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To Protect and Prevent:
Managing Environmental Hazards in a Changing Climate
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Verotoxigenic E Coli (VTEC) Prevention in Rural CHO5 (Health Protection Strategy 2022-2027).

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Abstract

Background

Ireland has highest VTEC rates in Europe. This survey was undertaken to engage rural stakeholders with a view to reducing incidence of VTEC in CHO5, seeing 75 cases reported from 1st of January 2024 to 11th of July 2024.

Aims

To engage with rural childcare providers who had experienced VTEC outbreak, those who had not, and parents of children who had contracted VTEC to guide public health intervention.

Methods

Phone survey of childcare facilities and parents of children who'd been diagnosed with VTEC.

Results

Crèches post outbreak (3); 66% had not heard of VTEC before outbreak, 100% believed they would have benefitted from prior education, 100% stated they are more vigilant of GI symptoms and 100% stated they were negatively affected by outbreak.

Other crèches (10) 70% had not heard of VTEC, exclusion criteria for diarrhoea; 1 episode, 10%, 2 episodes, 60%, 3 episodes, 30%. 100% believed they would benefit from Public Health engagement to prevent VTEC transmission.

Parents (10); 80% had not heard of VTEC prior to child's illness, 80% reported negative impact on quality of life, 70% believed they would have benefitted from prior knowledge of VTEC and 90% stated that Public Health should provide more information to rural stakeholders.

Discussion

Majority of stakeholders support more education and engagement by Public Health in preventing VTEC.

Plan; to produce leaflets for rural parents re VTEC, Haemolytic Uraemic Syndrome (HUS) and Private Well maintenance and engage directly with child-care facilities for cooperation and education.

Climate Change and Vector borne Diseases: Changing Epidemiology of Dengue Notifications in Ireland

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This work is covered under regular ID regulations - no ethical approval required.

Abstract

Background

Dengue is a mosquito-borne viral disease, widely distributed in tropical and subtropical regions, and transmitted by *Aedes* mosquitoes, which are not present in Ireland. All dengue notifications in Ireland are associated with international travel.

In early 2024 we noticed unseasonably high numbers of dengue notifications and investigated this increase.

Aims

To identify any changes to the epidemiology of dengue in Ireland which could account for the rise in dengue notifications.

Methods

Data for dengue notifications in Ireland from 2012 - Q2 2024 was extracted from Computerised Infectious Disease Reporting system. 'Likely region of infection' was determined using data from 'country of infection' and free-text fields containing details of travel. Trends were plotted by reported travel region and changes in proportions calculated using Chi-square tests.

Results

From 2012 - Q2 2024, there were 174 notifications of Dengue with 23% of these occurring between Q3 2023 and Q4 2024. Before 2022, 77% (46/60) of dengue cases, where travel was known, were related to travel to Asia and the Pacific. In comparison, between Q1 2022,

and Q2 2024, 69% (27/39) of cases, where travel was known, reported travel to the Americas and Caribbean (Chi²=3.67, P-value=<0.0001).

Discussion

The Americas are now the most common source of dengue infections for Irish residents while travelling. Climate change has caused changes in dengue across the globe; WHO and PAHO reports also indicating an ongoing outbreak in the Americas, partially attributed to climate change. Awareness of these ongoing changes is key to guiding appropriate messaging for the public about vector borne diseases risk while travelling.

Review of regional surveillance of environmental incidents of public health concern and recommendations for a national approach

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Background

Environmental incidents of Public Health concern are reported to regional Departments of Public Health from a variety of sources. These data are not currently collated nationally preventing analyses which might inform a nationwide understanding of the frequency of these incidents, and quantification of the related public health actions and workload.

Aims

To review the current processes of environmental incident data collection regionally to inform development of a standardised practice in recording incidents and of a national database for monitoring incidents.

Methods

Available data on environmental incidents documented regionally in 2023 were provided to HPSC and analysis was conducted using Excel to ascertain the variables currently captured regionally, to identify common variables and to understand categorisation of incidents.

Results

Environmental incident logs were not available for all areas for all incident types in 2023. Most logged incidents in 2023 related to drinking (n=273, 83%) and bathing water (n=46, 14%) incidents. There were differences between areas in the categorisation of environmental incidents, for example in terms of incident type, water type and supply type. Some common and key variables were identified, as well as recognition of the challenges in environmental incident data collection.

Discussion

Teams in each region take differing approaches to recording of environmental incidents. We are working towards the development of a standardised suite of variables, and a standardised approach to incident categorisation and reporting. This will allow for more systematic analyses and provide a better understanding of environmental incidents of public health concern in Ireland.

Environmental Health Indicator Surveillance - A Literature Review

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Abstract

Background

A new Outbreak, Case and Incident Management System (OCIMS) will monitor environmental health indicators (EHIs). Knowledge of what EHIs are monitored in other countries would inform the selection of suitable EHIs for surveillance here.

Aims

To conduct a literature review with narrative synthesis of evidence in relation to the surveillance of environmental health indicators by Public Health agencies internationally

Methods

A systematic search was conducted across five databases. Relevant websites, reference lists and the grey literature were searched. Data were extracted following TIDieR-PHP guidelines. Risk of bias was considered and quality appraisal was performed using SANRA and AGREE-HS tools. A narrative synthesis of the evidence was completed.

Results

12 papers were included in the final review. Four described European and Worldwide initiatives and the remaining eight described a single health system. The number of indicators monitored varied widely. The most established programmes described the use of a framework and indicator selection criteria were applied. The papers described a variety of public health actions arising from the surveillance of environmental health indicators.

Discussion

This review can inform OCIMS implementation. Establishment of a project team, and beginning with monitoring one domain is suggested. Air quality is the most frequently monitored domain internationally. The DPSEEA framework is recommended, and Briggs' indicator selection criteria should be applied to any indicator under consideration. The system should measure both hazard and outcome measures and record meaningful actions.

Imported Fevers from the perspective of an Irish Tertiary Academic Hospital

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Abstract

Background

Imported fevers (IF) are a broad a complex set of presentations to the emergency department (ED), without standardised management approaches.

Aims

To analyse the assessment and management of patients with IF presenting to ED, and to identify gaps for practice improvement.

Materials and Methods

A retrospective audit was conducted of patients who had a malaria test requested at MMUH in 2023. Data were collected from patient notes and descriptive statistics were used to present clinical parameters.

Results

74 malaria tests were requested, and 47 individuals who also had a documented travel history were identified for inclusion. 34 (72%) had travelled within the past 6 weeks. Frequent travel locations were Nigeria (11(23%), Ghana 3 (6%), Brazil 2(4%), and the DRC 2 (4%). Travel was urban for 26 (55%) patients and rural for 13 (27%). Seventeen (37%) were travelling for holiday and 10 (22%) to visit family. No reason for travel or risk factor was recorded for 18 (37%) patients. Twenty-four (50%) had no vaccination status recorded. Only 7 (14%) had documented full immunisation with both childhood and travel vaccines and malaria prophylaxis was taken by only 6 (13%) patients. Malaria was the most common diagnosis, with 7 (15%) patients. This was followed by 3 (6%) invasive bacterial infections, 2 (4%) dengue fever, and 2 (4%) rickettsiosis. An aetiology was not identified in 19 (41%). Forty (85%) were admitted to hospital. Thirteen (27%) were given antibiotics for a median (IQR) of 6.1 days (3-10).

Conclusions

Risk factor assessment and prevention of IF were suboptimal. A large proportion also remained undiagnosed. Co-ordinated approaches to improve prevention, diagnosis and surveillance for IF are needed in Ireland.

How have the Solid Fuel Regulations impacted air quality and human health? A post-hoc evaluation of the first year

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Abstract

Background

Fine particulate matter (particulate matter of diameter $\leq 2.5\mu\text{m}$, $\text{PM}_{2.5}$) is the air pollutant that poses the greatest threat to health in Ireland, where it is estimated to cause 1,300 deaths per year. Residential use of solid fuel is the major source of $\text{PM}_{2.5}$. On 31/10/2022, national Solid Fuel Regulations (SFR) restricting the sale of smoky fuels were implemented with the goal of improving air quality and health.

Aims

This study aimed to evaluate the impact of the implementation of the SFR on $\text{PM}_{2.5}$ concentrations and emergency cardiovascular and respiratory admissions.

Materials and Methods

Daily $\text{PM}_{2.5}$ concentrations from background air quality sites between 31/10/2018 and 30/10/2023 were obtained from the Environmental Protection Agency. Standardised cardiovascular, respiratory, chronic obstructive pulmonary disease, asthma, ischaemic heart disease, heart failure, stroke and arrhythmia emergency hospital admission rates were calculated from Hospital In-Patient Enquiry data for the period 31/10/2015 to 30/10/2023. Comparisons were made between the pre-SFR period and first year post-SFR.

Results

Mean $\text{PM}_{2.5}$ concentration fell by $1.0\mu\text{g}/\text{m}^3$ (11.8%, $p < 0.001$) in the year following SFR implementation. The prevalence of World Health Organization air quality guideline exceedances decreased from 11.6% to 7.4% ($p < 0.001$) post-SFR. Significant reductions were observed in standardised emergency hospital admission rates with cardiovascular disease, chronic obstructive pulmonary disease, asthma, ischaemic heart disease, heart failure and arrhythmia in the year post-SFR introduction.

Discussion

PM_{2.5} concentration and standardised emergency hospital admission rates were significantly reduced in the post-SFR year. A Health in All Policies approach is recommended for future air quality policy development.

Monitoring excess mortality in Ireland

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Abstract

Background

The Health Protection Surveillance Centre (HPSC) monitors excess all-cause mortality in Ireland, as part of the European Mortality Monitoring Project (EuroMOMO). This system estimates excess mortality that may be due to pathogens of epidemic/pandemic potential, extreme weather events (e.g. heat waves) and other public health threats.

Aims

We aimed to estimate excess all-cause mortality in Ireland, 2014-2024 and assess if heatwaves (defined as five or more consecutive days with maximum temperature over 25°C) were contributory.

Methods

Excess mortality was estimated using the EuroMOMO statistical algorithm, on data from the General Register Office on all registered deaths in Ireland, 2014-2024. Delays in death registrations were corrected using a delay adjustment. Excess mortality was compared to known periods when heatwaves were reported in Ireland.

Results

HPSC did not identify periods of excess mortality associated with heatwaves during the period 2014-2024, additional data analyses are ongoing. Statistically significant excess all-cause mortality, associated with periods of increased influenza/other respiratory virus activity was observed in Ireland most winters. Significant periods of excess mortality were observed during March/April 2020 and January/February 2021 associated with the COVID-19 pandemic.

Discussion

HPSC is continuing to monitor excess mortality on a weekly basis. Future initiatives include the development of a new HPSC SQL mortality database and an ongoing HSE project on the timely notification of deaths, which will improve the timeliness of detecting excess mortality

associated with public health threats, including extreme weather events due to climate change.

The effect of ambient air pollutants on cardiac arrhythmia hospital admissions during COVID-19 transport restrictions

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Abstract

Aim

Exposure to poor ambient air quality and cardiovascular disease (CVD) has been investigated in numerous studies; whether ambient air pollutants are a cause of development of CVD, however, remains unclear. This study aimed to examine the relationship between COVID-19 transport restrictions and hospital admissions due to CVD specifically cardiac arrhythmias in Dublin city and county.

Study Design

Retrospective population-based cohort.

Methods

Admission data were collected from the Hospital In-patient Enquiry (HIPE). Daily count of hospital admissions within Dublin city and county addresses with primary diagnosis of cardiac arrhythmias was performed. Daily concentration of particulate matter (PM_{2.5} and PM₁₀) and nitrogen dioxide (NO₂) were obtained from the Environmental Protection Agency (EPA). Atmospheric data was obtained from Met Éireann. The data from 2018 – 2019 were compared with the period of transport restrictions (starting March 2020).

Results

During the period of transport restrictions, there was a significant reduction daily concentration of NO₂ from 12.6 µg/m³ to 9.3 µg/m³ ($p < 0.001$) and PM_{2.5} from 9.0 µg/m³ to 7.74 µg/m³ ($p = 0.004$), and there was significant decrease in cardiac arrhythmias admission. Among the 3,760 patient episodes included in this study, the mean age at admission was 64.98 years, and 60.9 were male ($n = 2,292$).

Discussion

This study using routinely gathered data, highlighted that the transported restrictions introduced to mitigate against COVID-19 lead to reductions in ambient air pollutants, and

improvements in ambient air quality. Established relationships between ambient air pollutants and cardiac arrhythmias would indicate that these improvements in ambient air quality contributed to the reduction in cardiac arrhythmia-related hospitalisations. It also highlighted the unexpected co-benefits of the COVID-19 transport restrictions, reinforce the need for more robust transport policies that can mitigate for ambient air pollution.

A complex outbreak of chickenpox at a centre for International Protection Applicants in Ireland: the role of serological testing

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Abstract

Background

Chickenpox is a highly contagious disease caused by varicella zoster virus (VZV). Although common in the Northern hemisphere, rates of immunity to VZV are lower in tropical and Sub-Saharan populations. Prior to this study, the level of immunity to VZV among International Protection Applicants (IPAs) in Ireland was unknown. This report describes the results of a mass serological screening initiative, conducted during the initial stages of a VZV outbreak in a congregate setting accommodating IPAs in Ireland.

Methods

Of 320 residents, 302 consented to screening. Phlebotomy was performed over a two-day period in July 2024. Samples were processed at the National Virus Reference Laboratory. Information on vulnerability (pregnancy, immunocompromised etc) was obtained. Demographic characteristics of the immune and non-immune cohort were described and seroprevalence analysed at the individual-, family- and cohort-level.

Results

Out of 302 residents tested, 180 (59.6%) were VZV immune and 122 (40.4 %) were non-immune. Most of the non-immune cohort (107/122 [87.7%]) were children (<16 years). There were 11 women of childbearing age (16-50 years) with no evidence of immunity (including one pregnant woman). At the time of reporting, 21 of the 82 resident families were identified as fully immune based on serology and/or recent infection.

Discussion

To our knowledge, this is the first report to describe VZV immunity profile of IPAs in Ireland at this scale. The majority of non-immune residents were children. Results of serological screening informed several Public Health actions, including identification and management of high-risk individuals, and advice regarding suitability for onward transfer.

Wastewater-based Epidemiology in Ireland: The National Wastewater Surveillance Programme

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Abstract

Background

Many pathogenic viruses and pharmaceuticals are shed in stool and urine forming the basis of wastewater-based epidemiology to assess community infection rates and trends.

Aims

Since its inception in 2021, the scope of the National Wastewater Surveillance Programme (NWSP) has expanded from SARS-CoV-2 to include Poliovirus type 2 (PV2) and will include Influenza A/B and RSV A/B in the near future. The levels of these viruses in wastewater reflect infection rates in the catchment of wastewater treatment plants (WWTP). Sequence analysis reveals the presence of specific viral lineages circulating in the community.

Methods

The NWSP monitors 30 WWTP catchments, representing 70% of the population connected to public wastewater treatment facilities. Weekly 24-h composite influent samples are analysed using qPCR and dPCR to determine viral levels in wastewater. The receptor binding domain of the SARS-CoV-2 spike protein is sequenced to characterise circulating lineages of SARS-CoV-2.

Results

National SARS-CoV-2 levels in wastewater are reported weekly by the NWSP. The summer months have seen a significant increase in viral levels, in contrast to low levels of Influenza virus and RSV. Since December 2023, JN.1 sublineages have dominated.

Discussion

Wastewater surveillance of SARS-CoV-2 complements other community surveillance methods. PV2 testing strengthens activities to maintain Ireland's polio-free status. The revised Urban Wastewater Treatment Directive mandates wastewater surveillance for specified

targets. This requirement, and collaboration with the EU-WISH European Commission initiative, supports the NWSP to incorporate wastewater surveillance more systematically in national surveillance strategies and consolidate its use for other public health threats.

Effects of the 2018 European summer heatwave on the incidence of bacterial gastroenteritis in the Republic of Ireland

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Abstract

Background

The Intergovernmental Panel on Climate Change (IPCC) recognizes that climate change and the altered frequencies of associated extreme weather events (EWEs) such as heatwaves, drought and floods are expected to have negative impacts on human health. In Ireland, projections indicate more frequent and severe EWEs including heatwaves, however research on the health impacts of heatwaves in temperate climates is still in its infancy.

Aims

We aimed to analyse the spatiotemporal characteristics of two bacterial infections (STEC enteritis and campylobacteriosis) to identify and quantify the effects (if any) of the 2018 European summer heatwave on public health in the Republic of Ireland.

Methods

Seasonal additive decomposition was used to “de-seasonalise” the time-series of both infections, followed by Interrupted Time-Series Analyses (ITSA) to identify immediate and sustained effects. Subsequently, excess weekly cases per week were calculated based on de-seasonalised pre/post event conditions across several case delineations including gender, age-range, STEC serotype and settlement pattern.

Results

Study findings suggest that the summer 2018 heatwave was directly or indirectly responsible for a minimum of 169 excess cases of campylobacteriosis ($n = 101$) and STEC enteritis ($n = 68$). Heatwave effects were shown to be immediate (i.e., within 10 days of event initiation, $p = 0.0019$) on campylobacteriosis case notification, but not sustained. Significant increases were observed among males, younger adults (21-45 years), urban residents, and residents in northern and southern quadrants. Conversely, STEC enteritis notification did not immediately change, but sustained effects (≥ 4 weeks, $p < 0.001$) were noted, with significant case notification increases identified among males, older adults (>65 years), rural dwellers, eastern and northern quadrants, alongside a notable shift in STEC O26 cases ($p = 0.026$).

Discussion

Study findings indicate that environmental conditions facilitated increased numbers of STEC enteritis and campylobacteriosis during the 2018 European summer heatwave, in concurrence with shifting demographic and geographic transmission patterns. With climate change likely to favour proliferation of these bacteria, further increases and pattern shifts may be expected.

The effects of short-term hydrometeorology on the incidence of three enteric infections in the Republic of Ireland, 2009–2020

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Abstract

Background

The incidence of enteric infections at temperate latitudes, including Ireland, varies seasonally, and as such are forecasted to shift in response to global climate changes.

Aims

We aimed to better understand the impacts of shifting hydrometeorological patterns on enteric infection in Ireland by examining relationships between antecedent ambient temperature, cumulative rainfall and weekly de-seasonalised incidence rates of campylobacteriosis, cryptosporidiosis, and STEC enteritis, delineated by five distinct settlement type classifications.

Methods

A two-phase modelling strategy was employed, initiated via seasonal decomposition and followed by Bayesian structural time-series (BSTS) modelling of infection incidence using 0–26-week distributed temperature and rainfall lags.

Results

Models indicate that STEC enteritis is the most “climate driven” infection studied ($R^2=0.577$), followed by cryptosporidiosis ($R^2=0.355$) and campylobacteriosis ($R^2=0.207$). Associations between antecedent local weather variables and infection differed significantly with respect to settlement type. National-scale patterns of campylobacteriosis reflect a combination of i) urban incidence characterised by an association with short-term (0-4 weeks) antecedent temperature (suggesting shifting social behaviours e.g., food consumption), and ii) rural incidence driven by long-term temperatures (10-18 weeks) and short-term precipitation (1-2 weeks) (indicating bimodal transmission mechanisms). Conversely, STEC enteritis was the only infection with high levels of variance explained by antecedent hydrometeorological variables in both urban commuter ($R^2=0.495$) and rural commuter ($R^2=0.407$) areas, settlement types characterised by high densities of private wells, domestic wastewater treatment systems, and livestock grazing in Ireland. Overall, short-term weather patterns

represented a more significant precursor to cryptosporidiosis incidence in urban areas, than rural or commuter areas.

Discussion

Findings may be used to inform development of risk-based, pathogen-specific surveillance strategies based on observed and future weather conditions to mitigate the human health impacts of climate change in Ireland. Findings leave little doubt that infectious disease patterns in Ireland will shift in concurrence with climate change, with the use of settlement pattern for epidemiological stratification and transmission source/pathway attribution recommended.

Imported fevers in returning travellers presenting to Galway University Hospital from 2018- 2023: A retrospective analysis

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Abstract

Background

International travel is again rising among Irish citizens, many of whom will develop a febrile illness during or shortly after their return. Malaria accounts for 22% of all imported fever presentations with viral aetiologies accounting for 45% of presentations.

Aims

To assess the use of HIPE coded data to accurately capture the burden of imported fever presentations to Galway University Hospital

To review clinical data recorded with the aim of establishing a standardised clinical pathway for systematic identification of imported fevers

Methods

ICD-10 coding for top 10 imported infections as per BIA guideline paper identified patients presenting to hospital between June 2018 and June 2023. Clinical and laboratory data was collected from local IT system.

Results

1106 cases were screened based on ICD-coding provided by HIPE data; only 26 (2.4%) cases fitted criteria for febrile returning traveller. 61.5% of these were VFR (n=16). Malaria was diagnosed in 77% of cases (n=20). Diagnosis was unconfirmed in 19.2% (n=5). 73.1% (19/26) received antimicrobials. This was unnecessary in 53.8% (14/26) cases. Additional serology was sent in 50% of cases (n=13). Viral haemorrhagic fever risk assessment was not done in 12 of 13 cases (92%) indicated.

Discussion

HIPE coding does not accurately identify imported infections. Obtaining an accurate clinical history is dependent on a clinician's knowledge of travel related infections, there is empiric overuse of antimicrobials and additional serological testing may not be required. It highlights the need for a national streamlined pathway for systematic identification of imported infections in Ireland with the potential use of syndromic panels for diagnosis.

Development of Log for Environmental Incidences Reported to Public Health Dublin & Midlands Region

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Abstract

Background

Environmental surveillance is essential for the development of national policy and relaying of important information to the government and to the public. Adverse incidents that may impact human health are reported to the Department of Public Health Dublin & Midlands (DPH DML) for investigation and response by the health protection team. This novel log will inform the development of the environmental module of the Public Health (PH) information management system currently in development.

Aims

The log was developed to record qualitative data in a standardised manner to collate complex information in a format that enables analysis of trends. Enhanced surveillance information is provided on notifiable diseases to assist health protection, health intelligence and health improvement, and the analysis of this information will inform these three pillars of PH.

Methods

The log was built as an Excel database and is populated with pertinent environmental information. Data sets were established specific to water, air and other environmental quality parameters with drop down menus to ensure standardised data input. Use of this log was initiated on a phased basis across the region.

Results

In 2023, 94% of incidents reported to PH were related to drinking water. By end of Q2, 2024, 84% of incidents notified were drinking water related. The main sources of reports were: National Environmental Health Service, Uisce Eireann, Environmental Protection Agency, Local Authorities, and the public.

Incidences since Q3, 2022 have been recorded in this log resulting in a regional snapshot of the variety of hazards investigated and responded to by DPH DML.

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The National Environmental Health Service (NEHS) Mosquito Monitoring Programme to determine the presence or absence of invasive mosquito species in Ireland as a crucial element of preparedness for vector-borne diseases in a changing environment

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Abstract

Background

Since 2015, NEHS has conducted mosquito monitoring at designated ports as part of their vector surveillance programme, fulfilling their statutory duty under the International Health Regulations 2005 (Annex 1 B 1 (e)) under Core Capacity Requirements for Designated Airports, Port, and Ground Crossing. In 2024 the programme was expanded to include more sampling sites and this will be expanded again over the next two years.

Aims

The programme aims to determine the presence or absence of invasive mosquito species such as *Aedes albopictus* (tiger mosquito) and *Aedes Aegypti* in Ireland. A crucial element of preparedness for vector-borne diseases is monitoring the introduction, establishment, and potential spread of the primary disease vectors (mosquitos). The ECDC reported in July 2024 that *Aedes albopictus* is established in multiple European countries, and its migration is primarily through major transport pathways, accelerated by climate change.

Methods

Mosquito specimens were collected and identified using the BG-Gat method, larval dipping, and car tyres. The monitoring period is from April to October.

Results

To date in 2024, no invasive mosquito species were identified in Ireland. The non-invasive species of *Culex pipiens* and *Anopheles claviger* were identified.

Discussion

Climate change favours the spread of invasive, disease-carrying mosquitoes, such as those causing dengue and chikungunya further into Europe (ECDC). Ireland has a window of

opportunity to prevent or delay their potential establishment, as eradication is difficult once they are established. Mosquito monitoring is a key preventative measure and a priority for NEHS which continues to expand its surveillance.

Strengthening Preparedness for Radiation/ Nuclear Emergencies – What are the HSE’s Current Capacities, Capabilities and Future Needs?

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Abstract

Background

Potential radiation/ nuclear (RN) incidents in Ireland include local radiation/nuclear issues or major international events, with associated health, food and economic impact. Although Ireland is a non-nuclear energy-producing country we must be prepared for a RN threat. The

HSE's role during a RN emergency includes protecting population health, safeguarding staff and maintaining essential services.

Aims

We aimed to review the HSE's current RN emergency response capacities and capabilities, identify areas for development, and formulate strategic recommendations to strengthen emergency preparedness for this threat.

Methods

A RN working group was convened, comprising key HSE stakeholders from Public Health, Health Protection, Emergency Management, Acute Operations, Community Operations/Mental Health Services, National Ambulance Service, National Environmental Health Service and Communications. A review was undertaken of Irish and international literature and reports from previous training/simulation exercises in Ireland. The current capabilities and areas for development within each HSE sector were identified.

Results

Key findings from the report highlight sectoral gaps encompassing governance, guidance, training, communications and procurement. Recommendations include the need for: a resourced and tested HSE Operational Response Plan for RN incidents; a standing expert Clinical Advisory Group; consideration of designated radiation-receiving hospitals; import control/sampling, staff capacity-building, training and exercising. To support these, RN-specific hospital pathways, pre-hospital guidance, evidence-based PPE standards and procurement; and deployable communication materials are required.

Discussion

This report provides a baseline of existing emergency preparedness resources. It will enable both regional and national HSE structures, recently reformed, to review and strengthen RN preparedness and response mechanisms.