

Appendix 18: Dynamic Risk Assessment (DRA) model

Severity			
The seriousness of the incident in terms of the intrinsic propensity in the specific circumstances to cause harm to individuals or to the population.			
Severity and prognosis of known cases The degree of harm already incurred, or likely to be incurred by those already affected including, course, complications, death and morbidity rates as obtained from established knowledge, and the speed of onset and duration of illness.			
Grade	Qualifier	Description	Examples
0	<u>Very Low</u>	Seldom causing severe illness.	<ul style="list-style-type: none"> Hand, foot and mouth disease in a nursery. MRSA in a domestic setting. Head lice.
1	<u>Low</u>	Occasional serious illness rarely with long term effects or death.	<ul style="list-style-type: none"> Hepatitis A in a primary school.
2	<u>Moderate</u>	Often severe illness occasionally with long term effects or death.	<ul style="list-style-type: none"> Toxigenic E. Coli 0157. Pulmonary Tuberculosis. MRSA infection in a high dependency unit. Hepatitis B or C infection. Legionnaires' Disease.
3	<u>High</u>	Usually severe illness often with long term effects or death.	<ul style="list-style-type: none"> Meningococcal disease. MDRTB.
4	<u>Very High</u>	Severe illness almost invariably fatal.	<ul style="list-style-type: none"> Rabies. Ebola. VCJD

Confidence

The level of confidence, epidemiologically, clinically, statistically and from laboratory evidence, that the diagnosis is correct in the set of circumstances.

Confidence in the hypothesis

Extent of confidence in and consistency of the clinical picture in terms of available laboratory diagnostic results and associated confounding factors including ambiguity and uncertainty.

Grade	Qualifier	Description	Examples
0	<u>Very Low</u>	Available evidence suggests that the hypothesis is correct with an empirical probability of less than 10%.	<ul style="list-style-type: none"> Hunch.
1	<u>Low</u>	Available evidence suggests that the hypothesis is correct with an empirical probability in the range of 10% to 25%.	<ul style="list-style-type: none"> Alternative hypothesis more likely but cannot exclude the working hypothesis.
2	<u>Moderate</u>	Available evidence suggests that the hypothesis is correct with an empirical probability in the range of 25% to 50%.	<ul style="list-style-type: none"> Alternative hypotheses equally likely.
3	<u>High</u>	Available evidence suggests that the hypothesis is correct with an empirical probability in the range of 50% to 85%.	<ul style="list-style-type: none"> Typical incident picture without conflicting information.
4	<u>Very High</u>	Available evidence suggests that the hypothesis is correct with an empirical probability higher than 85%.	<ul style="list-style-type: none"> Typical incident picture with increasing confirmation.

Spread

The intrinsic temporal and spatial potential for spread including the infective dose, the virulence of the organism the availability of the route(s) of spread, the observed spread and the susceptibility of the population (e.g. lack of immunity) in the set of circumstances.

Potential of the organism to spread given the circumstances

The transmissibility of the organism, its characteristics (virulence and infective dose), its mode(s) of transmission and the availability of the routes of infection.

The susceptibility of population at risk i.e. the state of immunity, general health and nutrition of population under consideration and the extent to which normal defence mechanisms will protect that population.

Grade	Qualifier	Description	Examples
0	<u>Very Low</u>	Very low likelihood of spread with very few new cases.	<ul style="list-style-type: none"> A single case of Campylobacter.
1	<u>Low</u>	Low likelihood of spread with few new cases.	<ul style="list-style-type: none"> A single case of meningococcal disease. A smear negative culture positive case of TB.
2	<u>Moderate</u>	Moderate likelihood of spread with new cases. May develop into a limited outbreak.	<ul style="list-style-type: none"> Viral gastro-enteritis in a nursing home. A handful of cases of Hepatitis A occurring over a prolonged period of time in a large community. A smear positive case of TB.
3	<u>High</u>	High likelihood of spread with many new cases. May develop into a large outbreak	<ul style="list-style-type: none"> Multiple cases of Dysentery in a deprived population of children under 8 years old. Epidemic of influenza in an army camp.
4	<u>Very High</u>	Spread almost inevitable.	<ul style="list-style-type: none"> Measles in an non-immune sub-population.

Intervention

The feasibility to intervene to alter the course and influence the outcome of the event in terms of containing, reducing or eliminating the transmission of the organism, or assuaging public anxiety. The feasibility of delivering what is needed, to whom it is needed and when and where it is needed, considering the extent to which interventions are intrinsically simple, effective, available, affordable, cost-effective, acceptable, accessible, timely and well targeted.

Grade	Qualifier	Description	Examples
0	<u>Very easy</u>	Intervention well established with clear benefits and no anticipated difficulties to implement.	<ul style="list-style-type: none"> • Hand washing advice.
1	<u>Easy</u>	Intervention with clear beneficial effects and few difficulties to implement.	<ul style="list-style-type: none"> • Withdrawal of contaminated food in a closed institution. • Measles or Hepatitis A immunisation to a small group of vulnerable contacts of a case. • A case of meningococcal infection in a child with contacts confined to the household.
2	<u>Passable</u>	Intervention with some beneficial effects and some difficulties to implement.	<ul style="list-style-type: none"> • Prophylaxis to immediate family and close contacts in a meningococcal case where they are dispersed.
3	<u>Difficult</u>	Some remedial Intervention possible but either difficult to implement, relatively ineffectual or other significant problems.	<ul style="list-style-type: none"> • National food withdrawal. • Urgent mass immunisation campaign. • Response to rabid dog on the loose.
4	<u>Very difficult</u>	Remedial intervention very difficult.	<ul style="list-style-type: none"> • Response to a cluster of vCJD. • MRSA in a busy high dependency unit.

Context

The broad environment, including public concern and attitudes, expectations, pressures, strength of professional knowledge and the overall setting of external factors including politics, in which events are occurring and decisions on responses are being made.

5.1. Media, parents and local concern

The degree to which media, parents, local concern, politics aggravate and raise the profile of the event under consideration.

5.2. Historical problems

Influence of local experience of similar interests and previous events, the way they were handled, associated consequences and expectations arising.

5.3. Peer group practice

Extent to which an established approach or recommended best practice is tested and documented (national guidelines).

5.4. What is happening elsewhere

Extent to which other similar incidents are being managed and publicised, with resultant effect on public attitudes and expectations.

Grade	Qualifier	Description	Examples
0	<u>Very Calm</u>	No raised level of interest.	<ul style="list-style-type: none"> • Apathy. Public / media are supportive of immunisation. • Common adverse problems are fairly well understood.
1	<u>Calm</u>	A small degree of increased interest with a low level of conflicting factors. Little public concern.	<ul style="list-style-type: none"> • Misunderstanding corrected by routine information. • Head-lice control campaign. • A few cases of diarrhoea in a nursery school.
2	<u>Passable</u>	A degree of unease and anxiety on the part of the public and the media. The context could deteriorate if the event is mis-handled.	<ul style="list-style-type: none"> • A series of gastro-enteritis cases associated with an outdoor centre to which school children are sent. • TB in a school in a low incidence area.
3	<u>Difficult</u>	Context is sensitive with significant difficulties, press interest and local people (unaffected) involved. The incident could go very wrong unless carefully handled. The event could have re-occurred in spite of preventive actions.	<ul style="list-style-type: none"> • Surgeon is found to have HIV / AIDS. • Wide spread food poisoning affecting several schools. • Unjustified allegation about the safety of childhood vaccines with media coverage.
4	<u>Very Difficult</u>	Significantly raised public concern and political and emotional pressure with the public and the media declaring antagonistic and unhelpful views.	<ul style="list-style-type: none"> • If BSE-like illness linked to new source e.g. pork. • If MMR immunisation was shown to have serious unsuspected side effects.

Dynamic Risk Assessment Model

Incident ID: _____

Date ____ / ____ / ____ Time: ____ . ____ (24 hour clock)

Completed by: _____

	0	1	2	3	4
Severity					
Confidence					
Spread					
Intervention					
Context					

Latest analysis and observations