

Title of PhD project / theme	Health and economic impact of a universal rotavirus vaccination programme in Japan
Supervisory team	Kathleen M O'Reilly – LSHTM (primary) Motoi Suzuki – NU (primary) (also involved: Frank Sandmann – LSHTM, John Edmunds – LSHTM, Koya Ariyoshi – NU)
Brief description of project / theme	<p>Rotavirus-associated gastroenteritis has been a global health problem until the successful development and marketing of rotavirus vaccines, with the World Health Organisation (WHO) first recommending the inclusion of rotavirus vaccines in all national immunisation programmes ten years ago in 2009. As of October 2019, 98 countries worldwide have added rotavirus vaccines into their national immunisation programmes.</p> <p>In Japan, the rotavirus vaccines have been marketed since 2012, and in 2019 the vaccines were been approved to be part of the routine immunisation programme for children. With this recent change in policy it is important to assess the cost-effectiveness and monitor changes in the epidemiology in Japan.</p> <p>Previous analyses for Japan ignored transmission dynamics, herd immunity effects, the impact on the quality of life of parents/carers from illness and from premature deaths of children under 5 years, and rotavirus-associated mortality. Taken together, it is likely that the impact of a publicly funded universal rotavirus vaccination programme is underestimated.</p> <p>This project will comprehensively revisit the health and economic impact of universal rotavirus vaccination in Japan, with inclusion of non-linear and herd-immunity effects. The work will apply up-to-date mathematical modelling and cost-effectiveness techniques, which will also allow drawing comparisons to the UK and other (high-income) countries worldwide.</p> <p>The project is part of the UK-Japan “Viral mOlecular methods and Models that Inform Transmission of INfectious Gastroenteritis” (VOMITING) initiative in collaboration with colleagues at the National Institute of Infectious Diseases (NIID) of Japan, and it will be informing national vaccination policy making in Japan. The project will be part of a wider collaboration with plenty of opportunities to work with other researchers and for the student to develop additional research objectives.</p>

<p>The role of LSHTM and NU in this collaborative project</p>	<p>Researchers at LSHTM and NU will work collaboratively to critically review and update the cost-effectiveness analysis for assessing rotavirus introduction into Japan. Rotavirus-specific gastrointestinal disease incidence data from Japan will be included in the analysis, and the costs and outcomes will be reflecting current best practices in cost-effectiveness methodology and recently published guidelines for economic evaluation in Japan.</p>
<p>Particular <i>prior</i> educational requirements for a student undertaking this project</p>	<p>Students with a strong quantitative background, ideally with experience of mathematical modelling of infectious diseases.</p>
<p>Skills we expect a student to develop/acquire whilst pursuing this project</p>	<p>Mathematical modelling, rotavirus epidemiology, cost-effectiveness analysis.</p>