



Consumer research regarding people at higher risk of food poisoning

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Contents

Glossary of terms	1
Executive summary	2
Background	5
Project method	7
Research findings	11
Understanding food poisoning	12
Understanding of vulnerable groups	18
Defining older adults.....	22
Testing definitions.....	24
Sources of information and resources.....	32
Key findings - summary and insights	36
Final recommendations	39
Appendices:.....	40

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Glossary of terms

FSS	Food Standards Scotland
Vulnerable groups	People at higher risk of severe illness following food poisoning
Underlying medical conditions	Examples are chronic illness or a weakened immune system
Age-related factors	Specifically, young children under five years of age and adults aged 65 years and older
SEG	Socio Economic Group: defined by the National Statistics Socio-economic Classification (NS-SEC) ¹ . It categorises individuals into eight main analytic classes, ranging from higher managerial and professional occupations to routine occupations.
General population	Aged 50 to 64 years
Older Adults	Aged 65 years and older
Immunocompromised	If respondents have any of the listed health conditions and/or are taking any of the listed medications, then they would qualify as being immunocompromised. See recruitment questionnaire in Appendix B.
Carer	Defined as a person who is a carer of an older adult, prepares meals for an older adult or shops regularly for an older adult.
PPIs	Proton pump inhibitors
Definitions by population type	Young children, People with underlying health conditions, People prescribed medications, Those who are pregnant, Older adults.
Definitions organised by condition	Age/life stage, Underlying health conditions, Medication and treatments.
FSS	Food Standards Scotland

¹<https://www.ons.gov.uk/methodology/classificationsandstandards/otherclassifications/thenationalstatisticsocioeconomicclassificationnssecrebasedonsoc2010>

Executive summary

Background and research approach

Food Standards Scotland (FSS) commissioned qualitative consumer research to explore adults' understanding of people at higher risk of food poisoning, referred to in this report as the clinically "vulnerable groups" to foodborne illness, with a particular focus on definitions, terminology, and self-identification. The research was undertaken in response to a revised, evidence-based definition of increased vulnerability to foodborne illness, developed following an academic review commissioned by FSS in 2023. While the revised definition reflects current scientific understanding, there was limited insight into whether consumers recognise, understand, or identify with these vulnerability categories in practice.

Seven one-hour online focus groups were conducted between 3rd and 17th February 2026 with a total of 29 respondents from across Scotland. The sample comprised four different types of respondent that included members of the general public aged from 50 to 64 years old, older adults aged 65 and over, people who are immunocompromised, and carers. Respondents represented a mix of socio-economic groups, genders, and geographic locations. Discussions explored perceptions of food poisoning, awareness and understanding of vulnerable groups, responses to alternative definitions and terminology, sources of food safety information, and information needs.

Key findings

Understanding of food poisoning

Food poisoning was not a top-of-mind concern for most respondents. Knowledge was mainly based on personal experience rather than official guidance, and respondents were confident in their habits despite engaging in risky behaviours (e.g. ignoring use-by dates, washing raw chicken, reheating food repeatedly, judging safety by smell/appearance).

- Carers are more cautious due to responsibility for others
- Immunocompromised individuals do not show consistently higher awareness of food poisoning and food safety
- Older adults rely heavily on long-standing habits and recall little recent guidance

Understanding of vulnerable groups

Respondents showed a broad, intuitive understanding of vulnerability, commonly identifying young children, older people with poor health, individuals with weakened immune systems, and those undergoing treatments such as chemotherapy as being at higher risk of severe illness from food poisoning. There was a lack of clarity on why some people are vulnerable. Other areas of confusion included:

- What counts as a "young child"
- Which conditions increase risk
- How treatments/medications affect immunity

Explaining vulnerability through immune system function significantly improved understanding and self-identification.

Defining older adults

- Age 65 years and older was recognised, but many in this group rejected the label “older adults”, especially if they felt healthy
- People responded better to functional descriptions (e.g. immune decline) rather than age alone
- Adding flexibility (e.g. “typically aged 65 and over”) reduced resistance to self-identify with this group

Testing definitions of vulnerable groups

The most effective and preferred definition was detailed and condition-based. This version was favoured by five of the seven groups because it:

- Clearly explained why certain people are more vulnerable
- Used plain, accessible language without being overly simplistic
- Included concrete examples of health conditions and medications (e.g. chemotherapy, immunosuppressants, omeprazole)
- Encouraged people to recognise that vulnerability can be cumulative
- Supported self-identification across multiple categories

Definitions that lacked explanatory detail were consistently viewed as less credible, less helpful, and more likely to prompt resistance, particularly among older adults.

Sources of information

People rarely sought food safety information proactively. Instead, they relied on:

- Packaging, recipes, and cooking instructions
- Family advice and personal experience (often outdated)

Digital tools like Google and AI (e.g. ChatGPT, Copilot) were used as starting points, but information was often cross-checked with trusted sources like NHS or government websites.

Implications and recommendations

The findings highlight a clear gap between intuitive awareness of vulnerability and informed understanding of risk. Explaining why certain groups are vulnerable, particularly in relation to immune function, was critical in supporting understanding, acceptance, and self-identification.

Overall, a detailed, condition-based definition was found to provide a robust, inclusive and well understood framework for communicating vulnerability to foodborne illness and offers a strong foundation for future FSS food safety messaging and interventions.

Future consumer-facing food safety messaging should:

- Adopt condition-based definitions with clear explanations

- Include qualifying language and rationale for age-based terminology
- Provide examples of medications and conditions that are specific and familiar
- Account for entrenched habits and low salience of food poisoning risk, particularly among older adults
- Prioritise food safety messages on issues that are commonly misunderstood such as washing chicken, fridge temperature control, use-by dates and reheating food
- Embed food safety guidance into everyday information sources (e.g. packaging, recipes, healthcare interactions)

Background

The risk of foodborne illness is not uniformly distributed across the population in Scotland, with certain groups more likely to become ill and face a higher likelihood of severe illness from food poisoning. These populations are commonly referred to as clinically vulnerable groups to foodborne illness. The designation 'clinically vulnerable' is evidence-based and reflects differences in physiological resilience rather than personal behaviour or lifestyle. Its purpose is to support proportionate risk communication, targeted public health messaging, and the development of interventions that protect those most at risk of severe outcomes.

In 2023, Food Standards Scotland (FSS) commissioned academic researchers to review the existing definition of clinically vulnerable group drawing on contemporary evidence regarding patterns of foodborne illness ("Examining Vulnerability to Foodborne Illness: A Comprehensive Review of "Clinically Vulnerable Groups"). The objective of this review was to ensure that the definition accurately reflects current evidence and supports proportionate and effective food safety messaging.

Based on the findings of this review, a revised definition of vulnerability to foodborne illness has been developed. Under this definition, individuals may be classified as vulnerable due to:

- **Underlying medical conditions** (for example, chronic illness or a weakened immune system),
- Use of **certain medications or treatments** that reduce immune response, and/or
- **Age-related factors**, particularly very young children and older adults, whose immune systems may be less able to fight infection (specifically, young children under five years of age and adults aged 65 years and over)

However, there is currently limited understanding of whether, and in what ways, consumers recognise and identify with the different vulnerability categories outlined in this revised definition. Qualitative research was therefore required to explore consumers' interpretations and perceptions of the proposed vulnerable groups' definition.

Further evidence was also needed regarding the most appropriate terminology for referring to the older population. In particular, FSS was considering the use of the term "*older adults*" as an alternative to an explicit age-based threshold (such as "65 years and over"). While at the time the term "*older adults*" was used in food safety messaging in the UK, concerns were raised that it may be unclear and that some people may not realise it applies to them, including people aged over 65 not recognising themselves as part of this group, or younger people incorrectly assuming inclusion. Evidence was therefore required to assess whether this confusion exists in practice.

Accordingly, qualitative consumer research was required to examine adults' understanding of the revised vulnerable groups' definition, their perceptions of personal susceptibility to foodborne illness, and their views on the use of the term 'older adults'. Findings from this research will directly inform FSS consumer-facing food safety messaging, support improved

identification of populations at highest risk, and contribute to the development of targeted interventions aimed at reducing the incidence and burden of foodborne disease in Scotland.

Research objectives

The overarching objective was to determine the most appropriate way to describe the older population group as well as determine adults' understanding of the vulnerable groups' definition. Specifically, the study sought to explore:

The definition of vulnerable groups

- Understanding and awareness of vulnerable groups to foodborne illness in general
- Test different versions of the vulnerable groups' definition to determine which is preferred/best understood
- Understanding and awareness of susceptibility to foodborne illness

“Older adults” terminology

- Test wording/phrasing of 'older adults' versus an age-specific cut-off of 'older adults' (those aged 65 years and older)
- Determine whether respondents identify as 'older adults' versus 'those aged 65 years and older'

Information and resources

- Gather information on where respondents obtained general (and specific) information about food safety/vulnerable groups
- Understand what their most used, trusted and useful sources of information are
- Determine what information people look for regarding food safety/vulnerable groups

Project method

A qualitative approach was selected to gain deep insight into respondents' understanding of the vulnerable groups' definitions. The research was conducted across a series of seven, one hour-long, focus group discussions with members of the public from across Scotland. The focus groups took place between 3rd and the 17th February 2026. Respondents were paid an incentive of £45 to participate in the focus group.

Respondents were drawn from across a range of urban, rural and suburban areas. Areas included Central Scotland, Edinburgh, Glasgow and West Scotland, Perthshire, Aberdeenshire and the North, including one respondent from Orkney.

All research was undertaken in strict accordance with UK GDPR legislation and the Market Research Society's Code of Conduct. A copy of the technical appendix can be found in Appendix A of this report.

Recruitment

Using a combination of existing databases, known contacts and "cold" in-street recruiting Progressive's team of seven experienced qualitative recruiters were responsible for recruiting respondents for all focus groups. Recruitment was conducted using detailed specifications agreed with FSS to ensure that the final sample reflected the target audiences and research objectives (Table 1).

A structured recruitment questionnaire was designed and used to screen respondents against the agreed quotas. The questionnaire incorporated definitions and lists of relevant medications supplied by FSS to enable accurate identification of respondents who were immunocompromised. A copy of the recruitment questionnaire can be found in Appendix B of this report.

In addition, information was collected on any vulnerabilities respondents may have had, as well as behaviours that could influence susceptibility to foodborne illness (Appendix B). While no formal quotas were set on these characteristics, collecting this information provided important contextual insight and ensured a balanced mix of respondents across groups, supporting richer interpretation of the findings.

Validation

Ahead of the group discussions, respondents were 'validated' to double check that the information provided by each recruiter was accurate. An e-mail was sent to all respondents asking them to complete key validation keys ahead of the discussion. Respondents were reminded to do this to ensure that as many responses as possible were received. The validation e-mail also reminded respondents that the session is recorded and reassured respondents that the session is confidential. It also informed respondents on how they will receive their incentive via Progressive's incentive sharing partner, Ayda.

Validation responses were checked against the initial responses given by recruiters. Any discrepancies were checked directly with the recruiter. If a respondent was found to be out of specification for the project, then the recruiter would have been asked to re-recruit another respondent that is more relevant. This turned out not to be the case.

Fieldwork – teams links

Prior to the discussion taking place, e-mails were sent to all respondents reminding them of the session date, time and the link to access the discussion. Respondents were reminded once again that the session is recorded, how to log in and how to claim their incentive following the discussion. Once fieldwork had taken place and the field team had confirmation that respondents turned up and contributed, the respondents were paid via the Ayda platform.

Sample profile

The sample plan was drawn up and agreed with FSS. The sample covered four target audiences: general population aged 50-64, older adults aged 65 years and above, people who were immunocompromised, and carers.

The sample included an even mix of gender and representation from minority ethnic groups. Respondents were grouped by age and socio-economic group (SEG) where possible for groups one to four. SEG was allowed to fall out naturally for groups five to seven. A wide age range of respondents from 33 years old to 79 years old took part in these groups.

The original aim was to recruit five respondents to each group with the aim of achieving a sample of 35 respondents. Some participant drop-out occurred across four groups making the final sample size 29.

Table 1: Sample profile

Group	Audience type	SEG	Age	Number in group
1	General population	ABC1	50 to 64	5
2	General population	C2DE	50 to 64	4
3	Older adults	ABC1	65 and above	5
4	Older adults	C2DE	65 and above	3
5	Immunocompromised	Mixed	Mixed	4
6	Immunocompromised	Mixed	Mixed	3
7	Carer (who cares for, prepares meals for or shops for an older adult)	Mixed	Mixed	5
Total number of respondents				29

Moderation

Focus groups were held online over Teams which enabled respondents from across different geographical areas of Scotland to join. Four of the groups were viewed by an FSS member with observers turning off their cameras and muting their microphones during the course of the discussion. Each group began with a welcome and introductions. Consent for video recording was confirmed, and respondents were reassured about confidentiality, GDPR, and compliance with the MRS Code of Conduct.

Three very experienced executives from Progressive moderated the groups sticking closely to a topic guide that was designed in collaboration with FSS. Different versions of messaging and definitions of vulnerable people were tested to determine which communicated better. The topic guide was formed of six sections which included:

- Introduction where consents were confirmed
- Background to understanding of food poisoning
- Understanding of vulnerable groups and who is considered vulnerable
- Testing of definitions developed by FSS
- Short investigation into sources of information
- Final wrap up session where a reminder of key food safety behaviours was shared with respondents.

A full copy of the topic guide can be found in Appendix C.

Stimulus in the form of a PowerPoint document of showcards was shared with respondents to support the discussions. It comprised the following:

- One slide to outline types of vulnerable groups
- Two slides that outlined two versions of definitions of vulnerable people defined by category. One version simply outlined category inclusions, the other more detailed version gave an explanation of why inclusions belong
- Two slides that outlined two versions of definitions defined by types of people. One version simply outlined category inclusions, the other more detailed version gave an explanation of why inclusions belong
- Two slides that outlined key food safety behaviours

All of the stimulus carried FSS branding. A full copy of the stimulus can be found in Appendix D.

Analysis approach

Each focus group was recorded and a transcription made available by Teams. Moderators also took discussion notes and quotes during the process of moderating groups. Moderators reviewed discussion notes, transcripts and recordings; aligned on key themes via a brainstorm; and constructed a comprehensive summary of each group. Findings were checked against objectives to ensure coverage and coherence. The lead author of the report led the brainstorming session and read across all notes and transcripts of the focus group discussions.

Project rationale and limitations

Strengths of the approach taken include the following:

- The qualitative focus group method enabled in-depth exploration of respondents' understanding, perceptions, and language around vulnerable groups and foodborne illness.
- Group discussion facilitated the sharing and comparison of experiences, helping to surface common attitudes, misconceptions, and areas of agreement or disagreement.
- Testing alternative definitions within the sessions allowed immediate feedback on clarity, tone, and effectiveness.
- Online delivery via Microsoft Teams enabled participation from across Scotland, supporting geographic diversity while remaining time- and cost-efficient.
- Use of a structured topic guide ensured consistency across groups, while skilled moderation allowed flexibility from different executives to probe emerging themes.

Overall, the research was very effective although a few limitations should be noted:

- Due to the small sample sizes involved and the methods of respondent selection, qualitative research findings do not provide statistically robust data. However, this type of research does facilitate valid and extremely valuable consumer insight and understanding.
- Some participant drop-out was experienced in four of the groups leading to a slightly smaller sample than had been proposed.

Research findings

The research findings form the main body of the report and are structured thematically. The first section explores respondents' general understanding of food poisoning, followed by detailed findings on awareness and perceptions of vulnerable groups. Dedicated sub-sections examine definitions of young children, underlying health conditions and prescribed medications. A detailed section is dedicated to the concept and terminology of older adults. The report then presents the results of testing different versions of the vulnerable groups' definitions and identifies the preferred approach.

Subsequent sections explore sources of information and resources, including where respondents obtain food safety information, which sources they trust most, and the types of information they are most likely to seek.

The report concludes with a Key Findings – Summary and Insights section, drawing together the main themes and implications for food safety messaging and consumer engagement.

Finally, a series of appendices provide supporting technical detail, including the technical appendix, recruitment questionnaire, topic guide, and stimulus materials, ensuring transparency and robustness of the research process.

Throughout the report verbatim comments feature to evidence findings and illustrate the linguistic style and thinking of respondents who took part. While these are anonymous, they are attributed to the sub-group from which respondents were recruited.

Understanding food poisoning

Respondents' general understanding of food poisoning was examined largely as a warmup exercise to the group discussions as well as to set some understanding of the priority that different groups place on it. Moderators spent five to ten minutes discussing this at the beginning of the groups and then at the close of the group shared a showcard that depicted simple food safety tips known as the "4Cs" (chilling, cleaning, avoiding cross-contamination and cooking) and spent five to ten minutes discussing respondents' thoughts on food safety and where they could go for further information. See Figure 1a and 1b for the 4Cs for the showcards.

This section of the document reports on outcomes from both elements of discussion bringing together initial thoughts and considered thoughts based on what they had heard from the group discussion and information provided by FSS.

While this section was not designed as a main point of enquiry it provides a good understanding of where respondents are currently positioned in terms of their understanding of food poisoning and the importance they place on this subject. In so doing, it demonstrates some of the challenges associated with receptiveness to messaging and interventions aimed at reducing the incidence and burden of foodborne illness in Scotland.

Figure 1a: 4Cs showcard



Figure 1b: 4Cs showcard

How can food poisoning be prevented?
Just follow the 4Cs when preparing and cooking food to stay safe:

<div style="background-color: #d9ead3; padding: 5px; border: 1px solid black; margin-bottom: 10px;">Chilling</div> <ul style="list-style-type: none"> • Keep your fridge between 0°C and 5°C - use a fridge thermometer to check this. • Always follow use-by dates. 	<div style="background-color: #d9ead3; padding: 5px; border: 1px solid black; margin-bottom: 10px;">Cleaning</div> <ul style="list-style-type: none"> • Always wash your hands in warm, soapy water before preparing meals and especially after handling raw meat or poultry. 	<div style="background-color: #d9ead3; padding: 5px; border: 1px solid black; margin-bottom: 10px;">Avoid Cross-contamination</div> <ul style="list-style-type: none"> • Never wash raw chicken! This can spread germs around your sink and kitchen. • Use different chopping boards and utensils for raw meat/poultry and ready-to-eat food (or wash between use). 	<div style="background-color: #d9ead3; padding: 5px; border: 1px solid black; margin-bottom: 10px;">Cooking</div> <ul style="list-style-type: none"> • Cook food thoroughly until steaming hot. This ensures that any harmful bacteria on food are killed.
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Find out more at foodstandards.gov.scot

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Overview

Across all groups high levels of self-belief and reliance on personal experience made it difficult for food safety messaging in the media to gain traction and influence behaviour. Food poisoning was not high on the list of priorities for most groups. Carers were more conscious of good practice largely as a result of anxiety shaped by past experience of the COVID–19 pandemic and hygiene practices adopted then and a desire to protect loved ones. Those who were immunocompromised did not exhibit any higher levels of consciousness to food poisoning than healthy members of the public. Older adults were particularly entrenched in their habits and relied on the habits of a lifetime.

Understanding of food poisoning varied widely across all groups, as most respondents relied on their own experiences rather than consistent or authoritative information. Few actively sought out technical or research-based guidance, and many expressed confidence in their current practices because they had “been fine up until now”.

Most respondents believed food poisoning exists on a spectrum of severity and felt it was more likely to be contracted when eating out of the home. When discussing causes, food poisoning was commonly attributed to high-risk foods such as prawns, chicken and seafood, as well as poor kitchen and personal hygiene, undercooking (particularly chicken), reheating food more than once or inadequately, and cross-contamination between raw and cooked foods.

Despite this general awareness, respondents demonstrated notable gaps between understanding and actual practice. Examples of poor practice included consuming food past its use-by date, not checking fridges temperatures and washing raw chicken.

When shown the 4Cs guidance, respondents generally understood the principles intuitively, although this did not always reflect their everyday behaviours. They claimed to understand them intuitively and highlighted effective behaviours they already practised, such as handwashing, following packaging instructions, storing food correctly and maintaining high standards of general cleanliness. However, some aspects were less well recognised or misunderstood, particularly the risks associated with washing raw chicken and the importance of controlling fridge temperature. This was true of all groups.

Views from general population

In general, food poisoning was not top of mind. A few had completed a food safety course years ago as a result of fostering or working in a delicatessen, but many didn't pay close attention to current food hygiene practices other than messages at Christmas to defrost turkeys properly. Some were careful to check out reviews of restaurants before eating out.

Despite this, respondents who had experienced severe food poisoning tended to describe it as a serious and frightening event, characterised by rapid onset, significant danger, and in some cases the need for hospitalisation. For example, one participant recalled becoming severely ill while on holiday in Turkey, which strongly shaped their understanding of food poisoning as an acute and potentially dangerous condition. In contrast, others referred to much milder experiences, using terms such as "a dodgy tummy," while some described incidents where family members, including children, became very unwell after eating particular foods such as seafood.

These accounts highlighted a broad perception of food poisoning as existing along a wide spectrum of severity.

"I had some seafood that wasn't cooked properly and I've genuinely never been as ill in my entire life. I was throwing up, running to the toilet, got to the point where I had to sleep on a mattress outside the bathroom door, and then I ended up having to go to hospital because I was so dehydrated and so unwell. It was that severe."

General Population ABC1

"I mean, I think about it mostly like when I'm going out, like... especially when it's like Christmas time, you have a night out with the job folks. If I never heard of the place or I'll go and do some, you know, I'll go on the internet and see if anything came up about the place, if they had any like food poisoning from people." **General Population ABC1**

Views on food handling practices, particularly defrosting methods, were mixed. Many respondents reported using outdated or unsafe thawing practices, such as leaving food on the kitchen countertop or placing it in warm water, indicating gaps between perceived and recommended food safety behaviours. Some had a vague recollection of seeing food safety advice on TV but couldn't specify precisely where or when.

"I've seen one where it tells you if you're using raw chicken to clean the surfaces in that after you've prepared it." **General Population C2DE**

[On seeing the showcard of 4Cs] “My goodness, I'm never washing chicken again.”
General Population C2DE

Views from older adults

Older adults relied strongly on their own personal experience and habits of a lifetime rather than food safety messaging. They didn't recognise or seek out information on food safety. None could recall food safety messaging. Like other groups, understanding of food poisoning was largely based on personal experience and was therefore inconsistent.

A few had experienced food poisoning in a mild form, one had contracted dysentery and another salmonella poisoning while abroad. Two mentioned being more careful when cooking for others but in general the attitude of older adults was fairly relaxed towards food poisoning.

“I think most people know that you're not going to prepare food for anything like that if your hands are full of oil or dirt or muck and things. As [another participant] says, it's the way you've been brought up and you learn from parents and others.”

Older Adult C2DE

“I would probably be more concerned if I was doing it for others, possibly a wee bit slap dash when I'm just doing it for myself, maybe not as careful as I should be. But certainly, if I was doing it for other people, I would be making sure I didn't use the same knife for raw meat and then use it for cooked food or veg.” **Older Adult ABC1**

“I do quite a lot of cooking and like entertaining, so the last thing I want is to give anybody food poisoning or, you know, an upset tummy because of something that I've done. So I have different colour-coordinated chopping boards.” **Older Adult ABC1**

Views from immunocompromised

Many of those that were immunocompromised considered food purchased from out of home to be more dangerous than in-home food. A few had experienced food poisoning and as a result avoided the foods they thought caused it, usually seafood. When asked about food safety messaging they had seen, few could recall any. When shown the 4Cs, respondents mostly had a good understanding of everyday prevention practices such as keeping fridges cold, following use-by dates, washing hands and avoiding cross-contamination. Some were more concerned about food safety than others.

“I'm usually very good with food hygiene and things like that, you know. But I haven't seen anything about it.” **Immunocompromised**

“I don't watch much telly at night, but I remember quite a while ago when it was like not washing your chicken, great big stickers in the supermarket on your chicken about telling you not to wash it before you cook it.” **Immunocompromised**

“I've seen adverts to that effect on the telly about using thermometers and stuff to make sure that your turkey is properly cooked, but apart from that, I'm the same as everybody else. I haven't really seen much.” **Immunocompromised**

“It'd be nice to have these drummed into people a little bit, like we got drummed in about COVID and washing or 111 for police, fire, all that sort of, these little 4Cs. I mean, we get drummed in about stroke victims in the face, don't we, you know? So why can't we have these?” **Immunocompromised**

Views from carers

Carers sense of food safety concern was strongly linked to their responsibility and guilt avoidance. Anxiety, which was for many, shaped by past experience of the COVID-19 pandemic, the hygiene habits adopted during that era and their desires to protect vulnerable loved ones.

“I mentioned earlier about my granddad having dementia, it's very, very difficult and it's always that ownership of the responsibility that lands with you that you could potentially make someone that's in your family that you love very, very sick. Especially at that age, you know, it's very, very difficult to take that brunt of responsibility on.” **Carer**

They voiced awareness of risks associated with incorrect food storage (leaving food out too long), undercooked meat, especially chicken, use-by dates, cross-contamination, leftovers and reheating practices. Many were avid readers of labels but few could recall sources of formal food safety messaging. Even so, many adhered strictly to food safety procedures when preparing food.

“My granddad was ill. I prepared some meals for him and he'd left the chicken out for a while...maybe a couple of days. He'd cooked it but then he ate it again, kind of, a couple of days later when it wasn't really at its freshest. He wasn't well and he got put off to the hospital. That was one incident that happened in my life.” **Carer**

“A lot of people that I support or care for are diabetic, so I'm quite used to looking for sugar content and things, as an example. So look...you know, turning it over to check the...you know, salt, sugar, carbohydrates, calories and that. I'm quite used to looking at those.” **Carer**

“I mean, if I'm making mince and you're stirring all the mince, and then I'm cooking vegetables, I use different knives and I wash my hands in between because...well especially since COVID. I had COVID which wasn't pleasant, so I really, really don't want any, kind of, germs, especially as...at my age, I'm considered elderly, and I've got pre-existing conditions so I really don't want to add to that.” **Carer**

Many were confused, unsure about or inconsistent in their behaviours around frozen food expiry rules, use-by dates after freezing, shelf-life after opening for condiments and other

packaged foods, interval before refrigeration (cooling vs. leaving food out too long) and how long leftovers safely last.

“My grandparents, I do a lot of their cooking and I put a lot of big labels on so they can read it when I’ve cooked it. I’m quite conscious of...I guess, when I’ve cooked it and how long I’ve left it out for and when I put it in the fridge, because obviously it needs to be cooled down before you start putting it in the fridge or freezing.” **Carer**

“I think there’s a, sort of, general assumption that anything that’s frozen will be okay whenever you go to eat it and I’m not even so sure on that myself to be honest, things that have past that date. I think there’s a lot of confusion around that.” **Carer**

Understanding of vulnerable groups

Once a general understanding of food poisoning had been established, the discussion focused on understanding of vulnerable groups with a particular emphasis on defining understandings of ‘older adults’. The aim of this was to establish a spontaneous understanding across different groups and to determine if respondents instinctively identified themselves as being in a vulnerable group. Once spontaneous thoughts on which groups are vulnerable were collected, moderators probed further into respondents understanding of who falls into certain groups. A showcard was used to aid discussion (Figure 2).


Figure 2: Show card X - categories of vulnerable people

Show card X

Some people are more likely to become ill and have severe symptoms from food poisoning, often because they have a change in their immune system. These include:

- **Young children**
- **People with chronic illnesses/health conditions**
- **People prescribed certain medications**
- **Those who are pregnant**
- **Older adults**

If someone fits into more than one of these groups, the risk of getting very sick from food poisoning is increased.

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This section of the document reports on respondents’ understanding of who fits these categories with the exception of “older adults” category. This category was of specific interest to FSS, and it was a core objective to understand this terminology in detail. Findings relating to the definition and understanding of older adults are fully reported in the section that follows this.

Overview

Respondents expressed a strong belief that people with poor health, younger age children, and weakened immune systems increase susceptibility to food poisoning, and they welcomed explanations that clarified why these factors heighten risk. Across all groups, respondents demonstrated an intuitive understanding of vulnerability; however, this

understanding was often based on general perceptions rather than detailed knowledge of the underlying medical or physiological mechanisms.

Q: “So turning to [name redacted] and [name redacted], why would particularly young people be vulnerable?”

A: “Because they probably have not built up a resilience to like different foods and that.” **General Population ABC1**

There was a high level of consistency across groups regarding which populations were considered vulnerable. These commonly included young children, older adults with compromised health, individuals with weakened immune systems, people taking certain medications such as chemotherapy or treatments such as radiotherapy and those living with underlying or chronic health conditions. Pregnancy was mentioned very rarely as a condition that could increase susceptibility to food poisoning. It was a surprise to a few who saw it listed on the showcard. A few identified people with learning difficulties and dementia as being vulnerable to food poisoning and saw that as an omission from the list on showcard X.

“If there's only one that I would question maybe those who are pregnant, because I'd like to think they'd be seeing the doctor and the midwife more often and been given advice and, you know, their blood would be checked more often and might be given supplements. I'm not saying they shouldn't be in that list.”

Immunocompromised

“I think very young children, very susceptible, much older adults, very susceptible as well and anyone who's got things like coeliac disease, colitis, that kind of thing probably. But definitely the young and the older.” **General Population ABC1**

“I think it's the same as whenever you get the warnings about flu. Young children and older people, I would have thought, are much more susceptible to food poisoning.” **Immunocompromised**

“And we were talking about vulnerable people as well, and there'll be lots of people with learning disabilities. Because there's real issues around accessibility and availability of information for people with learning disabilities. Any information that goes out and is trying to appeal to the general population needs to be inclusive.”

General Population ABC1

While respondents were generally confident in identifying who might be vulnerable, they were often uncertain about why these groups face increased risk. Providing clear explanations of the reasons for vulnerability substantially improved respondents' understanding, and enabled individuals across all audiences to better recognise their own susceptibility to foodborne illness. In particular, explanations linking compromised immunity to increased risk helped bridge the gap between intuitive knowledge and informed self-identification.

Views from across the different groups were largely consistent with no notable differences across different types of respondent.

Definition of young children

Definitions of younger children were less consistent with the majority saying up to the age of 5 and many saying up to 11 and a few saying older and up to 16 years old. A few respondents questioned whether this included babies. All groups were mixed in their interpretation of what comprises young children. Respondents were mixed in their views of why young children can be vulnerable. Some thought because the immune system is still developing, others because young children are just “bags of germs”, a few because young children will eat anything. Findings suggest it is necessary to define the age of young children and explain why they are vulnerable.

“Well my granddaughter was premature. She was born at 25 weeks, so we had to be super clean, you know, as far as she was concerned for feeding and things like that when she came home to make sure that, you know, as far as possible she wouldn't contract anything.” **Carer**

“I would think of up to, like, mid primary or just perhaps including primary age. Yeah. I mean, mid primary I would think of as young children.” **Carer**

“They're [young people] very much in the development stage. So they kind of become young teenage, maybe into their teens is when they stop being young children.” **General Population ABC1**

“I would say probably a bit older up to their early teens. You know what I mean, because when they're getting older, when they get into their teenager, I think they've got a bit more common sense about them.” **Older Adult C2DE**

Definition of people with health conditions

People mentioned a wide range of underlying health conditions and illnesses such as: kidney or liver disease, diabetes, reflux, irritable bowel syndrome, gallbladder removal, fibromyalgia, asthma, or chronic obstructive pulmonary disease. The list was long and varied and people chose these conditions based on instinct rather than a clear understanding of why they might matter. Some simply said poor health can make people more vulnerable in general, a few thought dehydration can be dangerous and some said impaired immune systems are a result of ill health.

“But I can see if he had food poisoning, he would be extremely unwell because of the pressure that would put on his heart and his heart medication regime and then the effects that that would have on his system.” **General Population ABC1**

“That comes with vomiting and diarrhoea, that's dangerous for people that are either older or younger or immunosuppressed or something like that. I think dehydration and weakness are both dangerous states to be in.”

Immunocompromised

Definition of prescribed medications

While illness was readily identified as making someone susceptible, medication wasn't often spontaneously mentioned as making a person vulnerable. Seeing it on the showcard as a potential indicator of vulnerability was a surprise to some. It confused and worried some to see it listed without further qualification of what types of medication can leave you vulnerable.

"I never thought about certain medications but I'm presuming they're meaning things like chemotherapy maybe." **Carer**

"I never thought about it with people with prescribed certain medications that never came into my head. My brother doesn't keep good health and I can imagine if he got it, he would take it very badly because he does have poor health. But I wouldn't have associated that with certain medications. I wouldn't have thought about that." **Older Adult ABC1**

"But to me, I read sort of cancer medications into that because they are, you know, compromised but I don't know what other medications would be included that would affect your immune system." **Older Adult ABC1**

"I wouldn't say it was the medications it was causing it. It's just the people's health. After our immune systems low, through ill health, to me they're obviously going to be susceptible to catching different things a lot easier." **Older Adult C2DE**

"I take medication but I would never have thought that any medication I'm taking would make me more prone to food poisoning. I've never, sort of, read anything to say...you're diabetic type 2, don't eat certain foods but I've never actually read anything that says, well you're more prone to...I've not had food poisoning for years and years and years but I've never realised that. That would be of interest, you know, from that point." **Carer**

Defining older adults

One of the core objectives of the research was to investigate respondents' view on terminology for "older adults" and to test the wording of older adults versus using an age specific cut off. The research was also tasked with determining if respondents identify as being older. This section reports in detail on the definition and categorisation of older adults.

Findings across different sub-groups of respondents were highly consistent.

Several older respondents noted that many people don't feel old at 65 even if they technically meet the criteria. Older respondents who identified themselves as falling into the category of being more vulnerable to food poisoning identified this due to health issues rather than purely age. Older adults were more readily perceived as vulnerable when vulnerability was framed in relation to lifestyle factors, health status, or physical fitness as being the reason rather than age alone. Some also mentioned older people's failing eyesight and senses as leaving them more susceptible to food poisoning because of poor reading and lack of smell. A few mentioned older people's tendency not to waste food and eat what was in the fridge/cupboard regardless of its freshness, as making them vulnerable.

"I know you can be different because people age at different rates. Age is just a number, you know, it's how their health has declined or otherwise." **General Population ABC1**

"I think it really depends on the person, because I know some people are in their 80s, they are fit as fiddles, and other people struggle to get out of their bed. It really just depends on the person." **Older Adult C2DE**

"I'm 70 and I don't have any, keep touching wood, don't have any ailments. I have got very good health, always have had, long may it continue. I know a lot of people are like that, but I also know people that are my age and younger who have got ailments." **Older Adult ABC1**

"Well, older people, and especially who have dementia or Parkinson's and things like that, you know that affect the memory. Obviously, they forget how to cook things, how to store things, you know, hygiene again, you know." **Immunocompromised**

When people defined older adults by age, responses ranged from 55 years old to 70+, showing that age alone is not intuitive or straightforward for people. Respondents saw "older adult" less as a demographic category and more as a fluid, health-based category, where lifestyle and fitness are key determinants of vulnerability. However, 65 years and older was widely recognised as an age specific cut off because it aligns with traditional pension age and historical retirement age.

“Well, I would say anybody that’s about 65 and over ‘cause you’re considered...as far as the NHS is concerned, you’re considered geriatric at 60. And I’m 71, so I don’t consider myself as an older adult, but on paper, that’s what I am.” **Carer**

“It’s very, very hard to define because...you could get a 50 or 60-year-old who might have not lived a great lifestyle and looks older, but then you’ve got older people that...are the opposite.” **Carer**

“Mum’s in her 60s now and she’s still, like, so energetic. I think she’s got more energy than I have. So, when she’s with our little boy, I’m like, where does she get it from. I think she would, kind of, struggle with, I guess, being put in that older category but she’s, like, you know, down on paper I’m probably classed as older.” **Carer**

Although there was broad acceptance of 65 years as an appropriate reference point for defining older age, many respondents in this age group were reluctant to self-identify as older adults. However, when the groups later went on to discuss the FSS definitions the inclusion of the qualifier “typically” was viewed positively, as it acknowledged individual variation and reduced resistance to the label.

“I know a lot of people that are, you know, in their early 70s and they’re very fit and healthy and I think people are living longer than you know, they don’t seem as old at 65 or 75 or that.” **Older Adult ABC1**

While there was some debate about what constitutes an older adult and some were reticent to class themselves as such, respondents responded positively to the definition that explained why people over 65 are included, specifically, that immune systems tend to weaken with age. This functional framing helped them accept the category more clearly.

Testing definitions

A large part of the group discussion time was dedicated to testing two versions each of two different approaches to defining vulnerable groups. This section reports on which approach tested well and why that was the case. The order of showing the different propositions was randomised as a way of mitigating against order bias.

Options tested

One approach defined groups by condition such as: ‘age/lifestyle’, ‘underlying health conditions’ and ‘medication and treatments’. The other approach defined groups by population type such as: young children, people with underlying health issues, people prescribed medications, those who are pregnant and older adults.

Both approaches were given a simple version with no explanation of why as well as a more detailed version that explained reasons for vulnerability.

Table 2: Outline of different testing definitions

Option 1A	Population type	Simple definition
Option 1B	Population type	Detailed definition
Option 2A	Condition-based	Simple definition
Option 2B	Condition-based	Detailed definition

Overall preference was for the detailed versions that explained reasons for vulnerability. We have reported on the results in order of preference which show findings from the detailed condition-based versions first, followed by the detailed population type version. Commentary on the simple versions follows this.

The preferred option

The detailed, condition-based definition (Option 2B, Figure 3) was preferred by five of the seven focus groups (all except for General Population ABC1 and one group of Immunocompromised respondents) and demonstrated broad appeal across all respondent types. Respondents reported that defining vulnerability by condition rather than by population group made it easier for them to recognise and self-identify with relevant categories.

Figure 3: Detailed definition by condition

Show card 2B

People who fall into one or more of the following categories are more likely to become ill and have severe symptoms from food poisoning.

Age/life stage

- Young children, typically children under 5 years old, as the immune system is still developing.
- Pregnancy, as the immune system changes during the development of the unborn child.
- Older adults, typically people aged 65 and older, as the immune system starts to weaken around this age.

Underlying health conditions

- Such as cancer, diabetes, HIV/AIDS, liver or kidney disease, all of which can impact the body's ability to fight infection, including food poisoning.

Medication and treatments

- Chemotherapy
- Immunosuppressants, such as those taken for autoimmune conditions or after an organ transplant.
- Proton pump inhibitors (PPIs), e.g. omeprazole, used to reduce the acidity of the stomach.

If someone fits into more than one of these groups, such as being older and having diabetes, the risk of getting very sick from food poisoning is increased.

The level of detail provided in this version was considered appropriate and sufficient to support understanding without being overwhelming.

“I kind of understand that one rather than the other one as its too general. I wasn’t keen on it. I like seeing the categories. I like this one better.” **General Population ABC1**

The opening sentence was regarded as particularly effective, as it prompted respondents to consider whether they might fall into multiple categories, thereby supporting more accurate assessment of personal risk. In addition, the concluding statement was seen as clear and unambiguous, reinforcing the idea that vulnerability may be cumulative and encouraging respondents to reflect on overlapping risk factors.

“This is the first one that says likely to become ill and have severe symptoms from food poisoning. That’s a wee bit more clearer than the first two, this one’s showing you the effects.” **Immunocompromised**

“I like the bit at the bottom, if you fit into more than one of these groups, the risk of getting very sick is increased. I like that.” **General Population C2DE**

One of the major benefits of this version is that it provides more explanation, especially around why certain groups are at higher risk and how the immune system plays a role. Many found the use of bullet points helpful, saying they were easier to read and remember. Clear headings and categorisation supported understanding, and the additional level of detail was seen as informative rather than overwhelming.

“I like the fact that underlying health conditions are lumped together. The age and life stage is nice having the young, pregnancy and older people. It feels nice, it’s just explaining why all those stages apply.” **Immunocompromised**

Respondents appreciated that the definition explained why certain groups are vulnerable, which made it easier for them to recognise personal risk. Many felt that the structure helped them identify themselves across more than one category. The tone was described as clear and respectful, and the inclusion of examples of conditions and medications helped respondents recognise their own situation. The language was seen as straightforward, accessible, friendly and not over technical.

“There’s just a wee bit more information and it mentions your immune system quite a lot, which I think is obviously the key to everything. That’s the whole point of us doing this and us being the target for this because we’re either on medication or we have a disease that is impacting on our immune system. So if you contract food poisoning, you’re likely to probably contract it a bit easier and take longer to get over it. I think this one kind of explains that in a bit more detail. Talking about the body’s ability to fight infection. That’s putting it in quite plain terms for me.” **Immunocompromised**

“You’ve got a young child, under five, because of the immune system...you’re not left in any doubt about your health conditions, you’re not left in any doubt about your medication. So it’s quite clear that if any of those apply to you, then obviously you need to be very, very wary of any infection, including food poisoning. So I like that one the best.” **Carer**

“I like this one. It’s quite clear, you know, the different...the life stages, your health conditions, medication. It makes it clearer, you know, people that fall into these categories and if you’re in more than one category, obviously your risks will increase by quite a lot. I like that one. Yeah. I think that’s...tells us what we need to know.” **Carer**

“I often think about how are people that I’m supporting going to receive this information. As somebody who’s in a caring role, I think that slightly more information is really useful to me actually, to understand some of the reasons behind it.” **Carer**

Age/life stage

It clearly defines the age of younger children which was an element of confusion for all sub-groups of respondents. Respondents found it useful to have the reasons behind pregnancy explained as this was not a category of people that spontaneously was mentioned and some were quite confused as to why those who are pregnant would be at risk of food poisoning.

After discussion and sharing of the different versions of the vulnerable groups definitions the majority of respondents accepted the definition: **Older adults, typically people aged 65 and older, as the immune system starts to weaken around this age.** Older adults category

was readily accepted because the inclusion of the qualifier “**typically**” was viewed positively, as it acknowledged individual variation and reduced resistance to the label. Moreover, it gave an explanation that the immune system starts to weaken around this age. This also reduced resistance from those who were older and feel fit as well as those whose friends and family are known to be fit and well after the age of 65 years old.

“My mum wouldn’t class herself as getting older, but I think having that age bracket and then saying that the immune system starts to weaken, it’s, like, giving them facts, this is what happens. You might not feel it, you might be 65, but your immune system will start to weaken.” **Carer**

“I like the extra information that’s been put in it, but it’s made me understand it rather than be confused at it. I’m happy with that one for sure. The extra explanations in there are good. I’m fine with typically people aged 65 or older, not everybody is the same. So typically, you know, somebody at 65, their immune system might weaken, somebody at 65 might not as much.” **Immunocompromised**

“I like this one because, you know, we’re all not medically trained and sometimes you’d read it and you think, oh, is that why younger children under 5 have to be careful of food poisoning? I didn’t know the immune system wasn’t properly developed and things like this. And I like it all because it adds information.”

Immunocompromised

Underlying health conditions

Providing examples made this much easier to understand and the explanation that poor health conditions can impact the body’s ability to fight infection, including food poisoning was widely accepted.

Medications and treatments

The inclusion of chemotherapy was intuitive but reassuring to have it listed. The inclusions of immunosuppressants was thought to be informative and reassuring, especially for people who were immunocompromised. Giving examples of what they are also aided understanding. Many respondents were surprised to see proton pump inhibitors (PPIs) on the list and this built awareness. Many valued having the example of omeprazole listed as this was widely understood.

“I feel the mention of omeprazole’s very useful because omeprazole’s such a common medication for people and I think that’s really useful actually for...not only for them, but for people perhaps, you know, advising on food preparing or helping with food preparation. It’s just so common.” **Carer**

“You know, and I never knew that, you know, or never thought about it, you know, the stomach acid and all that kind of stuff, you know, not give it a thought that’s like opens up your eyes.” **Immunocompromised**

Second option

The detailed definition by population type (Option 1B; Figure 4) was preferred by **two of the seven groups** (General population ABC1 and Immunocompromised respondents), as respondents felt they could easily locate themselves within the correct category. The structure helped individuals recognise where they fit without needing to interpret complex criteria.

Respondents described the definition as easy to read, straight to the point and not overwhelming. The wording was seen as informative and accessible, striking a balance between clarity and conciseness.

The use of plain English, rather than medical or technical language, was valued by the few who chose this version. Compared with the definition by condition (Option 2B), this version was perceived as less clinical and therefore more approachable for them.

Figure 4: Detailed definition by population type

Show card 1B

Some people are more likely to become ill and have severe symptoms from food poisoning, often because of differences in their immune system. These include:

- **Young children** typically children under 5 years old, due to the immune system still developing.
- People with the following **underlying health conditions**: cancer, diabetes, HIV/AIDS, liver or kidney disease.
- People prescribed **medications** such as chemotherapy, immunosuppressants and proton pump inhibitors (PPIs, e.g. omeprazole; used to reduce the production of stomach acid).
- Those who are **pregnant** and their unborn babies.
- **Older adults** typically people aged 65 and older, because the immune system starts to weaken around this age.

If someone fits into more than one of these groups, such as being older and having diabetes, the risk of getting very sick from food poisoning is increased.

Some respondents also appreciated that the definition explained the ‘why’ behind vulnerability without going into excessive detail. This explanatory element helped soften the emotional impact of being categorised as an older adult and increased overall trust in the message.

“I think it's better because it's given the reasons why they put these young children, older adults, things like that. I think it's because it gives an explanation as to why.”

Older Adult ABC1

Key valued elements included the use of concrete examples of health conditions, the inclusion of the word 'typically', which was seen as allowing for variation and avoiding rigid labels and the specific reference to omeprazole rather than the more technical term 'proton pump inhibitors'.

"I like it because I like to understand things and they're put to me simply. That's what it is. It is what it is. It's explained to me, you know, answered it."

Immunocompromised

"I kind of think when it's your health, you should be reading stuff like that. You should have a wee bit more information so that you know what's going on."

Immunocompromised

Those who didn't chose this version claimed the opening sentence is less likely to encourage them to search for multiple conditions. They also preferred the additional detail given in Option 2B because it gave more details about why a person might be vulnerable such as: the explanation behind pregnancy, why underlying health conditions impact on the ability to fight infection and additional information about medication such as examples of immunosuppressants. Those aged 65 years and older especially resisted self-identification as older adult as a category but were more accepting when it was presented as a category under life stage.

Simple definitions that lack explanation of why

The simple definitions for both population type and condition (Options 1A and 2A, respectively) lacked explanation of why certain categories were vulnerable (Figures 5 and 6). These didn't test as well as the more detailed versions. The content presented was thought by many to be overly simplistic and lacking in sufficient detail to be considered adequately informative.

Figure 5: Simple definition by population type

Show card 1A

Some people are more likely to become ill and have severe symptoms from food poisoning, often because of differences in their immune system. These include:

- **Young children** typically children under 5 years old
- People with the following **underlying health conditions**: cancer, diabetes, HIV/AIDS, liver or kidney disease.
- People prescribed **medications** such as chemotherapy, immunosuppressants and proton pump inhibitors.
- Those who are **pregnant** and their unborn babies.
- **Older adults** typically people aged 65 and older.

If someone fits into more than one of these groups, such as being older and having diabetes, the risk of getting very sick from food poisoning is increased.

Figure 6: Simple definition by condition

Show card 2A

People who fall into one or more of the following categories are more likely to become ill and have severe symptoms from food poisoning.

Age/life stage

- Young children, typically children under 5 years old
- Pregnancy
- Older adults, typically people aged 65 and older

Underlying health conditions

- Such as cancer, diabetes, HIV/AIDS, liver or kidney disease

Medication and treatments

- Chemotherapy
- Immunosuppressants
- Proton pump inhibitors

If someone fits into more than one of these groups, such as being older and having diabetes, the risk of getting very sick from food poisoning is increased.

Furthermore, the text fails to explain the underlying rationale for the categories used, omitting essential contextual information. This absence of explanation hindered respondents from accurately self-identifying with the appropriate category. Explaining why certain groups are vulnerable is important, as it helps people generalise the risk and recognise their own susceptibility, rather than associating food poisoning only with specific illnesses. Moreover, this added information often prompted respondents to self-identify in more than one category.

“So the underlying health conditions that they've picked out there [showcard 1A] are those ones that they know people have become ill when they've had severe symptoms from food poisoning because they've got those conditions.” **General Population ABC1**

For reasons explained in the previous section many people resisted the phrase ‘older adult typically people aged 65 and older’ without the explanation of why.

“Certainly the older adults, but it was a bit, it's a bit too big, because as soon as you turn 65, you then suddenly get ill quite quickly. It's just, I think it depends on the individual.” **Older Adult C2DE**

“I take it that age 65 and older was taken before they changed all these pension ages and that was when we were, as men, we used to retire at 65.” **Older Adult C2DE**

“I think that's a bit offensive to people over 65.” **Immunocompromised**

In addition, the use of technical terminology, such as proton pump inhibitors and immunosuppressants, was not accompanied by clear definitions; as a result, these terms were not widely understood by many respondents.

“The only thing I would say is the proton pump inhibitor, I've not got a clue what that is. Whereas if you said omeprazole/lansoprazole, I'd know exactly where you were.” **Carer**

“The only one I'm a wee bit unsure about I think could be improved is the medication and treatments, because they come up with this immune suppressants and proton pump. Is there a way of putting that into a layman's term of what they actually are so that people would more likely, oh, I know that I've got that kind of tablet or I've got this.” **Older Adult ABC1**

Sources of information and resources

Sources of information

When asked about their sources of food safety information, many respondents said they didn't look for information about food safety but they did, however, often look for information on food preparation and cooking instructions which often contain food safety advice and messages.

"I certainly don't look online for anything like that and I don't recall seeing anything online, but I think a lot of it is kind of common sense. You know you wash your hands if you're going to be touching food. You know you don't use the same knife all day long, put it away to get washed once you've used it." **Older Adult ABC1**

"I'd be more inclined for posters and something that I'm going to see in the passing, but I don't think I would actively go out and look for information. But if there's information there with a fact in it, I'm one of the people that pick up facts and walk around them forever. So that would work best for me, I think."

Immunocompromised

"I'd rely on what I grew up knowing." **Immunocompromised**

A few older adults held the view that food safety and concern about food safety was overstated. They tended to refer back to old times when less attention was paid to this subject and yet, in their opinions, no more people experienced food poisoning than do so currently.

"Are we susceptible to these illnesses simply because we're being too clean. Because when you go back to when I was a kid, I don't think I came home for playing, I didn't come home and wash my hands and probably the same stuff was chopped up with the same knife. Everything was done the same, and I cannot recall ever having severe food poisoning. So, you just wonder, is it because now we're taking all these efforts to try and avoid it, and our body can't reject it. It's like the antibiotic situation. If you take them on a regular basis, they don't have the same effect. So is it like that now because we're becoming too clean and too hygienic?"

Older Adult ABC1

"But that's another thing that makes you wonder, because you see, when you go back many years ago, there wasn't a sell by date, use-by date. It was a case that you went by smell. If it smelt okay, it was okay and 9 times out of 10, it would have been okay." **Older Adult ABC1**

When pressed to give some sources of information, respondents commonly cited unofficial and informal sources. Word of mouth from friends and family played a significant role in shaping understanding and behaviour. Some respondents (even those in their 60s) would

call their mum to check what she does. This can lead to following outdated and unsafe practices that are handed down to following generations.

“The defrosting, like leaving it in water, I always do that. Just let it sit there but then I have to look and see how long do you leave it, you know what I mean? What's a good time? I used to heat the water. You know what I mean? Like, put it in some hot water. That's my mother's favourite thing she used to do and it worked back then, so I stick with it. You know what I mean?” **General Population ABC1**

“I see my son doing that now and I'm like, where did he get this from? And it must have been me. You know what I mean?” **General Population ABC1**

“I was quite fortunate. My wife was a great cook and she taught me well. So, basically, I've just, you know...followed all the things that I've seen, you see cookery programmes on and if you're careful and you cook it well, it's fine. To me, you're very unlucky if you catch food poisoning.” **Older Adult C2DE**

“I forgot to add that although I do all these Google searches, I'll be honest, I ask my mum a lot. She worked in the Glasgow College, just, like, got a lot of, kind of, experience with handling food. She's worked in kitchens before. So I'll be honest, I ask my mum a lot of questions about, is it okay to eat this, if it smells okay, should I, you know, freeze it, can I eat it...like, it's been a day...like, I ask my mum a lot of questions. I think I've learnt most from my mum, I'll be honest.” **Carer**

“I guess growing up, you know, you're always told, this is how you do things, and it's drummed into your head. Wash your hands, wash your hands, wash your hands.” **Immunocompromised**

“So for me some of it's just been family, so people that deal with it all the time have given me advice. If I'm not sure, then I've googled it, if it's something I'm not familiar with. So...yeah, internet or people.” **Carer**

Cooking guidelines on food packaging are a relied on and trusted source of information for many. Recipes and cooking instructions are often sought online.

“Very careful to follow cooking guidelines and weights and stuff like that. Especially, you know, I very rarely have seafood these days, but everything's fine. I haven't managed to kill anybody yet.” **General Population C2DE**

“I quite often look up recipes on maybe the BBC Good Food Guide. I use stuff off that and I would maybe expect to see it coming up on there.” **General Population C2DE**

“Most packaging is the first thing you're looking at, if you're cooking it, it gives you how long you'll cook it for now. So I think, well I do anyhow. Most things I cook, if it's in a package, I'll look to see what they recommend the correct way to

cook that cut. Obviously, some people eating a steak, people like rare, medium or well done, so these are all these things.” **Older Adult C2DE**

“I think it's just picked up a degree of common sense and when you look at recipes now, they never used to have, but they do have when after you've handled chicken, wash your hands for example. So you get it, you get it through recipes or on the or on the back of a packet if you've got stir fry for example.” **Immunocompromised**

There is some evidence in the data to suggest that whatever instructions or advice people seek some will always put their personal interpretation on it.

“I'm cooking a big roast in the oven, I'll really read instructions for the whatever time per kilo. I always put it in an extra 10, 15 minutes just to make sure that it is properly cooked and just slightly above the temperature that it says.” **General Population C2DE**

Respondents also relied on Google searches and anecdotal information when seeking guidance on food safety. AI was a commonly mentioned source of support with ChatGPT and Copilot mentioned frequently. Google searches often led respondents to Gemini solutions but they referred simply to Google.

“And then you've got Google. Google is the best one. You can find out whether it's all true. But as usual, you don't, to me, you don't really think about these things until you're hit with food poisoning.” **Older Adult C2DE**

“Usually when you search, AI comes up first and then you can read it and think, and if you just keep scrolling, the first website that comes up is usually NHS and then Food Standards Scotland or something like that. So you can just cross check what you've read.” **Immunocompromised**

Other media sources included social media, television, and newspapers.

Most trusted sources

While AI is commonly used it is not always immediately trusted. Most respondents said they would verify the information given to them. Most trusted sources were “calling mum”.

“It's [AI] okay for a starting point. You have to be discerning about what it spits out sometimes, because it can go wrong. I always get to double check it a lot of the time and it'll when it comes back it'll go I'm really sorry. So I do get to double check a lot of the time. I just ask it to recheck it.” **General Population ABC1**

Some respondents reported that they have lost trust in advice that continually changes.

“I think a lot of social media, television and papers, but sometimes one time they'll tell you this is good for you, the next time it won't be, this is not good for you and you think, who's telling the truth?” **Older Adults ABC1**

A small number of respondents reported using NHS websites for advice on what they should eat but this was related to their health primarily and not food safety. A few mentioned Food Standards Agency as being a trusted source but none used it to get information about food poisoning.

“AI, it comes up with a lot of different things, which I know can be, kind of, biased, so I tend to look at a few...I mean, I don't say that I would use, like, Food Standards Agency or anything, but I guess that's linked to my last job, which wasn't to do with food standards or anything, but we just dealt with that. So I knew that they were there if I needed to, but I tend to just do, like, a random Google search and just see what comes up and then just research from there and then ask people, is this accurate, is this what you've experienced.” **Carer**

Trusted sources mentioned included government sources and NHS.

“The only thing I've had was a link to do with through diabetes, which comes out of Dundee Hospital and you can have, they have a diabetes group there and they send out leaflets on e-mail and things like that with my stuff.” **Immunocompromised**

Types of information sought

On the occasions that food advice is sought, enquiries are often about instructions on how to cook. When respondents did seek advice relating to food safety, their enquiries most commonly focused on practical, task-based issues. These included how long food should be cooked for, appropriate oven temperatures, whether chicken can be safely cooked from frozen, guidance on reheating leftovers, and whether food that is past its use-by date can still be eaten.

“Thawing's always a big issue. My mum and I have long conversations about that.”
General Population ABC1

One respondent mentioned that it would have been useful for his doctor to outline his increased vulnerability to food poisoning now that he was immunocompromised.

Key findings - summary and insights

Understanding of food poisoning

Across participant groups, understanding of food poisoning was shaped predominantly by personal experience rather than engagement with technical, research-based, or official sources of information.

Respondents commonly expressed confidence in their existing food safety behaviours, frequently justifying this confidence through the perception that they had “been fine so far.” This reliance on experiential knowledge contributed to notable inconsistencies in understanding and, in some cases, to the continuation of unsafe practices.

A clear disparity emerged between respondents’ perceived knowledge and their actual behaviours. Examples of poor practice included consuming food beyond its use-by date, not checking the temperatures of refrigerators and washing raw chicken. Importantly, such behaviours were evident even among respondents who fell within higher-risk categories, including older adults and immunocompromised individuals.

Carers demonstrated a heightened awareness of good food safety practices, largely driven by anxiety alongside a strong desire to protect vulnerable loved ones. In contrast, respondents who were immunocompromised did not exhibit noticeably higher levels of awareness or concern about food poisoning than healthier members of the general public. Older adults were particularly entrenched in established behaviours, relying heavily on food handling habits developed over a lifetime.

As a result, conventional food safety messaging could be insufficiently salient to prompt reconsideration of established habits, indicating that future communications may need to be more direct, salient and impactful to achieve behavioural change.

Understanding of vulnerability

Perceptions of vulnerability to food poisoning were broadly consistent across participant groups. Respondents commonly identified individuals with poor health, weakened immune systems, people taking medications such as chemotherapy and younger age groups as being more susceptible to foodborne illness. Pregnancy was mentioned infrequently as a factor increasing susceptibility to food poisoning and its inclusion on the showcard came as a surprise to many.

While there was a largely shared understanding of who might be considered vulnerable, respondents often lacked clarity regarding why these groups were at increased risk. Moreover, there was conflicting understanding of how young children are defined, which types of medication increase risk, and which underlying illnesses are relevant.

Providing explanations of the underlying physiological or health-related reasons for increased susceptibility significantly enhanced understanding and supported greater

self-identification among respondents across all groups. Findings point to the need to clearly define ages, types of medication and illness in order to establish a common understanding.

Defining older adults

In relation to older adults, vulnerability was more readily attributed to the presence of lifestyle limitations, reduced fitness, or health conditions rather than age alone. Although there was general acceptance of 65 years and over as a public health threshold for older age, many respondents within this age group were reluctant to categorise themselves as such.

Notably, the inclusion of qualifying language, such as describing older adults as “typically” aged 65 and over, helped to mitigate resistance by acknowledging individual variation and avoiding overly rigid or deterministic categorisation.

Testing definitions

Version 2B emerged as the preferred definition, judged to be the most effective by five of the seven research groups. Respondents consistently reported that this approach facilitated clearer self-identification, as it framed vulnerability in terms of specific conditions rather than categorising individuals by broad population groups. This condition-based structure was perceived as particularly valuable because it articulated the underlying reasons why certain individuals are more susceptible to food poisoning, thereby strengthening conceptual understanding rather than relying on assumed knowledge.

The inclusion of concrete examples of relevant medical conditions and medications further enhanced the accessibility and credibility of the definition. These examples enabled respondents to reflect on their own circumstances and prompted consideration of overlapping or multiple risk factors, which supported a more accurate assessment of personal vulnerability. Importantly, the language and tone were widely described as clear, respectful, and approachable. While providing sufficient detail to inform and reassure, the definition avoided excessive technicality, maintaining a balance between authority and accessibility.

Overall, Version 2B was perceived as more informative and reassuring than alternative approaches, particularly among individuals living with chronic illnesses or those taking immunosuppressive medications. By combining explanatory depth with straightforward language, the definition was seen to promote understanding, trust, and inclusivity, making it especially effective for communicating risk to diverse audiences.

Sources of information

Respondents did not generally seek out food safety information directly, instead relying on cooking instructions, food packaging and online recipes where safety advice is embedded. Many depended on informal sources such as family, friends and personal experience, which can reinforce outdated or unsafe practices. Google searches and AI tools were commonly used, though often referred to simply as “Google.” Some older adults viewed food safety concerns as overstated. Overall, information was drawn from a mix of informal, online and

media sources, with individuals frequently applying personal judgement to the advice received.

Final recommendations

Adopt the detailed, condition-based definition (Option 2B) as the primary proposition

- Use the condition-based structure (age/life stage; underlying health conditions; medications and treatments) as the default format.
- Retain the explanatory ‘why’ language (immune system/ability to fight infection) to increase credibility, understanding and self-identification.
- Feature the opening and closing cumulative-risk statements (“People who fall into one or more of the following...”, “If someone fits into more than one of these groups...”).

Use age terminology that is specific, explained and easy to understand

- Use “Older adults, typically people aged 65 and older” rather than “older adults” alone.
- Define “young children” explicitly as “children under 5 years” and include a simple reason (immune system still developing).
- Lead with familiar examples (e.g. “omeprazole and similar acid-reducing medicines”) and then, where needed, add the category label (e.g. “proton pump inhibitors”).

Prioritise messages that address the most common gaps between confidence and practice

- Reinforce the “do not wash raw chicken” message, explaining cross-contamination risk.
- Increase emphasis on fridge temperature control.
- Address use-by dates and leftovers with practical guidance, e.g. safe cooling, storage and reheating rules.

Embed food safety prompts into the places people already look

- Design messaging to feature in contexts such as: on-pack guidance, supermarket environments, recipe/meal content, and quick search results.
- Optimise FSS web content for search and AI retrieval.

Appendices:

A: Technical appendix

Qualitative Approach

1. The data was collected by group discussions.
2. The target group for this research study was members of the Scottish Public.
3. In total, 7 group discussions were undertaken.
4. Fieldwork was undertaken between 3rd to 17th February 2026.
5. Respondents were recruited by Progressive's team of qualitative recruiters. These recruiters worked to predetermined quota controls to ensure that the final sample reflected the requirements of the project.
6. An incentive of £45 compensated respondents for their time and encouraged attendance.
7. In total, 3 moderators were involved in the fieldwork for this project.
8. Each recruiter's work is validated as per the requirements of the international standard ISO 20252. Therefore, all respondents were subject to validation, either between recruitment and the date of the depth interview, or on the day of the depth interview. Validation involved respondents completing a short questionnaire asking pertinent profile questions and checking that they have not participated in similar research in the past 6 months.
9. It should be noted that, due to the small sample sizes involved and the methods of respondent selection, qualitative research findings do not provide statistically robust data. This type of research does however, facilitate valid and extremely valuable consumer insight and understanding.
10. All research projects undertaken by Progressive comply fully with the requirements of ISO 20252.



B: Recruitment questionnaire

Job Name: Vulnerable Groups

Job No: 11436

Classification

Age		Gender		Respondent location	
18-24	1	Man	1	Edinburgh and Lothians	1
25-34	2	Woman	2	Greater Glasgow	2
35-44	3	Other identity	3	Aberdeen	3
45-49	4	PNTS	4	Inverness	4
50-54	5			Perth	5
55-64	6			Falkirk	6
65-74	7			Fife	7
75+	8			Other, specify _____	8
				Postcode:	
SEG					
AB	1				
C1	2				
C2	3			Urban	1
D	4			Rural	2
E	5				

Interviewer's Declaration

I declare that I have carried out this interview in full, in accordance with the instructions and briefing material from Progressive Partnership Ltd.

Interviewer's Signature: _____ Date: _____

Print Name: _____ E-mail: _____

Method of Recruitment

Face to face Telephone Online

Respondent Details

Name: _____

Phone: _____

Email: _____



START TIME: _____

Introduction: Good morning/afternoon I am..... from Progressive, an independent research company. We are conducting research on behalf of Food Standards Scotland to improve food safety messaging and as part of the research we are keen to speak to groups of people that may be more vulnerable to foodborne illness, or care for those who may be vulnerable, to gain insight into how these consumers understand food safety information. Would you like to take part?

Before I start, I just need to give you a few details about the research. This research will include collecting information about you such as age and gender. This information is needed because we have been asked to speak to specific groups of people in Scotland. No personal information about you will be provided to any other third parties. You are free to withdraw at any stage of the research. I can give you contact details for Progressive at the end of the interview if you would like.

The research is in the form of a group discussion which will last around 90 minutes and we are offering a **£45 incentive** as a thank you for your time. If needed, I can provide Progressive's privacy statement for you to read.

Would you be interested in taking part?

Outcome:

	Code	Route
Yes	1	Continue
No	2	CLOSE

At this moment I just need to ask a few profiling questions to find out about you, as we want to invite a broad spectrum of people to take part. Running through these questions with me will take around five minutes.

Sample plan:

7 x focus groups	
Group 1 – General population Tues 3rd Feb – 6pm-7.30pm - Aged 50 to 64 years - SEG ABC1 - Mix of gender	Group 2 – General population Wed 4th Feb – 7.45pm-9.15pm - Aged 50 to 64 years - SEG – C2DE - Mix of gender
Group 3 – Older adults Tues 10th Feb – 7.45pm-9.15pm - Aged 65+ years - SEG ABC1 - Mix of gender	Group 4 – Older adults Wed 4th Feb – 6pm-7.30pm - Aged 65+ years - SEG C2DE - Mix of gender
Group 5 – Those who are immunocompromised Tues 3rd Feb – 7.45pm-9.15pm - Mix of age - SEG ABC1 - Mix of gender	Group 6 – Those who are immunocompromised Tues 17th Feb – 6pm-7.30pm - Mix of age - SEG C2DE - Mix of gender
Group 7 – Carers (paid or unpaid) Tues 10th Feb – 6pm-7.30pm - Mix of age - Mix of SEG - Mix of gender	

Recruiter notes

If respondents have any of the following health conditions and/or are taking any of the medications listed below, then they would qualify as being immunocompromised:

- Cancer
- Diabetes
- HIV/AIDS
- Liver disease
- Kidney disease

Common types of medication that immunocompromised people may be taking include:

- Chemotherapy
- Proton pump inhibitors (PPIs) – e.g. omeprazole
 - PPIs are used to reduce the production of stomach acid to treat gastroesophageal reflux disease or gastric ulcers.

- Brand names include Nexium (esomeprazole), Zoton (lansoprazole), Losec (omeprazole), Protium (pantoprazole), and Pariet (rabeprazole). Multiconstituent products containing PPIs are also available (Vimovo, Axorid).
- Immunosuppressants – e.g. Tumour Necrosis Factor-alpha (TNF α) inhibitors or anti-TNF α
- Immunosuppressants are a group of medications that modulate the body’s immune response, taken for a wide range of conditions which are typically autoimmune conditions (e.g. rheumatoid arthritis, Crohn’s disease, ulcerative colitis) or to prevent organ rejection for transplant recipients.
 - Brand names for TNF α inhibitors include: Remicade (infliximab), Enbrel (etanercept), Humira (adalimumab), Cimzia (certolizumab pegol), and Simponi (golimumab).
 - Brand names for anti-rejection drugs include: Imuran (azathioprine), CellCept/Ceptava/Myfortic (mycophenolate mofetil), Neoral/Deximune/Capimune (cyclosporin), Adoport/Prograf/Modigraf/Advagraf/Dailiport (tacrolimus), Rapamune (sirolimus), Simulect (basiliximab), Certican (everolimus) and Nulojix (belatacept).

Please note the list of medications given is not exhaustive but covers the most common ones typically found.

QUESTIONS

SQ1. Does any of your close family or friends work in any of the following industries?

	Code	Route
Market Research	1	CLOSE
Food Standards Scotland	2	
Scottish Government/and or political parties	3	
Healthcare/the NHS	4	
None of the above	5	Q1

Q1. Do you live with any of the following health conditions?

<i>Multi-code possible</i>	Code	Route
Cancer	1	CHECK QUOTAS Q2
Diabetes	2	
HIV/AIDS	3	
Liver disease	4	
Kidney disease/ Kidney problems that require dialysis	5	
Other longer term health conditions, please specify _____	6	
None of the above	7	
Prefer not to say	8	

Q2. Are you on/do you take any of the following types of medication?

Recruiter note: refer to the medication list supplied above

Multi-code possible	Code	Route
Chemotherapy	1	CHECK QUOTAS
Proton pump inhibitors, e.g. omeprazole	2	
Immunosuppressants	3	
None of the above	4	Q3
Prefer not to say	5	

Recruiter note: if respondent has specific health condition at Q1 (codes 1-5) and/or takes specific medication at Q2 (codes 1-3), then recruit as immunocompromised respondent.

Q3. Which of the following statements, if any, apply to you?

Multi-code possible	Code	Route
I am a carer/unpaid carer of an older adult	1	CHECK QUOTAS
I prepare meals/food regularly for an older adult	2	
I do food shopping regularly for an older adult	3	
None of the above	4	Q4
Prefer not to say	5	

Recruiter note: if respondent has caring responsibilities at Q3 (code 1) and prepares meals (code 2) or carries out food shopping (code 3), then recruit for the carer group.

Q4. Which of the following statements, if any, apply to you in your home setting?

Multi-code possible	Code
I typically prepare/cook my own meals	1
I feel knowledgeable about food safety	2
I find it difficult to read the small print on food packaging	3
I eat food after the use-by date	4
I regularly use a food thermometer to check my food is cooked thoroughly	5
I regularly check the temperature of my fridge	6
I wash raw chicken/poultry/meat before cooking	7
I reheat leftovers more than once	8
None of the above	9

ASK OF CARERS ONLY (Q3=1, and 2/3)

Q5. Which of the following statements, if any, apply for the individual you provide care for?

Multi-code possible	Code
I typically prepare/cook meals for the person I provide caring support for	1
The person I care for finds it difficult to read the small print on food packaging	2

The person I care for eats food after the use-by date	3
I or the person I care for regularly uses a food thermometer to check their food is cooked thoroughly	4
I or the person I care for regularly checks the temperature of their fridge	5
I or the person I care for washes raw chicken/poultry/meat before cooking	6
I or the person I care for reheats leftovers for their meals more than once	7
None of the above	8

ASK ALL

Q6. What is your ethnicity?

SINGLE CODE	Code
White including White Scottish, White British, White Irish, White other	1
Asian, Asian British or Asian Scottish	2
African	3
Caribbean or Black Caribbean	4
Other Ethnicity	5
Mixed Ethnicity	6
Prefer not to say	7

Recruiter note: please recruit a mix of ethnicity

Q7. Have you ever attended a group discussion or taken part in a market research study recently?

	Code	Route
Yes	1	Q8
No	2	Q10

Q8. How long ago did you attend this group discussion or research study?

	Code	Route
In the last 6 months	1	Q9
Between 6-12 months ago	2	Q10
Longer than 12 months ago	3	

Q9. What was the subject matter?

If subject similar to this topic, close and do not invite

Q10. Which of the following statements do you agree or disagree with?

	Code	Route
I enjoy going out and meeting people	1	Recruit
I would describe myself as outgoing and enjoy chatting to people even if I don't know them well	2	
I am not afraid to express my opinions in front of a group of people	3	
I don't feel comfortable participating in a focus group	4	Do not recruit

Thank you for taking part in this survey. You fit the criteria we need for our research on _____ @ _____.

The group discussion will be audio/video recorded. This recording will only ever be used for research purposes by the team at Progressive and may be used by the client team. It is possible that a client may join the groups discussion or view the recording. Your information and details will never be passed to third parties without your permission.

If reassurance required:

You have the right to withdraw from the session at any time, for any reason. You may decide to withdraw your consent for Progressive to use all or part of your contribution at any time. By agreeing to participate you are giving your consent for the session to be recorded and for the recording to be kept until the completion of the project. The recording will be destroyed within 1 month of the end of the project.

Recruiter Note:

AS THERE COULD BE STIMULUS PLEASE ENSURE THE RESPONDENT IS COMFORTABLE WITH PARTICIPATING IN THE RESEARCH VIA ONLINE VIDEO (USING TEAMS PLATFORM). THIS INVOLVES HAVING ACCESS TO:

- INTERNET
- PC/LAPTOP/TABLET THAT HAS VIDEO AND AUDIO CAPABILITIES (e.g. built in microphone and camera or webcam)
- Please also make sure that the respondent has an appropriate place they can take part (i.e. a quiet area within their house, respondents shouldn't be sitting in a car or a pub for example. The moderator will be able to view all respondents on their screen.
- Mobile phones are not practical so please avoid!

Recording consent:

Are you happy to take part in these recorded discussions?

	Code	Route
Yes	1	Continue
No	2	CLOSE



All incentives will be paid via Ayda so please ensure respondents are ok with providing their e-mail and bank account details to Ayda.

Thank and close

END TIME: _____

C: Topic guide

Food Standards Scotland (FSS)
Vulnerable Groups Research – Topic Guide
Final

Introduction to the project (5 mins)

- Introduction to moderator/Progressive/MRS Code of Conduct, GDPR, etc.
- Purpose of the research: We are conducting research on behalf of Food Standards Scotland about people's thoughts on defining people who are vulnerable to foodborne illness/food poisoning.
- Completely confidential – whatever you say will only be used for the purposes of the research project.
- Explain audio recording - permission should have been granted at recruitment stage but reiterate and check again. It is so I don't have to take notes. It will only be used for the purposes of this research project.
- Anonymous – do not attach names. Pull all findings together and report it back on a group basis.
- Explanation of rules of engagement of discussion - take part
 - not a test
 - no right or wrong answers
 - just interested in your own views
 - REASSURE: only share what you are comfortable sharing
- Reiterate GDPR rules if required: Withdraw at any time, only share what you are comfortable with.

Introductions (5 mins)

- Name
- Where do you live?
- Who lives at home with you?
- Do you or someone you care for suffer from health conditions?
 - (P) what are they?

Understanding of food poisoning (5 mins)

New proposed questions for this section:

- Talk to me about food safety messaging you have seen.
 - (P) what was it, where did you see it, what was the core message?
 - Have you or any of your family members experienced food poisoning?
 - Was it diagnosed/confirmed or self-reported?
 - What do you think causes food poisoning? What can we do to prevent it?
- Note to moderator: we can revisit this at the end of the group with general advice**
- Can food poisoning be mild, or is it always serious?
 - Are you concerned about food poisoning/food safety when preparing meals for yourself or others?

Understanding of vulnerable groups (15 mins)

- Do you think all groups of people are affected by food poisoning in the same way?
- Do you think there are any groups who are more susceptible to food poisoning than others?
 - (P) which groups are more vulnerable?
 - (P) why do you think that is?

Test definition

Before we go on to discuss my client's definitions in detail, I'd like to get some spontaneous thoughts on who you believe falls into certain groups, let me show you a slide that outlines this.

- Show card X
- What are your thoughts on this?
- What did you expect?
- What, if anything, comes as a surprise?
- Do you or anyone you care for fall into any of these categories?
 - (P) probe on all groups (1/2/3/4/5/6/7)
- How would you define;
 - **Young children**/who falls into that category/probe on age bands
- How would you define:
 - **Older adults**/who falls into that category/probe on age bands (ask all groups)
 - Would you describe yourself as an older adult?
 - Probe on groups 1, 2, 3 and 4
- What would your preference be to use the terms 'Older adults' or using an 'age-specific cut-off' - what is easier to understand, what works better in this context?
 - (P) for example using 65 years or older. How do you feel about that? To what degree does that marry with your thinking of older adults?

- What do you think would be included in:
 - Chronic illness or health conditions
 - Certain medications

Test definitions (20 mins)

I'd like to test some definitions that we have developed to determine which is easier to understand. We have two versions of the definitions and within each we have a simple and a more detailed approach.

Rotate order of testing

Show version 1A simple

- What are your thoughts on this?
- How easy is this to understand?
- What, if any, points of confusion are there?
- What, if anything, requires more clarification?
- Do you or anyone you care for fall into any of these categories?

Show version 1B detailed

- What are your thoughts on this?
- How easy is this to understand?
- What, if any, points of confusion are there?
- What, if anything, requires more clarification?
- How does this compare to the earlier version 1A that we looked at?
 - (P) improve/overcomplicate/make easier
- Were you aware of the term PPI and what a PPI was without the brand name reference?
- What do you think immunosuppressants are?
 - (P) is this a term that is familiar to you?
- Do you or anyone you care for fall into any of these categories?

Note to moderator: this is a prompt to determine if detailed version increases likelihood to identify as being in group

Preference

- Which is easier to understand and why?
- We have two approaches here, the first simply defines the group, and the second gives an explanation of why. Which is preferable and why?

Show version 2A simple

- What are your thoughts on this?
- How easy is this to understand?

- What, if any, points of confusion are there?
- What, if anything, requires more clarification?
- Do you or anyone you care for fall into any of these categories?

Show version 2B detailed

- What are your thoughts on this?
- How easy is this to understand?
- What, if any, points of confusion are there?
- What, if anything, requires more clarification?
- How does this compare to the earlier version 2A that we looked at?
 - (P) improve/overcomplicate/make easier
- Do you or anyone you care for fall into any of these categories?

Preference

- Which is easier to understand and why?
- We have two approaches here, the first simply defines the group and the second gives an explanation of why. Which is preferable and why?

Determine preference for version 1 or 2 (10 mins)

- Which is your preferred approach: 1) defining risk categories by type of people or 2) defining risk categories by condition?
 - (P) why
- Which is easiest to understand?
- The final statement of the definition states “If someone fits into more than one of these groups, such as being older and having diabetes, the risk of getting very sick from food poisoning is increased”.
 - (P) How do you interpret this/do you understand what it means?

Information sources (5 mins)

- Where do you obtain general (and specific information) about food safety or groups who are more at risk?
 - (P) networks, FSS website, NHS website/resources, newspapers, social media, charity organisations, AI website e.g. ChatGPT, family/friends etc.
 - (P) **Groups 5 and 6 only** – do they generally receive food safety advice from healthcare settings (GPs, nurses, hospital appointments)
- What are the most used and useful sources of information? What are the most trusted sources?
 - (P) channel, format etc.
- What information do you look for/would you like to have regarding food safety/groups who are more at risk?

- (P) foods of high risk, how to cook food safely, cooking for people who are more at risk etc.

Wrap up (5 mins)

- What if anything new have you learnt this evening during the group discussion?
- What has surprised you, if anything?
- Do you think this will change any of your food safety behaviours?
- Summarise the best approach: 1 or 2/simple or detailed.

Note to moderator: Reminder of key food safety behaviours that can reduce risk (slide provided by FSS) and where to go to learn more information on food safety (FSS website).

Thank and close

D: Stimulus materials

Show card X

Some people are more likely to become ill and have severe symptoms from food poisoning, often because they have a change in their immune system. These include:

- **Young children**
- **People with chronic illnesses/health conditions**
- **People prescribed certain medications**
- **Those who are pregnant**
- **Older adults**

If someone fits into more than one of these groups, the risk of getting very sick from food poisoning is increased.

Show card 1A

Some people are more likely to become ill and have severe symptoms from food poisoning, often because of differences in their immune system. These include:

- **Young children** typically children under 5 years old
- People with the following **underlying health conditions**: cancer, diabetes, HIV/AIDS, liver or kidney disease.
- People prescribed **medications** such as chemotherapy, immunosuppressants and proton pump inhibitors.
- Those who are **pregnant** and their unborn babies.
- **Older adults** typically people aged 65 and older.

If someone fits into more than one of these groups, such as being older and having diabetes, the risk of getting very sick from food poisoning is increased.

Show card 1B

Some people are more likely to become ill and have severe symptoms from food poisoning, often because of differences in their immune system. These include:

- **Young children** typically children under 5 years old, due to the immune system still developing.
- People with the following **underlying health conditions**: cancer, diabetes, HIV/AIDS, liver or kidney disease.
- People prescribed **medications** such as chemotherapy, immunosuppressants and proton pump inhibitors (PPIs, e.g. omeprazole; used to reduce the production of stomach acid).
- Those who are **pregnant** and their unborn babies.
- **Older adults** typically people aged 65 and older, because the immune system starts to weaken around this age.

If someone fits into more than one of these groups, such as being older and having diabetes, the risk of getting very sick from food poisoning is increased.

Show card 2A

People who fall into one or more of the following categories are more likely to become ill and have severe symptoms from food poisoning.

Age/life stage

- Young children, typically children under 5 years old
- Pregnancy
- Older adults, typically people aged 65 and older

Underlying health conditions

- Such as cancer, diabetes, HIV/AIDS, liver or kidney disease

Medication and treatments

- Chemotherapy
- Immunosuppressants
- Proton pump inhibitors

If someone fits into more than one of these groups, such as being older and having diabetes, the risk of getting very sick from food poisoning is increased.

Show card 2B

People who fall into one or more of the following categories are more likely to become ill and have severe symptoms from food poisoning.

Age/life stage

- Young children, typically children under 5 years old, as the immune system is still developing.
- Pregnancy, as the immune system changes during the development of the unborn child.
- Older adults, typically people aged 65 and older, as the immune system starts to weaken around this age.

Underlying health conditions

- Such as cancer, diabetes, HIV/AIDS, liver or kidney disease, all of which can impact the body's ability to fight infection, including food poisoning.

Medication and treatments

- Chemotherapy
- Immunosuppressants, such as those taken for autoimmune conditions or after an organ transplant.
- Proton pump inhibitors (PPIs), e.g. omeprazole, used to reduce the acidity of the stomach.

If someone fits into more than one of these groups, such as being older and having diabetes, the risk of getting very sick from food poisoning is increased.

If you/someone you care for is more at risk of food poisoning, there are simple things you can do to keep safe

To prevent food poisoning,
always follow the **4Cs**



Chilling



Cleaning



Avoid
Cross-contamination



Cooking

How can food poisoning be prevented?

Just follow the 4Cs when preparing and cooking food to stay safe:

Chilling

- Keep your fridge between 0°C and 5°C - use a fridge thermometer to check this.
- Always follow use-by dates.

Cleaning

- Always wash your hands in warm, soapy water before preparing meals and especially after handling raw meat or poultry.

Avoid Cross-contamination

- Never wash raw chicken! This can spread germs around your sink and kitchen.
- Use different chopping boards and utensils for raw meat/poultry and ready-to-eat food (or wash between use).

Cooking

- Cook food thoroughly until steaming hot. This ensures that any harmful bacteria on food are killed.

Find out more at
foodstandards.gov.scot