potential to affect their personal safety, school environment and investments. Investments at risk from disasters include buildings, reading materials, and other important school activities such as gardening, which boosts child awareness of nutrition and food production.

In Kasese District, 30 DRR Clubs have been established. Each club comprises 20 members who are now trained on disaster preparedness, risk mitigation, and disaster management responses. Members have conducted community outreach activities, such as music, dance, and drama shows, to raise awareness of disaster risks and psychological first aid to better enable community members to support each other.

Through the outreach work of the clubs, children have been informed of the dangers of climate change. Children and



Kasese District, Uganda.
Before: The old wooden bridge became unsafe due to floods...

adults now understand the important role they can play in the protection and safety of their community by reporting concerns to community members.

Community members, with support from the local leadership, commit to their participation in the school safety calendar by getting involved in different child-led activities, such as levelling and clearing the school compound, contributing to mid-day meals and gardening for school feeding. Informed and empowered parents also play a significant role in detecting, prevention and reporting child rights violations to the existing authorities, such as the Child Protection Committee (CPC).

Saving lives

Child and community-centred disaster risk reduction initiatives have empowered communities and children to assess the risks, vulnerabilities, and capacities to adapt to and mitigate climate-related shocks. SCI has enabled children's clubs in 30 schools to participate in climate change mitigation through tree planting and sustainable riverbank management practices for flood mitigation. By collaborating with the District Disaster Management Committee (DDMC) and the Uganda Red Cross Society, Save the Children has trained school management committees and DRR clubs in early warning risk prevention messages and response drills on evacuation and first aid to save lives.

During the latest floods in May 2020, the Village Disaster Management Committees (VDMC) of Kasese District (having been trained in risk mitigation and the development of contingency plans and early warning signs) were able to save lives when the river banks burst. The VDMC, through the use of megaphones, community radios, and loudspeakers, sounded alarms late in the night that enabled people to rush to pre-identified safe zones and evacuation sites in schools and churches. VDMC located children who had been separated from their families and ensured they reached safety and were reunited with their families and relatives.

Boosting food productivity

In addition, through collaboration with district technical persons, climate-smart agricultural practices have been mainstreamed in school gardening activities and shared with



After: ...So community members worked together to build a new, improved bridge

caretakers and parents to improve food productivity at home. Parents now harvest greens and vegetables planted in their backyards, while schools boost school meals with vegetables from the school gardens. This not only provides additional nutritional supplements, but also equips schoolchildren with agricultural skills for the future, with the awareness that the agriculture sector involves around 90% of Uganda's workforce.

Through DRR interventions, young people aged between 10 and 24 years have been trained in life skills, including social, communication, and vocational skills, to enable vulnerable youth to cope with the shocks that come with the effects of climate change, such as reduced food intake, domestic violence, psychological trauma, and physical injuries. Life skills training has provided foundational competencies to identify, plan, and kick-start alternative livelihood sources which are critical for building resilience to climate related shocks at the household level. In Kasese, groups of over 100 young people have been supported to grow crops such as watermelon and passionfruit, which they are able to sell to complement household income.

Empowering communities

If sustainable measures are not put in place to mitigate some of the drivers of climate change, then the future remains worrying. Drastic climate change will have a grave impact on lives, ranging from the displacement of people, the destruction of property and infrastructure, the separation of children from parents, and the washing away of farming land.

The plan for Save the Children's resilience and DRR interventions is to empower communities to practice climate-smart agriculture and improve farming methods, to strengthen the capacity of VDMCs to better coordinate with government disaster management plans, and also advocate to government to resource these small, but powerful units at the grassroots level, given the real-time role they place in monitoring and alerting communities when disasters strike.

Lastly, we seek to continue to empower children and provide platforms for them to raise issues, discuss the impact of climate change on their lives, and equip them with the most relevant skills to be able to respond in simple but significant ways. **CK**

At the time of printing, Margaret and Gilbert have both taken up new posts with Save the Children. Margaret is now a Child Protection in Emergencies Specialist based in Mozambique and Gilbert coordinates the U-learn Project.

Supporting small island states

Marlene Attzs is a Lecturer in Economics at the University of the West Indies, Trinidad and Tobago. Her research has a primary focus on sustainable economic development issues confronting Caribbean Island States. She is also a Civil Society Advisory Governor (CSAG) to the Commonwealth Foundation, the Commonwealth agency for civil society.

In this article, Marlene shares the challenges faced by small island developing states (SIDS), the impact of COVID-19 on pre-existing vulnerabilities, and the necessity of developing resilient strategies for future progress.



SIDS were first recognised as a distinct group of countries in 1992 by the United Nations Conference on Environment and Development (UNCED). SIDS are located all over the globe, including in the Caribbean. Despite the geographic spread of these islands, they share several commonalities and challenges.

Some of these commonalities include small but growing populations, limited resources (particularly financial), geographical remoteness, and vulnerability to natural disasters and other exogenous shocks.

For the most part, SIDS are open economies which depend heavily on trade, and are often characterised as having fragile ecosystems. This combination means that sustainable development for SIDS is a multidimensional challenge, requiring multidimensional and intersecting solutions. Building resilience is a priority for these islands as they seek

to navigate their inherent characteristics while simultaneously addressing development goals.

The reality of this group of islands' vulnerabilities has become even more apparent with the development challenges presented by COVID-19.

Supporting health sectors

As high-income countries unleashed massive financial resources in 2020 to deal with spiraling rates of COVID-19 infections and deaths, Caribbean island states struggled to raise additional financial resources to support their health sectors. Many island states simply did not have the fiscal space to reallocate budget to healthcare and for many Caribbean countries, COVID-19 has become both a social and economic burden.

Marlene Attzs

1999 Split-site Scholar from Trinidad and Tobago

PhD Environmental Economics

University College London and the University of the West Indies, St Augustine Campus



Many governments have had to incur additional debt from borrowing to fund health responses; provide additional safety nets to support vulnerable members of society; close borders, which has crippled the tourism sector; and manage the threat of food insecurity as global supply chains have been disrupted owing to worldwide border closures (food imports account for 60% of the food consumed in the Caribbean).

In addition to the direct health and economic impacts identified there also indirect consequences due to COVID-19 that potentially compromise efforts for sustainable development in Caribbean SIDS.

Widening inequalities

The need to halt economic activity across several sectors to control this pandemic has highlighted inequalities and inequities in most island states, with many households unable to manage the impact of unemployment on livelihoods. It has unearthed and exacerbated pre-existing inequalities and inequities in educational access which must be addressed as part of any development strategy moving forward. The abrupt closure of all schools from March has had a significant impact on learners, as well as uncertainty about what teaching and learning might look like in a COVID-19 restricted society, particularly in countries with limited financial resources to invest in the technology required for online learning.

Data from the Caribbean Development Bank (CDB) and from the Food and Agricultural Organization (FAO) suggest that the poverty challenge predated the current global crisis and may have put a significant number of vulnerable persons at even greater risk from COVID-19. The FAO has estimated that 30% of the region's population is absolutely poor, with six Caribbean islands having poverty rates between 20-29% of the population, and another six with poverty rates in excess of 30%.

The poverty challenge is compounded by chronic unemployment in many Caribbean countries, including specific cases of rising youth unemployment. On the issue of gender equality, the International Labour Organization (ILO) suggests that while girls and women generally outperform boys and men in education, this performance does not translate into the world of work in terms of overall labour force participation, employment, seniority, and ownership of businesses.

Compared with other regions, a high proportion of Caribbean households are headed by women and as such tend to be poorer and have greater numbers of dependents, increasing financial strain and insecurity.

Protocols for managing the spread of the virus, such as frequent hand washing, rely on the assumption that households have access to adequate water supplies. Social distancing measures are also having a negative impact on mental health, particularly amongst vulnerable groups, including children, the elderly, and those who live alone, as individuals are cut off from social contact. This has raised concern around the potential increase in mental health issues - from substance abuse as a coping mechanism, to increased levels of anxiety, depression, and self-harm, and ways to support those affected during and post-pandemic.

The way forward

Beyond the obvious global concerns of a reliable COVID-19 vaccine, widespread and low-cost access to this, and a return to sustainable levels of economic growth, the way forward in a post-COVID world, certainly for Caribbean island states, is likely to be fraught with new challenges, some of which will be layered on top the pre-existing conditions.

The Sustainable Development Goals provide a way to build resilience among these island states and therefore attention should be paid to providing greater support to SIDS in a post-COVID economic world order. Focusing on building economic resilience alone by addressing issues such as appropriate fiscal and monetary policies, however, is unlikely to help regain momentum towards achieving the development goals and objectives. While improvements in the economic trajectory will assist with other social dimensions such as poverty, deliberate attention must be paid to the plight of the most vulnerable members of society, through education and human capital development. A reduction in pre-existing and new vulnerabilities and closing of gender gaps are also vital.

In the same way in which COVID-19 continues to be a global challenge, achieving sustainable development requires resilience building across all nations, particularly for Caribbean SIDS – future generations are counting on it.

CK

Practising care-giving through keyboards

Nanthini Arumugam, a Professor in the Department of Community Health Administration at the National Institute of Health and Family Welfare (NIHFW), shares the challenges faced by nurses in India during COVID-19, and the efforts of teaching institutes in providing critical and responsive training to support healthcare professionals on the frontline, and to those currently studying.

To mark the 200th birthday of Florence Nightingale, the World Health Organization (WHO) designated the year 2020 as the Year of the Nurse and Midwife. Nurses and midwives play a critical role in providing health services, by dedicating their lives to caring for mothers and children, giving lifesaving immunisations and health advice, looking after older people, and generally meeting everyday essential health needs. They are often the first and only point of care in their communities.

Since mid-March 2020 we have witnessed surreal images of a world that appears to have come to a standstill in response to COVID-19. The number of COVID-19 cases in India rose from a single case which was detected in Kerala in January 2020 to over 84,62,080 by the first week of November 2020. In India, as in many other countries, lockdown was enforced to minimise transmission of the virus but nurses continued to report to work every day to care for the sick, while risking their own lives. COVID-19 has mandated the need for every nation to invest in nurses and midwives as part of their commitment to achieve Universal Health Coverage. At the time of writing, nurses continue to work on the frontline of this pandemic.

The demand on healthcare

As Professor in the Department of Community Health Administration at the National Institute of Health and Family Welfare (NIHFW), the apex technical institute of public health in India, I am involved in the teaching and training of health professionals, including doctors and nurses, as well as conducting research in public health and specialised projects, including Reproductive and Child Health (RCH) and skills-lab training for health professionals in Reproductive, Maternal, Newborn and Child and Adolescent Health (RMNCH+A).

In India, nurses constitute two-thirds of the health workforce and 90% are female. Through various movements and technological developments, nursing today has witnessed several changes and the role and responsibilities have expanded. In 2018, the Government of India introduced the Ayushman Bharat Mission, a scheme to provide free access to healthcare for 40% of the population as part of the National Health Policy. Following this, the demand on healthcare

services and for healthcare workers with appropriate skills has increased.

Challenges on several fronts

The education gained pre-service often does not equip nursing students with the requisite practical knowledge and skills to meet health needs. To fulfil multiple roles and responsibilities, efforts have been taken by the Government and regulatory body to strengthen nursing education and services. As a core group member constituted by the Ministry of Health & Family Welfare, I was given the opportunity to contribute to the advancement of nursing education in India. This has included curriculum development of induction and promotional training for nurses, preparation of Operational Guidelines for Strengthening Pre-Service Education in Nursing and Midwifery, guidelines for the implementation of Skills-Lab Training, the development of a curriculum for nurse practitioners in midwifery, and a training module for mid-level health care providers in community health nursing.

Despite these advancements, the current pandemic has made it necessary for teachers and trainers of public health professionals like myself to move onto online platforms to deliver urgent teaching and training on various aspects of COVID-19, and to equip workers with the skills and practical knowledge needed to deliver healthcare during this time. Though they have been taught about the prevention and control of infection and infectious diseases in their regular practice, due to the scale of the epidemic, speed of its spread, and lack of pre-existing scientific data, nurses are facing several challenges in efficient management of patients with COVID-19 and protecting themselves from infection.

Though we are in the early phase of using online technology in medical and nursing education, there is a progressive acceptance by both teachers and students that this will continue to be the way forward in teaching delivery.

Nanthini Arumugam

2009 Professional Fellow from India

Public Health

NHS Manchester



Challenges have included a lack of resources and personal protective equipment (PPE), with many working in non-critical care units relying on homemade or bought face protection, and others re-using one-use masks due to shortages; the exposure risks involved in putting on and taking off PPE; and with the rise in the number of cases, increasing demand for nurses to work longer hours, resulting in the limitations on exposure time to infected patients becoming redundant. In addition, the lack of scientific data on COVID-19 transmission and its symptoms has meant patients receiving treatment for unrelated reasons are later being diagnosed with COVID-19, with nurses and fellow patients having unknowingly been exposed.

Moving online

In response to the pandemic, new training has been developed by the Department of Personnel and Training (DOPT), involving information on how the virus is transmitted, how to manage patients with COVID-19, and how nurses should protect themselves, including how to put on and take off PPE safely. We have also been involved in coordinating and monitoring training activities related to COVID-19 management across states with the help of the State Institute of Health and Family Welfare (SIHFW).

For current students, all teaching has moved online to enable them to continue their studies, however this poses a new challenge for medical and nursing students. Due to COVID-19 restrictions, students are facing a lack of experience in clinical and field exposure, which ranges from time usually spent in Outpatient Departments and ward posting, to peripheral health facilities where they interact with patients and teachers to present cases and enhance their communication and clinical skills.

To manage this gap, we have used simple virtual reality and computer simulations, websites, and blogs to host videos demonstrating essential skills, such as procedural clinical and communication skills. While these changes are enabling teaching to go ahead, we still face challenges in fully implementing online teaching and training, which include economic constraints, lack of infrastructure and resources, and

a lack of knowledge in the use of online platforms amongst teaching staff and students.

In order to adapt to the latest technology and integrate it into teaching practice, we are organising faculty development workshops. Though we are in the early phase of using online technology in medical and nursing education, there is a progressive acceptance by both teachers and students that this will continue to be the way forward in teaching delivery. Training institutes are therefore committed to the use of technology in the enhancement of teaching and learning.

Beyond the virtual realm

States have also taken action to increase accessibility to protective equipment for healthcare workers and this in part has been achieved by use of technology. All nurses now at risk of exposure or in direct contact with infected patients have been provided with respirators to carry out their duties, and in some cases, solutions have been introduced for nurses to use respirators beyond the recommended shelf life. To help prevent the spread of infections, hospitals have introduced surveillance systems and a mobile app for the safe wearing and removal of PPE, with a camera and audio system giving instructions on safety aspects. Nurses have also now been provided access to infection prevention measures. Financial incentives, such as insurance, could help mobilise nurses to serve in priority areas and is a very judicious step towards financial protection for health workers across India.

In any public health emergency, the organisation of standardised, short, and regular training is essential to promote better patient care and support health care workers, in addition to adequate and requisite medical supplies, financial and social protection, and psychological support. Protecting healthcare professionals fighting on the forefront of COVID-19 and preparing future healthcare professionals is a national and global priority. In India, the NIHFW will continue to deliver training courses and research activities to address a wide range of public health issues and equip healthcare professionals to face all future challenges.

CK

Uncovering plastic pollution



Teale Phelps Bondaroff

2009 Scholar from Canada

PhD Sea Shepherd Conservation Society

University of Cambridge

*Through the work of his organisation, OceansAsia, **Teale Phelps Bondaroff** shares findings on the impact of COVID-19 on marine plastic pollution, particularly the effect which disposable masks have had on this issue.*

In a recently released report, authored by Teale, OceansAsia estimated that over 1.56 billion face masks will likely enter our oceans in 2020, amounting to between 4,690 and 6,240 tonnes of plastic pollution.

The scale of plastic production globally is more than 359 million tonnes. Eight million metric tonnes are estimated to enter our oceans annually, equivalent to approximately eight million pieces of plastic a day. Marine plastic pollution kills approximately 100,000 marine mammals and sea turtles every year, and millions of sea birds. There are currently no confirmed estimates on the impact of plastics on other marine vertebrates and invertebrates.

During the COVID-19 pandemic, facemasks have become integral to the global response to limit the spread of the infection and help save lives. An estimated 52 billion masks were produced in 2020, triggering warnings from conservationists that single-use disposable masks, containing polypropylene, will contribute to a significant increase in plastic pollution. It is also estimated that masks will take 450 years to break down, releasing micro-particles of plastic into the environment in the meantime. The impact of this increased plastic pollution on marine life is already apparent, and severe.

Unmasking the problem

Founded in 2019 by Teale and Gary Stokes, former Asia Director for the Sea Shepherd Conservation Society, OceansAsia brings an intelligence-based conservation approach to fighting illegal fishing and exposing marine

conservation issues, including plastic pollution. During a visit to Hong Kong in April 2019, Teale and his team visited the remote, boat-in only Soko Islands, located south of Lantau, which they used as a test site to monitor plastic pollution and conduct research projects. They discovered plastic over five feet (1.5m) deep which was washed up on the beaches, and ranged from household items, such as toothbrushes, to a television and a fridge, bringing into stark relief the level of plastic pollution in the region. Due to the remote nature of the islands, the vast majority of the rubbish washed up is from rivers and the local fishing industry, rather than inhabitants and tourists.

OceansAsia teams regularly visit this test beach, and on a visit in late February 2020, they found 70 masks spread along 100 metres of beach. Whilst this is a small number compared to the estimated number of masks being worn and disposed of globally, this finding highlights a new addition to marine plastic pollution, and one that is travelling to isolated parts of the world. More masks are being discovered upon each return visit. For example, in November 2020, two OceansAsia team members collected 54 masks from the same beach in an hour.

The increase of masks appearing on beaches and streets can be linked to a country's stage of COVID-19. For example, masks tend to appear as lockdowns ease and people resume work and other everyday activities. It can only be expected



Photo: OceansAsia.org

that the number of masks entering our oceans will increase in the near future.

The appearance of masks in our oceans can be attributed to a number of reasons, such as poor waste disposal practices amongst people and weaknesses in waste management systems. The lightweight nature of the masks also makes them susceptible to being blown away from landfill sites.

A threat brought to light

The issue of marine plastic pollution is not a new one, however Teale feels that the prevalence of mask wearing globally as a result of COVID-19 has helped highlight the threat of plastic pollution more generally and will help change attitudes towards single-use plastics. Photographs taken on the Soko Islands and shared on OceansAsia's website and social media pages have led to over 2,500 news stories, in 70 languages, on the impact of COVID-19 and marine plastics pollution. For a small organisation, this is an important breakthrough in raising awareness of an issue that is often hidden.

In a recently released report, authored by Teale, OceansAsia estimated that over 1.56 billion face masks will likely enter our oceans in 2020, amounting to between 4,690 and 6,240 tonnes of plastic pollution.

For most people, marine pollution may equate to what they see washed up on beaches, but the impact of micro-plastics ingested by marine creatures, or ghost nets (lost or abandoned fishing nets which end up almost invisible in the water) trapping fish and marine creatures on the ocean floor, goes unseen and often ignored.

The need for consistent action

The sudden increase in disposable masks and other single-use plastics during the pandemic has been accompanied by pauses in single-use plastic bags and laws aiming to reduce plastic consumption, further threatening to roll-back steps made pre-COVID to tackle plastic pollution and change public attitudes.

Research suggests that inaction will result in a dramatic increase in the amount of plastic entering the ocean, and that even with different conservation efforts, plastic pollution will increase over the next few years. For Teale, taking action now to raise awareness of plastic pollution and the impact of COVID-19 is critical to motivate people to reduce the use of single-use plastic and plastic consumption more generally, by seeking alternative options. **CK**

New research, new knowledge

The winner of the 2020 Taylor & Francis Commonwealth Scholar Best Journal Article Prize and three fellow finalists summarise their pioneering research

Dr Dorcas Obiri-Yeboah - winner for her article 'Epidemiology of cervical human papillomavirus (HPV) infection and squamous intraepithelial lesions (SIL) among a cohort of HIV-infected and uninfected Ghanaian women', published in BMC Cancer, a peer-reviewed open access medical journal that publishes original research on cancer and oncology.



Dr Dorcas Obiri-Yeboah

2013 Split-site Scholar

Ghana

PhD Clinical Microbiology

London School of Hygiene and Tropical Medicine and Kwame Nkrumah University of Science and Technology, Kumasi



In Ghana and most parts of sub-Saharan Africa, cervical cancer is the second biggest contributor to cancer-related mortality among women. Despite this, there has been no national cervical policy to guide health care workers and other relevant stakeholders concerning the prevention, diagnosis, and management of cervical cancer in the country. The situation is worse when it comes to specific sub-populations, including women living with HIV. While the National AIDS/STIs Control Program (NACP) has focused on HIV and other co-infections, such as tuberculosis, limited research has been conducted into Human Papillomavirus (HPV) related conditions, including cervical cancer.

My research compares the epidemiology of HPV infection and cervical lesions among HIV infected and uninfected women and sought to contribute evidence on this issue, as part of my Split-site PhD study under the supervision of Professors Philippe Mayaud (London School of Hygiene and Tropical Medicine [LSHTM]) and Yaw Adu-Sarkodie (Kwame Nkrumah University of Science and Technology, Kumasi, Ghana).

My research findings concluded that HIV-1 infected women bear a significant burden of HPV infection and related cervical disease. It also highlighted the potential contribution of other high-risk HPV genotypes to the development of cervical

lesions among HIV infected women. As a result of my research, I recommended that prevention and screening programmes should be developed for this specific sub-population including in Ghana.

The findings were disseminated in Ghana at a conference of the Ghana College of Physicians and Surgeons, the School of Medical Sciences, University of Cape Coast, and a research conference at the Cape Coast Teaching Hospital (CCTH). As a result, my work has contributed to the development of a cervical cancer screening system at the CCTH, making screening more accessible and affordable to women seeking care at the facility, including HIV positive clients at the ART clinic. Nationally, steps have been taken to develop a national policy document for cervical cancer prevention.

In January 2020, the Medical Women Association of Ghana conducted a campaign on cervical cancer prevention through awareness creation and access to screening. As a member of the association, I was able to engage in media campaigns to further disseminate this and other related research findings and contribute to the associated screening exercises across the country.

Through this research I have further established collaborations with a team of researchers in Burkina Faso. As part of this research group, I have continued to research and publish on HPV infection and the related conditions in West Africa thus, I have continued to advocate for stronger policies on HPV vaccination and screening. I am currently developing further collaborations which includes working with a team of researchers in southern Africa to receive funding in order to continue this research.

Dr Dileepa Senajith Ediriweera Patabandige - highly commended for his article, 'Reassessment of the prevalence of soil-transmitted helminth infections in Sri Lanka to enable a more focused control programme: a cross-sectional national school survey with spatial modelling', published in Lancet Global Health, a world leading medical journal for global health that aims to publish the best science to advance health in all regions of the world.

The WHO reports that 711 million people were treated in 2010 for at least one of four neglected tropical diseases: lymphatic filariasis, onchocerciasis, schistosomiasis, and soil-transmitted helminthiasis. Mass deworming programmes



**Dr Dileepa Senajith
Ediriweera Patabandige**

2017 Split-site Scholar

Sri Lanka

PhD Medical Informatics

Lancaster University and the
University of Kelaniya



directed against soil-transmitted helminths (STH) are among the largest public health programmes in low income and lower middle-income countries.

In Sri Lanka, deworming programmes for STH infections became an integral part of school health and antenatal care. In 2013, the Ministry of Health issued guidelines for deworming for a 5-year period. These guidelines categorised the nine provinces as high or moderate risk and recommended biannual deworming treatment in high-risk provinces and annual treatment in moderate-risk provinces.

We reassessed the national STH prevalence in 2017 and mapped the STH prevalence at the smallest healthcare administrative level. Our survey findings indicate that the national prevalence has continued to decline and a substantial number of MOH areas are at low risk of STH infections. In 2017, 3.8 million school children were targeted for deworming. According to our results, as per WHO guidelines, only 103,000 children in high-risk areas would require continued annual deworming; another 1.5 million in intermediate-risk areas would require deworming once every 2 years; and routine deworming might be stopped for 2.1 million living in low-risk areas. We recommended the discontinuation of routine deworming in low-risk areas, a continuation of annual deworming in high-risk areas, and deworming once every 2 years in intermediate-risk areas, for at least 4 years.

Based on our research findings, the Ministry of Health revised the national deworming guidelines, and the programme was scaled down from the province-based approach to a more focused district-based targeted deworming programme, with reduced unnecessary healthcare expenditure. This is the first time in history a country has scaled down a national deworming program and the WHO intends to use the experiences in Sri Lanka as a model for other countries.

I am looking forward to expanding this research to assess the impact of Global Climate Change on the prevalence of STH in Sri Lanka in 2025 and 2050. This will provide valuable information for healthcare decision-makers to project future requirements of deworming treatment in the country.

Dr MD Atiqur Rahman - highly commended for his article, 'Inhibition of ErbB kinase signalling promotes resolution of neutrophilic inflammation', published in eLife, a not-for-profit peer-reviewed open access scientific journal for the biomedical and life sciences.



Dr MD Atiqur Rahman

2013 Scholar

Bangladesh

PhD Inflammation and
Immunity

University of Sheffield



Neutrophils are considered the first line of immune cells that migrate to the site of injury or infection to limit the infection or heal the injury. However, this immune cell can inappropriately be activated in a number of inflammatory conditions, including chronic obstructive pulmonary disease (COPD), and subsequently can cause detrimental tissue injury or even death.

COPD is considered the fourth leading cause of death worldwide and causes a huge economic burden for patient management. COPD is a highly prevalent and grossly underdiagnosed public health problem in Bangladesh. There is no effective therapy that can reverse neutrophil mediated lung damage observed in COPD.

Following mediating functions, tissue-migrating neutrophils eventually die by a programmed cell death process called apoptosis, which is required to minimise unwanted tissue injury. Studies suggest that neutrophil apoptosis is dysregulated in COPD, which may result in persistent neutrophil dominant inflammation in the lung and cause continued lung destruction and impairment.

A major barrier in designing anti-inflammatory therapies targeting neutrophil apoptosis is a lack of complete understanding in the molecular mechanisms regulating neutrophil apoptosis. Identifying novel and therapeutically targetable neutrophil apoptosis pathway(s) is an unmet need in the design effective therapies for treating chronic inflammatory conditions, such as COPD. Studies suggest that enhancing neutrophil apoptosis can have therapeutic benefits for treating inflammation.

In order to identify therapeutically targetable novel neutrophil apoptosis pathway, we screened a library of kinase inhibitor drugs based on the ability to accelerate neutrophil apoptosis in vitro and reduce neutrophil numbers in vivo in a zebrafish tail fin injury model. Erbb family kinases were found as potential regulators of neutrophil apoptosis as they were common targets of the inhibitor drugs. We showed that Erbb family kinase inhibitors effectively enhance neutrophil apoptosis and reduce neutrophilic inflammation in multiple in vivo models.

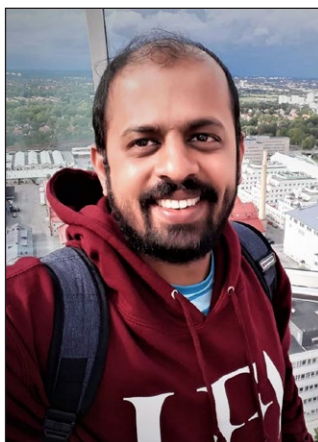
Repurposing drugs is currently an attractive approach to drug development since the safety of the drug has been already tested, minimising the time and costs incurred in drug development. Erbb-targeting drugs are safe and in clinical use for cancers and could therefore be repurposed to treat people with COPD and other chronic inflammatory conditions. Further

studies will establish whether this is possible, and our study may contribute to developing cures across a broad range of life threatening chronic inflammatory diseases, including COPD.

Experiences from this research might not only help in mitigating global problems but will also help in the expansion of research in respiratory disease in Bangladesh. This research was carried out at the University of Sheffield, in collaboration with scientists from Scotland, Netherlands, and USA, as well as scientists from GlaxoSmithKline and has helped develop long-standing collaboration to address problems in health and wellbeing globally.

Although future research is required for a sustainable solution, our research provides a potential strategy for treating neutrophil mediated inflammatory diseases that affect the quality of life in a significant proportion of the population worldwide as well as pose a huge economic burden to society. We plan to conduct further research to understand the effects of Erbb-signalling in lung inflammation, and the therapeutic potential of targeting the Erbb pathway in the resolution of a broad range of inflammatory diseases.

Dr Ramakrishnan Vasudeva - highly commended for his article 'Adaptive thermal plasticity enhances sperm and egg performance in a model insect', published in eLife, a not for profit peer-reviewed open access scientific journal for the biomedical and life sciences.



Dr Ramakrishnan Vasudeva

2017 Rutherford Fellow
India

Post-doctorate in Climate
Change, Adaptation and
Pest Management
University of East Anglia



Our planet is currently experiencing drastic changes to its biodiversity, especially in response to recent trends in temperature related climate change. Biodiversity, dubbed the planet's life-support system, has seen serious decline in numbers across both terrestrial and marine habitats, and there is growing evidence that reproduction is especially sensitive

to increasing temperatures. My work investigated this using a well-established laboratory model insect.

Most organisms cope with periodic or drastic changes caused by climate change by dispersing to less stressful environments. If dispersal is not possible, species can adapt via two well-known mechanisms: genetic inheritance and/or phenotypic plasticity. Genetic inheritance operates through Darwinian selection over a longer timescale, however plasticity operates within shorter durations, by better 'matching' fitness traits under prevailing conditions without the requirement for any genetic change.

To understand the scope of thermal adaptation within reproduction, we studied the capacity for plasticity within the gametes (both sperm and eggs) in the red flour beetle (*Tribolium castaneum*). Within our research group, we have studied replicate populations which have been constantly maintained under two distinct thermal regimes (30°C and 38°C) for over ten years (~100 generations of selection).

We found that increasing temperatures through adult development resulted in opposing responses among gametes; males experiencing warmer environments produced smaller sperm, while females produced larger eggs and vice versa. Next, we were able to show that gametes produced in warmer environments had greater reproductive performance under warm conditions and vice versa for gametes produced under cooler thermal regimes: "environmental matching" provided sperm and eggs with better performance, primed within a single generational shift in thermal environments.

Our findings provide evidence that thermal plasticity can enhance both male and female reproductive success, showing that there is potential for gametes to buffer against stressful temperatures and cope with increasing temperatures within a generation via plasticity. It has been suggested that thermal adaptations can exist within cells through the mitochondria, that generate most of the chemical energy needed to power the cell's biochemical reactions.

Collectively, these findings offer an exciting new avenue to understand and investigate how organisms are able to cope and successfully function under the growing threat of climate change. We believe that future research will focus on understanding how information from the environment is transmitted transgenerationally via both the sperm and egg epigenomes during gametogenesis and whether these trends hold true for many other economically important insects.

Evaluating the CSC Distance Learning Programme



Since 2002, the CSC has offered scholarships for Distance Learning to support postgraduate students who wish to access training not available in their home countries, but who also wish to remain in their home country while they study.

To date the CSC has funded 3,287 Distance Learning scholarships, working in close partnership with 42 Higher Education Institutions in the UK to provide Scholars the opportunity to study a broad range of subjects, including Public Health, Forestry, Human Rights, and International Development.

As we near the end of the second decade of the programme, the CSC Evaluation Team is currently undertaking an evaluation that is to be completed in the coming year. Already, we have consulted with the Alumni Advisory Panel, CSC Commissioners, and members of the Secretariat whose contributions have all helped to steer the project and its research questions. Additionally, thanks to the ongoing support and contributions of Distance Learning Scholars and Alumni, we already have a large existing data set collected through our Longitudinal and On-Award surveys that we have been able to explore in greater depth.

A unique feature of the programme is that CSC Distance Learners typically undertake their studies part-time over a 3-5 year period. This allows them to continue employment during their studies, which many choose to do. In fact, 82% of Scholars reported that they were in full-time employment during their studies, with another 14% indicating that they were working part-time, self-employed, or doing voluntary or unpaid work. The flexibility to study while continuing to work is an important feature of the programme for Scholars that was highlighted by the Alumni Advisory Panel.

The ability to continue working also means that Commonwealth Distance Learners are in a position to immediately apply what they are learning in their workplace, something that 96% of Scholars reported doing frequently. It also means that they can immediately share what they have learned with others in their workplace, which 91% of Scholars also said they did frequently. The impact of Scholars' award experiences on their workplaces is an area that we are keen to explore further, so we will be looking to speak with Distance Learning Scholars and Alumni about their experiences in this area in the new year.

Another area of interest to the CSC is the potential effects that clusters of Commonwealth Distance Learners can have within an institution, industry, or sector as a result of the programme, and how these compare to the individual effects that we know our Scholars and Alumni are having across the Commonwealth. We will be reaching out to Distance Learning Scholars and Alumni to gather your insights on these and other areas of interest in the new year, and to collect stories about the impact of your work that we can feature, so make sure your contact email is up to date, and we will be in touch soon!

Delivering healthcare in Cameroon

Acha Anwi Therese, a nursing volunteer from Cameroon, demonstrates how health education plays an important role in the prevention of diseases through her healthcare delivery work to vulnerable populations and to those displaced by conflict.

After graduating from a nursing school in Buea in 2017, a great part of my work was done in the suburbs, where I found there were significant limitations in social amenities, including inaccessibility to healthcare. There were times where we went for months without potable drinking water and were left with no other option but to use water from streams which were also used for waste disposal, thereby exposing the population to infectious diseases like cholera, typhoid fever, and skin infections.

In order to contribute substantially towards improving healthcare in such settings, nurses were expected to work hard and attend health-related training workshops and refresher courses. Also, I gained critical creative thinking and practical skills which enabled me to handle highly pressurised situations in a professional manner. With a great passion to help support patients and vulnerable members of society, the quest for knowledge motivated me to further my career in nursing.

Health education plays a key role in the prevention of both communicable and non-communicable diseases. As part of community health practice within an area of the Southwest region called Bota, I carried out health sensitisations within the communities specifically on water-borne diseases and diseases of high prevalence in Sub Saharan Africa such as malaria, HIV and TB. I also organised and participated in health seminars and in the regulation of nursing practice in Cameroon through my membership with the Cameroon Nurses Association, which is affiliated to the Commonwealth Nurses Federation. In this light, I offered voluntary services to train Higher National Diploma nursing students in the Medical and Biomedical field, both in theory and practical skills at a nursing institution in Douala. I educated second-year nursing students, evaluated and trained them on patient care and how to carry out evidence-based research within the specialised area of medical pathology. I equally ensured adherence to the standards and guidelines of the nursing practice.

Supporting communities

The connections and relationships I have built have spurred my professional and personal growth to date. During one of my internship programmes in an underprivileged community, I

created and coordinated a family planning club for women and young girls in remote areas who could not access healthcare. This club offered basic healthcare, antenatal care, and infant welfare clinic to improve maternal and child health. My team, comprising 50 committed members, met the main objectives, proving it a success. For me, working with young people has been the most challenging experience but it has strengthened me to incorporate and manage different temperaments. One such difficult experience was the HIV project which I coordinated in one of the most populated schools in the Littoral Region. This project aimed to inform adolescents on the transmission of HIV, provide free screening, and distribute contraception. This program was centered on preventing HIV infection through a complementary contribution of behavioral, biomedical, and structural strategies and met the needs of high-risk groups.

Humanitarian crisis

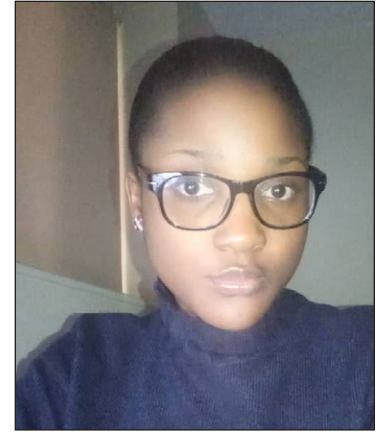
The ongoing Southern Cameroon conflict has led to a humanitarian crisis. Inhabitants from the English-speaking regions (Northwest and Southwest) have fled to neighboring towns for security purposes. So far, over 4,000 people, including members of the military, have died and several others have been seriously injured with no access medical care. The French-speaking regions are presently burdened by displaced people who are in urgent need of humanitarian assistance. Furthermore, the Boko Haram Terrorist Group conflict has expanded into the Far North region of Cameroon and resulted in the death of a significant number of citizens. This region also hosts thousands of refugees from Chad and the Niger. The conflicts have resulted in overcrowded refugee camps with unfavorable conditions resulting in frequent cholera outbreaks.

Acha Anwi Therese

2019 Scholar from Cameroon

MSc Humanitarian Health Programme
Management

Liverpool School of Tropical Medicine



I created and coordinated a family planning club for women and young girls in remote areas who could not access healthcare. This club offered basic healthcare, antenatal care, and infant welfare clinic to improve maternal and child health.



Acha Anwi Therese providing antenatal and health sensitisation to pregnant women in a hospital in Bota, Limbe

The ongoing Covid-19 pandemic and many other health challenges have further complicated healthcare delivery in Cameroon with a weak healthcare system and infrastructure. Humanitarian interventions are therefore much needed to mitigate and manage these challenges as well as assist the affected communities to recover from such crises. If these crises continue to affect Cameroon, there is a need to put an Emergency Response Plan in place as indicated in Sustainable Development Goal 3d.1 (international health regulation capacity and health emergency preparedness).

The next stage

Upon returning to my country, I plan to work with the Ministry of Public Health (MoH) to strengthen the Cameroon Emergency Response System to promote the stability of affected regions. I equally plan to work with aid agencies to manage the refugees in Northern Cameroon to provide humanitarian assistance to the victims of the ongoing Southern Cameroon conflict who are stranded. With humanitarian health training, received from the Liverpool School of Tropical Medicine, I aspire to become a health professional pioneer who has specific knowledge and skills in providing holistic humanitarian assistance which will enable me to mentor other healthcare workers. I intend to set up a team that will organise programmes to train support groups in the effective management of humanitarian emergencies in the Northern and the English-speaking regions of Cameroon. I equally intend to support the MoH to deliver essential health services, especially to the remote communities through health outreach campaigns. In the future, I hope to work with the government to influence policies which will create an environment for aid workers to operate and develop customised public health emergency response systems to improve the

government's preparedness in the event of crises and disasters in Cameroon and strengthen the Cameroon Emergency Response System. It is my vision to contribute to the training of professionals in the humanitarian health field, and carry out extensive research to evaluate evidence-based methods to improve public health interventions during cholera outbreaks in various localities and refugee camps in the Northern region of Cameroon.

CK

From epidemics to a pandemic

Alpha Forna explains how inclusive research is making a difference in dealing with epidemics and pandemics, focusing on the Ebola epidemic in West Africa and more recently COVID-19.

The West African Ebola epidemic in 2013-2016 caused severe socioeconomic problems throughout the region. Over 28,000 cases and 11,000 deaths were reported at the end of the epidemic. The epidemic was not limited to rural communities but had also reached dense urban settlements, where people move with relative ease.

The epidemic in Sierra Leone spread from border towns close to Guinea which reported the first cases, to dense urban areas including Freetown, the capital city. The government of Sierra Leone, with the support of its partners (including the UK government), mobilised both material and human resources to respond to the epidemic. These efforts, which showcased the bravery and sacrifices of health and social workers, helped turned the tide against the disease and cases eventually started to fall.

At the end of the epidemic, it was clear that what was needed to better manage future health emergencies, like Ebola and most recently COVID-19, was a proactive and sustainable approach that improves the current fragile health systems and one which provides training and expertise relevant to the specific country. Additionally, there was also the need to further understand the West African Ebola epidemic to inform future public health policies and practices. My training and research at Imperial College London was effective in this.

My skills, knowledge and experience

My training in infectious disease epidemiology has helped me develop my ability to manipulate health data using statistical software, and I have learnt how to formulate research questions and write epidemiological reports for policymakers and publications. These skills have prepared me to provide support for future public health responses in Sierra Leone and the wider African continent. For instance, I was part of the MRC Centre of Global Infectious Disease Analysis team that provided real-time technical support to both local and international (e.g. FCDO) partners during the 2016-2018 Ebola epidemic in the Democratic Republic of the Congo.

Even more recently, as part of the Imperial College London COVID-19 Response Team, I have offered my expertise to support the COVID-19 response in Sierra Leone. A memorandum of understanding between Statistics Sierra Leone (an organisation which aims to create a viable National Statistical System to support evidence-based decision-making processes at both policy and planning levels) and Imperial College London is now in place to take this work forward. The work will include (but will not be limited to) estimating hospital bed, ventilation and oxygen support capacity. We will quantify the impact of non-pharmaceutical interventions and communicate the uncertainties in those estimates. Moving forward, the work will not only support the COVID-19 response but also seek to build country-level capacity. I plan to strengthen these collaborations on my return to Sierra Leone.

Techniques, patterns and data

My research has been just as exciting and useful as my training. Using geostatistical and machine learning techniques (i.e. techniques that learn patterns in data through space and time), I collated and analysed the large-scale datasets of the 2013-2016 West African Ebola epidemic. With these large-scale datasets, I predicted survival outcomes for Ebola cases with missing outcomes, adjusted the predictions for imperfections in the machine learning models, and re-estimated more representative estimates of Ebola case fatality ratios. I also identified and explored the relevant clinical and demographic predictors of Ebola case fatality ratios. These relevant predictors included age, fever, country of origin, and case classification among others.

Further analysis of the data was based on investigating spatiotemporal heterogeneity in Ebola case fatality ratios. The overarching aim of this analysis was to understand

Alpha Forna

2016 Scholar from Sierra Leone

PhD in Public Health

Imperial College London



As part of the Imperial College London COVID-19 Response Team, I have offered my expertise to support the COVID-19 response in Sierra Leone.



subnational variation in Ebola case fatality ratios, incorporating spatially correlated patterns not captured by the machine learning models. These research findings could inform future health planning and impact assessment. The geostatistical and machine learning approaches can be adapted to other infectious diseases (e.g. Coronaviruses, Dengue, and Zika viruses) using epidemiological analyses based on datasets with missing data.

Adapting as a researcher

The challenges and opportunities arising from my training and research can be viewed within the context of the ongoing global COVID-19 pandemic. The global pandemic has limited the possibility for researchers and policymakers to meet in person to share ideas and discuss the practical implications of their research. Some funders in the UK are beginning to question their research frameworks and strategies, and

whether these adequately promote inclusion and diversity in the research community. Thankfully, platforms such as Zoom, Teams, and Skype are making this work easier as people now meet remotely even when they are geographically apart. Our ongoing collaboration with Statistics Sierra Leone is an example of such possibilities.

While my research gives more insight into the epidemiology of the West African Ebola epidemic, the COVID-19 pandemic, with its global geographical reach, is proving to be more challenging for the research community. Questions around COVID-19 still need to be answered, across academic disciplines, from its severity and transmissibility to the socioeconomic and governance issues affecting both country-level and global responses. I hope to continue to be part of the Sierra Leonean team contributing to answering these questions.

CK

Quarantining COVID-19



Miraj Kobad Chowdhury explains the air-liquid culture (ALI) techniques he is practising in order to investigate exactly how respiratory viruses, such as the one responsible for COVID-19, infect human lung cells and define specific cell sensitivities to the infection.

Miraj Kobad Chowdhury

2018 Scholar from Bangladesh

PhD in Molecular Biology

University of Sheffield

“Proposals to achieve a solution to the current situation include the development of either a potential vaccine that will boost immunity against SARS-CoV-2, or a potential drug to cure COVID-19.”

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is responsible for the ongoing coronavirus disease 2019 (COVID-19) pandemic. With the death of more than half a million people globally in addition to a catastrophe in the global economy, the pandemic has halted our usual day-to-day life, and threatened extended lockdowns and food scarcity. Nations are enacting urgent measures while hoping for a quick recovery, and this quick recovery is dependent upon finding a successful vaccine.

Proposals to achieve a solution to the current situation include the development of either a vaccine that will boost immunity against SARS-CoV-2, or a drug to cure COVID-19. These research approaches are ongoing and there is the prospect of a solution being supplied by the end of 2020, but both approaches are time-consuming.

Since SARS-CoV-2 attacks the respiratory epithelia (a thin, continuous layer of cells in the lungs) to cause severe breathing problems, molecular biologists have prioritised research into this part of the human body. It was soon discovered that the resource needed to develop a treatment to combat COVID-19 requires an ideal model to study the pathogenesis (the progression of processes of cellular lineage, maturation, and migration) of the virus and to perform initial trials of drugs.

Optimising a technique

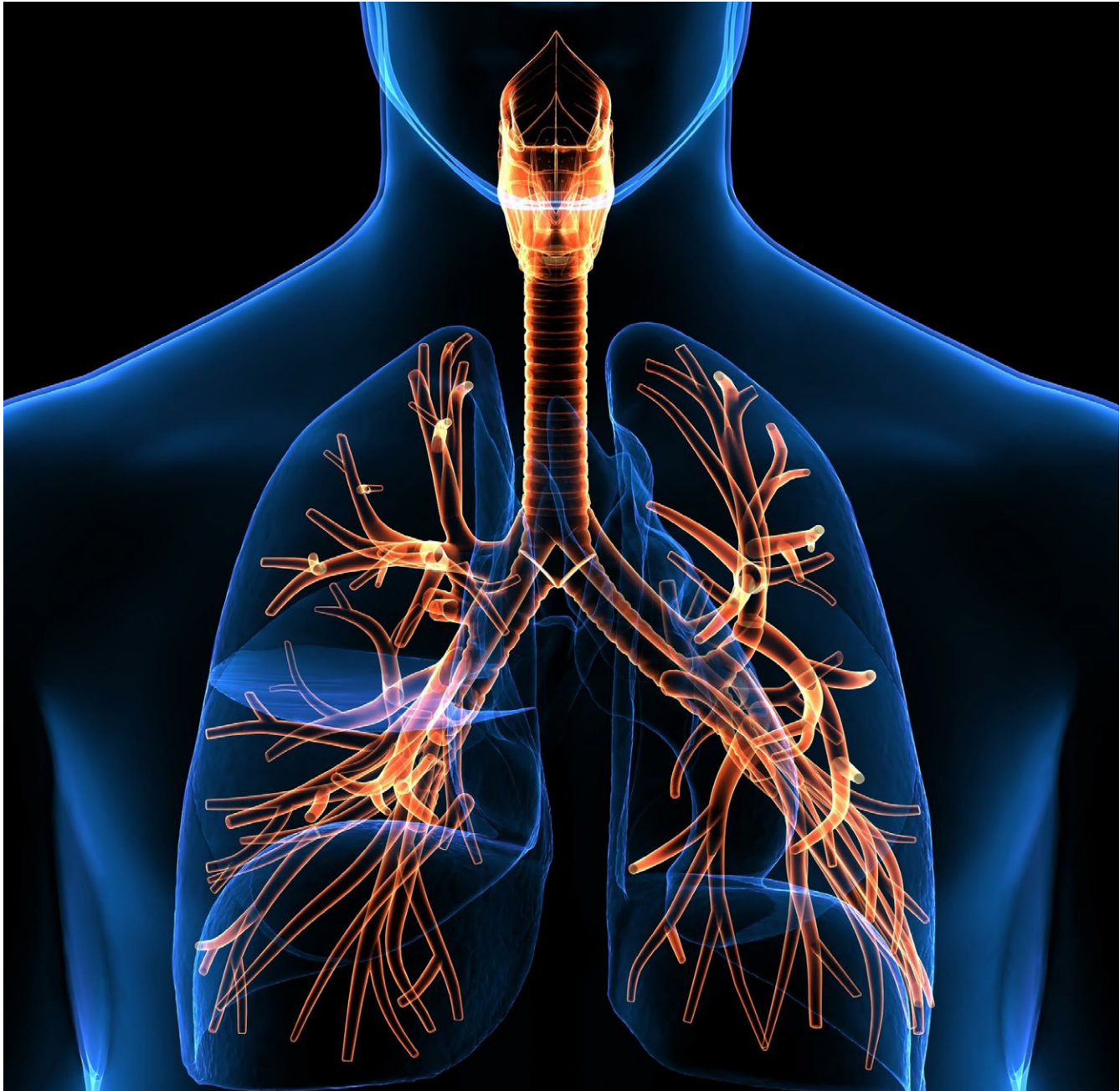
Professor Colin D Bingle, a Professor of Respiratory Cell and Molecular Biology in the Department of Infection, Immunity and Cardiovascular Disease at The University of Sheffield (and also my supervisor) has discovered several proteins associated with this epithelial development and defence. Under his supervision, my project is to further define the molecular development of this epithelia. I am currently

optimising a technique called the air-liquid interface (ALI) culture that can be utilised to develop an ideal model of the respiratory epithelia.

ALI culture is a method to grow cells of epithelial lining at a lower surface, where the cells are in contact with a complex liquid media at the bottom and the apical (top) surfaces are in contact with the air.

The respiratory epithelia developed through ALI culture represents the normal respiratory epithelia found throughout the respiratory tract, from the nasal cavity to the small alveolar sacs of lung where the gas exchange takes place. This is the region where SARS-CoV-2 and many other infectious viruses such as influenza, Middle East respiratory syndrome-related coronavirus (MERS-CoV), human rhinovirus, and human respiratory syncytial virus infect. We can therefore use this system to investigate the viral specificity and pathogenesis as well as to trial different drugs to find therapeutics for the treatment of COVID-19. Within Bingle's lab, we carry out ALI cultures of human and mouse respiratory, middle ear, and nasal cavity epithelia to understand their molecular cell biology.

For SARS-CoV-2, this system has been used to define exactly which cells in the respiratory system are infected by the virus, e.g. ACE2+TMPRSS2+ cells. Moreover, the



roles of different cytokines (a large group of proteins that are secreted by specific cells of immune system) in exerting the COVID-19 phenotype have been investigated. In addition to this, preliminary trials of some drugs have been carried out to combat COVID-19. In my experiments, I am using such system to investigate the formation of cilia, which are specialised organelles (subcellular structures which have one or more specific jobs to perform in the cell), and to which some viruses attach. My studies have helped to define the subset of cells which are sensitive to the viral infection, as well as addressing the alternative expressed genes during viral infection.

ALI culture approaches

Current approaches of ALI culture use primary cells isolated from mouse or human donors. However, these cells have a limited life span and cannot be grown for a long time. Hence, batch to batch variation is expected. To address

this challenge, the use of immortalised human bronchial epithelial cells to develop respiratory epithelia through ALI culture is under investigation. Immortalised human cells are a population of cells which would normally not proliferate indefinitely but, due to mutation, have evaded normal cellular senescence and instead can keep undergoing division.

One limitation of the ALI culture is it takes approximately 14 days to develop the epithelia from starting point and is costly. However, cost can be reduced with submerged culture (a method for growing pure cultures of aerobic bacteria in which microorganisms are incubated in a liquid medium subjected to continuous, vigorous agitation) if successful. As part of my PhD, I have started optimising submerged culture with immortalised human cells, with some promising outcomes so far. I am hopeful that this approach will ease the screening of millions of drugs to define potential treatments for COVID-19 and future respiratory coronaviruses. This will help not only Bangladesh, but the entire global community in its efforts to combat SARS-CoV-2.

CK

Alumni news

The updates below (listed by year of award) summarise just some of the achievements of our global alumni. To let us know about your successes, email alumni@cscuk.org.uk



Arthur Ekwue

1979

Arthur Ekwue has been appointed Royal Academy of Engineering Visiting Professor in Developing Problem-based Learning for Electrical and Power Systems at Brunel University London. (Scholar from Nigeria, PhD Electrical Engineering, Imperial College London)

Sankar Pal has been appointed to lead the task force group for 'Data analytics, modelling, tracking, monitoring, and controlling the spread of [the COVID-19] outbreak through AI and IOT-based solutions'. He has also been selected as National Science Chair by the Government of India. (Scholar from India, PhD Electrical Engineering, Imperial College London)

1982

Josef Amuzu has been appointed Emeritus Professor in the Department of Physics at the University of Ghana. He was Pro-Vice-Chancellor of the University for the period 1998-2002. (Academic Fellow from Ghana, Chemical Engineering, Imperial College London)

Roger Scott-Douglas has been announced as Acting President of National Research Council of Canada. He is the current Secretary to the COVID-19 Vaccine Task Force. (Scholar from Canada, MPhil Philosophy, University of St Andrews)

1985

Roshan Ramessur has been appointed Board Advisor to the Ocean Foundation (Washington, DC). He is currently Chair of the Steering Committee for Ocean Acidification- East Africa (OA- East Africa). (Scholar from Mauritius, BSc Marine Chemistry, Bangor University)

1986

Sandra Den Otter has been appointed Vice-Provost (International) of Queen's University. She has advanced equity, diversity, inclusion, and Indigeneity in research at Queen's, including the Canada Research Chair program. (Scholar from Canada, DPhil History, University of Oxford)

Frances Woolley has received the 2020 Canadian Economics Association (CEA) Distinguished Service Award for lasting contributions to the CEA and the community of academic economists in Canada. (Scholar from Canada, PhD Economics, London School of Economics and Political Science)

1987

Mark Green has been appointed Provost and Vice-Principal (Academic) of Queen's University. (Scholar from Canada, PhD Engineering, University of Cambridge)

1991

Nick Saul has been elected as the 15th Chancellor of Victoria University in the University of Toronto. He is an internationally renowned food and social justice activist and Officer of the Order of Canada. (Scholar from Canada, PhD Labour Studies, University of Warwick)

1993

Sudantha Liyanage has been appointed Vice-Chancellor of the University of Sri Jayewardenepura. He is also the first alumnus Vice-Chancellor appointed from the Faculty of Applied Sciences. (Scholar from Sri Lanka, PhD Chemistry, Cardiff University)

2000

Erica Moodie has received the Centre de Recherches Mathématiques and the Statistical Society of Canada Prize in Statistics 2020 in recognition of her outstanding research. (Scholar from Canada, MPhil Epidemiology, University of Cambridge)

2001

Mélanie Bourassa Forcier has been appointed a member of the Commission on Ethics in Science and Technology by the Council of Ministers of the Government of Quebec. She has also been appointed Deputy Commissioner of Ethics and Regulations for the Commissioner of Health and Welfare. (Scholar from Canada, MSc International Health Policy, London School of Economics and Political Science)

2006

Muhammad Imran Majid has been promoted to Senior Member at the Institute of Electrical and Electronics Engineers (IEEE) in honour of his significant contributions to his profession. (Scholar from Pakistan, PhD Electronic Engineering, University of Surrey; Academic Fellow, Electronic Engineering, University of Warwick)



Erica Moodie



Eris Schoburgh



Shahwar Kazmi

2010

Eris Schoburgh has been promoted to Professor of Public Policy and Management in the Department of Government at the University of the West Indies. Her research focuses on public policy analysis and management, subnational governance, and local economic development in both Caribbean and non-Caribbean contexts. (Academic Fellow from Jamaica, Local Governance Institutional Capacity, University of Manchester)

2013

Tarik Dixon has been presented an award for being an outstanding graduate of the Faculty of the Built Environment and the Urban and Regional Planning Division of the School of Building and Land Management at the University of Technology, Jamaica. Tarik was also awarded a Goodenough College Fellowship 2020. (Scholar from Jamaica, MSc Spatial Planning, University College London)

2013

Monidipa Mondal was nominated for a 2019 Nebula Award by the Science Fiction and Fantasy Writers of America (SFWA, Inc.) for her novelette, 'His Footsteps, Through Darkness and Light'. (Shared Scholar from India, MLitt Publishing Studies, University of Stirling)

2014

Adetunji Adekanmbi reached the final of the PhD Researcher of the Year award at the University of Reading for his work on the impact of climate change on soil respiration and resilience. (Scholar from Nigeria, MSc Soil Science, University of Aberdeen; 2017 Scholar, PhD Soil Science, University of Reading)

2015

Shahwar Kazmi was a finalist for the Social Impact Award in the British Council Study UK Alumni Awards 2020. He was nominated for his research and identification of a new treatment for KalaAzar-HIV co-infection, as well as starting India's first 50-bedded hospital for Stage-IV HIV, and setting-up two Medecins Sans Frontieres projects for Rohingya refugees in Bangladesh. (Shared Scholar from India, MPH Public Health, University of Sheffield)

2015

Simone Walker-McFarlane has been sworn in as Parish Court Judge in Jamaica. She was previously Assistant Attorney General in the Attorney General's Chambers. (Shared Scholar from Jamaica, LLM International Law and Sustainable Development, University of Strathclyde)

2016

Enowntai Nkongho Ayukotang has earned the distinction of Fellowship in the American Academy of Optometry. (Scholar from Cameroon, MSc Public Health for Eye Care, London School of Hygiene and Tropical Medicine)

2019

Monika Gupta received the Outstanding Educational Role Model award as part of the 'She Inspires' Awards 2020, in which inspirational women from all over the world are recognised for work in their respective fields. (Split-site Scholar from India, PhD South Asian Studies, SOAS University of London and Jawaharlal Nehru University)

Obituaries

1961

Sir Michael John Berridge was a physiologist and biochemist. His research on cell signalling and the landmark discovery of the role that calcium plays in controlling cellular activity led to insights into the physiology of various diseases. He received a knighthood in 1998 for his service to science. He was elected to the Royal Society in 1984 and to both the National Academy of Sciences and the American Academy of Arts and Sciences in 1999. Sir Michael passed away on 13 February 2020. (Scholar from Zimbabwe, PhD Entomology, University of Cambridge)

1961

David Robert Murray was an academic and historian. He served as Dean of the Faculty of Arts at the University of Guelph for 12 years and became University Professor Emeritus in 2007. (Scholar from Canada, MA History, University of Edinburgh)

1974

Jamilur Reza Choudhury was a civil engineer, researcher, and consultant. He received the Japan International Cooperation Agency Recognition Award in 2013 and Japan's highest civilian award, 'The Order of Rising Sun, Gold Rays with Neck Ribbon', in 2018, in recognition of his contributions to development. In 2017, he received Ekushey Padak, Bangladesh's second highest civilian award. Jamilur Reza passed away on 28 April 2020. (Academic Fellow from Bangladesh, Structural Analysis, University of Surrey)

1975

James Nwoye Adichie was the first in his country to become Professor of Statistics, at the University of Nigeria, Nsukka. Between 1980 and 1984, he was the Dean of the Faculty of Physical Sciences and the Deputy Vice Chancellor of the University of Nigeria. He was also the first editor of the Journal of Statistical Association of Nigeria. James passed away on 10 June 2020. (Academic Fellow from Nigeria, Statistics, University of Sheffield)

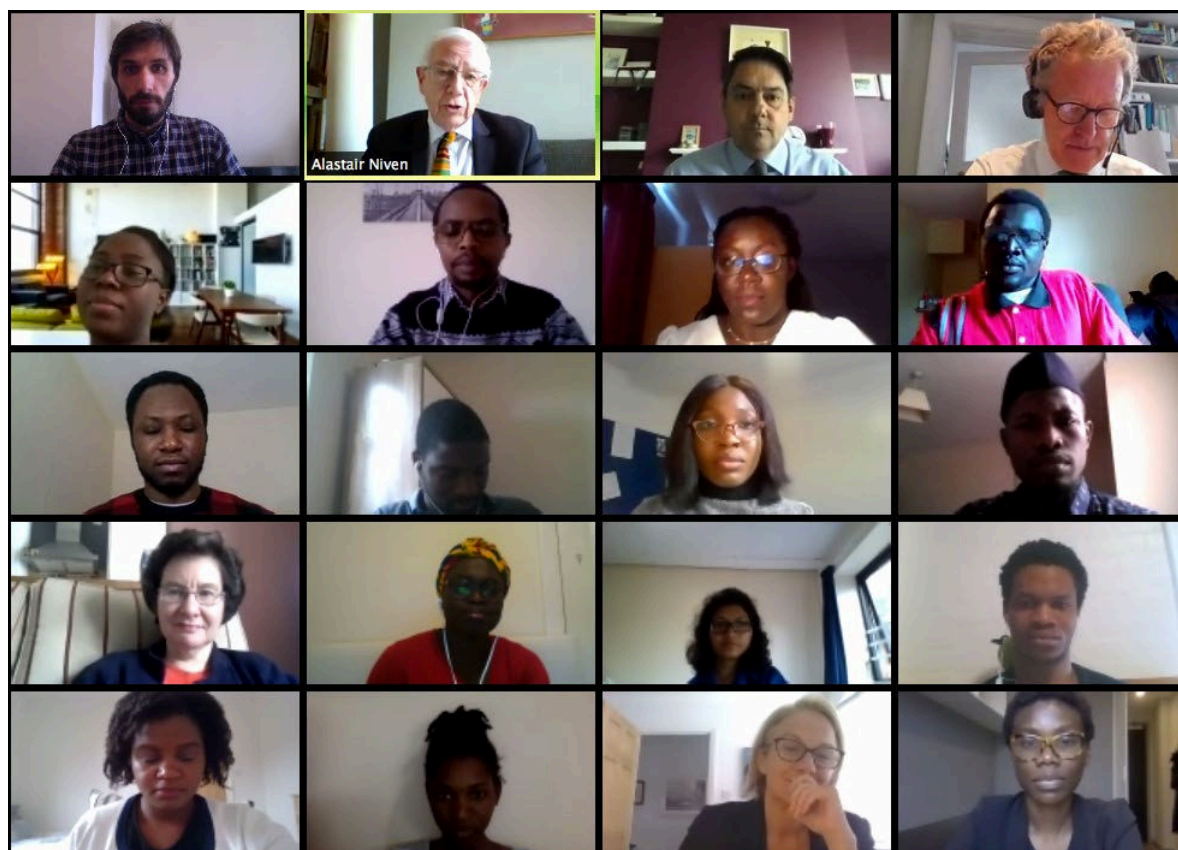
Scholar events

With the unfolding Covid-19 crisis in the UK, the CSC took the decision in mid-March 2020 to cancel all planned in-person events until further notice, to safeguard the health and wellbeing of our Scholars and staff involved in delivering these events, and to comply with Government guidance.

In response to this change we commenced our Virtual Engagement Programme of events, activities, and training to provide ways for Scholars and Fellows to continue networking and developing their professional skills in an online space.

Some of the highlights from the last academic year are presented here.

A



B



C



A, B – Parliamentary event for Commonwealth Scholars

A Parliamentary event for Commonwealth Scholars, which gave selected Scholars the opportunity to meet British Members of Parliament and Peers, was held via Zoom in July 2020

C, D - Farewell event

Our annual event for departing Commonwealth Scholars and Fellows, held via Zoom in September 2020

E – Social entrepreneurship: starting a social enterprise

Scholars learned about how they can launch their own social project or social enterprise from AccessEd in September 2020

F – Social Enterprises, Institutions and Impact Models

A workshop run by AccessEd (a non-profit organisation which works with researchers across the world), introducing Scholars to social impact concepts in July 2020

G – Developing great professional skills

A workshop run by AccessEd, where Scholars learned about key professional skills which are essential for the workplace in July 2020

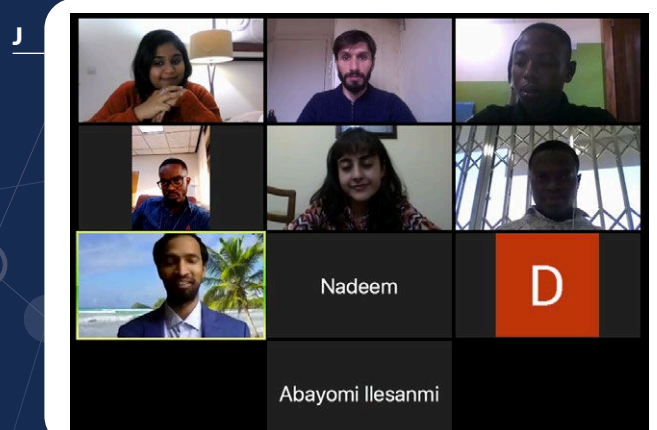
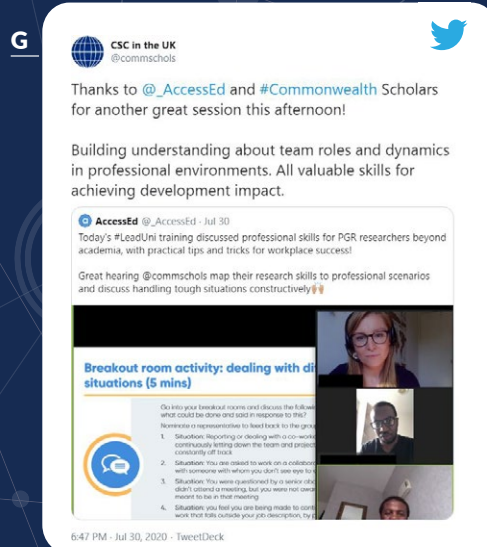
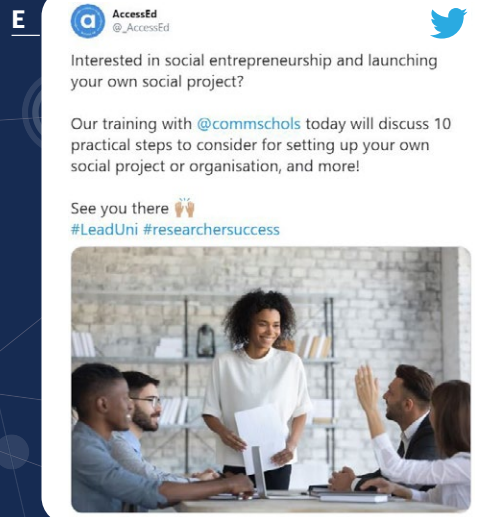
Throughout 2020 we have hosted a large number of virtual site visits and meet ups at institutions across the UK, inviting Scholars and Fellows to talk with CSC staff and Commissioners via Zoom about their research and experiences of studying. These site visits have offered Scholars and Fellows a chance to connect with their peers and raise questions with CSC staff in an informal setting.

H – Virtual meet up for Scholars in South East

Scholars participated in a series of quizzes to help them transition from their home country to the UK in October 2020

J – Virtual meet up for Scholars in North West

Scholars introduced themselves and discussed their research with their Programme Officers in October 2020



Alumni events

Ghana

An online workshop was held for alumni up to one-year post-Scholarship in June 2020, to share information on how to continue their professional development in the months immediately following their Scholarship. The workshop included information on the employment landscape in Ghana, securing relevant employment, and the important of soft skills. Alumni delivered short presentations on their experiences returning to the workplace, seeking new employment, and the importance of alumni as agents of change.

Kenya

The British High Commission in Kenya delivered a panel discussion on the topic, 'Leveraging inclusive distance learning in delivering education', in July 2020. The panel comprised Commonwealth and Chevening Alumni and addressed the importance of digital space in addressing the crisis.

Uganda

Alumni from the from Mbale, Fortportal and Gulu districts in Uganda delivered a panel discussion on 'Gender issues amidst COVID-19', in July 2020. The panel addressed the challenges of preventing and supporting victims of gender-based violence in Uganda as a result of COVID-19.

Pakistan

Alumni in Pakistan led a panel discussion on 'Gender issues in employment', in October 2020. The panel addressed common issues experienced in the workplace due to gender and other forms of discrimination.

West and Southern Africa

Alumni across the West and Southern Africa region attended a panel discussion on, 'Access and inclusion in a pandemic', in October 2020. The panel consisted of Commonwealth Alumni from across region who are experts in the fields of gender, women's rights, gerontology, disability studies, and community development.

This event is the first in a new series panel discussions related to the CSC's development themes for Commonwealth Alumni across the West and Southern Africa region.

CSC's Knowledge Hub webinar series

The Knowledge Hub webinar series was launched in July 2020 for members of the CSC's Knowledge Hubs. The webinars provide a platform for Commonwealth Scholars and Alumni to discuss their work and contribution to development across a range of contemporary global challenges and provide insight into ongoing research and action. The webinar series addresses the six CSC development themes aligned with the Knowledge Hubs.

July 2020

Why does gender matter in COVID-19 response?

CSC theme: Access, inclusion and opportunity

The first webinar, 'Why does gender matter in COVID-19 response', was delivered by Monika Gupta, 2019 Split-Site Scholar from India, PhD South Asian Studies at SOAS, University of London and Jawaharlal Nehru University.

The webinar highlighted the need to discuss the rise of gender related issues during the COVID-19 pandemic, and the solutions, challenges, and deliberations in regards to the UN Sustainable Development Goals (SDGs).

September 2020

Youth: the missing peace in global security

CSC theme: Strengthening global peace, security and governance

The webinar, 'Youth: the missing peace in global security', was delivered by Terri-Ann Gilbert-Roberts, 2007 Scholar from Jamaica, PhD Regional Governance at the University of Sheffield and 2016 Academic Fellow, Young Power: youth participation in regional governance, University College London.

In this webinar, Terri-Ann shared information on her work on the Independent Progress Study on Youth Peace and Security, titled 'The Missing Peace', and promoted the importance of youth as ambassadors to strengthen global peace.

You can watch previous webinars on the CSC YouTube channel. To attend the live webinars, you must be a member of a CSC Knowledge Hub.

Get involved!

You can stay part of the CSC community through events across the Commonwealth, promoting our Scholarships and Fellowships to potential applicants, and joining our alumni associations and other networks.

Regional Networks

Our newly appointed Regional Network Coordinators for the 2020-21 academic year have been busy organising virtual regional events and activities, and bringing Scholars together to collaborate and exchange ideas in an informal and supportive environment.

Some of the events that have already taken place this academic year have included meet and greets, tea sessions, and casual get-togethers where Commonwealth Alumni have also participated

and provided some of the current Scholars with valuable advice on how to manage their academic programme during this pandemic.

We invite you to connect with Commonwealth Scholars in the same university or region within the UK:

Scotland
North West England
North East England
Wales and Northern Ireland
Midlands and Oxford
South West
South East

For full details, visit <https://cscuk.fcdo.gov.uk/networks/regional-networks>

Knowledge Hubs

The CSC's Knowledge Hubs provide a platform for Commonwealth Scholars and Alumni studying and working in similar disciplines to network and exchange ideas to support a shared sustainable development outcome under the CSC's six themes.

As a member of a Knowledge Hub, you can post news about your current work and research, share links to reading and publications, and ask and answer questions related to your work.

The six Knowledge Hubs are:

Science and technology for development
Strengthening health systems and capacity
Promoting global prosperity
Strengthening global peace, security and governance
Strengthening resilience and response to crises
Access, inclusion and opportunity

For full details about the Hubs and to join, visit <https://cscuk.fcdo.gov.uk/networks/knowledge-hubs/>

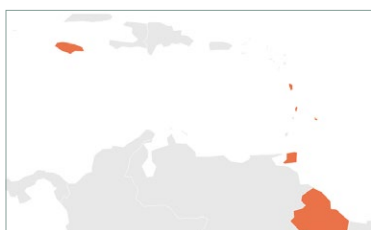
Alumni Associations

Meet and network with past, present, and future Commonwealth Scholars and Fellows



Africa

Cameroon	Nigeria
Ghana	Rwanda
Kenya	Sierra Leone
Lesotho	Tanzania
Malawi	Uganda
Mauritius	Zambia
Namibia	



Caribbean

Barbados	St Lucia
Dominica	Trinidad and Tobago
Guyana	
Jamaica	



Europe

Gibraltar



N. America

Canada



South Asia

Bangladesh
India
Malaysia
Pakistan
Sri Lanka

For full details, visit <https://cscuk.fcdo.gov.uk/alumni/associations/>

For further details about these activities and more, visit www.cscuk.fcdo.gov.uk

COMMON KNOWLEDGE

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Photo: OceansAsia.org

▲ **Teale Phelps Bondaroff**, a 2009 Commonwealth Scholar from Canada, is currently raising awareness of the impact COVID-19 has inflicted on marine life through his organisation, OceansAsia. The photo was taken during his visit to Soko Islands.



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