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| Host department:Bristol |
| Project Title: |
| Antibiotic prescribing for infected insect bites in primary care: a mixed methods study |
| Proposed supervisory team: Names and areas of expertise to be included |
| Dr Jessica Watson (academic GP with experience in diagnostics, CPRD and qualitative methods, Bristol)Professor Alastair Hay (academic GP with expertise in infectious diseases, Bristol)Professor Nick Francis (academic GP with expertise in skin infections, Southampton) |
| Potential for cross consortium networking and educational opportunities: |
| The successful candidate will join 45 SPCR doctoral students peers for regular training meetings and the SPCR Annual Trainees Event. They will have access to training and academic opportunities across the 10 consortium institutions and will join a peer-learning group. They will have a mentor, who will be a post-doctoral researcher from a different institution to the student. They will be able to undertake a secondment in Southampton, and virtual attachments will also be available where appropriate.  |
| Project description: |
| BackgroundInfected insect bites are mostly managed in primary care. Recent NICE guidelines recommend that most insect bites do not need antibiotic treatment, but surveys show marked variation in the clinical management of insect bites in primary care,1 and there is a lack of evidence on how to distinguish cellulitis from the normal inflammatory reaction to an insect bite.2 Routine data shows rising rates of flucloxacillin prescribing with marked seasonal trends,3 which may in part be linked to higher rates of insect bites in summer months, suggesting important opportunities to improve antibiotic stewardship.Methods1) Systematic review of diagnostic indicators for infected insect bites in primary care. Diagnostic indicators could include point of care blood tests, microbiological tests and rapid diagnostic technologies, and/or clinical symptoms or signs which could be used by primary care clinicians to diagnose an infected insect bite. 2) Qualitative study. The PhD candidate will interview primary care clinicians, including GPs, nurses and allied health professionals (+/- patients) to explore knowledge and attitudes to antibiotic prescribing in insect bites and potential barriers and facilitators to changing rates of antibiotic prescribing.3) Clinical Practice Research Database (CPRD) study using routine data from primary care electronic health records to determine:* What treatments are currently prescribed in primary care for insect bites and are these prescriptions in keeping with NICE guidelines?
* What are the rates of complications (hospital admission/sepsis) following insect bites and what are the predictors of poor prognosis (age, gender, co-morbidities)?

The candidate will agree with the supervisors whether to take a broad approach combining these three methodologies, or whether to focus in greater depth on one or more of them. If the candidate chooses to focus on qualitative methodologies rather than CPRD, then there would be the option to build on this qualitative work to iteratively develop and pilot an antibiotic prescribing intervention based on the Person-Based Approach. Additional supervisory expertise from a behavioural scientist would be obtained to support the candidate if they chose this option. Potential ImpactThe findings of the PhD would have direct implications for primary care clinicians and patients in determining how to best diagnose infected insect bites and who is most at risk of complications. If successful the proposed PhD could lead to future randomised trials of diagnostic strategies or treatments with the overall aims of reducing unnecessary antibiotic prescribing and preventing complications from infections.  |

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| Training and development provision by host: |
| ***Formal training:***The training plan will be informed by an analysis of the academic needs of the PhD candidate carriedout in the first month. Training will be directed towards helping the candidate develop as anindependent researcher, as well as towards the needs of the PhD project. The PhD candidate will have access to formal training in epidemiology, statistics, research governance, qualitative research methods and systematic reviews provided by the University of Bristol Population Health Sciences Short Course programme. They will also have access to generic skills training courses offered by the Bristol Doctoral College which offers courses in time management, career development, writing skills, presentation skills and leadership. |
| *Informal training:* The student will be embedded within the Centre for Academic Primary Care (CAPC) infection group, and will be invited to attend regular departmental seminars and meetings. They will be have access to mentorship, a peer-learning group and annual training meetings. They will have opportunities to present their work internally at meetings and seminars in the department and externally at conferences. |
| *PPIE:* The Centre for Academic Primary Care at the University of Bristol has established strong PPIE links and PPIE co-ordinators. The PhD candidate will be supported by the CAPC PPIE co-ordinators to set up a PPIE group who will contribute to study design, interpretation of findings and dissemination activities.  |

 References

1. NICE Guidelines NG182. Insect bites and stings: antimicrobial prescribing. <https://www.nice.org.uk/guidance/NG182>
2. Anderson et al. Insect and tick bite management. British Journal of Family Medicine. 2019. <https://www.bjfm.co.uk/insect-and-tick-bite-management-in-gp-general-practice-survey-and-literature-search>
3. Francis, N. A., Hood, K., Lyons, R., & Butler, C. C. (2016). Understanding flucloxacillin prescribing trends and treatment non-response in UK primary care: a Clinical Practice Research Datalink (CPRD) study. The Journal of antimicrobial chemotherapy, 71(7), 2037–2046. https://doi.org/10.1093/jac/dkw084