FSA research suggests new higher estimates for the role of food in UK illness

The FSA is also publishing a ground-breaking five-year study into the extent of norovirus in food carried out by a consortium of UK scientists, and a further FSA paper which reviews and updates the assessment developed during that project.

These new figures do not indicate an increase in total illness, or any new risk to public health, but rather provide a better estimation of the proportion of infectious intestinal disease that is due to food. The overall estimate for this type of illness, from all sources, remains the same, at around 18 million cases each year in the UK.

These new studies and their accompanying models reveal:

- an estimated 380,000 cases of norovirus linked to food occur in the UK per year
- a breakdown of the roles of the main transmission pathways in food suggest eating out accounts for an estimated 37% of all foodborne norovirus cases, takeaways at 26%, open-headed lettuce on retail sale at 30%, raspberries on retail sale at 4%, and oysters on retail sale at 3%
- the revised foodborne norovirus estimate, combined with better analysis of how many illnesses of unknown cause are also likely to be caused by food, suggest around 2.4 million estimated UK cases of foodborne illness occur each year

Professor Guy Poppy, Chief Scientific Adviser to the Food Standards Agency, said:

> 'This work gives us a much better idea of the role of food in the spread of all infectious intestinal disease in the UK. However, this does not mean more people are getting unwell, only that we estimate food is responsible for more existing cases than previously thought.
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> 'Most of this increase is due to innovative new research into foodborne norovirus. As part of this, sampling surveys focused on the five most common food-related transmission routes. Although the percentages may appear striking, the risk to consumers remains very low for most of these pathways. For example, on average, an individual would only end up with norovirus once in every 15,000 portions of open-headed lettuce – that would take around 40 years. Oysters pose the highest risk per serving, with illness likely on average once in around 160 servings.
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> 'We are not changing our advice to consumers and businesses. Instead this research reinforces the need for the highest standards of good personal and food hygiene practices in catering establishments and at home to avoid infection.'

Professor Sarah J. O’Brien, lead NoVAS researcher, added:

'Estimating the contribution of norovirus to the burden of UK foodborne disease has been particularly difficult up until now. This is largely due to people not attending doctors' surgeries when they are unwell with symptoms of the winter vomiting bug. And whilst helpful in preventing the spread of the virus and alleviating the strain on healthcare settings, it does mean that crucial information about the virus cannot be collected. This is why the development of the first risk assessment of this type for the UK is particularly significant.'

The FSA can now use this new and improved understanding of the significance of foodborne disease to inform future efforts to control and reduce the risk of infection posed to the public from food by all pathogens.

Find out more about the importance of good food hygiene to reduce the risk of spreading norovirus.

Food business operators can find more guidance on personal hygiene when handling food.

Notes to Editors

Publications

1. The five-year Norovirus Attribution Study (NoVAS): Assessing the contribution made by the food chain to the burden of UK-acquired norovirus infection launched in 2014 and was funded by the FSA (£2.5m), in an effort to improve our understanding of the contribution food makes to the transmission of norovirus in the UK – as opposed to person-to-person – and how that might impact on overall rates of illness related to food. A team of researchers from across the UK, led by Professor Sarah O'Brien, conducted for the first time a series of retail surveys in oysters, lettuce and raspberries (selected based on existing evidence which identified them as the most significant risk), as well as samples from catering and takeaway preparation areas. These tests were combined with existing data on outbreaks to feed a new predictive model for the prevalence of foodborne norovirus.
2. In line with government-wide recommendations on the quality assurance of models used to inform government decision-making, an internal review was conducted by the FSA following NoVAS – resulting in a technical report entitled, Review of Quantitative Risk Assessment of norovirus transmission from domestic and catered foods. This confirmed that the model structure was fit for purpose, and made use of the latest data (that had become available after the NoVAS modelling work had been completed) to re-run the model to produce the following revised estimates:
    - Foodborne transmission of norovirus was estimated to account for around 380,000 (just over 12%) of all 3 million annual UK norovirus cases. The previous estimate in 2009 had been 73,000 (2.5%).
    - Of the five pathways or sources identified as posing the most significant risk for norovirus foodborne transmission, based on existing knowledge, the study revealed that eating out was responsible for 37% of foodborne norovirus cases, Takeaways 26%, Oysters at retail 3% (highest risk per serving), Raspberries at retail 4%, and lettuce at retail 30%.
3. The Foodborne Disease Estimates for the United Kingdom in 2018 paper includes the Foodborne Disease Estimation Model (FDEM). This is a model developed by analysts at the FSA to provide annual estimates for the burden of foodborne disease in the UK. The FDEM produces estimates for the total number of cases of infectious intestinal disease (IID) in the UK as well as the number of those cases that are due to food. It also provides individual estimates for the major IID and foodborne disease-causing pathogens. The

increase in the proportion of foodborne norovirus cases estimated by NoVAS has a significant impact on the overall picture of foodborne disease, and so the FDEM was updated with the NoVAS estimates in order to create updated estimates of the burden of foodborne disease in the UK.

Other notes

- Infectious intestinal disease (IID) is defined as a disease which produces gastrointestinal symptoms due to infectious agents. It is often characterised by the acute onset of diarrhoea and/or vomiting, and can be accompanied by additional symptoms including fever and abdominal pain. It is caused by a wide range of pathogens or their associated toxins, and infection can result from the ingestion of contaminated foods. Disease is generally mild and of short duration.
- Of the 18 million cases of IID in the UK every year, around 60% (or 11 million) are never attributed to a specific cause. The FDEM is able to apply the foodborne proportion of cases of IID from known sources (1 million) to those with no cause. As a result, the number of foodborne cases from unattributed sources is estimated to be around 1.4 million per annum, taking the overall foodborne disease figure to around 2.4 million.
- In terms of food pathways for norovirus, whilst open-headed lettuce was found to account for 30% of foodborne cases, when considered against the huge volume consumed, the risk remains low, equivalent to an average of getting ill once every 15,000 meals containing open-headed lettuce are eaten. Meanwhile, raspberries equates to a norovirus infection once per 12,500 portions. In contrast, oysters were found to account for 3% of the total but pose the highest risk per serving – estimates suggest an average of getting ill once in every 160 portions. Consumers of takeaways/catered food would on average get ill from one in 2,000 meals.

Advice to consumers and food businesses

- It is important to wash all fruit and vegetables before eating them. Advice on how to wash, safely store and handle fresh fruit and vegetables to prevent food poisoning, is available on NHS website. There is no need for consumers to re-wash ready-to-eat bagged salads unless it says so on the packet.
- To help prevent passing norovirus on, consumers are advised to follow good hygiene practices such as washing hands with soap and water after using the toilet and before preparing or eating food. It is also important to prevent cross-contamination when preparing and storing food by handling food carefully, washing chopping boards and utensils and cleaning surfaces properly. Consumers can find out more about the importance of good food hygiene and practices through our 4Cs messaging.
- People should be aware of the risks of eating raw oysters. We advise that vulnerable groups, such as elderly people, pregnant women, very young children and people who have a weakened immune system should avoid eating oysters and other raw or lightly cooked shellfish to reduce their risk of getting food poisoning.
- In catering environments and takeaways, the main source of norovirus is considered to be cross-contamination linked to poor hygiene. This highlights the importance of good personal and food hygiene. These measures and more are set out in our Safer Food Better Business guidance.
- Consumers are advised to check the food hygiene rating when choosing a takeaway or place to eat outside their home.
- An FSA Explains Norovirus video is available on our website, alongside information and assets relating to other food poisoning pathogens, including campylobacter, e.coli, salmonella and listeria.
- Food Standards Scotland is the public sector food body for Scotland and has devolved responsibility for food safety and standards in Scotland.