# Estimating the impact of a novel gonorrhoea therapy with structured expert judgement

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Current Health Technology Assessment (HTA) methods do not capture the full range of costs and benefits related to antimicrobials. As HTA focuses on treatment costs and health benefits accrued by an individual patient, it misses population-level costs associated with the spread of resistance and benefits associated with reduced transmission and reduced selection pressure on other treatment options. These values cannot be directly obtained from a clinical trial or estimated through traditional disease models because the many dependent factors influencing changes in resistance rates are not sufficiently well understood. An alternative approach is to use structured expert judgement. We develop a protocol to elicit future resistance rates in the context of a test case examining the impact of a hypothetical new antimicrobial to treat gonorrhoea infections in the United Kingdom. We elicit quantitative estimates and uncertainty bounds for resistance under three different scenarios and qualitative information about changing resistance patterns. Using Cooke's Classical Model of structured expert judgement also allows us to assess the statistical accuracy and informativeness of the experts to validate their assessments and combine them into a performance-based aggregated assessment. The outputs from the structured expert judgement process can be used to estimate additional costs and benefits of a new antimicrobial, making them useful for a HTA evaluation. Qualitative information on the rationales for the experts' assessments and their understanding of the causes of changing resistance patterns more generally can also help disease modellers better understand the factors that contribute to the emergence and spread of resistance, improving future modelling capacity in this area.