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The impact of new national guidance for the public health management of enteric fever in England

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ABSTRACT

Objectives: New guidance was published in England in February 2012 to support the public health management of enteric fever and reduce the risks of secondary transmission. The new guidance was evaluated to assess:

- The impact of reduced sampling schedules on secondary transmission of enteric fever.
- The burden, compliance and yield associated with sampling.
- User acceptability.

Study design: Quantitative and qualitative evaluation of the implementation of new public health guidance.

Methods: A qualitative review of all non-travel–related cases from February 2010 to January 2014 to compare the risk of secondary transmission before and after the guidance introduction; an audit of clearance sampling for each case and their contacts reported in London from February 2012–January 2015 to compare with a previous London audit; and an online user survey in November 2014.

Results: The proportions of non-travel cases reported before and after the introduction of the new guidance were similar, 6% in 2010–2012 compared to 7% in 2012–2014 ($P = 0.33$). There was a 32% reduction in the number of clearance samples required for cases and the estimated period of exclusion from work or school was reduced from 54 days to 16 days. Compliance in case clearance improved from 53% to 90% and contact screening compliance improved from 42% to 80%. The targeted screening of contacts led to a significantly higher positive yield (3.6% from 1.5%, $P = 0.003$). All symptomatic co-travellers presented to a healthcare professional, suggesting that screening could be restricted to those in risk groups for transmission. Feedback from users highlighted additional areas, such as

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management of large organised groups of co-travellers and those diagnosed abroad, which has informed the update of the national guidance.

Conclusions: The new guidance has not led to an increase in secondary transmission of enteric fever in England and findings have been used to inform an update of the guidance. The new guidance also represents a reduced burden of investigation and thus a likely reduced cost to patients, healthcare professionals, laboratories and environmental health officers.

Introduction

Enteric fever (typhoid or paratyphoid fever) is caused by *Salmonella enterica* subspecies *enterica* serovar Typhi (*S.* Typhi) or Paratyphi (*S.* Paratyphi types A, B or C). England, and the United Kingdom as a whole, typically has the highest rates of enteric fever infections in Europe[1] which is thought to be partly related to historical close links with the Indian subcontinent and regular travel between these countries.

There is considerable variation in non-endemic countries regarding the public health management of enteric fever, and there is little published evidence for a standardised clearance and screening schedule for cases and contacts.[2–17] The 2004 UK guidance posed significant resource implications due to the extensive exclusion criteria and schedules for clearance for cases, contacts and particularly those in risk groups.[18] Findings from audit data[19,20] and case studies informed the new guidelines in England introduced in February 2012.[21,22]

In contrast to previous guidance, the new version focuses on a systematic assessment of the likely source of infection, especially for non-travel–related cases (Table 1). Microbiological clearance of cases has been restricted only to cases in risk groups and contact screening restricted to co-travelling contacts or where there is investigation of a non-travel case. Thus there is an overall reduction in the number of cases and contacts being sampled, and a reduction in the start time, length of the schedule and the number of samples required (Table 1).[21]

In England, cases of enteric fever are statutorily notifiable[23] and are reported to local health protection teams (HPTs) by hospitals or general practitioners. A national enhanced surveillance questionnaire[24] is completed by the HPT or local authority Environmental Health Officers (EHO), and public health actions initiated. Samples from local laboratories are sent to the national reference laboratory for confirmation. Thus a database of cases, based on reference laboratory and enhanced surveillance records is maintained and summary reports published by the Travel and Migrant Health Section of the National Infections Service, Public Health England (PHE).[25,26]

Given the paucity of evidence to support one schedule over another, we carried out an evaluation adopting both qualitative and quantitative approaches to review the public health management of enteric fever cases under the 2012 guidance. This evaluation focused on reviewing the following three main elements:

1. The impact of the guidance on secondary transmission of enteric fever within England. Had there been a change in the number of non-travel–related cases or cases who are contacts of known enteric fever cases?

Table 1 – Summary of changes in the 2012 guidance from the previous 2004 guidance.

	2004 guidance – Previous	2012 guidance – New
Case in risk group	Carers, healthcare workers, hygiene difficulties, children 5 and under: exclusion until three clear stool samples ≥1 week apart starting 3 weeks after antibiotics Food handlers: exclusion until six clear stool samples ≥1 week apart starting 3 weeks after antibiotics	All risk groups – exclusion until three clear stool samples ≥48 hours apart starting 1 week after antibiotics If non-travel related, then wider screening and investigation to determine source.
Case not in risk group	One follow-up stool sample to identify carriers. Exclusion advised until 48 hours after last symptoms	48 hours exclusion advised after last symptoms.
Contact in risk group	Exclusion of all contacts until two clear stool samples ≥48 hours apart after case started antibiotics	ONLY co travellers = one stool sample. No exclusion unless symptomatic. Warn and inform letter to other household contacts
Contact not in risk group	2 stool samples	If non-travel related, then wider screening and investigation to determine source.