Minutes of public meeting of the PFAS Scientific Advisory Panel on Teams

10am on 13 September 2024

Panel Members present:	Dr Steve Hajioff – Independent Chair
	Dr Tony Fletcher – PFAS and Health member
	Professor Ian Cousins – PFAS and Environment member
In attendance:	Julia Head – Senior Public Health Officer
	Grace Norman – Deputy Director of Public Health
Subject Matter Experts:	Dr Roger Klein
	Prof Kristina Jakobsson - University of Gothenberg
	Dr Axel Andersson - University of Gothenberg

Welcome:

The Chair welcomed everyone to the Panel meeting, and reminded people the meeting was being recorded.

Introductions

The Chair and Panel members introduced themselves.

Dr Steve Hajioff, Independent Panel Chair: A background as a GP for 25 years and a retired Director of Public Health from an area of London with two major international airports and a variety of other environmental hazards and challenges. Not a PFAS expert but has done lots of work with National Institute of Care Excellence and other groups about translating science into policy. Dr Hajioff has also worked a lot in the pharmaceutical industry.

Dr Tony Fletcher, PFAS and Health Panel Member: Environmental Epidemiologist at the London School of Hygiene and Tropical Medicine, working on PFAS since 2006 and member of the panel with experience of epidemiological studies on the health effects of PFAS in contaminated communities in West Virginia in the United States, in the Veneto region, in Italy, and in Ronneby, and is the health expert on the panel.

Professor Ian Cousins, PFAS and Environment Panel Member: A Professor in Environmental Chemistry at Stockholm University, an expert on PFAS, appointed as the environmental expert on this Panel and whose expertise on PFAS is on the sources, transport, fate, and exposure of PFAS.

Support staff for programme management and administration were also in attendance.

The Chair noted that the meeting had 3 Subject Matter Experts in attendance who introduced themselves before speaking.

Declarations of Interest

No additional declarations.

Minutes of last meeting and matters arising

The Minutes of 11 July meeting were discussed.

Prof Cousins noted a clarification on a point in the minutes regarding biomonitoring.

In the July meeting the Panel discussed whether it would be possible to gather information on environmental markers such as tap water and dust. Dr Hajioff commented that this would be not necessary, and that recording whether a household is on borehole or mains water is sufficient due to the bulk of the body burden of PFAS in the exposed population is from water. If a household is on borehole water, there could be differences in exposure levels. The minutes will be updated to reflect this clarification.

The Chair noted that he had received two questions from an Islander following the July meeting. The panel discussed the two queries and provided clarifications.

The first was regarding a comment Dr Fletcher made noting that there is a lot of variability in PFAS blood tests. Dr Fletcher clarified that it is not that the results are not trustworthy, but rather that the blood tests result in a precise number and in reality, there is some variability in the measurement. He explained that if a repeat blood sample was taken the next day, it would be expected to be a bit higher or a bit lower due to testing factors (applicable for all laboratories) and the variation within the person, affected by factors such as their level of hydration when the sample was taken. To get a good population average, it is necessary to look at the averages across many people, and explained that estimation from one person is not possible due to this inherent variability. The minutes will be updated.

The second comment related to the panel discussion about the results from the C8 panel. The Islander pointed out that the C8 panel dealt with a PFOA exposure, and this is different to the exposure in Jersey. The Islander questioned how much weight the panel should be giving to this work. Dr Fletcher answered the comment noting that the Islander is quite right with this comment and explained that the panel have clearly noted in the report where evidence relates to that exposed community. These studies are informative about PFAS in general, but mainly about PFOA in particular. The Islander is correct, but he hopes that it is clear in the report which is now available to be read as the question was submitted before the report had been made publicly available Dr Fletcher requests that any further comments are submitted to the panel.

The Chair noted one further matter arising on biomonitoring and indicated that he had been conversing with a colleague who is a professor of primary care diagnostics in the UK called Professor Willie Hamilton. The panel would like to engage him as a subject matter expert but for personal reasons, he is unable to attend online meetings. Therefore, Dr Hajioff has corresponded with him and will bring the evidence to a future meeting. There are some interesting findings around biomonitoring.

Additional findings since the last meeting

Dr Hajioff noted that a period of Islander input has been launched for Report 2 at public Islander events on Wednesday 11 September and Thursday 12 September. A discussion was held about the content of Report 2 at both meetings. Islanders and others have been invited to read the text of the report which is available online at www.gov.je/PFAS. Comments are invited by email by 4th October to PFASPanel@gov.je. The panel will

anonymise responses and publish all the questions and comments in an appendix to the final report, along with an explanation about what changes have or haven't been made.

Prof Cousins questioned if Report 2 was also going to be peer-reviewed and noted that he would appreciate viewpoints on the conclusions in the report. Dr Hajioff confirmed that the subject matter experts (SME) who contributed to the report have received a copy of the draft report and have been asked to comment. Comments from SME will be dealt with in the same manner as Islander comments.

Agenda item 5 – Input from Subject Matter Experts

The Subject Matter Experts introduced themselves to the panel:

Dr Roger Klein

Dr Klein has been working on issues of health in the fire service for a very long time. He reported that it became clear in around the year 2000 that PFAS was an issue for firefighters and that firefighting foams could result in environmental contamination. Dr Klein has been working on these foams particularly in Germany and Australia since then, and has contributed to the Jersey PFAS Panel previously.

Professor Kristina Jakobsson

Senior Professor in Clinical Environmental Medicine. She is a specialist in environmental and occupational medicine and has worked on PFOS since 2013. She will provide experiences from her recent work with the Danish Public Health Agency who had a large expert panel for assessment of scientific evidence and produced a report and advice for general population and general practitioners in PFAS exposure hot spots. She also has experience in PFAS exposure in a small municipality in Sweden. Prof Jakobsson has contributed to the Jersey PFAS Panel previously.

Dr Axel Andersson

Dr Andersson is a medical doctor and has been a PhD student in Prof Jakobsson's group for 3 years. He is currently focusing on conducting elimination trials in Ronneby in Sweden, studying the effects of cholestyramine and similar compounds on PFAS levels in the blood. He is also conducting additional studies on immunotoxic effects in adults such as whether the COVID-19 vaccine is affected by PFAS levels.

Dr Roger Klein

Dr Klein gave a presentation entitled "Plasma Donation". Dr Klein started his presentation by explaining that, with regards to the consequences of PFAS contamination of groundwater, he has come to understand that the problems can be quite substantial.

Dr Klein explained that there were concerns in Australia about PFAS exposure for the fire service and several studies were conducted which indicated that firefighters could have high levels of PFOS and PFHxS. The plasma levels of PFOS were far higher than the population levels and there was also a correlation between PFOS and PFHxS. The serum to plasma ratios for PFHxS, PFOS and PFOA were 1:1 and were concentration independent. Serum of plasma to whole blood ratios, (regardless of anticoagulant used) were approximately 2:1. This indicated that that the fluorochemicals are mainly bound to plasma proteins rather than red blood cells.

Dr Klein explained that in Australia it was found that downstream contamination of ground water from major incidents at airport training grounds could contaminate 10-20km. At one

particular military airfield, weekly training with approximately 1000L foam a week was conducted over 25 years, resulting in 1.43 million litres of foam concentrate discharged to ground water over this time. This was a concern.

PFOS and PFHxS levels in firefighters were found to be linked (correlated) because PFHxS (C6) is a homologue of (has a similar structure to) PFOS (C8) and is an unavoidable contaminant of commercially produced PFOS. Around ~5-10% of a PFOS mixture is PFHxS. The biological half life of PFHxS is approximately twice that of PFOS meaning that after 30 years, there appears to be more PFHxS in groundwater than PFOS but this is because of the greater time PFHxS takes to break down.

The indications for concern for human health are from a German group called the Human Biomonitoring Group. They have derived two levels. HBM-I in 2016 set levels for PFOS of 5ng/ml plasma and PFOA of 2 ng/ml plasma. HBM-II in 2019 set levels for PFOS of 20 ng/ml plasma and PFOA 10 ng/ml plasma. It also set levels for women of childbearing age in 2019 for PFOS for 10 ng/ml plasma and PFOA 5 ng/ml plasma. HBM-I and HBM-II have trigger levels for action.

In Australia, many firefighters had levels above HBM-II. At the time, there were details in the literature which suggested that phlebotomy could reduce PFAS levels in blood. Other types of blood loss, for example menstruation, may impact PFAS levels too. A randomized controlled trial study was conducted to look at the effect of plasma and blood donations on levels of PFAS in firefighters in Australia. Dr Klein described the methodology and strengths and limitations of the study. The study indicated that for both PFOS and PFOA, plasma donation was more effective than blood donation, which was thought to be due to PFAS being found predominantly in the plasma. Testing was undertaken after donation was stopped and found there was some bounce back, although there was limited data.

Advantages of plasma donation:

- Does not deplete body iron stores, in comparison to whole blood donation
- Can be done more frequently than whole blood donation
- Is more effective than blood donation at reducing PFAS levels
- Removes major carrier of PFAS – serum albumin

Disadvantages of plasma donation:

- Intrusive and invasive
- Repetitive long term
- Requires traveling to a specialist centre
- Inconvenient long term

Dr Klein finished by reminding the panel that there are many PFAS compounds for which there is very little data. Questions were invited.

The Chair thanked Roger for his presentation and noted that he had heard Dr Klein explain that plasma donation appears to be more effective than whole blood donation due to the fact that the PFAS is stored in the plasma. Dr Hajioff noted that a reason for enhanced effectiveness might be due to the fact that it can be performed more frequently. Dr Hajioff explained that the panel have previously discussed what matters more to people, how quickly the PFAS goes down over a certain time period, or how many times the participant needs to go through a procedure. He noted that Dr Fletcher modelled these differences between treatments and time for PFAS removal in Report 1 and did not find a significant difference between treatments in terms of effectiveness. Dr Hajioff asked Dr Klein his

opinion on this matter. Dr Klein commented that the travel distances to perform plasma donation were far greater than blood donation and this may have led to lower participant engagement with plasma donation.

The Panel discussed that the HBM-I and HBM-II figures are from a few years ago, and since they were reported, further information has come to light in recent years such as immunotoxicity and cancer. They noted that in Report 1 they used more stringent measures than HBM-I trigger values, but that the Panel should confirm the threshold chosen in Report 1 is still valid. This threshold was 10ng/ml total across 8 types of PFAS. It was suggested that the aim should be to reduce the concentration down to the island background level.

Dr Klein was given the opportunity to comment and confirmed he had nothing further to add.

Prof Kristina Jakobsson

Prof Kristina Jakobsson gave a presentation entitled “PFAS exposure and screening, testing and biological monitoring”. She explained that her PFAS experience started in 2005 when she attended a PFAS workshop in Toronto. There was very little knowledge on human exposure at this time; it was understood that it was an issue with contamination globally, but there were no epidemiological studies.

In December 2013, one of the two waterworks in a small municipality in Sweden was found to be heavily contaminated with PFOS. About 30,000 inhabitants lived in the municipality, and approximately one third of the households had been drinking heavily contaminated mains water, caused by nearly use of firefighting foam from a military airfield. The length of time of contamination was unknown. This discovery triggered a lot of scientific research in the area. There is a summary of the research available at https://pfas.blogg.lu.se. The recent research continuing is on a mother-child cohort with PFOS at high levels in contrast to those with background levels.

In 2014 a rapid investigation study in children in the contaminated area showed high PFAS levels. These results led to a wider blood sampling programme in 2014-2016 to understand the exposure situation. About 1000 people attended in the first two weeks. Researchers found higher levels in older people suggesting that the exposure had been going on for quite some time. This information was used to conduct risk assessments based on knowledge at the time. Investigations were also started to understand the speed of elimination of PFAS from the body after the end of their high levels of exposure, and this let to lots of further research.

The PFAS levels in Ronneby were compared to average serum levels of background in Sweden, and to two other hotspots; Veneto (Italy) and C8 (USA). The exposures from people living with contaminated water at home in Ronneby were vastly in excess of comparator populations for PFOS, PFHxS and PFOA.

In 2014, the residents got information on their individual serum levels and how their level compared to others. The research team engaged in risk communication based on what was known at the time at a clinic with clinical, occupational and environmental medicine experts. A personal contact was made available during the blood sampling by mail, phone and at community events. Information was given to the local health care system on websites and via the media. No health related blood analysis was conducted, the only information shared was only whether the person was at the higher end, lower end or in the middle of the group. There were no recommendations for health screening or for reducing breastfeeding. Participants were encouraged to go to their general practitioner as usual if they felt unwell. Doctors had been told of the current knowledge on PFAS.

10 years later, in 2024, there has been much research conducted and it is understood that there are associations *on a group level* between PFOS and blood lipids, especially cholesterol. Importantly, cholesterol is not a disease in itself, but is a risk factor for cardiovascular disease. Studies from Ronneby have found that there is an increased risk for two rare cancers (testicular cancer and kidney cancer) and that there can be decreased antibody response after childhood vaccinations. There is evidence from elsewhere that PFAS can be associated with *decreased* birth weight, but, importantly, not *low* birth weight, although this was not observed in Ronneby, where they had higher exposure levels than other studied locations. There are many other health effects which have been investigated around the world but the findings are highly variable between studies and so are not conclusive.

This is today's state of knowledge. There are areas of interest, especially cardiovascular diseases, based on the finding of increased cholesterol in PFAS exposed populations. We need to carefully follow the evidence in exposed populations and update our scientific understanding in light of new evidence.

Medical screening is relevant to biomonitoring in the healthy general population. Some significant health problems can be screened for, but an essential criteria of screening is confirmation that early detection of disease lead to more effective treatment outcomes, e.g. breast cancer in women. Screening for identification of risk factors which can be prevented or modified is also conducted, such as checking blood pressure or cholesterol.

It is a requirement of medical screening that health outcomes must be improved through the screening programme. There may be specific programmes that are directed to a defined group of people, and there is also opportunistic screening conducted during standard medical procedures, e.g. doctors check blood pressure.

A useful medical screening programme is one which can detect a high proportion of the health outcome, and also does not result in a lot of false alarms, and this is a balance. The programme should be safe to administer, reasonable in cost and widely available, and there must be an effective intervention that can improve the health outcome.

For blood lipids there are health checks in place for people over 40 in the UK. For testicular cancer, self examination is important to identify changes early. There is not a recommended screening test for kidney cancer. Society protects each other with good vaccination coverage. The maternity healthcare and child healthcare systems in place protect against decreased birth weight of babies.

With regards to testing PFAS levels, it is more helpful at a group than individual level. PFAS levels for an individual can neither predict future disease risk nor confirm that PFAS is the cause of a disease.

Testing drinking water shows whether there are elevated PFAS levels in the water, and human PFAS levels can be estimated from water concentrations. In Ronneby, this will guide whether further selective testing is necessary for understanding exposure. It may be that present drinking water levels would not reflect previous drinking water levels and in such a situation, investigation of serum levels in selected segments of the population can help understanding. Similarly, if there are elevated levels of PFAS in locally produced food, in addition to calculating what it would mean to normal estimated intake, it can be helpful to test a selected group of high consumers for guidance on intake recommendations.

It is important that exposed populations receive clear risk communication and support. However, the right to know one's own blood PFAS level is not meaningful from a medical

point of view, although it is understandable that people who have been exposed want to know.

Prof Kristina invited comments and questions from the panel.

The Chair explained that routine health checks for those aged over 40 are not provided in Jersey. He mentioned the panel made recommendations for testicular self-examination and good vaccine coverage across the whole population, as mentioned by Kristina. The panel has also made recommendations around breastfeeding.

Dr Hajioff reminded the panel that he had had a conversation with Professor Hamilton that there are no recommended screening tests for kidney cancer. Dr Hajioff and Prof Hamilton had discussed a potential test looking at microscopic blood in urine, however this test is not effective because out of every 1000 positive tests, 999 would be false alarms which would cause a lot of distress in a population and so this test would not meet the criteria for a screening programme.

Dr Hajioff explained that *lower* birthweight and *low* birthweight are different technical terms. Low birthweight below 1.5kg, as babies below that weight are at greater risk of experiencing complications. If PFAS exposure might reduce birthweight from 2.1kg down to 2.0kg, that is probably not associated with health problems. Prof Jakobsson agreed and explained that there is large variation in the population for baby birth weights.

Prof Cousins was grateful for the presentation, and was reassured that the panel recommendations align with Prof Jakobsson's evidence. Prof Jakobsson commented that these recommendations are in line with the Danish PFAS panel as well.

Dr Fletcher asked about the 'right' to know one's PFAS level and asked whether in Ronneby there had been much demand from participants to know their individual results. Prof Jakobsson explained that they had always given the results to participants, alongside information about the categories in which they fell, which were based on the levels of the first 1000 samples. This banding information was used to compare individuals rather than use the individual numbers.

Dr Fletcher commented that this is similar to what happened in Jersey in 2022 where the results were compared to the NHANES 95th centile from the USA data. Dr Hajioff commented that this would help the situation discussed at the beginning of the meeting with regards to variability in testing and small variations in a specific number. Having bandings relating to exposure would help people to understand where they fall.

Dr Hajioff picked up on the comment about the right to know and explained that in English Law, there is no right to know health information. There is a right to know the results of any test that has been done, but there isn't a right to require a test to be done in order to know that answer. The panel is not aware of the legal situation in Jersey though, and suggested that this could be investigated.

Prof Cousins asked whether Ronneby has information available about environmental contamination and clean up efforts which would help the panel in their preparation of Report 4? Prof Jakobsson indicated that she would be happy to help. The panel thanked Prof Jakobsson in advance.

Dr Fletcher commented that the population in Ronneby was exposed to a complex mixture of PFAS from AFFF which does not help researchers determine which is most toxic. However, the Ronneby exposure is very useful for the Panel, because Jersey has a comparable situation of AFFF exposure. He explained that in the Panel's second report on health, they

have heavily relied on Ronneby evidence in the balance of evidence because of the similarities of the exposures, rather than relying on reports on individual PFAS chemicals, which cannot account for the mixture of chemicals. Dr Hajioff mentioned that the analysis Dr Fletcher had done on predicted exposure levels indicates that the exposures in Jersey and Ronneby would have been very similar at the time of contamination being identified, making the experiences and evidence from Ronneby very relevant to the Jersey hotspot.

The panel noted that Jersey had recognised the problem very early in the late 1990s prompted by the observation of foaming in the water and taken households off borehole water quite early. Government of Jersey intervened much earlier than other countries, and so the main exposure substantially dropped earlier.

Prof Jakobsson commented that it is important to note that blood PFAS levels have reduced significantly in recent decades and that levels found in hotspots now are similar to the levels in the general population in the late 1980s/early 1990s. The health effects observed in hotspot studies now are likely to be caused by exposure levels that were significantly higher than levels found today. Levels in the populations are much lower today and so any health effects seen are a worst case scenario from higher past exposures which is reassuring.

The panel thanked Prof Jakobsson for her inputs and commented that they were very helpful and interesting.

Dr Axel Andersson – Pharmacological PFAS interventions

Dr Andersson started by indicating that, in contrast to rodents and monkeys, the half lives of PFAS of humans are very long. This is one reason why interventions may be recommended in certain hot spot areas.

Cholestyramine impacts on enterohepatic recirculation (the circulation of biliary acids, bilirubin, drugs or other substances from the liver to the bile, into the small intestine and back to the liver). All humans have cholesterol in the blood which gets converted into bile acids allow intake of lipids in the intestinal system. Bile acids are stored in the gall bladder and excreted into the small intestines which help with digestion. Cholesterol is passively and actively transported back into the blood stream, hence a recirculation. Cholestyramine binds to bile acids, to stimulate the body to produce more bile acids. There is a hypothesis that cholestyramine may be used to enhance PFAS excretion, due to PFAS being in high concentrations in bile, but in low concentrations in faecal matter. This indicates that PFAS exits the liver through the bile acids and then gets reabsorbed due to either passive or active uptake which will increase faecal excretion. There have been several small studies which support this hypothesis. There are several side effects of cholestyramine including constipation, nausea, stomach pain, risk of lower uptake of other medications.

A new clinical trial, published in 2024, was run in a hotspot in Denmark called Korsør. Cows grazed grass polluted with firefighting foam, primarily high PFOS. Dr Andersson compared the levels in serum with the Jersey results and found they were generally similar overall, but with much higher PFOS levels in Korsør. The researchers conducted a 12-week trial with cholestyramine with 45 individuals. The results found that the serum levels after 12 weeks of treatment were significantly reduced in comparison to the observation period in the same individuals. PFOS elimination was 63% on treatment compared to 3% in the observation period. The extent to which these findings can be applied to Jersey is unclear, and it may be that the rate of elimination would be lower in Jersey because PFOS levels now are lower than in the Korsør population.

Dr Andersson displayed a graph which showed that cholestyramine was considerably more effective than blood and plasma donation at reducing PFAS levels.

The second intervention that Dr Andersson described was Probenecid. This is an old gout medication and it works in the kidney. Probenecid inhibits the uptake of compounds, and potentially PFAS. There are side effects of nausea, headaches and interactions with other medications.

There was a trial in Ronneby (where the drinking water was polluted by firefighting foam, primarily high PFOS and PFHxS) to look at elimination both short term (1 week) and long term (12 weeks) use of probenecid. The results have not been published yet. The results of the short term, one week trial with probenecid indicate that there is no significant effect of probenecid treatment in PFAS excretion.

Dr Andersson concluded that the evidence currently suggests that cholestyramine is effective at lowering PFAS serum levels, but probenecid is not. It is unclear the effectiveness of treatment in lower PFAS serum levels, and it is also unclear in other dose schedules.

There will be a clinical trial about long term cholestyramine treatment in tablet form in a low dose in Korsør. The risk benefit of treatment is not known. The treatment phase of this work has been completed and the analysis is underway, with the paper expecting to be published in early 2025.

Dr Andersson finished his presentation by reminding the Panel that it is not known whether lowering PFAS levels improves the health outcomes for people, and this is an important limitation.

The Chair thanked Dr Andersson for his presentation. He asked if the Korsør paper reported on side effects and tolerability of the treatment with participants. Dr Andersson commented that this is published and that there were a number of participants who dropped out due to unpalatability of the treatment.

The Chair asked when the findings of the longer term study in Ronneby with the alternative medication will be published.

Dr Fletcher noted that in Korsør the researchers were looking at dose ranges of cholestyramine, and indicated that this is not the plan in Ronneby. He questioned whether if the participant took half the dose but for longer, would this result in a good reduction of PFAS serum levels but with fewer side effects? The Chair noted that it is not just about the side effects once taken, but the tolerability of the medication at point of administration because the unpleasant taste is difficult to avoid. Dr Andersson noted that the Korsør studies will be focusing on this. In his opinion there should be a dose response relationship with side effects, but also the effectiveness of lower doses needs researching also. Dr Hajioff noted that the capsule version of the drug may have different side effects, and that this medication would be expected to be used for a relatively short period of time, rather than indefinitely, which may make it more palatable.

Dr Fletcher asked whether there was an increase in PFAS levels after the intervention was completed (as was found in the blood and plasma donation trial). Dr Andersson replied that this was not reported in the paper but there was a small amount of rebound. Dr Jakobbson commented that a challenge with interpretation is that evidence suggests that a lower PFAS level is better for health, but it is not clear whether it is the levels in the body that someone has *now* or *in the past* which impacts on health. Messaging about health risks must be communicated very carefully and clearly. Whenever elimination trials are starting, there is a

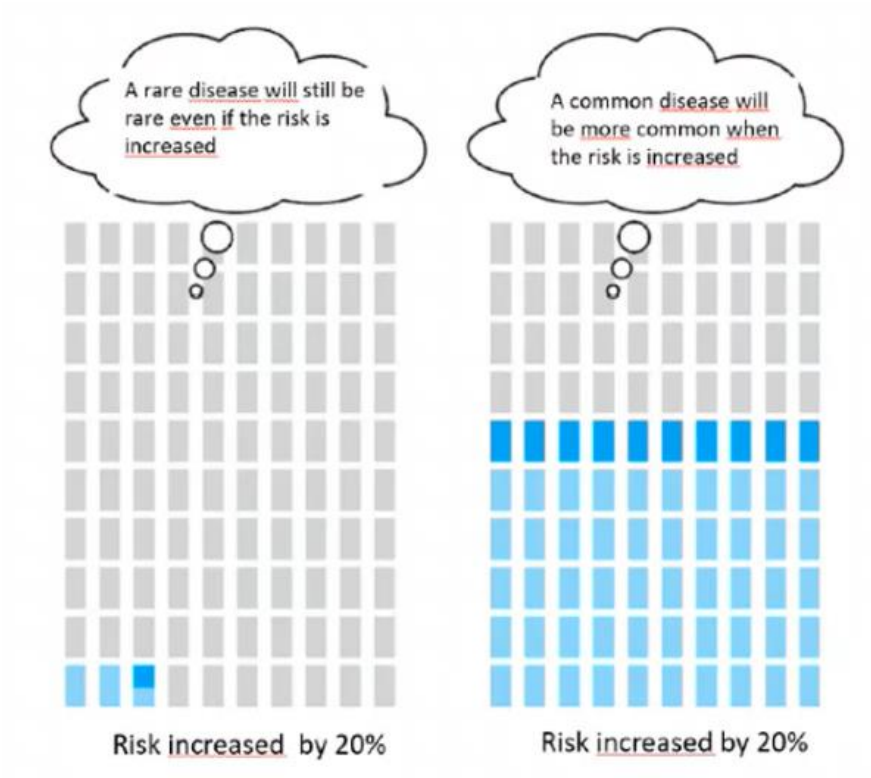
need to follow up what is happening using different types of biomarkers. There is a need to figure out substantiable markers which are related to physiological process. Any trial starting should be seen as within scientific context and it should be made clear for participants that scientifically, we don't know what it means for the individual.

Dr Jakobbson explained that what levels of PFAS a woman transfers to her child is also an important question. Dr Hajioff agreed, and said that, given the context of the IARC findings around cancer, questioned whether the panel should assume that, as they are dealing with a carcinogen, what you have presently is more likely to be important than what you had in the past? To know about the change in cancer rates will take years, and due to this, due to the IARC findings, should be we be more precautionary and assume that there are more health effects? Dr Jakobbson asked if the mechanism of carcinogenesis is known, because this is important to understand. She noted that not knowing whether the PFAS are mutagens or tumour promoters makes it difficult to know the timing of follow up. Dr Fletcher commented that due to the cancer concern, there is a presumption that a threshold of no effect cannot be defined, and this is why the EPA is setting a level to be as low as practicable. Therefore, we cannot quantify the benefits of reducing exposure by half in terms of risk assessment, but we can argue that it should be better and therefore there is an advantage and a reduction in risk of ongoing disease. Dr Hajioff commented that this argument was discussed in Report 2 in the context of immunomodulatory mechanisms, but the time factor was still important. He noted that quite a few of the possible mechanisms still have a time factor.

Dr Jakobbson commented that the shape of the dose response curve is important not only for cancer, but for other effects. There are indications that there seems to be more marked changes in response in lower doses and not so steep at higher doses. This effect is not fully understood yet, but it has implications on the lowering serum levels. Dr Hajioff noted that he recalled a graph about cholesterol in report 1 which showed a rapid increase of cholesterol levels in blood at low PFAS concentrations and then it plateaued. It is very important for non-cancer complications but is difficult for the cancers. No data are available yet.

Grace asked Dr Jakobbson about screening. Screening is a process whereby people without a disease are screened for risk factors for disease. In the decision-making process about whether screening should be offered, does balance of risks and benefits change given the fact that Islanders in the plume area have been exposed to high levels? Dr Jakobbson explained that it depends what kind of health effects are considered. For rare diseases, an increase of 20% does not dramatically impact the incidence of the disease; a rare disease will still be rare even if the risk is increased. However, a common disease will be more common when the risk is increased by 20%. It is important to have a screening programme which covers everybody. It is necessary to work out whether the screening programme causes more problems than it solves. This depends on the test, are there a lot of false alarms, is it sensitive enough to pick up those who need to be picked up? You must be guided by the diseases that you want to examine, and whether a highly exposed group would benefit from screening, or whether everyone would benefit.

Dr Jakobbson showed the Panel the following image which is helpful for understanding the impact of an increased risk of disease:



Dr Hajioff noted that risk factors become irrelevant for diagnostic purposes if one has already got symptoms, and risk markers become more important.

Screening is a different matter. When screening, proportionality and the effect on wider society are important, but risk factors are important too. Risk factor screening can be done, e.g. there is a new screening test for lung cancer in smokers which is being piloted at the moment. Lung cancer has a big added risk of 13 times (1300% additional risk) in smokers. For a disease which only has a 10 or 20% increase in risk, like kidney or testicular cancers in the PFAS exposed population, it becomes harder to justify the disruption and dealing with the false alarms from this programme. It has to be on a case by case basis, looking at the condition and the exposure.

Dr Hajioff responded to an earlier point raised about routine health checks for everyone aged 40 and over and explained that this is not a service that Jersey currently runs but that there may be a case for a targeted screening programme in that higher risk group.

Dr Jakobbson reminded the group that just having a health examination does not change the health of the population; there needs to be access to appropriate interventions also. For cholesterol, for example, there should be weight management interventions, supporting diet and physical activity and medications. The evidence base consistently shows a health examination without interventions is not effective.

Dr Hajioff reminded the group that screening can cause significant harm. For example, in the USA, whole body CT and MRI scans identified incidental tumours which would not have gone on to cause an illness, and this over-diagnosis can cause physical and psychological harm to those affected. It is important that there is robust decision-making around screening programmes.

There were no further points for discussion. Dr Hajioff thanked the subject matter experts for their time and advice and help which has been immensely valuable to this process and looked further to conversing further to make the panel's response in Jersey better.

Any other business

No other business was raised by the panel.

Date of next meeting

Wednesday 9 October 2024. It will be held 10am-1pm online.

The Chair thanked everyone for their contributions, those watching the meeting and Julia for her support throughout the whole process. A reminder to the public that this meeting has been recorded and the video will be available online on request by emailing the PFAS mailbox. This will take a couple of days to make sure the observers are anonymised.

There being no further business, the meeting was closed.

To note that the Panel can be emailed via PFASpanel@gov.je.

Details of meeting dates and times can be found at PFAS in Jersey (gov.je)