



Food handlers and Norovirus transmission: Social science insights

Executive summary

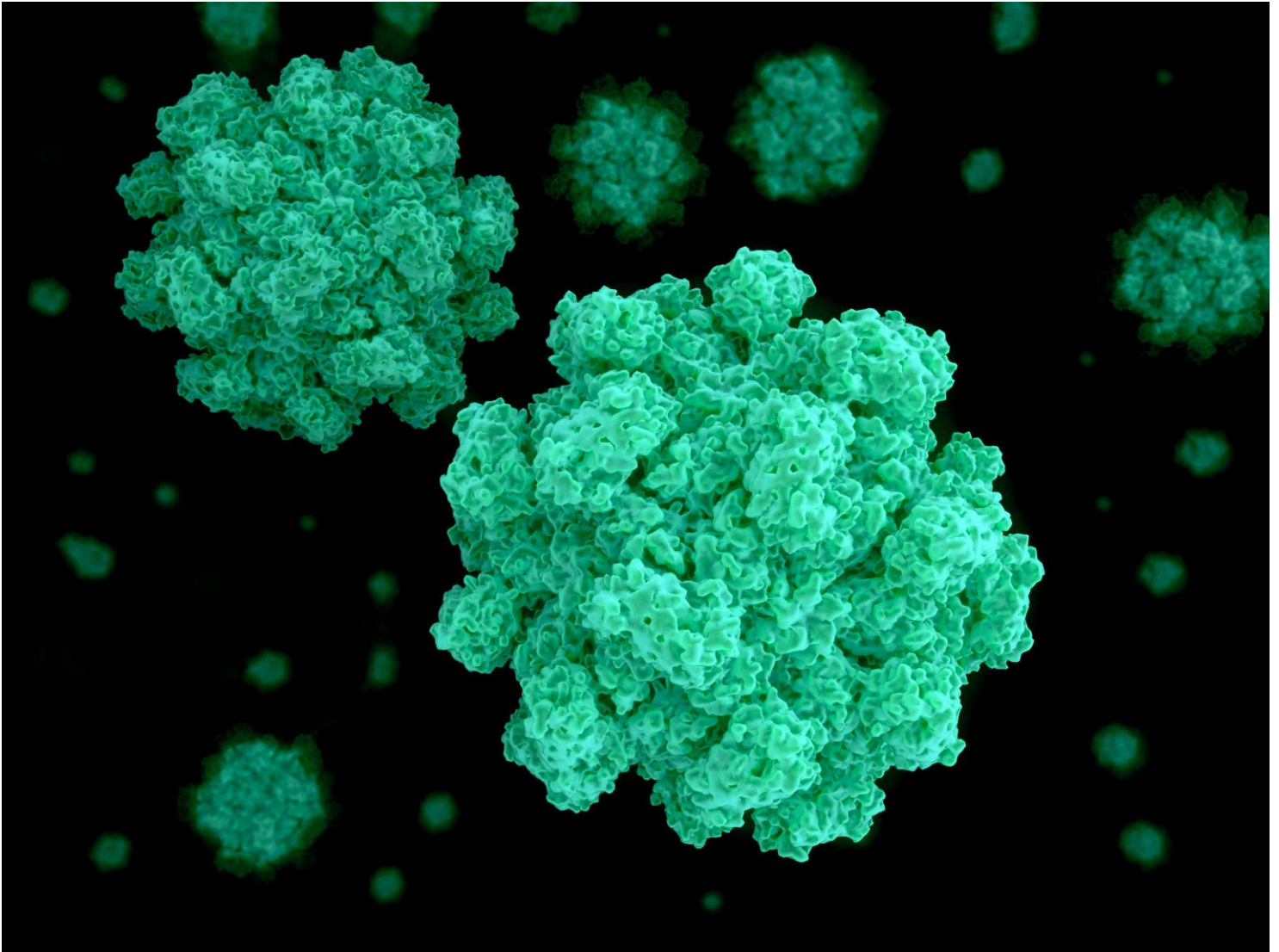
Ipsos MORI

Social Science Research Unit
Food Standards Agency
June 2017



Social Science in Government

© Crown Copyright 2017



June 2017

Food Handlers and Norovirus transmission (FS101143)

Report prepared for the Food Standards Agency

Acknowledgements

This project was funded by the Food Standards Agency (FSA). The authors would like to thank the FSA and Dr. Lou Atkins at University College London for their support and advice in delivering this research. They would also like to thank the FSA's appointed external reviewers for their input during the reporting stage.

We would also like to thank all the Food Business Operators (FBOs) and food handlers who agreed to accommodate our researchers and were willing to discuss their views and behaviours related to food hygiene and norovirus.

Finally, the authors would like to thank Dr Sinead Watson, Queens, University Belfast, and Dr Yun Yun Gong, University of Leeds for their help with the scoping review; as well as the Ipsos MORI project team for their help with fieldwork and analysis.

Contents

Acknowledgements	
Glossary	
Executive Summary	2
End notes	5

Glossary

Glossary

APEASE	A criteria for making context-based decisions on intervention content and mode of delivery (See appendix 9).
Behaviour Change Interventions (BCIs)	Behaviour change interventions are coordinated sets of activities designed to change specified behaviour patterns.
Behaviour Change Techniques (BCTs) ⁱ	Are an active component of an intervention designed to change behaviour.
COM-B	COM-B (Michie et al 2011, Michie et al 2014) is an overarching framework for modelling behaviour and behaviour change. It sets out that behaviour occurs from an interaction of 'capability' to perform the behaviour and 'opportunity' and 'motivation' to carry out the behaviour. New behaviour or behaviour change requires a change in one or more of these.
Food Business Operator (FBO)	The Food Business Operator (FBO) is defined in EU law as 'the natural or legal person/s responsible for ensuring that the requirements of food law are met within the food business under their control'. ⁱⁱ Throughout this report, the FBO refers to the person who self-defined as such during this study. In the absence of the FBO, the research team spoke with the person who stated they had management / supervisory responsibilities over staff.
Food Handler	FSA guidance on food handler health ⁱⁱⁱ , uses the term 'food handler' mainly to refer to people who directly touch open food as part of their work. For the purposes of this research, a food handler constituted a person in a dedicated role with responsibility for food preparation, handling, cooking and storage. Across the food establishments in this study this was typically the head chef / cook or an assistant chef / cook.
Food Standards Agency (FSA)	The FSA was created in 2000 as a non-Ministerial government department, governed by a board, and tasked with protecting consumers in relation to food. The FSA uses its expertise so that people can trust the food they buy is safe to eat and honestly labelled.
Food Hygiene Rating Scheme (FHRS)	The FHRS provides consumers with information about hygiene standards in food business establishments. The purpose of the FHRS is to allow consumers to make informed choices about the places where they eat out or shop for food and, through these choices, encourage businesses to improve their hygiene standards.
Hazard Analysis and Critical Control Point (HACCP)	HACCP is an internationally recognised way of managing food safety and protecting consumers. All FBOs except farmers and growers are required by EU food hygiene legislation, to implement and maintain hygiene procedures based on HACCP principles, including identifying any hazards that need to be eliminated and implementing appropriate controls.
Habit	Generically, <i>something that you do often and regularly, sometimes without knowing that you are doing it</i> ^{iv} or <i>a settled or regular tendency or practice, especially one that is hard to give up</i> . More specifically, from a psychological perspective, habit may be understood as a " <i>non-volitional mechanism involved in motivation</i> " ^v and has been defined as <i>'a process by which a stimulus automatically generates an impulse towards action, based on learned stimulus-response associations.'</i> ^{vi}

Theoretical Domain Framework (TDF)	The Theoretical Domains Framework (TDF) is an integrative framework developed from a synthesis of psychological theories as a vehicle to help apply theoretical approaches to interventions aimed at behaviour change.
Symptomatic / asymptomatic	<p>Norovirus is highly infectious; this means the organism is likely to be easily spread by food handlers who:</p> <ul style="list-style-type: none"> • have been <u>symptomatic</u> (have had diarrhoea and/or vomiting) and return to work while still shedding virus particles and fail to follow the relevant hygiene requirements • are <u>asymptomatic</u> (who are infected but show no symptoms), but are nonetheless shedding virus and fail to follow the relevant hygiene requirements

Executive Summary

Executive Summary

Introduction

Norovirus is the most common cause of infectious gastrointestinal disease in the community.^{vii} In 2014, the Food Standards Agency (FSA) estimated approximately 74,000 cases of foodborne norovirus infection in the UK^{viii}. Reducing this incidence is a key priority of the FSA.

Norovirus has frequently been associated with outbreaks of illness linked to raw or lightly cooked shellfish, principally from oysters, as well as fresh produce, particularly soft fruit. However, the introduction of norovirus into food by infected food handlers^{ix} is thought to be a significant contributor to human infection but evidence of this in the formal literature is limited.

In November 2015, FSA funded this study to enhance their understanding of norovirus transmission in the catering sector, in order to better understand the role of food handlers in this context. The objective of the research was to:

- Explore influences on norovirus transmission among food handlers working in the catering sector, and
- Propose potential ways to mitigate and reduce norovirus transmission in this context.

Method

A scoping stage informed by a desk based review of literature evidence and five expert interviews identified five “control strategies” (“Personal hygiene”; “Food handling”, “Washing and cooking food”, “Surface and uniform cleaning”, and “Fitness to work”), each consisting of a number of “practices and behaviours” with potential to reduce or mitigate norovirus transmission. The scoping review informed a mixed-method, case study design, during which, thirty-two food establishments were visited.

As part of each visit, in-depth interviews were conducted with a food handler and an individual with responsibility for food handlers, structured environmental and behavioural observations were undertaken and a small number of food handlers (not including the interviewed food handler) were surveyed. Data collection and analysis were informed by COM-B, the Theoretical Domains Framework and the Integrated Behavioural Model for Water Sanitation and Hygiene (IBM-WASH). Future intervention strategies and Behaviour Change Techniques were identified using the Behaviour Change Wheel and the Behaviour Change Technique Taxonomy v1. What these models are and why they were chosen is covered in appendix 3 (published separately).

Key findings

Participants often reported recognition or awareness of the term norovirus but knowledge about norovirus was typically very low. There was often either a lack of knowledge or confusion about what norovirus is, and how it is contracted and transmitted. At best, participants had some awareness of norovirus symptoms and how to mitigate norovirus transmission but there was little evidence that norovirus was a particularly salient concern. Lack of knowledge of norovirus, and awareness of the relevance and implications of norovirus to food handling

might have been anticipated. What was more surprising was the *Knowledge* and *Skills* gap in terms of the awareness, and application of, recommended behaviours comprising more generic hygiene practice such as what constitutes effective hand-washing.

Environmental barriers were often identified both in terms of: characteristics of the setting (time scarcity, busyness, workload, and in the case of returning to work, money and pay); and the physical design and infrastructure of food handling environments. Both frequent micro-behaviours (e.g. hand washing, glove use, surface cleaning) and less frequent behaviours (e.g. uniform cleaning and exclusion from work) were environmentally influenced. *Social influences* were notable by their absence. For example, there was a lack of social pressure or expectation to engage in recommended behaviours (which may also be related to not knowing what is appropriate), as well as the assumption that recommended practice is already happening.

There was clear evidence of *Motivation*-related barriers, something that had not been identified in the scoping review. There was an absence of negative *Beliefs about Consequences* in relation to the non-performance of recommended behaviours, and certain behaviours (most obviously hand hygiene and surface cleaning) had become routinised and habitual but were typically not aligned with recommended practice.

There was clear and frequent evidence that seven “practices and behaviours” from four overarching ‘control strategies’ presented a norovirus transmission risk. These were:

- ‘Inadequate hand washing and drying’ and ‘Not washing hands prior to gloving’ from the Personal Hygiene control strategy;
- ‘Using bare hands when preparing food’ and ‘Not changing gloves regularly’ from the ‘Handling food’ control strategy;
- ‘Food handlers cleaning the area where an episode of vomiting occurred instead of trained personnel’;
- ‘Not washing uniform or not washing uniform correctly’ from the ‘Surface and uniform cleaning’ control strategy; and
- ‘Returning to work too early’ from the ‘Fitness to work’ control strategy.

Proposed behaviour change intervention strategy

In line with recommended practice in behaviour change intervention development ‘Inadequate hand washing and drying’ and ‘Returning to work too early’ were selected as target behaviours for the purposes of intervention development based on an assessment of likely impact, and ease of, behaviour change. A potentially feasible four part, complementary intervention strategy was developed after consideration of intervention function^x and policy category^{xi}. Seventeen behaviour change techniques^{xii} (See Section 2.9) were identified as promising ‘active ingredients’ of the intervention strategy.

Intervention strategy component	Intervention function(s)	Policy category
Training: Principally targeted at the Kitchen Manager and ideally one to one and face to face with an Environmental Health Officer or equivalent. Videos are another option.	Education; Persuasion; Training; Modelling; Enablement	N/A
E-Learning: To support the training and as a stand-alone resource.		Guidelines

Resource provision: Suitably designed guidance, training materials, posters etc. to complement training and e-learning and targeted at both individual food handlers and FBOs.	Education; Persuasion; Training; Environmental restructuring; Modelling; Enablement	Guidelines
Awareness: Days or weeks with a specific norovirus focus to raise awareness at appropriate times of year.	Education; Persuasion	Communication / marketing

This study provides a foundation for meaningful intervention design work, but we suggest that more careful intervention planning and development work is required to ensure optimal development, design and eventual implementation of interventions in this context.

End notes

- ⁱ Mitchie, S. et al (2013) The behaviour change technique taxonomy (v1) of 93 hierarchically clustered techniques: building an international consensus for the reporting of behaviour change interventions, *Ann Behav Med.* 2013 Aug;46(1):81-95. Accessed from: <https://www.ncbi.nlm.nih.gov/pubmed/23512568>
- ⁱⁱ The General Food Law Regulation (EC) 178/2002 is directly applicable EU legislation and provides the general principles of food safety which include the requirement on food businesses to place safe food on the market, for traceability of food, for presentation of food, for the withdrawal or recall of unsafe food placed on the market and that food and feed imported into, and exported from, the EU shall comply with food law. Available at: <https://www.food.gov.uk/enforcement/regulation/foodlaw>
- ⁱⁱⁱ Food Standards Agency (2009) Food Handlers: Fitness to Work, Regulatory Guidance and Best Practice Advice for Food Business Operators. Available at: <https://www.food.gov.uk/sites/default/files/multimedia/pdfs/publication/fitnesstoworkguide09v3.pdf>
- ^{iv} Cambridge Dictionary. Available at: <http://dictionary.cambridge.org/dictionary/english/habit>
- ^v Michie, S., Van Stralen, M.M., West, R. (2011) The behaviour change wheel: A new method for characterising and designing behaviour change interventions, *Implement Sci.* 2011; 6: 42. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3096582/>
- ^{vi} Wood, W., Neal, N. N., (2009) The Habitual Consumer, *Journal of Consumer Psychology*, Volume 19, Issue 4, pages 579-592. Available at: <http://www.sciencedirect.com/science/article/pii/S1057740809001065>
- ^{vii} O'Brien, S., et al (2012) The second study of infectious intestinal disease in the community (IID2 Study), Food Standards Agency. Available at: https://www.food.gov.uk/sites/default/files/711-1-1393_IID2_FINAL_REPORT.pdf
- ^{viii} O'Brien, S., et al (2014) Costed extension to the Second Study of Infectious Intestinal Disease in the Community: Identifying the proportion of foodborne disease in the UK and attributing foodborne disease by food commodity, Food Standards Agency. Available at: https://www.food.gov.uk/sites/default/files/IID2%20extension%20report%20-%20FINAL%2025%20March%202014_0.pdf
- ^{ix} University of Liverpool (report pending) Assessing the contribution made by the food chain to the burden of UK-acquired norovirus infection, Food Standards Agency. Available at: <https://www.food.gov.uk/science/research/foodborneillness/b14programme/b14projlist/fs101040>
- ^x Michie, S., Van Stralen, M.M., West, R. (2011) The behaviour change wheel: A new method for characterising and designing behaviour change interventions, *Implement Sci.* 2011; 6: 42. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3096582/>
- ^{xi} Ibid.
- ^{xii} Michie, S. et al (2013) The behaviour change technique taxonomy (v1) of 93 hierarchically clustered techniques: building an international consensus for the reporting of behaviour change interventions, *Ann Behav Med.* 2013 Aug;46(1):81-95. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/23512568>