# Hazard Identification and Risk Assessment for Infectious Disease Requests

## Introduction

This **worksheet** is one component of Public Health Ontario's (PHO) **Hazard Identification and Risk Assessment (HIRA) Framework.** It may be used in preparation for completing a final mass gathering HIRA. Public health organizations may adapt this form for their own purposes, situations and structure.

**Instructions:**

- Complete the worksheet, which is based on a combination of reviewing available literature and resources, expert opinion and group discussion across organizational areas to achieve consistency in probability, impact and risk level assignments (Refer to pages 2-3 for sample probability and impact definitions and the related matrix to assign risk).

- If there are multiple populations to assess, separate tables may be created to assist in assessments for each population, if necessary.

- For each disease group, add/delete rows and sections, as needed. Some diseases are listed in the sample Table 1 below as examples only.

- To help inform surveillance planning for a mass gathering, the last two columns of the table may be used to indicate, based on a preliminary assessment, whether the current surveillance is sufficient to monitor each disease. If it is not, note some preliminary planning implications (e.g., considerations or ideas for enhanced surveillance and reporting).

- While similar diseases with similar risk assessments and possible planning implications may be grouped in the final HIRA, diseases may be listed in individual rows in this worksheet, allowing staff to identify relevant groupings.

# Probability, Impact and Risk Levels

Tables 1 and 2 provide sample probability and health impact scales, which may then be used in conjunction to assign a level of a risk (Tables 3 and 4) to each disease.

**Table 1. Probability Categories and Example Definitions**

| Probability | Example definition* |
|---|---|
| **Frequent** | Multiple incidents have occurred in the last five years in the local jurisdiction or the health event has been regularly reported at similar MGs. |
| **Probable** | One or two similar incidents have either occurred in the local jurisdiction in the past five years or the health event has been irregularly reported at similar MGs elsewhere. |
| **Unlikely** | Similar incidents have only occurred in the local jurisdiction more than five years ago or the health event has only been reported once or twice at similar MGs elsewhere. |
| **Rare** | It is possible for the health event to occur, but it either has not been reported yet or it has only happened extremely rarely at non-MG events. |

*The probability definitions provided in this table may be considered as guidance and may be adapted to suit the circumstances of different events and considerations identified on the intake form.

**Table 2. Impact Categories and Definitions**

| Impact | Definition |
|---|---|
| **Major** | Would result in significant or prolonged morbidity and some mortality and/or health care system would be overwhelmed by the health event. |
| **Significant** | Would result in some morbidity and some mortality and/or health care system would be strained by the health event. |
| **Moderate** | Could result in morbidity or mortality, but the health care system would have the capacity to cope with the health event. |
| **Minor** | Unlikely to result in harm or fatalities to the community and what harm results would be well within the capacity of the health care system to manage. |

**Table 3. Probability vs. Impact Matrix**

| Probability of Event Occurring | Minor Health Impact | Moderate Health Impact | Significant Health Impact | Major Health Impact |
|---|---|---|---|---|
| **Frequent** | Low | Medium | High | High |
| **Probable** | Low | Medium | Medium | High |
| **Unlikely** | Low | Low | Medium | Medium |
| **Rare** | Low | Low | Low | Medium |

**Table 4. Risk Categories and Definitions**

| Risk | Description |
|---|---|
| **High Risk** | The health event poses a threat to Ontario's public health capacity. It is a high priority for incident-specific planning. |
| **Medium Risk** | The health event could affect Ontario's public health capacity. It is a medium priority for incident-specific planning. |
| **Low Risk** | The health event will not affect Ontario's public health capacity. It is a lower priority for incident-specific planning. |

# Worksheet

Create one table for each population being assessed. Note that the disease groups/diseases listed in Table 1 below are examples for illustrative purposes only; remove/update rows as appropriate. Please refer to page 1 for additional instructions for using this worksheet.

**Table 1. Name of population being assessed**

| Disease Groups/Diseases (examples listed in rows below) | Probability (see definitions) | Impact (see definitions) | Rationale for probability and impact selections (Describe) | Risk assessment (use Table 3 matrix) | Current surveillance sufficient? If no → | Possible, high-level planning implications (Describe, if current routine surveillance is not sufficient) |
|---|---|---|---|---|---|---|
| **Antimicrobial resistance and healthcare-associated infections** | | | | | | |
| | | | | | | |
| | | | | | | |
| **Food and waterborne diseases** | | | | | | |
| Gastrointestinal illness/Food poisoning | | | | | | |
| Norovirus | | | | | | |
| Salmonellosis | | | | | | |
| | | | | | | |
| | | | | | | |
| **Vectorborne diseases** | | | | | | |
| | | | | | | |
| | | | | | | |
| **Zoonotic diseases** | | | | | | |
| | | | | | | |
| | | | | | | |
| **Vaccine-preventable diseases** | | | | | | |
| Measles | | | | | | |
| Mumps | | | | | | |
| Varicella (Chickenpox) | | | | | | |
| | | | | | | |

| Disease Groups/Diseases (examples listed in rows below) | Probability (see definitions) | Impact (see definitions) | Rationale for probability and impact selections (Describe) | Risk assessment (use Table 3 matrix) | Current surveillance sufficient? If no → | Possible, high-level planning implications (Describe, if current routine surveillance is not sufficient) |
|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |
| **Respiratory diseases** |  |  |  |  |  |  |
| Acute respiratory illness |  |  |  |  |  |  |
| Influenza |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Sexually-transmitted infections (STIs)** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Blood-borne infections** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Other/Emerging infectious diseases** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

## Notes

This resource has been developed by Public Health Ontario. For questions or feedback about this resource, contact epir@oahpp.ca.

## References

European Centre for Disease Prevention and Control. Potential risks to public health related to communicable diseases at the Olympics and Paralympics Games in Rio de Janeiro, Brazil 2016. Stockholm: ECDC; 2016 [cited 2019 Oct 08]. Available from: https://www.ecdc.europa.eu/en/publications-data/potential-risks-public-health-related-communicable-diseases-olympics-and.

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## Acknowledgements