Bathing Water and Health: Programme for Joint Environmental Health Service and Public Health Medicine Training Day March 13th 2019

The training day was opened by Ms Ann Marie Part (AND Environmental Health). She welcomed participants and acknowledged the work that had gone into preparations for delivery of this training. She highlighted the importance of this training.

Dr Regina Kiernan chaired the morning session of the training day and outlined the learning outcomes of the day.

Learning Outcomes

1. Understand the role of key stakeholders in responding to bathing water incidents
2. Be aware of the need for prompt communication between LAs, HSE (EHS and PH), and the EPA
3. Know the communication protocol for reporting bathing water incidents
4. Know the threshold levels in Table 1 and the appropriate actions to take based on these
5. Know the criteria for lifting a bathing water prohibition
6. Be able to correctly list the 5 changes in the 2019 Bathing Water and Health Guidance
7. List the steps in performing either a PHRA or EHRA as appropriate

Section 1: Morning Presentations – Part 1

1. Learning Outcomes. Dr Regina Kiernan, Consultant in Public Health Medicine.

2. Oceans and Human Health: Understanding the interconnections between people and the sea. Dr Easkey Britton, Whitaker Institute, NUI Galway.

   This presentation outlined the human health benefits associated with the sea. An overview of the "Seas, Oceans and Public Health in Europe (SOPHIE)" project was provided. It is a 2.5 year EU H2020 funded project that aims to establish a Strategic Research Agenda for Oceans and Human Health (OHH) in Europe. The primary action is to define future "Oceans and Human Health" research priorities.

   Access to and experience of "Blue Space" was outlined including realising the health and wellbeing benefits from experiencing and engaging with coastal blue space, seas and oceans. A healthy marine environment supports the human health benefits from oceans.

   Dr Britton is the author of a systematic review "Blue Care: A systematic review of blue space interventions for health and wellbeing." This research suggests that blue

care can have direct benefit for health, especially mental health and psycho-social wellbeing. There was also some evidence for improved social connectedness.

The Welcome Wave project in Inchydoney was described. This involved providing surf lessons for children living in direct provision in the Cork area. It was very successful.

3. Antimicrobial resistance and the environment - what we know and what we need to know. Dr Dearbháile Morris, Lecturer in Bacteriology, NUI Galway.

Antimicrobial resistance (AMR) is a major public health problem. There are different types of AMR. Carbapenemase-producing Enterobacteriaceae (CPE) is most concerning as they are resistant to almost all available antibiotics. Treatment of infection with CPE is very difficult. The causes of AMR include over prescribing of antibiotics, poor infection control practices, poor hand hygiene and a lack of new antibiotics.

One Health report on antimicrobial use and antimicrobial resistance is Ireland's first cross-sectoral report on antimicrobial use (AMU) and AMR in humans and animals. Ireland is ranked 9th out of 25 European countries in terms of antibiotic use in humans and 17th out of 30 in terms of use in animals.

Dispensing raw sewage in the vicinity of recreational bathing areas is a major risk for transmission of antimicrobial resistant organisms. NDM-producing Escherichia coli were isolated from recreational waters in Ireland, 2016 to 2017.

There are several research projects underway including:

- The AREST project will generate national level data on the key sources, hot spots and drivers of AMR in the environment from various sectors which will inform priority areas for action.
- Public health Impact of Exposure to antimicrobial Resistance PIER: 2019-2022 in coastal waters
- DESIGN - 2019-2020: Detection of Environmental Sources of Infectious diseases in Groundwater Networks.

4. Bathing Water Quality – The role of the EPA. Mr Anthony Mannix Environment Protection Agency.

Good quality bathing waters are a resource for recreational use and an important tourist attraction. Assessment relates to Intestinal Enterococci and Escherichia coli (E.Coli) in Bathing Waters. These organisms can cause illness on their own but are generally used as indicators of faecal contamination and as surrogates for other pathogens.

The role of the local authority(LA) and the EPA in relation to bathing waters was outlined. The local authority has a role in identifying bathing water, managing and monitoring bathing waters and designating new bathing sites. The EPA must ensure the LA carry out their functions. They collate information on bathing waters and

communicate with the public. They submit information to the European Commission. Beaches.ie was highlighted as a useful resource and communication platform.

The EPA bathing water quality report provides an assessment of Ireland's identified bathing waters and information on other non-designated bathing waters where water quality monitoring is undertaken by the LA.

Questions relating to morning presentations – Part 1

1. **In Cheltenham the horses are walked through water for recovery. Is this something you have come across or found evidence for in your work?**

   There is a lot of research emerging in the last 5-10 years regarding the use of sea water to treat illness. There is resurgence in the use of sea water under blue space health benefits.

2. **The presentation referenced the importance of consideration to the urban sea space, could you explain that further?**

   We need to shift our understanding to consider the environmental dynamics which are important in the urban context.

   Examples of this are the "Clean up the Hudson" projects and the "Billion Oyster Project" in New York. These aim to provide cleaner waters and also offer educational elements.

   The explorer project is an example in Ireland of an educational project promoting the importance and value of the ocean.
   A lot of the research for blue spaces follows a similar pattern to that of green spaces. The mental and psychological health benefits are emerging.

3. **Will the research AREST project - look at drinking water sources for animals such as cattle?**

   Drinking water sources for animals can be examined and they are open to suggestions regarding this. The work will include sampling surface water. A holistic approach will be taken to the research particularly in the point prevalence survey.

4. **Is the ocean health research very human centric or does it include broader issues such as fishery policies?**

Seas, oceans and public health in Europe (SOPHIE) explores the relationship between oceans and health. There are 26 priorities in this area of work including fisheries, sustainable environment and resource use.

5. **What are the issues with preventing raw sewage in bathing water?**

   The lack of suitable waste water treatment plants in some areas is the main problem. Irish water is working hard on this issue and prioritising investment.

6. **How were the cut-off figures in Table 1 of the bathing water guidelines formulated?**

   This dates back to 2012/1 when the environmental health group convened to make a standardised approach. A literature review was undertaken regarding once off abnormal results (referenced on page 6 of guidelines). There was wide consultation with public health, the EPA and medical microbiology. The science behind the table is a collaboration of that information guided by legislation.

   Easkey raised the point that it would be useful to consider real time monitoring using developments in biotechnology. Also consideration should be given to the issue of water quality outside of the bathing season as this is particularly relevant to people who enter the water outside of the bathing season such as surfers who surf all year round.

7. **Sewage treatment and antimicrobial resistance – does secondary treatment work?**

   Antimicrobial Resistance and the Environment – Sources, Persistence, Transmission and Risk Management (AREST) project planned to look at all levels of treatment – primary, secondary, tertiary. However, due to resource restrictions in Irish Water this may be more limited than initially planned.

8. **What are the criteria for designating a bathing water site?**

   There is a combination of factors involved in designating a bathing site. The level of usage of the site, the resources, water safety issues and access to the area are all considerations. Clubs/organisations can come forward and ask the local authority to designate a particular site.

9. **The usefulness of shellfish studies was mentioned in terms of the information that can be gained from shellfish sampling.**

   The panel responded to this highlighting that the bathing water directive is periodically reviewed. It follows the WHO recommendations for bathing water assessment. The process of monitoring and analysing is resource intensive.

10. The issue of planning in relation to blue space was raised.

There is a lot more focus in other countries regarding blue space planning. There is a study in Galway currently regarding blue space use and access. This is often not a consideration in Ireland at present. Easkey will add information on what is available in relation to this to her presentation.

Section 2: Morning presentations - Part 2

1. Recreational Open Water and Infectious Disease. Dr Katharine Harkin, Specialist Registrar, Public Health Medicine.

   This study aimed to minimise the public health risk of infectious disease by developing evidence-based recommendations for recreational open water users. It involved a literature review and a survey among those involved in open water sporting events.

   There were 673 survey responses. The key findings showed that 26.6% linked a previous illness to recreational open water contact. Gastrointestinal symptoms were the commonest illness.

   Recreational water users are advised to use beaches compliant with EU bathing standards. They should be aware of weather events such as heavy rain which can contaminate water. People should avoid swallowing water and wash their hands after exiting the water. National sporting bodies should inform participants of the risk.

2. Public Health Risk Assessment. Dr Áine McNamara, Consultant in Public Health Medicine

   Types of Bathing Water incidents were outlined such as microbiological exceedances, sewage spill, poisonous jelly fish, oil pollution, rodent infestation and proliferation of cynanobacteria.

   The bathing water guidance provides important guidance outlined in Table 1 (page 7) regarding the criteria for action levels in response to microbiological sample results. The presentation provided an overview of the factors for consideration in the public health risk assessment including the source of contamination, the beach profile, sample history, period of exposure, the population at risk, human illness, surveillance and control.

   The public health risk assessment for possible harmful algae bloom was outlined. This includes assessment of the water body characteristics and use, the assessment of the nature and intensity of bloom, cyanobacterial characterisation, and comparison of cell count with WHO guidance. If there is a concern about exposure risk and no lab results it is safest to assume toxicity and prohibit water use.

Questions relating to morning presentations – Part 2

1. **What action should be taken if a prohibition notice has been placed on a site and an event such as a triathlon is due to take place there?**

   The notice should be put up and be clearly visible. The triathlon organisers should be informed of the risk and it should be ensured that organisers of the event inform

participants. Once the information is communicated appropriately, it is an individual risk after that.

Quiz

1. **What does the updated guidance suggest in relation to Inlet Stream signage?**

   As the health authority, the HSE recommends that local authorities should erect signage at all inlet streams which cross bathing areas to warn the public of potential risks unless they can show that the stream is not contaminated. The signage should be visible and on local authority advice boards.

2. **You have obtained / are made aware of a result of a bathing water sample taken from a popular blue flag beach indicating a result of 750 E coli / 100ml, the day after the sample was taken. An Intestinal Enterococci (I.E.) result will not be available for at least another 24 hours? What action(s), if any, do you take?**

   The precautionary approach is appropriate. The area should be monitored and re-sampled. The guidance outlines that you can act on an elevated E.coli result now, you don't have to wait for intestinal enterococci result. An advisory notice can be considered in exceptional circumstances where a non-typical e. coli result is recorded without any obvious cause e.g. heavy rainfall.

3. **BW & Health includes a guide to action in relation to microbiological exceedances in :**
   Table 1: Action levels in response to microbiological sample results.
   The updated Guidance suggests a precautionary approach where results are close to HSE bacterial action levels.

   This would permit the recommendation of a prohibition notice in certain circumstances when there is an:

   E coli result of >1800/100ml
   or
   I.E. result of >225/100ml

4. **The updated guidance includes Appendix 6: Marine Algal Bloom Guidance. What actions are suggested in the document in relation to first steps where an algal bloom event is suspected in a seaside bathing area, to rule out the possibility of it being an algal bloom?**

   Algal blooms are less common in marine sites and are usually not harmful to bathers. Other causes should be considered as outlined on page 22 of the guidelines.

5. **A prohibition notice is in place due to high levels of enteric bacteria obtained on routine sampling from an isolated beach surrounded by farmland, some of which is used for slurry spreading. What criteria are required in order to be able to recommend lifting of the notice?**

   Both E. coli and intestinal enterococci results are required in order to lift a prohibition notice. Consideration should be given to potential malfunction of sewage systems. The impact of tidal flow on contamination should be considered. The background levels for each beach during seasons should be examined.

Scenarios

Scenario 1: Sewage leak with bathing water site contamination.

- Public health and environmental risk assessments were outlined and appropriate actions discussed as per the sample answer. It should be noted that it is the responsibility of the local authority to provide the necessary information in a timely manner to allow accurate risk assessments. The HSE can also do additional investigation if required. Pre-liaison with the local authority on the profile/location of these discharges may also assist in your initial assessment of such scenarios.
- Additionally, the issue was discussed regarding the difference between an advisory and prohibition notice. The advisory notice advises people not to swim. When a prohibition notice is issued the level of risk is deemed to be higher and it uses stronger language such as "Do not swim". The prohibition notice in these cases differs from a prohibition notice issued to food premises as one which may be issued for a food premises in that one cannot force a person not to swim.

Scenario 2: Outbreak of gastrointestinal illness following a triathlon

- Actions were discussed as per guidelines.
- This was not an identified bathing site. Local authority can still put up a prohibition notice but this is on a voluntary basis. However, under infectious diseases regulations 1981, (article 11) the MOH can take whatever measures are necessary to protect health.
- Organisers of such events should have public liability insurance and should carry out an appropriate risk assessment, ideally including sanitary survey, water testing and weather forecasting, before events. Post-event personal hygiene facilities/measures should also be provided.
- Consideration should be given as to whether this should this be an identified site in future.

Scenario 3: Algal Bloom

- Follow guidelines as outlined on page 19-20 of guidance.
- In this case we assumed toxicity due to death of the dogs and the fact it is in freshwater. A prohibition notice should therefore be put in place.
- It is important that users include those fishing, walking dogs etc, not just bathers
- It is noteworthy that the laboratory for testing in cases of suspected algae bloom is undertaken in Scotland so there can be a delay in getting results. Therefore it is important to implement precautionary action at an early stage – particularly in this case which involves fresh water and dog fatalities.
- The criteria for lifting the prohibition should be adhered to – page 20 of guidelines.

Closing of the training day

Dr Regina Kiernan revisited the key learning points and closed the training day.