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PULMONARY • CRITICAL CARE • SLEEP

# ATS African Interest Group (AIG) Newsletter

August 4, 2020

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Register [here](#) to receive the AIG biannual newsletter and other important announcements

## Welcome to the AIG Fall Newsletter

Dear AIG members,

In this issue of the newsletter we share information about the COVID-19 response.

We would appreciate feedback and encourage you to get involved in subsequent issues of the newsletter to make it a better medium to network and to keep up-to-date on pulmonary and critical care research in Africa. Please contact us with any publications, conferences, events, achievements, or suggestions for future issues at [cbraz@thoracic.org](mailto:cbraz@thoracic.org) or [danseki@yahoo.com](mailto:danseki@yahoo.com).

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## ATS International Conference and AIG Meeting 2021

As we look forward to the next AIG meeting in 2021, we welcome suggestions on topics, ideas, and objectives we would like to discuss during the meeting. For instance, how can the AIG engage African leaders to improve research funding for lung health?

We also welcome contributions on developing ideas for proposals for Scientific Symposia, Postgraduate Courses, Workshops, Sunrise Seminars and Meet the Professor Seminars for the 2021 conference.

If you have any ideas you would like to discuss, please contact Cristina Braz ([cbraz@thoracic.org](mailto:cbraz@thoracic.org)).

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## SARS-CoV-2 (COVID-19) response in Africa Lagos, Nigeria

As of April 30th 2020, there were 1337 confirmed cases of SARS-CoV-2 (COVID-19) and 40 deaths in Nigeria. The country has responded by implementing a series of public health measures that include stay at home orders.

Obianuju Ozoh, MBBS, FMCP is a Pulmonologist at the Lagos University Teaching Hospital (LUTH), a 700 bed level I teaching hospital in Lagos Nigeria. Dr. Ozoh shares her concern about the disruption of care caused by the response to the SARS-CoV-2 (COVID-19) epidemic in Nigeria. As an example, six patients with disseminated tuberculosis (TB) including 4 with TB meningitis were recently admitted at her medical center within the span of a week- all with delayed presentation after several weeks of illness, due to the fear of COVID-19. In another unfortunate event, Dr. Ozoh describes a young woman in labor who had to go to 15 hospitals before she could find one willing to admit her because her regular hospital was closed for decontamination after treating COVID patients. Many private hospitals in Lagos are requesting a negative COVID-19 test prior to admission; however the turnaround time for results can take as long as 4 days.

Other aspects of care disruption include patient registration which is a prerequisite for patients to access medications on the Lagos University teaching hospital formulary. Lack of staff in this important step in the patient care pathway has resulted in patients having to buy medications outside of the hospital pharmacy. Dr. Ozoh and her team of hospital administrators have had to restructure the admission process in order to get patients their medications during this period.

It is obvious that if healthcare workers are well equipped with PPEs that they are actually willing to work, notes Dr. Ozoh who also reports that “getting tests for patients who come through the emergency is challenging and the turnaround time makes it even more challenging to treat appropriately when PPE is not abundant”.

Dr. Ozoh points out that as African health systems respond to the COVID-19 pandemic, which is extremely important, African pulmonologists must not forget the other chronic respiratory diseases of public health importance that continue challenge them.

“We may not want the storm after the rain.”

*Obianuju Ozoh, MBBS, FMCP.  
Senior Lecturer, Consultant Physician and Pulmonologist  
Department of Medicine, College of Medicine,  
University of Lagos and the Lagos University Teaching hospital*

## LOOKING BEYOND COVID-19: Advancing Africa's health systems.

The current COVID-19 pandemic has disrupted health systems worldwide. Nations that apparently had advanced and sophisticated health systems have struggled to deal with this pandemic. Current morbidity and mortality figures show that high income countries (HIC) have been hit the most by this pandemic, with some national death counts in the tens of thousands, especially among the aged, frail and those with co-morbid conditions.

African nations and other developing countries have also reported a high number of cases but nowhere near the figures coming from HICs.

There have been previous epidemics in the past in various African countries including epidemics of Ebola, Lassa fever and other viral diseases but not much has changed and opportunities for massive review of the health systems have been missed. The current pandemic creates another opportunity for leaders and policy makers in African nations to critically appraise their healthcare system, understand its weaknesses and proffer long-term solutions.

Amongst many learning points, I think the following understanding and steps need to be embraced by all.

1. No health system anywhere is foolproof. The 'rich' and 'developed' countries have struggled to deal with this pandemic. All health systems require continuous re-evaluation and strategization for better preparedness and service delivery. We need to adapt fundamental healthcare principles to local realities and peculiarities for maximal impact.
2. Health systems tend to focus on primary and secondary healthcare network including hospital care, neglecting the vital public health in many cases. Interestingly, active and responsive public health systems are the binding forces that keeps the other systems from being overwhelmed so easily. We need to build well-coordinated and intertwined primary and secondary healthcare systems with universal access for all citizens and begin the process to abolish out of pocket payments.
3. African nations should take advantage of their diaspora resources especially in the health care sector. We need to create opportunities for the diaspora to be solidly involved locally. They are super eager to contribute to their home institutions if local leaders can support them. At the same time we need to understand that the unmitigated loss of locally trained professionals to foreign nations is a crisis and serious emergency that need to be addressed through the proper channel and policies. Appropriate steps should be taken to encourage local

healthcare professionals and graduates to practice satisfactorily at home.

4. The ATS can support a viable network through its African Interest Group (AIG), to promote exchange of ideas and collaborative **research between African and US institutions.** **The ATS can make major impact on respiratory** research and practice in Africa by advancing and supporting short term exchange programs aimed at supporting local physicians and scientists.

There are no easy answers to healthcare problems. Let's begin to take the steps towards self-sufficient national health systems in Africa.

*Daniel Obaseki MD MPH FWACP CCFP  
Co-chair, African Interest Group  
American Thoracic Society*

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## East African Training Initiative

Ethiopia is a low resource country with a high burden of respiratory diseases, and few specialized physicians to meet population demands. The East African Training Initiative (EATI) was founded in 2013 to create a cadre of well-trained Ethiopian physicians in pulmonary and critical care medicine (PCCM).

The first phase of EATI (2013-2018) was mainly focused on clinical and research training through a 2-year intensive fellowship program. US and Swiss faculty provided continuous on-site clinical training; PATS MECOR established a foundation in clinical research. Vital Strategies, the Swiss Lung Foundation, Addis Ababa University, and the Ethiopian Ministry of Health jointly sponsored the program. Over the last seven years, thirteen PCCM physicians have been trained and 4 are currently in training (two from other East African countries).

Ethiopian leadership now directs the fellowship program, which continues to be recognized as one of the strongest adult and pediatric PCCM training programs in Africa.

The second phase (2019-2023) is now focused on three additional components to the ongoing PCCM fellowship training. The first is the Critical Care and Pulmonary Research Institute of Ethiopia (CAPRIE), which will serve as a center for PCCM research throughout the country. The second is an advocacy component of the Ethiopian Thoracic Society, targeting public

health reduction of risk factors for lung diseases (i.e. tobacco, air pollution, and specific occupations). And the third is Project ECHO, a method to disseminating PCCM knowledge throughout Ethiopia.

EATI owes its success to the hard-work and dedication of the Ethiopian PCCM faculty and fellows.

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## 3D Printing in The Gambia as a component of the COVID-19 Response

3D printing is the process of building a three-dimensional object from a computer aided design. A major advantage of 3D printing is the ability to produce complex shapes and sizes locally and in good time. In recent times, this technology has been used in the medical field in the printing of customized prosthetic parts and physiological or pathological models for research or learning purposes.

At the Medical Research Council Unit The Gambia at the London School of Hygiene and Tropical Medicine, most new equipment and the replacement parts for repairs of medical equipment are procured from outside of The Gambia, and would usually take an average of six to eight weeks to get delivered. This results in work downtime which affects the laboratory and the clinical aspects of the organization.

During this COVID-19 pandemic, there has been a shortage of medical equipment and protective equipment all over the world, and medical workers have improvised in different ways to meet their local needs. This has been worsened by suboptimal delivery of freight due to partial or total lockdowns in many parts of the world. Given this context, inhouse 3D production is helping with the elimination of shipping costs and transit time. The MRC Unit The Gambia at LSHTM is applying 3D printing technology to address the needs of our physicians and scientists in The Gambia.

The Biomedical Engineering Department of MRCG at LSHTM and Make 3D company Limited have partnered to identify and produce tools needed locally by clinicians. Dr Babatunde Awokola ATSF led the needs identification process for assessment and possible inhouse production of clinical and laboratory tools. He has worked alongside, a Biomedical Engineer (Mr Christopher Vandi) and a 3D designer (Mr Silvestr Tkac, Director, Make3D Limited in The Gambia).

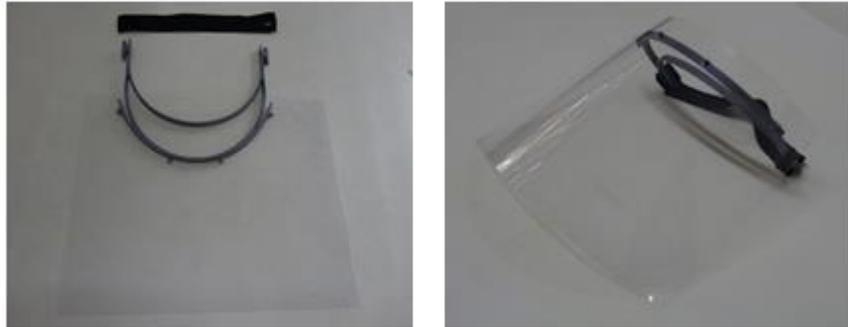
In The Gambia, there are a few 3D printers available. Make3D® Limited is the only Gambian company offering commercial 3D printing focused on providing access to 3D printing technology to various organizations, companies and individuals. The company started communication with the MRCG at LSHTM mid 2019 with an intention for the Unit to develop an open source repository of 3D printable medical equipment. The COVID-19 crisis catalyzed this alliance by developing potential 3D printable protective equipment and medical printable parts related to frontline health workers providing care to COVID-19 patients in The Gambia.

The in-house production utilized low cost materials and appropriate alternative material where applicable. Thermoplastic material (Polylactic acid) that has been used as filaments for 3D printing is not classified as hazardous in compliance with regulation (EC) 1272/2008. In starting, three items have been identified for possible production and the prototypes have shown great potential: Face shield, Inhaler spacer device, Stethoscope diaphragms.

### ***3D printed products in The Gambia***

With the use of four Prusa® 3D printers imported from the Czech Republic, the following have been designed and printed: Face shields: Face shields have proven to be an important element of the Personal Protective Equipment used by frontline health workers in the fight against COVID-19. 3D printing has enabled in house production of these shields. Each stack of 20 shields is printed within 7 hours, and a minimum of 80 shields are printed at the Unit each day.

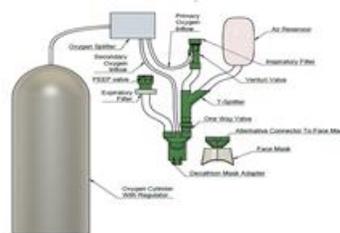
Figure 1: Pictures of the 3D printed face shield in its component parts (image on the left) and assembled together (image on the right).



Pictures of the 3D printed face shield in its component parts (image on the left) and assembled together (image on the right).

### ***3D Assisted Non-Electronic Continuous Positive Airway Pressure (CPAP) device***

We are developing a prototype non-electronic, 3D assisted CPAP device using an adapted Decathlon® snorkeling mask with a biofilter for early use on COVID-19 patients requiring non-invasive ventilation. Currently, we are on the seventh version, a consequence of learning what works and what does not. Some parts of the CPAP system are 3D printed, including the positive end expiratory pressure (PEEP) valve and the venturi valve. The schematic diagram of the work-in-progress is as below:



Schematic of the 3D Assisted Non-Electronic CPAP device



Decathlon® snorkeling mask attached to the second version of the CPAP device

The parts in green are 3D printed and are meant to be single use. Commercial HEPA filters are used for the inspiratory and expiratory filter aspects of the apparatus. The oxygen cylinders we have are able to deliver at a flowrate of 15L per minute, with FiO<sub>2</sub> of about 63%. In addition to the Decathlon® snorkeling

masks, other face masks or hoods can be used for the device-patient interface.

*Babatunde Awokola MRes, ATSF, Karen Forrest FRCP, Christopher Vandi MSc, Silvestr Tkac, and Jama Jack Medical Research Council Gambia at London School of Hygiene & Tropical Medicine Atlantic Boulevard, Fajara, The Gambia.*

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## Recent publications and abstracts from AIG members

This section highlights some of our assembly members' abstracts and manuscripts. It is possible that we may miss your best work, so please send your recent abstracts and publications to: [danseki@yahoo.com](mailto:danseki@yahoo.com) or [stouray@salud.unm.edu](mailto:stouray@salud.unm.edu).

1. [Effectiveness of a Flipped Classroom Model for Teaching Principles of Mechanical Ventilation to Internal Medicine Residents: An Interim Analysis](#)

A. Trainor, M.M. Hayes, D. Fobert, A. Cohen, E.D. Riviello

2. [Importance of Serial Training in the Use of Clinical Tools: Results from Sepsis Screen Card Use Audits in the Gambia](#)

B.I. Awokola, G.A. Amusa, B.O. Adeniyi 1, J.W. Kagima, M. Jallow, D. Garba, K.M. Forrest.

3. Paradigm of Transthoracic Ultrasound in Resource Limited Setting: The Case at University Teaching Hospital Rwanda, A Report of the First 655 Patients  
International Scholars Poster Colloquium

4. 9453 - Lung Cancer in Addis Ababa, Ethiopia: Clinical, Radiological, Pathological Features, and Socio-Demographic Correlates: Update

A70 - ADVANCES IN LUNG CANCER THERAPEUTICS  
Thematic Poster Session

5. 12145 - Lung Cancer Specimens in One Referral Center in Ethiopia: Molecular Markers on Specimens Fixed in Formalin for Extended Time

A70 - ADVANCES IN LUNG CANCER THERAPEUTICS  
Thematic Poster Session

6. 11325 - Critical Care Practice and Resource Utilization in a LMIC Setting: A Prospective Cohort Study from Ethiopia

A42 - CRITICAL CARE: HOW WE MANAGE CRITICAL CARE IN

AND OUT OF THE ICU  
Thematic Poster Session

7. 12170 - Multidrug Resistant Pulmonary Tuberculosis Presenting with Lung and Endobronchial Masses: A Case Report  
A60 - UNUSUAL TB CASES FROM AROUND THE WORLD  
Thematic Poster Session

8. 8629 - Effect of Isoniazid Preventive Therapy on Prevention of Tuberculosis and Reduction of All-Cause Mortality Among HIV Patients on Antiretroviral Therapy  
A108 - HIV RELATED PNEUMONIA, TB, AND MYCOBACTERIAL INFECTIONS  
RAPiD: Rapid Abstract Poster Discussion Session

9. 12233 - Clinical Characteristics and Outcomes of Acute Kidney Injury in Adult Intensive Care Unit of Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia  
B47 - CRITICAL CARE: NON-PULMONARY CRITICAL CARE  
Thematic Poster Session

10. 7188 - Paradigm of Transthoracic Ultrasound in Resource Limited Setting: The Case at University Teaching Hospital Rwanda, A Report of the First 655 Patients  
B58 - BIOMARKERS AND IMAGING IN PULMONARY VASCULAR DISEASE: CLINICAL  
Thematic Poster Session

11. 7597 - Pleurisy and Bilateral Pleural Effusions After Administration of Atorvastatin  
C35 - CAUSES OF PLEURAL EFFUSIONS: CASE REPORTS  
Thematic Poster Session  
Tuesday May 19, 2020 9:15 AM - 4:15 PM

12. 13437 - A Dramatic Case of Cryptogenic Organizing Pneumonia Presenting with Acute Respiratory Failure  
C39 - DIFFUSE LUNG DISEASE STUMPERS  
Thematic Poster Session

13. 12355- Not All Cough Is Pulmonary Tuberculosis. An Unusual Case of Langerhan Histiocytosis In A One Year Old, Addis Ababa, Ethiopia  
D 58- LUNG INFECTION, IMMUNODEFICIENCY  
Thematic Poster Session

14. 12193- The Prevalence of Malnutrition Among Patients Admitted To The Pediatric Intensive Care Unit, Tikur Anbessa Hospital, Addis Ababa, Ethiopia. A Hospital Based Cross Sectional Study.



D23- WHAT'S NEW IN NON-PULMONARY CRITICAL CARE?  
Poster Discussion Session

15. 10585 - Prevalence, Clinical Features, and Risk Factors for Non-Cystic Fibrosis Bronchiectasis at the Chest Unit of Tikur Anbessa Specialized Hospital (TASH), Addis Ababa, Ethiopia  
D104 - PHENOTYPES, PROGNOSTIC TOOLS, AND ADJUNCT THERAPIES IN COUGH, CF AND NON-CF BRONCHIECTASIS  
Poster Discussion Session