

“An insight into research at the Food Industry Centre”



Dr Ellen W Evans – Junior Research Fellow

As a researcher at ZERO2FIVE Food Industry Centre (FIC), Dr Ellen Evans obtains insight to many areas relating to food. However in this insight blog, the focus is shifted to give us insight on Ellen and the research conducted at the FIC.

What does food research mean to you?

I know that my family think I knock on peoples doors and ask what breakfast cereal they buy, but it's far more complex than that. Given the association of the domestic kitchen with sporadic foodborne illness, there is a need to determine consumer food safety practices. Therefore, I specialise in consumer food safety research and for this I have to understand how people behave but also how foodborne pathogens behave and how these result in food safety risks, as well as understand how these risks can be reduced.

Why do we need food safety research?

Food safety research, including observational and microbiological analyses, gives us an in-depth understanding of how consumer food safety behaviour can increase food safety risks in the home. Our research is utilized to inform the development of targeted food safety educational interventions to reduce foodborne risks to consumers or specific vulnerable patient groups in healthcare settings.

How did you become interested in food safety research?

- Over a decade ago (yes I am that old!) having qualified and worked as a professional chef, my interest in food science, microbiology and the relationship between people and food, resulted in me pursuing a Food and Consumer Science degree at Cardiff Metropolitan University. During my summer placement with a food magazine, a subscriber sent in a letter expressing their disgust at witnessing someone failing to wash their hands after using the toilet at a supermarket and this instantly sparked my interest in consumer food safety research. Consequently, my dissertation project determined young adults' food safety knowledge and self-reported

practices. After which, I secured a Vice Chancellors' Doctoral Award scholarship to complete a PhD at Cardiff Metropolitan University on older adults' domestic food handling and storage practices associated with the risk of listeriosis.

On completion of my doctorate, I became a researcher at the FIC and have conducted a number of research projects. Some of my post-doctoral, recently completed and ongoing externally funded research projects include:

- Tenovus Cancer Care Innovation Grant: Food safety strategies for cancer patients
- Welsh Government Food Sector Development Framework: "Food for the Future". A Food, Health and Nutrition Project.
- Welsh Government Food Division project to Support the Food & Drink Sector: Understanding the Barriers to Accreditation in the Food & Drink Sector in Wales.
- Research and Enterprise Get Started fund: Feasibility study to assess hand hygiene practices of food handlers in Welsh SMEs.
- Health Technology Challenge: Evaluation of the acceptability of tablet-based and paper-based food-safety and nutrition interventions for carers of chemotherapy patients.

What does a typical week as a researcher at the FIC involve?

I don't think I've ever had a typical week, it is an extremely varied job that involves team work, lone working and meeting new people on a regular basis. One day I can be sat in a food manufacturing site watching employees washing their hands assessing if their practices are compliant with protocols, the next I'm conducting a focus group to develop a food safety booklet, the following day I'm advising healthcare professionals on delivering food safety information to vulnerable patient groups.

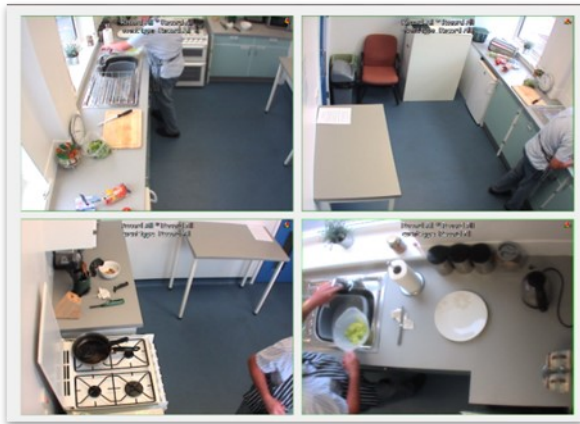
Other days I can be in the office preparing a manuscript for an academic journal on the outcomes of our latest research projects or writing research grants for future research. In addition to this, I regularly supervise research projects from BSc, MRes and PhD students. I frequently get telephone calls from journalists regarding food safety issues in the media. I contribute to learned societies such as the Society for Applied Microbiology, the International Association for Food Protection and I am on the committee for the food safety education professional development group.

The summer is always a busy time for disseminating the findings of FIC research projects to various conferences, over the years, I have been fortunate enough to visit some very interesting places, this year the FIC Food Safety Research Group and I will be attending:

- International Association for Food Protection, Tampa, Florida, USA.
- European Symposium on Food Safety, Brussels, Belgium.
- UK Affiliate Food Protection conference, Cardiff, Wales.
- International Conference on Culinary Arts and Sciences, Copenhagen, Denmark.
- Society for Applied Microbiology, Newcastle, England.
- International Society for Quality in Healthcare, London, England.
- International Conference Food Science and Technology, Sitges, Spain.
- Dubai International Food Safety Conference

How do you conduct food safety research?

We use a variety of research skills (not just asking what breakfast cereal someone buys!). Some people may say I'm quiet whilst others say I'm chatty, and the ability to build rapport with a research



participant and probe further or remain quiet to allow people to talk, have to be used to ones advantage in research interviews. Furthermore, I love 'people watching', which comes in particularly handy at times as the FIC is internationally recognised for the observed food safety behavioural research that we've conducted over the years.

What research facilities do you have at the FIC?

In addition to laboratories for microbiological analysis, we are very fortunate to have a model domestic kitchen housed at the FIC, it is a typical domestic kitchen with the addition of ceiling mounted digital cameras. This valuable innovative facility allows me and the [Food Safety Research Group](#) to observe food safety

practices that may increase the risks associated with foodborne disease in the home.

Furthermore, we can clean the model domestic kitchen according to a validated cleaning protocol before and after each participant, which enables the determination of post-food preparation microbial contamination. This allows for novel statistical analysis to link the relationships between observational and microbiological data to determine potential routes of cross contamination.

Why do you need to watch people, when you could just ask them what they do?

Although determination of knowledge, attitudes and self-reported practices through interviews or questionnaires generates insightful consumer food safety data, none are as valuable as actual behavioural data. Observational data provide the most reliable information denoting consumers' actual food safety behaviour. Knowledge and self-reported data can be subject to social desirability bias, whereby the research participant gives the response they think to be most favourable and not one that is true to their behaviour. We regularly triangulate behavioural data with cognitive data to determine associations and discrepancies.

Is there a need for observed behavioural data?

In 2014, I conducted a [review of international consumer food safety research](#). The review ascertained that less than a third of studies determine actual consumer food safety behaviours and that three quarters of such studies are predominantly conducted in consumer's home kitchens. However, when conducting research in the home kitchens of consumers, variables are not controllable and food preparation sessions are not so easily replicated, thus making comparison problematic. Furthermore, due to the researcher's presence in the kitchen, such direct observation may be subject to reactivity bias as consumers may change their behaviour as a result of being observed. The review determined that only three-percent of consumer food safety studies are conducted in model domestic kitchens. The model domestic kitchen enables observation in a controlled setting; variables considered important for food safety can be controlled and enables direct comparison between participants and between repeated food preparation sessions. The method enables a direct interpretation of actual consumer behaviour. To date, the majority (70%) of published observed consumer food safety studies based on model domestic kitchen data have been conducted at the FIC.

Are behaviours in model domestic kitchens reflective of actual consumer practices?

It may be argued that behaviour in such environments may not reflect actual consumer practices, however, previous [FIC research](#) has determined the reliability of the technique and behaviours in a model domestic kitchen are representative of those implemented in consumers' homes.

What would be your advice be to someone considering a career in research?

Go for it! You will need to gain experience in quantitative and/or qualitative methodologies and research techniques, have attention to detail, project management and analytical skills. But the most important thing is to be curious and have the desire to learn.

Questions regarding food safety research at the FIC can be forwarded to Ellen and the FIC Food Safety Research Group:

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Recent FIC journal publications:

- Evans, E. W. & Redmond, E. C. (2014) Behavioural Risk Factors Associated With Listeriosis in the Home: A Review of Consumer Food Safety Studies. *Journal of Food Protection*. 77(3) pp 510 – 521.
- Evans, E. W. & Redmond, E. C. (2015). Analysis of Older Adults' Domestic Kitchen Storage Practices in the United Kingdom: Identification of Risk Factors Associated with Listeriosis. *Journal of Food Protection*, 78(4), 738-745.
- Evans, E. W. & Redmond, E. C. (2016) Older adult consumers' knowledge, attitudes and self-reported storage practices of ready-to-eat food products and the risks associated with listeriosis. *Journal of Food Protection*, 79(2), 263-272
- Evans, E. (2016). Older adults' domestic kitchen practices associated with an increased risk of listeriosis. *Perspectives in Public Health* 136(4): 199-201.
- Evans, E. (2016). Domestic kitchen risk factors of listeriosis among older-adult consumers. *Microbiologist* 17(1): 14 - 17.
- Evans, E. & Redmond, E. (2016) Time-Temperature Profiling of United Kingdom Consumers' Domestic Refrigerators. *Journal of Food Protection*, Vol 79, p2119 – 2127. Evans, E. W. & Redmond. An assessment of food safety information provision for UK chemotherapy patients to reduce the risk of foodborne infection. Accepted for publication in *Public Health*.

The ZERO2FIVE Food Industry Centre at Cardiff Metropolitan University, provides food businesses with technical, operational and commercial support to enable them to compete more effectively.

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