



WHO risk assessment

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Risk Analysis training course
NIHE, Hanoi, Vietnam, 4-5 May 2016



WHO: Risk management cycle



Risk management cycle as defined by WHO (2012)

Risk assessment is only part of the whole process of risk management cycle (risk analysis)

- **Control measures:** ranked by priority, likelihood of success, feasibility and consequences
 - **Evaluation:** continuous monitoring
 - **Risk communication:** ongoing to every stakeholder in order to support control measures
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Components of Risk Assessment

- WHO Rapid Risk Assessment
 - The risk assessment includes the following components:
 - Hazard assessment
 - Exposure assessment
 - Context assessment
 - Risk characterisation
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Rapid Risk Assessment

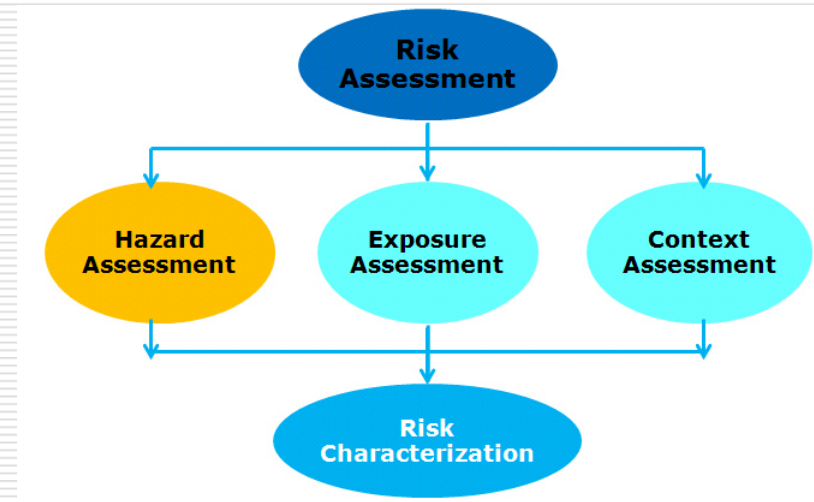


- Level of risk depend on:
 - Suspected hazard
 - Possible exposure
 - Context of occurrence

 - Not always sequential process
 - Overlapping in the required information
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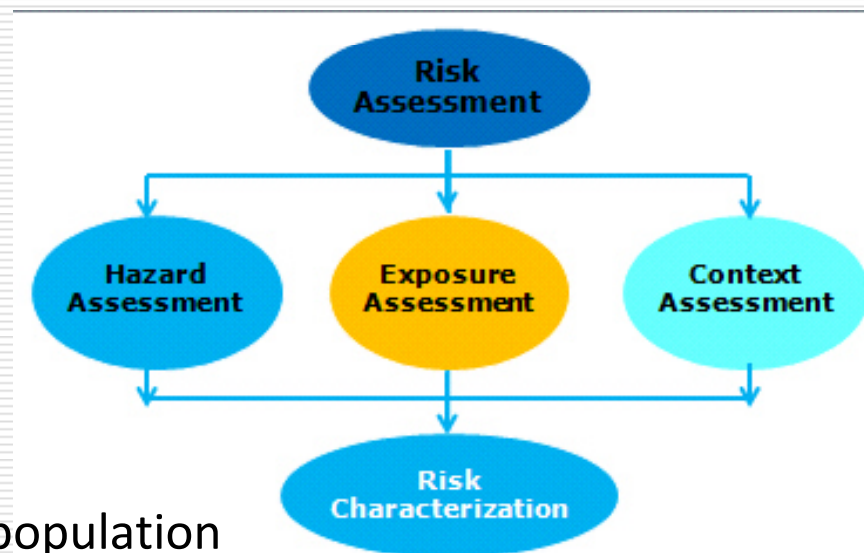
Hazard assessment

- ❑ identifying the hazard(s) that could be causing the event
- ❑ reviewing key information about the potential hazard(s) (i.e. characterizing the hazard)
- ❑ ranking potential hazards when more than one is considered a possible cause of the event



Exposure assessment

- ❑ Describes the biological pathway(s) necessary for exposure of individuals and population the *studied environment* to the *hazards* released from a given *risk source*
- ❑ Estimate the probability of the exposure(s) occurring.
 - number exposed and number of susceptible
 - modes of transmission
 - dose–response
 - incubation period
 - case fatality rate (CFR)
 - Vaccine status of the exposed population



Context assessment

- Context: evaluation of the environment in which the event is taking place.
 - physical environment: climate, vegetation, land use, water systems
 - health of the population
 - infrastructure
 - cultural practices and beliefs.
 - **STEEEP:** consider all factors – social, technical and scientific, economic, environmental, ethical, and policy and political – that affect risk and its consequences
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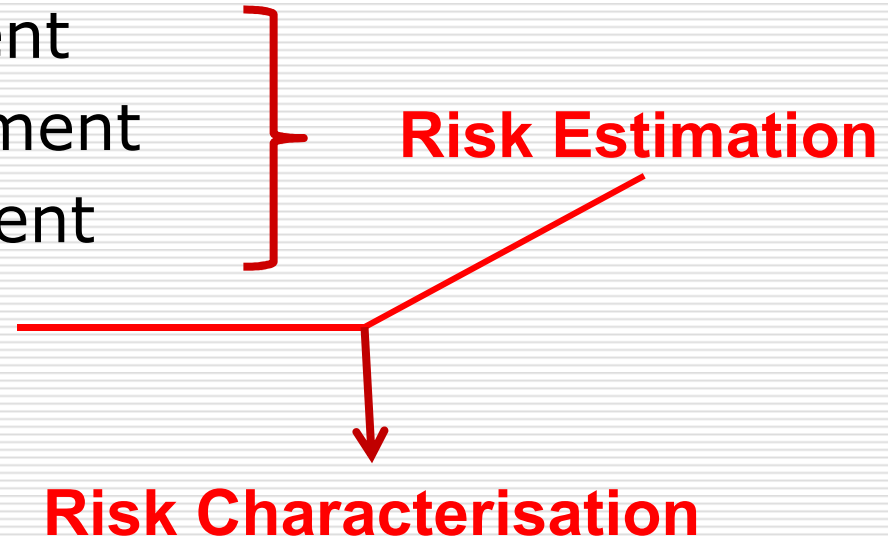
Consequences assessment

- Consequences: Describes the relationship between specified exposures to a biological agent and the consequences of those exposures
 - **STEEEP**: consider all factors – social, technical and scientific, economic, environmental, ethical, and policy and political – that affect risk and its consequences
 - Examples:
 - Morbidity, mortality and long-term disability
 - Direct financial costs of the response activities for the affected individual/families/communities
 - Indirect costs:
 - effect on individual and family ability to work
 - effect on household income
 - effect on the community income
 - effect on national economy
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Risk Characterisation

□ Integration of the results from:

- Hazard assessment
- Exposure assessment
- Context assessment
- **Consequences**



To produce overall measures of risk associated with the hazards

Assessing the risk

- Review information and estimate risk for each step
 - Deduct the overall probability of occurrence of the risk of interest and of unwanted consequences
 - +/- decide whether this risk is acceptable or not
 - NB: « low » or « negligible » risk does not imply « acceptable risk » (e.g. when severe consequences)
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Key points

- Descriptive risk rating:
 - Ex.: negligible < low < moderate < high
 - Must be clearly defined at the beginning of the risk assessment
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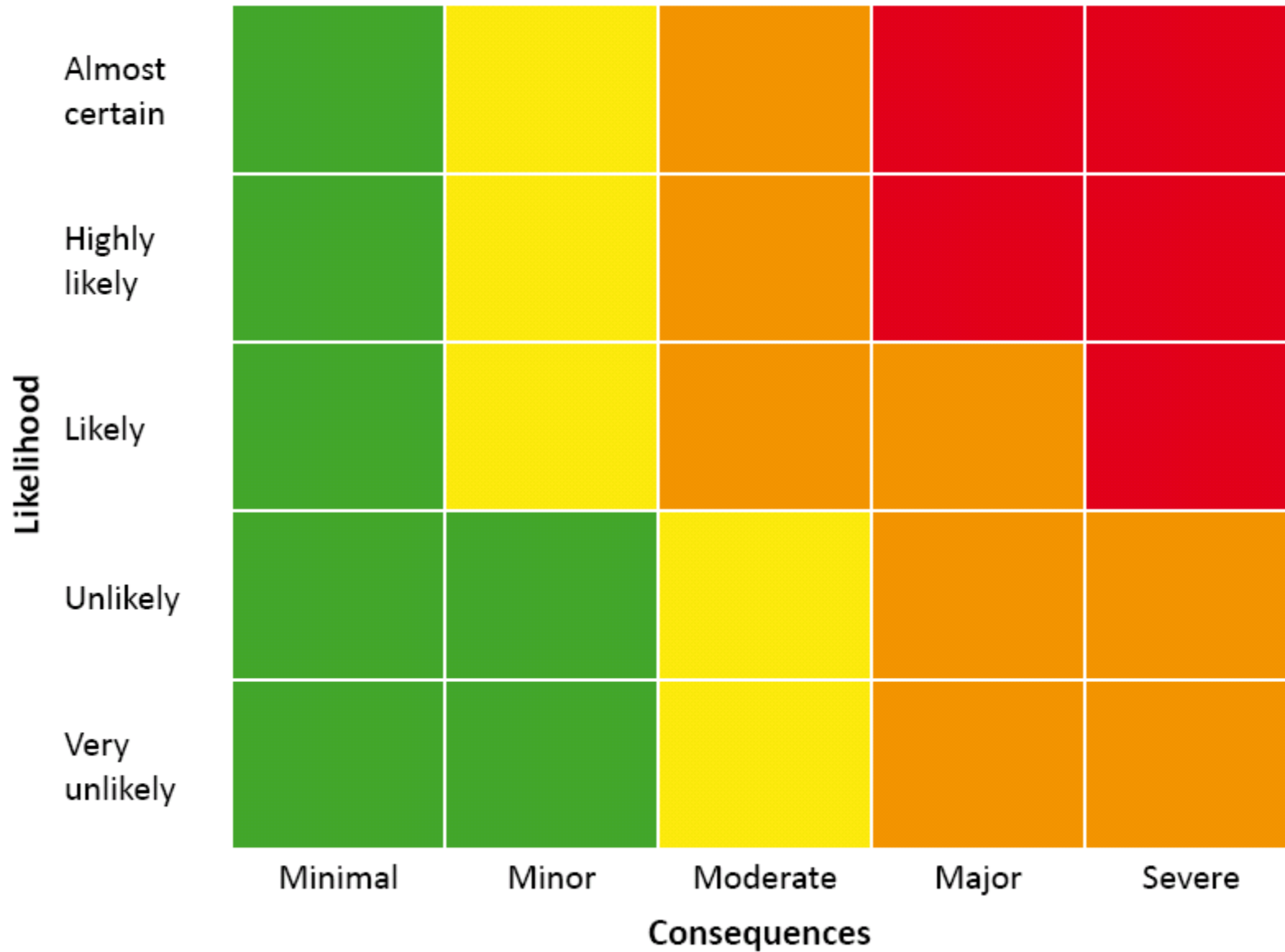
Risk estimation qualitative RA

Risk category	Interpretation
Negligible	probability of event sufficiently low to be ignored or event only possible in exceptional circumstances (RA can be concluded for pathways with negligible risk)
Low	occurrence of event is a possibility in some cases
Moderate	occurrence of event is a possibility
High	occurrence of event is clearly a possibility

Estimates of likelihood (WHO-2012)

Level of risk	Interpretation
Very unlikely	Could occur under exceptional circumstances (e.g. a probability of less than 5%)
Unlikely	Could occur some of the time (e.g. a probability of between 5% and 29%)
Likely	Will occur some of the time (e.g. a probability of between 30% and 69%)
Highly likely	Will probably occur in most circumstances (e.g. a probability of between 70% and 94%)
Almost certain	Is expected to occur in most circumstances (e.g. probability of 95% or more)

Risk matrix for risk characterisation



Estimates of consequences

LEVEL	CONSEQUENCES
MINIMAL	Limited impact on the affected population Little disruption to normal activities and services Routine responses are adequate No extra costs for authorities and stakeholders
MINOR	Minor impact for a small population or at-risk group Limited disruption to normal activities and services A small number of additional control measures are required Some increase in costs for authorities and stakeholders.
MODERATE	Moderate impact as a large population or at-risk group is affected Moderate disruption to normal activities and services Some additional control measures will be needed Moderate increase in costs for authorities and stakeholders
MAJOR	Major impact for a small population or at-risk group Major disruption to normal activities and services A large number of additional control measures will be needed Significant increase in costs for authorities and stakeholders
SEVERE	Severe impact for a large population or at-risk group Severe disruption to normal activities and services A large number of additional control measures will be needed Serious increase in costs for authorities and stakeholders



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