

# Dr Arran Hamlet

POSTDOCTORAL RESEARCHER

Global Infectious Disease Analysis, School of Public Health, Imperial College London

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*Infectious disease epidemiologist and mathematical modeller with extensive experience in data analysis and statistical/mechanistic modelling to inform outbreak response and public health policy. Strong interest in work within LMIC settings and the programming of interactive tools for data analysis and decision making.*

## Qualifications

### PhD titled 'Yellow fever in South America: The role of environment and host on transmission dynamics'

2017-2020

IMPERIAL COLLEGE LONDON

London, United Kingdom

- Project focused on understanding the epidemiology of yellow fever across South America, with a focus on Brazil, examining the roles of climate, environment and host, using a variety of statistical and mechanistic modelling techniques.
- Awarded 3 Medical Research Council (MRC) Exceptional Training Opportunity awards (total £4,589) and a MRC pump priming award (£23,000) to present results as well as teach, design and run workshops in Brazil and Colombia for Ministries of Health and Universities.
- Supervised by Dr Tini Garske and Professor Neil Ferguson, fully funded by the UK Medical Research Council.

### MSc in Epidemiology

2014-2015

IMPERIAL COLLEGE LONDON

London, United Kingdom

- Studied a broad collection of topics before specialising in infectious disease epidemiology.
- Awarded a distinction for my dissertation project titled 'The Seasonality of Yellow Fever in Africa.'

### BSc in Biology with Psychology

2011-2014

QUEEN MARY UNIVERSITY OF LONDON

London, United Kingdom

- Graduated with Upper Second-class Honours (2.1).

## Employment

### Postdoctoral Researcher (Malaria)

Jan 2020-

IMPERIAL COLLEGE LONDON

London, United Kingdom

- Involved in a variety of projects assessing the public health impact of various control measures on the burden of malaria across Africa using mechanistic transmission models.
- Assessed the impact of disruption caused by the SARS-CoV-2 pandemic on malaria control across Africa. Results published Nature Medicine as joint first author.
- Lead researcher on a piece of work commissioned by Abbott and the Presidents Malaria Initiative to assess the potential impact of Anopheles stephensi establishment on malaria transmission in the Horn of Africa.

### Postdoctoral Researcher (Nigeria COVID-19 response)

Apr 2020-

IMPERIAL COLLEGE LONDON

London, United Kingdom

- Lead researcher for Imperial College London's data analytics and modelling support for Nigeria.
- Conducted analysis to answer specific questions in order to provide evidence for decisions to be made by the Nigerian Presidential Task Force.
- Produced a multitude of reports as well as regular state-specific analysis that fed into NCDC, US CDC and UK Department for International Development decision making.
- A number of position papers can be found at <https://statehouse.gov.ng/covid19/2020/09/18/evidence-based-guidance-on-measures-to-curb-the-spread-of-covid-19/>.

### Postdoctoral Researcher (COVID-19 response)

Feb 2020-

IMPERIAL COLLEGE LONDON

London, United Kingdom

- Provided technical support and input for numerous reports and projects, with a focus on work in Low-to-Middle-Income Countries (LMIC) and on quantifying the underascertainment of mortality.
- Seconded through the Global Outbreak Alert and Response Network to provide technical support for the WHO in Geneva Feb - Apr 2020.

### PhD in Infectious Disease Modelling

Jan 2017 - Jan 2020

IMPERIAL COLLEGE LONDON

London, United Kingdom

- PhD thesis titled 'Yellow fever in South America: The role of environment and host on transmission dynamics'.

## Research Assistant

IMPERIAL COLLEGE LONDON

Oct 2015 - Dec 2016

London, United Kingdom

- Outbreak analysis and response for the 2015-2016 outbreak in Angola and the Democratic Republic of the Congo working with the World Health Organization (WHO).
- Responsible for estimating population-level vaccination coverage across Africa and the development of an open-source tool to explore this information. Currently utilised by researchers and the WHO.

## Consultancy

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### Epidemiologist: COVID-19

WORLD HEALTH ORGANIZATION

Feb 2020 - Apr 2020

Geneva, Switzerland

- Provided technical support for the WHO in the Health Emergency Information and Risk Assessment (HIM) pillar through GOARN deployment
- Work involved exploring and quantifying mortality, transmission and country specific impacts through data analysis and visualisation in real time as the COVID-19 pandemic unfolded. Aspects of data visualisation acknowledged in <https://worldhealthorg.shinyapps.io/covid/>.
- Continued to provide adhoc support till Dec 2020.

### Epidemiologist: Yellow fever

WORLD HEALTH ORGANIZATION

Jul 2016 - Sep 2016

Geneva, Switzerland

- Commissioned to produce a report evaluating the risk of outbreaks of yellow fever across Africa as a result of ongoing transmission in Angola and the Democratic Republic of the Congo and the potential for introduction into Asia.

### Epidemiologist

OZYGEN SYSTEMS

Feb 2016 - Mar 2016

London, United Kingdom

- Hired to produce a report on numerous pathogens involved in nosocomial infection and to evaluate the applicability of ozone decontamination technology in UK healthcare settings to limit their spread.

## Teaching

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### PhD Assessor

UNIVERSITY OF SÃO PAULO

Oct 2020-

São Paulo, Brazil

- Examining progress and assisting with the research of a PhD student's project titled 'Spatio-temporal dynamics of yellow fever in Brazil'.

### MSc Dissertation Supervisor

IMPERIAL COLLEGE LONDON

May 2020 - Oct 2020

London, United Kingdom

- Designed and supervised MSc Epidemiology projects looking at the effect of forest fragmentation on yellow fever in Southern Brazil, and exploring the differences in transmission dynamics between yellow fever, dengue and Zika.

### Graduate Teaching Assistant

IMPERIAL COLLEGE LONDON

Jan 2017 -

London, United Kingdom

- Teaching assistant and demonstrator for numerous modules on infectious disease modelling, statistical analysis and epidemiology.

### Shortcourse Demonstrator

IMPERIAL COLLEGE LONDON

Sep 2017/Sep 2018/Sep 2019

London, United Kingdom

- Demonstrator on the departments 'Mathematical modelling for the control of infectious diseases' short course, run since 1990 and designed to teach public health professionals about infectious disease modelling.

### Shortcourse Demonstrator

IMPERIAL COLLEGE LONDON

Jun 2020

Bogota, Colombia

- Demonstrator and lecturer on a course coordinated between Imperial College London, Instituto Nacional De Salud and Pontificia Universidad Javeriana Bogota which aimed to give an introduction to infectious disease modelling.

### Design and implementation of an online platform for teaching infectious disease modelling

IMPERIAL COLLEGE LONDON

Jan 2019 - Sept 2019

London, United Kingdom

- Responsible for liaising between programming team and course organisers to design and translate existing practicals from Berkely Madonna to an online web interface running the Odin language.
- Highly successful implementation with the platform now being used for both future shortcourses and the MSc Epidemiology at Imperial College London.

## Funding awards

### MRC Pump Priming (£23,000)

Nov 2019

IMPERIAL COLLEGE LONDON

London, United Kingdom

- Jointly awarded £23,000 with co-PI Natsuko Imai to run a week long training workshop in Rio de Janeiro focusing on the use of mathematical models in outbreak response and policy in July 2020.
- Course was to be run collaboratively with the Brazilian Ministry of Health and Fundação Oswaldo Cruz (Fiocruz).
- Postponed due to the COVID-19 pandemic.

### MRC Exceptional Training Opportunity

Oct 2017/Aug 2018/Jun 2019

IMPERIAL COLLEGE LONDON

London, United Kingdom

- Oct 2017: Awarded £650 to travel to the WHO in Geneva, Switzerland to present my work on yellow fever and discuss with the yellow fever team how my PhD can provide support for their activities.
- Aug 2018: Awarded £2220 to travel to Rio de Janeiro and Brasilia, Brazil, and present my results on modelling yellow fever in South America at a meeting co-hosted by the Brazilian Ministry of Health and the Pan American Health Organization, as well as to set up a research collaboration with Fiocruz.
- Jun 2019: Awarded £1719 to travel to Bogota, Colombia to lecture and demonstrate on a course coordinated between Imperial College London, Instituto Nacional De Salud and Pontificia Universidad Javeriana Bogota which aimed to give an introduction to infectious disease modelling.

## Presentations

### The potential public health consequences of COVID-19 on malaria in Africa

Oct 2020

LONDON MALARIA NETWORK

London, United Kingdom

### Seasonality of agricultural exposure more important than seasonality of climate for predicting yellow fever transmission in Brazil

Nov 2019

AMERICAN SOCIETY OF TROPICAL MEDICINE AND HYGIENE

National Harbor, United States of America

### Statistical and mathematical modelling of yellow fever in South America

Jun 2019

OUTBREAK ANALYSIS AND MODELLING FOR PUBLIC HEALTH

Bogota, Colombia

### Land-use, vegetation and habitat fragmentation as drivers of yellow fever transmission in South America

Feb 2019

INTERNATIONAL CONFERENCE ON ONE MEDICINE ONE SCIENCE

Chang Mai, Thailand

### Yellow fever in Brazil - Modelling as a tool to inform outbreak response and public health policy

Nov 2018

YELLOW FEVER FORECASTING: EMBEDDING MODELLING IN LESSONS LEARNT EXERCISES

Brasilia, Brazil

## Publications

### FIRST AUTHOR PUBLICATIONS

#### A Hamlet, KAM Gaythorpe, T Garske, NM Ferguson

*PLoS neglected tropical diseases*

SEASONAL AND INTER-ANNUAL DRIVERS OF YELLOW FEVER TRANSMISSION IN SOUTH AMERICA

2021

#### A Hamlet, K Jean, S Yactayo, J Benzler, L Cibrelus, N Ferguson, T Garske

*Vaccine*

POLICI: A WEB APPLICATION FOR VISUALISING AND EXTRACTING YELLOW FEVER VACCINATION COVERAGE IN AFRICA

2019

#### A Hamlet, K Jean, W Perea, S Yactayo, J Biey, M Van Kerkhove, ...

*PLoS neglected tropical diseases*

THE SEASONAL INFLUENCE OF CLIMATE AND ENVIRONMENT ON YELLOW FEVER TRANSMISSION ACROSS AFRICA

2018

### SELECTED ADDITIONAL PUBLICATIONS

#### PGT Walker, C Whittaker, OJ Watson, M Baguelin, P Winskill, A Hamlet, ...

*Science*

THE IMPACT OF COVID-19 AND STRATEGIES FOR MITIGATION AND SUPPRESSION IN LOW-AND MIDDLE-INCOME COUNTRIES

2020

#### E Sherrard-Smith, AB Hogan, A Hamlet, OJ Watson, C Whittaker, ...

*Nature medicine*

THE POTENTIAL PUBLIC HEALTH CONSEQUENCES OF COVID-19 ON MALARIA IN AFRICA

2020

#### KAM Gaythorpe, A Hamlet, L Cibrelus, T Garske, NM Ferguson

*Elife*

THE EFFECT OF CLIMATE CHANGE ON YELLOW FEVER DISEASE BURDEN IN AFRICA

2020

**K Jean, A Hamlet, J Benzler, L Cibrelus, KAM Gaythorpe, A Sall, ...**

ELIMINATING YELLOW FEVER EPIDEMICS IN AFRICA: VACCINE DEMAND FORECAST AND IMPACT MODELLING

*PLoS neglected tropical diseases*

2020

**I Dorigatti, A Hamlet, R Aguas, L Cattarino, A Cori, CA Donnelly, T Garske, ...**

INTERNATIONAL RISK OF YELLOW FEVER SPREAD FROM THE ONGOING OUTBREAK IN BRAZIL, DECEMBER 2016 TO MAY 2017

*Eurosurveillance*

2017

## SELECTED REPORTS

**N Ferguson, D Laydon, G Nedjati Gilani, N Imai, K Ainslie, M Baguelin, ...**

REPORT 9: IMPACT OF NON-PHARMACEUTICAL INTERVENTIONS (NPIs) TO REDUCE COVID19 MORTALITY AND HEALTHCARE DEMAND

2020

**P Walker, C Whittaker, O Watson, M Baguelin, K Ainslie, S Bhatia, S Bhatt, ...**

REPORT 12: THE GLOBAL IMPACT OF COVID-19 AND STRATEGIES FOR MITIGATION AND SUPPRESSION

2020

**I Dorigatti, L Okell, A Cori, N Imai, M Baguelin, S Bhatia, A Boonyasiri, ...**

REPORT 4: SEVERITY OF 2019-NOVEL CORONAVIRUS (NCoV)

2020

**N Grassly, M Pons Salort, E Parker, P White, K Ainslie, M Baguelin, ...**

REPORT 16: ROLE OF TESTING IN COVID-19 CONTROL

2020

**K Gaythorpe, N Imai, G Cuomo-Dannenburg, M Baguelin, S Bhatia, ...**

REPORT 8: SYMPTOM PROGRESSION OF COVID-19

2020