GUIDELINES / CONVENTIONS FOR SCORING OF PATHOGENS ORIGINATING FROM WILDLIFE

1) Interpretation of the formulation of the different subcriteria-scores: generalities:
- Yes (Y), No (N), and Non-existent (NE) have an absolute meaning (no room for interpretation).
- Non-Applicable (NA): if the target group concerned is not affected by this pathogen.
- Low (L) / Medium (M) / High (H): are susceptible to interpretation (from the literature or by the expert)
- Unknown (U): if no information is available allowing to assign a score to the subcriterion concerned.

2) Interpretation of the general subcriteria not linked to a particular target group:
- Contagiousness: estimation of the contagiousness of the agent. For pathogens that are mainly vector-transmitted (and that are conventionally considered as non-contagious), this subcriterion implies also the “efficiency of transmission through vectors”. This is done for consistency reasons, so that vector-borne and non-vector-borne pathogens can be scored in an equal way concerning their transmission probability. (H/M/L/U).
- Genetic stability: some agents such as RNA viruses (p.e. avian influenza A viruses) are susceptible to frequent and unpredictable genetic reassembling, increasing their impact risks. If the agent is genetically stable but includes nevertheless a variety of genetic subtypes, this is not taken into consideration for this subcriterion. (H/M/L/U).
- Notifiable disease in Belgium: the pathogen causes a disease listed as notifiable in Belgium (Y/N).
- OIE listed: the pathogen causes a disease listed in the OIE list of notifiable diseases or in the OIE list of notifiable wildlife diseases (Y/N).
- Resistance in environment: resistance against physical influences (temperature, dessication, climate, .. ). Obligatory intracellular organisms are scored “L” except if the organism can form spores (in which case it is scored “H”) or has also extracellular stages. (H/M/L/U)
- Resistance to desinfectants: for obligate intracellular organisms score “U” (except if resistance is known). For parasites this subcriterion concerns the free living stages (eggs, oocysts, spores). (H/M/L/U)
- Risk concerning the use as a weapon in bioterrorism: agents listed in the categories A, B, C (possible bioterroristic agents) of the CDC (Centrum for Disease Control, USA) are scored “H”. URL: http://www.bt.cdc.gov/agent/agentlist-category.asp. Agents for which it cannot be excluded that they could be used as a weapon for bioterrorism (referred or not) are scored “M”. Agents for which it is improbable that they could be used as a weapon in bioterrorism are scored “L”. (H/M/L/NE/U)
- Probability of introduction: for some agents their probability of introduction (in a very broad sense) in new territories (in casu Belgium) is mentioned in the literature or can be estimated by experts. A possible choice is also “endemic (End)”. (H/M/L/NE/End/U)
- Transmission influenced by extrinsic factors: with “extrinsic factors” we mean environmental changes (climate changes, global warming, floodings or other environmental changes with high ecological impact) as well as anthropogenic induced changes such as translocations or introductions of animals, travelling, large scale changes in agricultural techniques, etc.). (H/M/L/NE/U). Not included here is “occupational exposure” of humans or animals through certain activities (humans) or through the production type (production animals): these subcriterias are listed apart for each target group.

3) Interpretation of the subcriterias for the specific target groups:
- Economic impact in “target group”: includes: high cost of treatment, eradication, prevention, monitoring; long time span needed for eradication; loss of production/production means in livestock breeding, in companion animal breeding or in game; possible trade restrictions; possible devastation of livestock industry; work disability in humans. (H/M/L/NE/U)
- Impact on “target group” life comfort: human or animal welfare impact, can cause a chronic debilitating disease, can cause pain, can limit the physical or mental activity. (H/M/L/NE/U)
- Probability of eradication achievement in “target group”; “eradication” is used in the sense of elimination of the agent in the target group of concern only; for example: successful eradication by any means is (not) reported, eradication possibilities limited, etc. (H/M/L/NE/U)
- Treatment possibilities in “target group”: for example: treatment is possible/ limited possibilities/ impossible or unexistent; high/low succes rate of treatment, logistical possibilities of treatment (e.g. in wildlife). Includes also “good prognosis without treatment” in which case the subcriterion should be scored as “H”. In man and companion animals: palliative treatments included. In wildlife: main objective of treatment is functional recovery for release back into the wild. (H/M/L/NE/U)
- Vaccination efficiency in “target group”: vaccination (not) available, (not) effective, important side effects, logistical possibilities of vaccination. (H/M/L/NE/U)
- Morbidity: we define morbidity as the percentage of diseased individuals in the population that is exposed to the pathogen. (NOT the percentage infected). (H/M/L/NE/U)
- Mortality: we define mortality as the percentage of deaths in the population exposed to the pathogen. Remark: “abortion of unborn fetuses” is not considered as mortality here but is taken into consideration for “morbidity”. (H/M/L/NE/U)
- Case fatality: we define case fatality as the percent of deaths among the individuals that show disease symptoms following infection by the pathogen (aborted unborn fetuses not included). Arbitrarily we propose to score case fatalities between 1-5% as “L”, 5-15% as “M” and > 15% as “H”. (H/M/L/NE/U)
- Probability of secondary transmission from “target group”: the secondary transmission as well intra- as extra-“target group” is meant (as well within a certain species as between different species). (H/M/L/NE/U)
- Probability of transmission from wildlife to “target group”: some biotypes of pathogenic agents occur in certain target groups but are known to be genetically different from those in wildlife: in this case the probability of transmission is “L”. Other meanings of “probability of transmission” can be used as well. (H/M/L/U)

→ Subcriteria for Target Group “Man”
- Occupational hazard in man: if the disease occurs exclusively or mainly in certain predisposed population groups, i.e. people with certain occupations or people frequenting certain places or immunocompromised individuals, this subcriterion is scored “H”. If this is only partially the case, it is scored “M”. If the exposure risk is the same for the entire population without distinction, it is scored “L”. (H/M/L/U)

→ Subcriteria for Target Group “Production animals”
- Influence of production type on infection risk: analogous to “Occupational hazard in man”. This subcriterion implicates the influence of the type of production on the infection risk (including housing, feeding and other management issues). (H/M/L/U)

→ Subcriteria for Target Group “Companion animals”
- Economic impact for individual companion animal owners: consider for example costs of medical treatments, prevention measures, loss of capital, etc.. (H/M/L/NE/U)
- Influence of way of living of companion animal on infection risk: Analogous to “Occupational hazard in man”, p.e. hunting dogs, travelling with pets, dietary habits, surroundings, contact with other animals, etc.. (H/M/L/U)

→ Subcriteria for Target Group “Wildlife”
- Risk of population decrease: score apart for game, unprotected/pest species, protected/threatened species. (H/M/L/NE/U)

4) Interpretation of the meaning of the different target groups.
- When a disease is not known (not reported) in a certain target group, the subcriteria referring to this target group for the concerning pathogen are scored as “N.A.” (Cf above).
- If the impact or the transmission characteristics of a pathogen are different in different species within the same target group, then the scoring for each subcriterion is carried out for the species with the most relevant score for the risk assessment.
- By convention the target groups will include the animal species mentioned below. If considered relevant, these choices could be changed after discussion, implicating a revision of the scores entered in the database for each pathogen.

→ Production animals: includes first of all the classical production animals such as cattle, sheep, goat, pig, poultry (chickens, turkeys). If other animal groups are effectively kept as production animals in Belgium then they can be considered as “production animals” as well p.e. cervids, rabbits, anseriforms, ostriches, (pheasants in case of large scale breeding for consumption). Hares are not considered as production animals.

→ Companion animals: includes dogs, cats, cage birds, rodents kept as pets (guinea pig, hamster, chinchilla, etc.), exotics. Horses are kept mainly as “companion animals” in Belgium though a limited number are still used as working horses, for example in forestry in Wallonia. Therefore horses are considered here as “companion animals”. Domesticated galliforms (backyard poultry, ornamental fowl) and anseriforms are considered as “production animals”.

→ Wildlife: includes only animals that are living effectively in the wild (but not exclusively in Belgium: for affected species that are not present in Belgium, data about their taxonomic order or family can be included in the risk assessment). Exotics or wild animals kept in captivity are not included.

The impact of a pathogen is appreciated differently whether it concerns game-, pest- or threatened/protected species. Therefore the subcriteria “Probability of population decrease”, “Morbidity” and “Mortality” are scored seperately for
these three wildlife classes. Moreover each pathogen is not always affecting each of these three wildlife classes. When the concerning wildlife-group is not known to be affected by the concerning pathogen, the subcriterion is scored “N.A.”, and “U” if no information is available.