

Research

A conversation with ...

Jo Middleton



Tell us about your role at BSMS

I'm a Research Fellow in the Department of Primary Care and Public Health. Much of my research and teaching involves interrelated work at two very different scales, that of microscopic parasites and that of planetary health, an emerging field which aims to safeguard both human health and the natural systems that underpin it. Recently my workday has ranged from conducting a health needs assessment in the New Guinea jungle, to teaching and supervising students, and collecting ticks across the South Downs National Park.

What were you doing before you joined BSMS?

My interest in diseases related to mites and ticks brought me to BSMS in 2014 to work on the Scabies Research Project, a collaboration with Public Health England and the London School of Hygiene & Tropical Medicine. I had previously worked in the ambulance service, and taught courses for NHS staff and those travelling to remote areas. I had my first contact with BSMS back in 2006, as part of a team taking students out onto the South Downs for night-time scenario training in outdoor emergency care. Prior to health work, I spent a decade in biodiversity conservation. These varied roles all inform my present work at BSMS. For example, in New Guinea we are providing health services and pre-hospital training to clans who have protected their forests from logging, but partly as a result have little way of accessing external medical care.

Tell us about your work at BSMS?

Scabies, an infestation with mites, is a public health problem in care homes for the elderly. We carried out clinical visits to outbreaks to determine why, and I am very chuffed our report was published as the August cover story of *The Lancet Infectious Diseases* (the world's leading infectious disease journal). Having generated the evidence, we are now developing diagnostic and outbreak management guidelines.

Scabies is a worldwide problem and so having started in UK care homes we have now broadened out to communities in developing countries with very high rates. I've just returned from Ethiopia, where we are supporting a scabies mass drug administration to control outbreaks triggered by a climate change exacerbated drought. My main project at present is SURFACES, which is integrating public health and biodiversity conservation in the threatened rainforests in Papua New Guinea, focusing first on neglected tropical skin diseases, including scabies. Nearer to home, with the University of Brighton, I am investigating ecological determinants of tick-borne Lyme disease and evaluating interventions to decrease hazard in national parks without negatively affecting ecosystem health.

Tell us more about your fieldwork in Papua New Guinea – what did this entail?

New Guinea has the third largest remaining rainforest on Earth, and some of the world's worst health metrics, so it is a global priority for action in both conservation and health. In July 2018, I led a multidisciplinary team carrying out a clinical and anthropological assessment of the medical needs of nine remote forest clans. These communities have worked with University of Sussex to protect 100 square kilometres of rainforest from loggers, and requested health services as the next step in the collaboration.

To get to the protected area we drove a 4x4 down a logging road for three hours, then trekked through the jungle for a further two. This is the same journey clan members have to take to get medical care. We collected data to support the setting up of a long-term base for medical aid and research. We had some great discussions and interviews where the clans outlined their priorities, and we gave clinical assessments and treatments to most of the 200 people in the area. Many of these were suffering from multiple infectious skin diseases and acute bouts of malaria.

Jo's interest in mites and ticks brought him to BSMS in 2014



What other roles do you have?

BSMS is a member of the Planetary Health Alliance (PHA), a worldwide consortium of 95 universities and NGOs. The Rockefeller Foundation–Lancet Commission on Planetary Health concluded that the continuing degradation of natural systems threatens to reverse the health gains seen over the last century. As the BSMS liaison, I'm responsible for building research with other PHA member institutions. Locally, as I'm partly based at Life Sciences at the University of Sussex and Pharmacy and Biomolecular Sciences at the University of Brighton, an important part of my job is helping our researchers link-up with those of our host institutions.

Tell us about your teaching?

I teach about parasites on courses from our undergraduate medical course to our postgraduate MSc in Public Health, and supervise fourth-year medical student research projects. One of my students this year is searching historical records of scabies outbreaks in crowded 19th institutions such as workhouses and asylums, bringing up interesting parallels and lessons for our work on institutional scabies outbreaks today. I teach Planetary Health at the University of Sussex and I'm the lead within PHA of a working group developing curriculum across member medical schools, from Sydney to Yale. In our rapidly changing world, clinicians will be faced with new challenges both at the level of individual patients and of public health. I'm excited about introducing Planetary Health education to tomorrow's doctors.

What research areas are you looking to work on in the future?

My colleagues and I have external grant applications pending to carry out an oral medication trial for scabies in UK care homes, expand our scabies work to Brazil and Ghana, and also evaluate deforestation's effect on rates of non-communicable and infectious diseases.

Keep up-to-date with Jo's research on Twitter:

@MedVetAcarology



Above top, Jo investigates tick-borne Lyme disease in the UK

Above bottom, the team visit Papua New Guinea in July 2018