Supplementary materials for the article:

Prioritisation of infectious diseases from a public health perspective: a multi-criteria decision analysis study, France, 2024

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Supplementary Table S1: Synthetic presentation of the literature review. The prioritization lists were issued primarily by high income countries in Europe and North America. None has territories dispersed around the globe. Some of them used Multi-Criteria Decision Analysis (MCDA) to rank communicable disease risks.

Publication: First author (year) - Country DOI or reference	Methods:	Identified sample size: N diseases/pathogens; N criteria N participants for weighting; for rating
Klamer (2021) - Belgium DOI : 10.1186/S12889-020-09566-9	**MCDA**	98 Communicable diseases / 18 weighted criteria Weighting: n= 80; Rating: n =37
Otten (2019) - Canada DOI :10.1016/j.mran.2019.100089	**MCDA**	43 vector-borne diseases / 10 weighted criteria Number of participants unclear
Dahl (2015) - Sweden DOI : 10.1371/journal.pone.0136353	Delphi method (unknown n rounds)	106 pathogens / 10 unweighted criteria Weighting: NA; Rating: n = 5
Brookes (2014a & b) – Australia DOI: 10.1016/j.prevetmed.2013.10.014 DOI: 10.1016/j.prevetmed.2013.10.016	**MCDA**	30 pig diseases / 9 weighted criteria Weighting: n = 50; Rating n=50
Economopoulou (2014) - European Union DOI: 10.2807/1560-7917.es2014.19.15.20770	Delphi method (2 rounds)	71 Communicable diseases / 2 unweighted criteria Weighting: NA; Rating: n = 56
Cediel (2013) - Colombia DOI: 10.1590/s1020-49892013000500002	Delphi method (1 round)	32 zoonotic diseases / 12 weighted criteria Weighting: n = 12; Rating: n = 12
Ng (2013-2012) - North America DOI: 10.1371/journal. pone.0029752 DOI: 10.1371/ journal.pone.0048519 DOI: 10.1371/journal.pone.0072172	Questionnaire (conjoint analysis)	62 zoonotic diseases / 21 weighted criteria Public: n = 1539; Professionals: n = 1471
Cox (2013, 2012) - Canada DOI: 10.1371/journal.pone.0041590 DOI: 10.1371/journal.pone.0068338	**MCDA**	9 Communicable diseases / 40 weighted criteria Weighting: n = 64; Rating: n = 47
Humblet (2012) - Belgium DOI: 10.3201/eid1804.111151	**MCDA**	100 zoonotic diseases / 57 weighted criteria Weighting: n = 40; Rating procedure not available
Balabanova (2011) - Germany DOI: 10.1371/journal.pone.0025691	Delphi method (1 round)	127 pathogens / 10 weighted criteria Weighting: n = 86; Rating: n = 20
Capek (2010) - France Reference[1]	Expert opinion	37 non-food borne zoonoses / 10 unweighted criteria Weighting: NA; Rating: n = 16
Havelaar (2010) - The Netherlands DOI: 10.1371/journal.pone.0013965	**MCDA**	86 zoonotic diseases / 7 weighted criteria Weighting: n = 29; Rating: unclear size of the panel.
Cardoen (2009) - Belgium DOI: 10.1089/fpd.2009.0291	**MCDA**	51 zoonotic pathogens / 5 weighted criteria. Weighting: n = 7; Rating: n = 35
Krause (2008) - Germany DOI: 10.1038/embor.2008.76	Delphi method (1 round)	85 pathogens / 12 weighted criteria Weighting: n = 11; Rating: n = 11
Doherty (2006) - Canada PMID: 17076030	Expert opinion	48 Communicable diseases / 10 unweighted criteria Weighting: NA; Rating: n = 6
Who (2002) - 7 countries of South-East Europe http://apps.who.int/iris/handle/10665/107469	Delphi method (1 round)	53 Communicable diseases / 8 unweighted criteria Weighting: NA; Rating: n = 24
Doherty (2000) - Canada DOI: 10.1155/2000/134624	Expert opinion	43 Communicable diseases / 10 unweighted criteria Weighting: NA; Rating: n = 6
Carter (1991) - Canada DOI :10.1155/1991/346135	Expert opinion	60 Communicable diseases / 12 unweighted criteria Weighting: NA; Rating: n = 6

NA: not applicable due to lack of weighting process.

[1] https://www.santepubliquefrance.fr/docs/definition-des-priorites-dans-le-domaine-des-zoonoses-non-alimentaires-2008-2009

Supplementary Table S2: Distribution of the 98 raters and number of rated entities according to medical specialty.

Specialty	Participants [a] (n1) among proposed experts (n2)		Rated entities	
	n1/n2	%	n	%
Infectious diseases	22/24	91.7	1216	26
Emergency medicine	19/34	55.9	836	18
Public health	11/13	84.6	684	14
Intensive care medicine	12/25	48.0	532	11
Paediatrics	11/18	61.1	513	11
General medicine	11/21	52.4	475	10
Geriatrics	6/18	33.3	304	6
Occupational health	6/16	37.5	190	4

[a] Fourteen learned societies were stakeholders of the study and proposed 169 representative participants (participation rate 58%). The experience of participants in the specialty was distributed as follows: less than 10 years for 21 participants (21.4%); between 10 and 20 years for 36 participants (36.7%); between 20 and 30 years for 17 participants (17.3%); and over 30 for 24 participants (24.5%).

Supplementary Table S3: Description of the incidence and case-fatality rates and of the existence of a notifiable disease (ND) system and a National Reference Laboratory (NRL) in France for the 94 ranked entities as well as Disease X (the background for the high-priority, low priority, and non-priority groups of entities are pink, yellow, and green, respectively).

Entities	Incidence rate	Case-fatality rate	ND	NRL
E0- Disease X	Minimal	Simulated from Minimal to High	NA	NA
E1- Viral haemorrhagic fevers	Minimal	High	YES	Viral haemorrhagic fevers
E2- Acute respiratory infections due to viruses other than influenza, emerging coronaviruses, RSV and hMPV	High[1]	Moderate	YES. for some	Respiratory virus including influenza virus and SARS-CoV-2
E3- Mosquito-borne arboviroses	High[2]	Low	YES. for some	Arbovirus
E4- Influenza virus infections with zoonotic potential	Minimal	High	NO	Respiratory virus including influenza virus and SARS-CoV-2
E5- Seasonal influenza A and B	High	Low	NO	Respiratory virus including influenza virus and SARS-CoV-2
E6- Emerging coronavirus infections (Severe Acute Respiratory Syndrome, Middle-East Respiratory Syndrome, COVID-19)	Low	Low	YES. for some	Respiratory virus including influenza virus and SARS-CoV-2
E7- Respiratory syncytial virus (RSV) and human metapneumovirus (hMPV) respiratory infections	High	Low	NO	Respiratory virus including influenza virus and SARS-CoV-2
E8- Creutzfeldt-Jakob disease and other human transmissible spongiform encephalopathies (TSEs)	Minimal	High	YES	Non-conventional transmissible agents
E9- Systemic infections due to multi-resistant bacteria to antibiotics	Low	Moderate	NO	Antibiotic resistance
E10- Infections due to emerging highly-resistant bacteria to antibiotics	Minimal	Minimal	NO	Antibiotic resistance
E11- Invasive infections due to *Neisseria meningitidis*	Minimal	High	YES	Meningococci and *Haemophilus influenzae*
E12- Rabies	Minimal	High	YES	Rabies
E13- Tuberculosis due to antibiotic-susceptible strains	Low	Moderate	YES. for some	Mycobacteria and resistance to anti-tuberculosis drugs
E14- Invasive pneumococcal disease	Low	High	NO	Pneumococcus
E15- Plague	Minimal	High	YES	Plague and others yersinioses
E16- Invasive yeast and filamentous fungal infections (*Candida*, *Aspergillus…)*	Moderate	Moderate	NO	Invasive and antifungal fungal mycoses
E17- Severe infections due to E*nterobacterales*	High	Low	NO	*E. coli*. shigella. salmonella
E18- Rotavirus gastroenteritis	High	Minimal	NO	Gastroenteritis virus
E19- Multi-drug tuberculosis	Low	Low	YES. for some	Mycobacteria and resistance to anti-tuberculosis drugs
E20- Tetanus	Minimal	High	YES	Anaerobic bacteria and botulism
E21- Viral gastroenteritis excluding rotavirus	High	Minimal	NO	Gastroenteritis virus
E22- Listeriosis	Low	High[3]	YES	*Listeria*
E23- Invasive infections due to *Staphylococcus aureus*	High	Low	NO	Staphylococci
E24- Invasive tropical mycoses	Minimal	High	NO	Invasive and antifungal fungal mycoses
E25- Melioidosis	Minimal	High	NO	NONE
E26- Measles	Minimal	Minimal	YES	Measles. rubella and mumps virus
E27- Cutaneous infections of aquatic origin	Minimal	High	NO	Vibrios and cholera
E28- Human immunodeficiency virus (HIV) infection	Low	Low	YES	Human immunodeficiency virus
E29- Food-borne gastroenteritis/food poisoning	High	Minimal	YES	*Campylobacter* and *Helicobacter* *E. coli*. shigella. salmonella

E30- Severe viral infections in immunocompromised patients	Low	Moderate	NO	Herpes virus
E31- Ectoparasitoses including scabies, pediculosis and bed bug infestation	Moderate	Minimal	NO	NONE
E32- Bacterial sexually-transmitted infections	Moderate	Minimal[4]	NO	Bacterial sexually transmitted infections
E33- Cancers and other diseases caused by human papillomaviruses	Low	Low	NO	Human papillomavirus
E34- Orthopoxvirus infections including smallpox and Mpox	Minimal	Minimal	YES	Orthopoxvirus including smallpox and Mpox
E35- Invasive infections due to *Streptococcus pyogenes* and other invasive streptococci (*S. suis. S. dysgalactiae*)	Moderate	Low	NO	Streptococci
E36- Enteroviruses excluding poliomyelitis	High	Minimal	NO	Enterovirus and parechovirus
E37- Botulism	Minimal	Moderate	YES	Anaerobic bacteria and botulism
E38- Legionellosis	Minimal	Moderate	YES	*Legionella*
E39- Tick-borne encephalitis	Minimal	Low	YES	Arbovirus
E40- Haemolytic uremic syndrome	Minimal	Low	NO	*Escherichia coli*. shigella. salmonella
E41- Diphtheria	Minimal	Moderate	YES	*Corynebacteria* of the dipthteriae complex
E42- *Clostridioides difficile* infections	Moderate	Minimal	NO	Anaerobic bacteria and botulism
E43- Malaria	Low	Low	YES *Autochthonous and imported malaria in the DOM*	Malaria
E44- Nocardiosis	Low	Moderate	NO	NONE
E45- Cholera	Minimal	Minimal	YES	Vibrios and cholera
E46- Infections caused by hypervirulent clonal strains of *Klebsiella pneumoniae*	Minimal	Minimal	NO	*E. coli*. shigella. salmonella
E47- Invasive infections due to coagulase-negative staphylococci	High	Minimal	NO	Staphylococci
E48- Invasive infections due to *Haemophilus influenzae* serotype b	Minimal	Moderate	NO	Meningococci and *Haemophilus influenzae*
E49- Poliomyelitis	Minimal	Minimal	YES	Enterovirus and parechovirus
E50- Diseases induced by *Helicobacter pylori*	High	Minimal	NO	*Campylobacter* and *Helicobacter*
E51- Cancers induced by and severe infections due to Human Herpes Virus (HHV) type 8	Minimal	Low	NO	Herpes virus
E52- Cancers induced by and severe infections with Epstein-Barr virus (EBV)	Minimal	Low	NO	Herpes virus
E53- Diseases induced by human T-lymphotropic virus (HTLV) types 1 & 2	Minimal	Minimal	NO	NONE
E54- Congenital cytomegalovirus (CMV) infection	Low	Minimal	NO	Herpes virus
E55- Gastroenteritis and parasitic enterocolitis	Moderate	Minimal	NO	Cryptosporidiosis. microsporidia and other digestive protozooses
E56- Hepatitis B / Hepatitis D	Low	Low	YES *Symptomatic acute HBV infection*	Hepatitis B. C and Delta virus
E57- Anthrax	Minimal	Low	YES	Anthrax
E58-Systemic enterococcal infections (*Enterococcus faecalis*. *E. faecium*)	Low	Low	NO	NONE
E59- Hepatitis C	Low	Minimal	NO	Hepatitis B. C and Delta virus
E60- Mycobacteriosis (excluding tuberculosis and leprosy)	Low	Minimal	YES. for some	Mycobacteria and resistance to anti-tuberculosis drugs
E61- Leprosy	Minimal	Minimal	NO	Mycobacteria and resistance to anti-tuberculosis drugs
E62- Leptospirosis	Low	Low	YES	Leptospirosis
E63- Chagas disease	Minimal	Minimal	NO	NONE
E64- Pneumocystis pneumonia	Low	Low	NO	Invasive and antifungal fungal mycoses
E65- Whooping cough	Low[5]	Minimal	NO	Whooping cough and other bordetelloses
E66- Atypical pneumonia	Moderate	Minimal	NO	NONE
E67- Congenital rubella	Minimal	Minimal	YES	Measles. rubella and mumps virus
E68- Haemorrhagic fever with renal syndrome (Puumala hantavirus)	Minimal	Minimal	NO	Hantavirus
E69- Urogenital/intestinal schistosomiasis	Minimal	Minimal	YES *Autochthonous urogenital schistosomiasis*	NONE
E70- Cutaneous or visceral leishmaniases	Low[6]	Minimal	NO	Leishmaniases

E71- Hepatitis E	Minimal	Minimal	NO	Enteric hepatitis viruses (hepatitis A and E)
E72- Lyme disease	Low	Minimal	NO	*Borrelia*
E73- Typhoid and paratyphoid fevers	Minimal	Low	YES	*Escherichia coli*. shigella. salmonella
E74- Cystic and alveolar echinococcoses	Minimal	Low	NO	Echinococcoses
E75- Parvovirus B19 infection	Moderate	Minimal	NO	NONE
E76- Varicella zoster virus infection	Moderate	Minimal	NO	Herpes virus
E77- Congenital toxoplasmosis	Minimal	Minimal	NO	Toxoplasmosis
E78- Severe herpes simplex virus types 1/2 infections	Minimal	Low	NO	Herpes virus
E79- Q fever	Minimal	Low	NO	*Rickettsia. Coxiella. Bartonella*
E80- Rickettsioses	Minimal	Low	YES. for some	*Rickettsia. Coxiella. Bartonella*
E81- Systemic *Streptococcus agalactiae* infections	Low[7]	Minimal	NO	Streptococci
E82- Hepatitis A	Minimal	Minimal	YES	Enteric hepatitis viruses (hepatitis A and E)
E83- Dermatophytoses (*Microsporum* and *Trichophyton*)	Moderate	Minimal	NO	NONE
E84- Intestinal nematodiases	Moderate	Minimal	NO	NONE
E85- Anaplasmosis and other tick-borne bacterial infections (*Ehrlichia*)	Minimal	Minimal	NO	NONE
E86- Whipple's disease	Minimal	Minimal	NO	NONE
E87- Filariases. cutaneous. visceral *larva migrans*	Low	Minimal	NO	NONE
E88- Tularemia	Minimal	Minimal	YES	*Francisella tularensis*
E89- Mumps	Minimal	Minimal	NO	Measles. rubella and mumps virus
E90- Bartonellosis	Minimal	Low	NO	*Rickettsia. Coxiella. Bartonella*
E91- Brucellosis	Minimal	Minimal	YES	*Brucella*
E92- Bacterial inoculation diseases (red mullet, haverhilliosis)	Minimal	Low	NO	NONE
E93- Distomatoses	Minimal	Minimal	NO	NONE
E94- Pasteurellosis	Minimal	Minimal	NO	NONE

NA: not applicable

[1] Function of virus, age, and presence of risk factors.

[2] For dengue fever or Chikungunya in the West Indies and Reunion Island.

[3] Non-maternal-neonatal forms.

[4] Excluding congenital syphilis.

[5] Data for patients < 12 months hospitalised in the RENACOQ network.

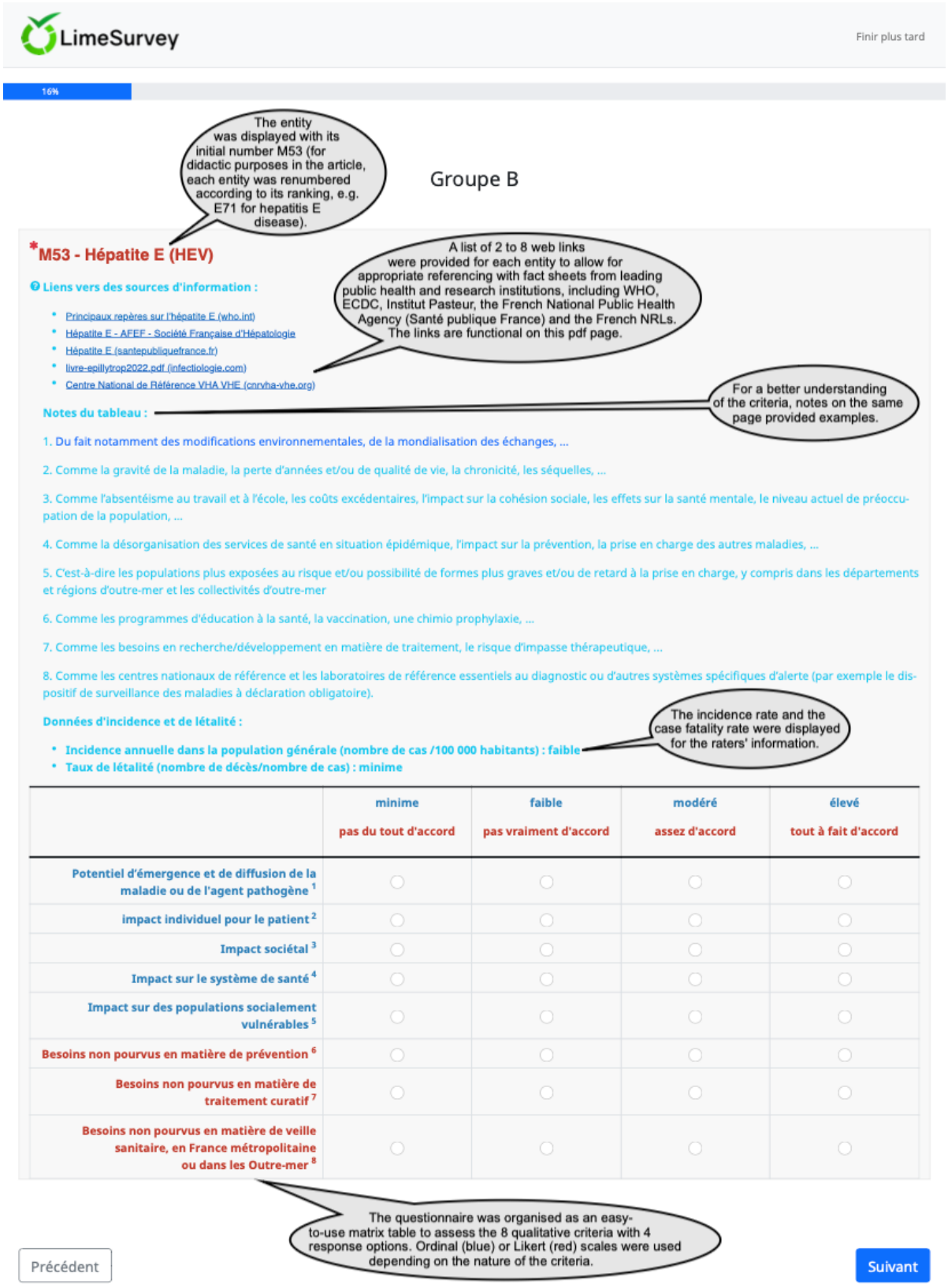
[6] Cutaneous leishmaniasis in French Guiana ≈ 67 cases/100,000 inhabitants.

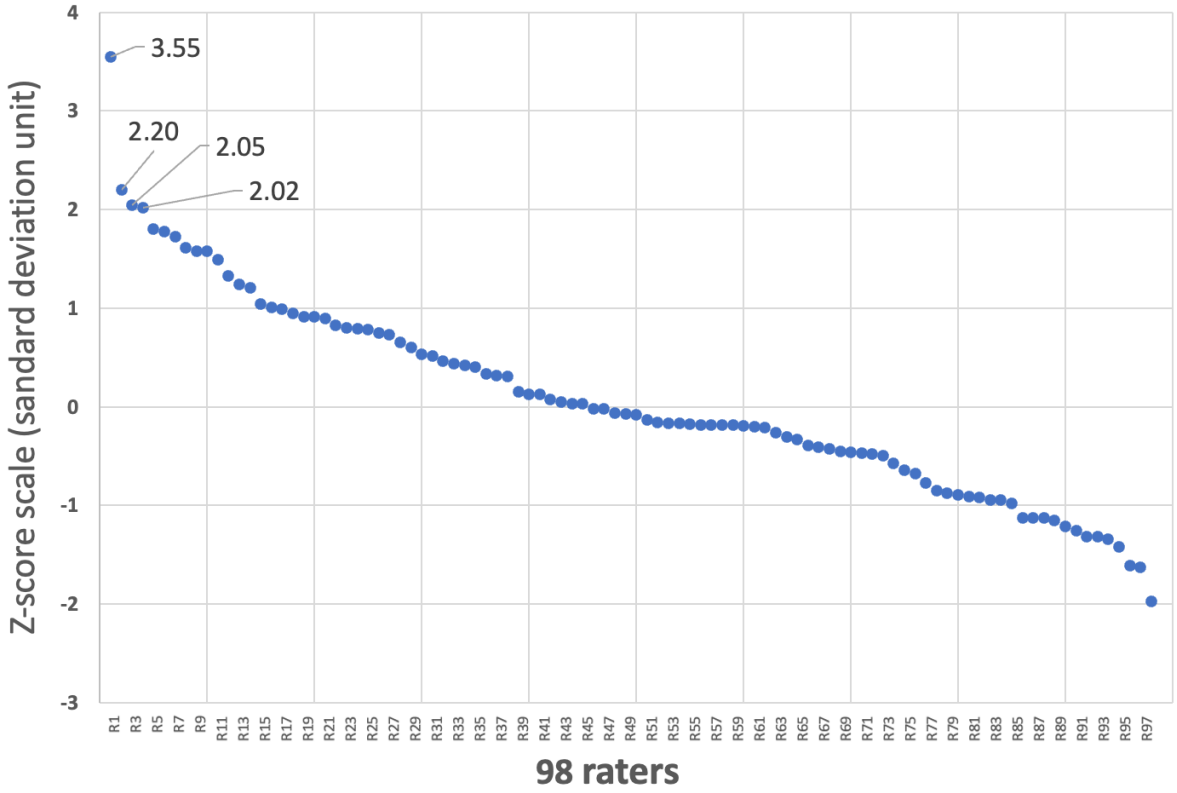
[7] For the French overseas territories.

Supplementary Table S4: Respective impact of the different criteria on the rating of the 94 entities and the 14 high-priority entities, excluding Disease X.

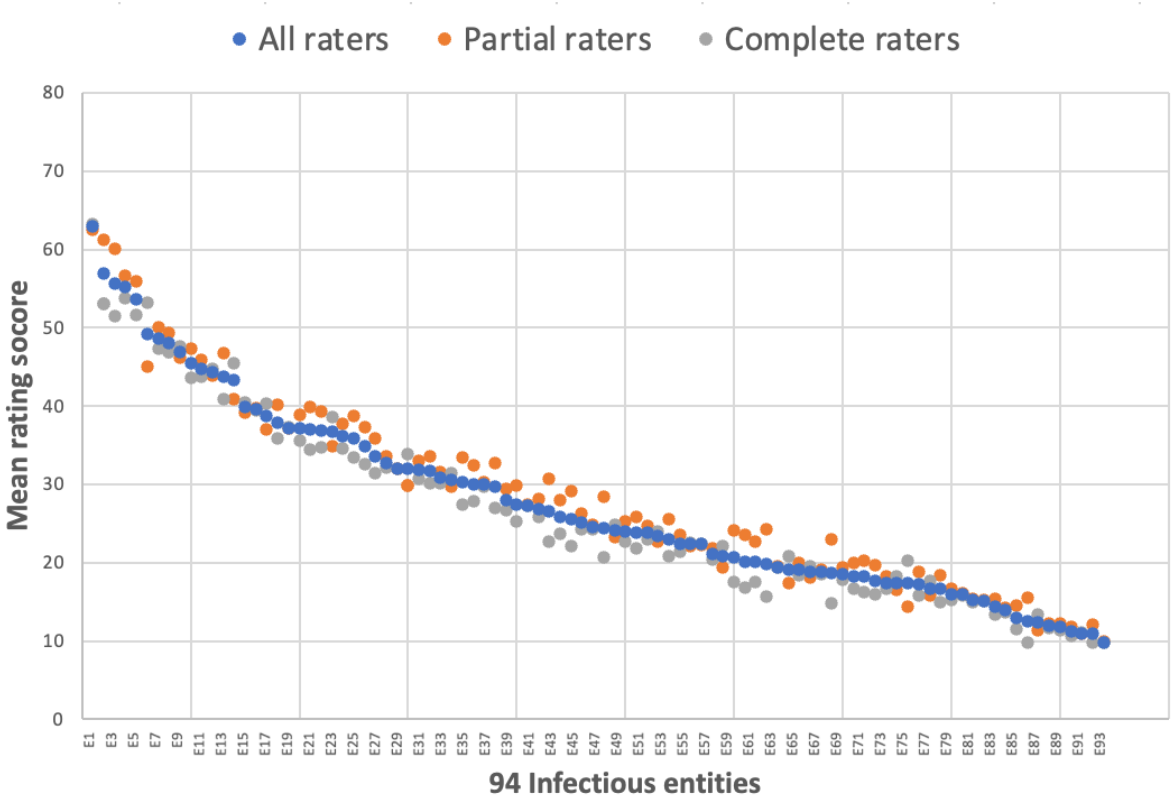
Criterion	94 entities (%)	14 high-priority entities (%)
C1: Potential for the emergence and spread of the disease or pathogen	12.9	14.5
C2: Annual incidence (number of cases / 100,000 inhabitants)	6.3	5.3
C3: Case-fatality rate (number of fatal cases / number of cases)	11.5	17.7
C4: Individual impact on the patient	20.4	14.7
C5: Societal impact	9.1	10.2
C6: Impact on the healthcare system	9.1	12.8
C7: Impact on socially vulnerable populations	12.3	9.7
C8: Unmet need for prevention	7.0	4.9
C9: Unmet need for curative treatment	8.4	8.6
C10: Unmet need in disease surveillance in mainland and overseas France	3.1	1.7

Supplementary Figure S1: Example of the tool "LimeSurvey": the screen for Hepatitis E disease. It was displayed with its initial numbering M53 (for didactic purpose in the article, each entity was renumbered according to its ranking, e.g. E71 for hepatitis E disease).

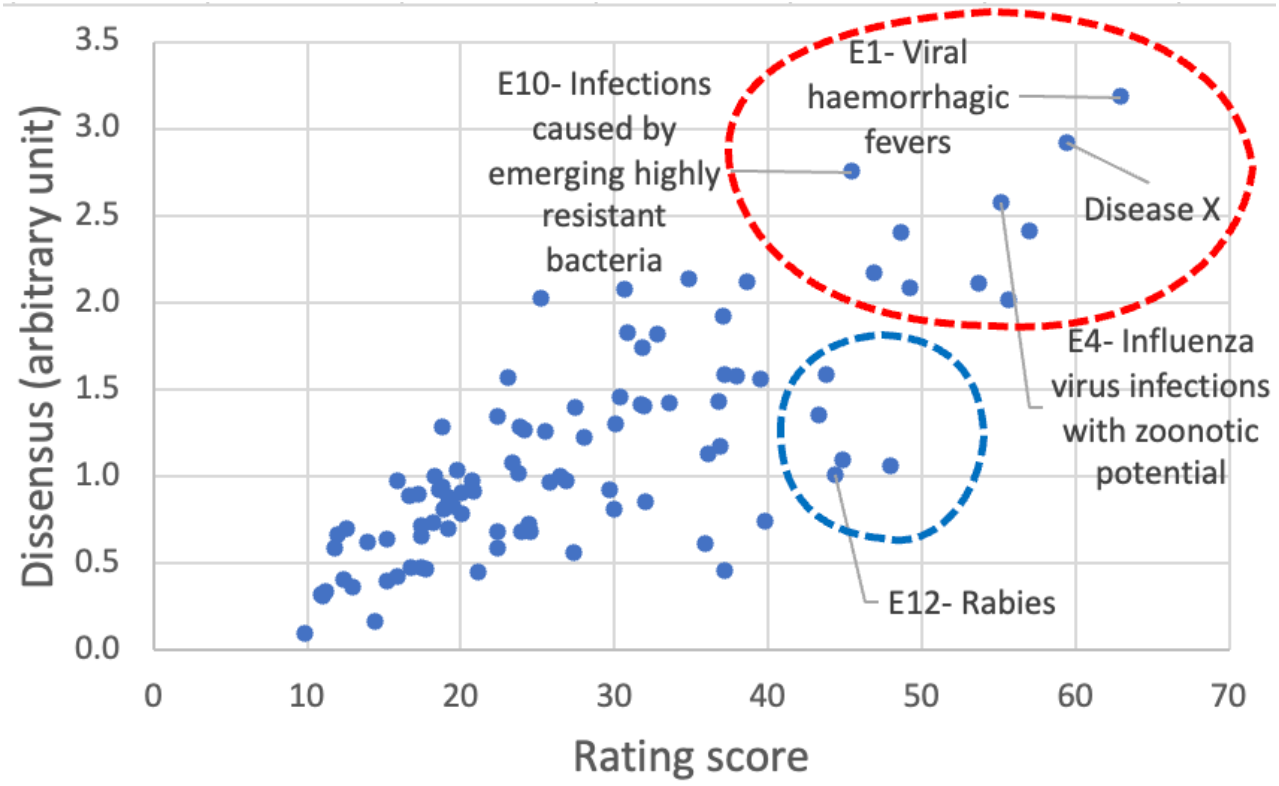




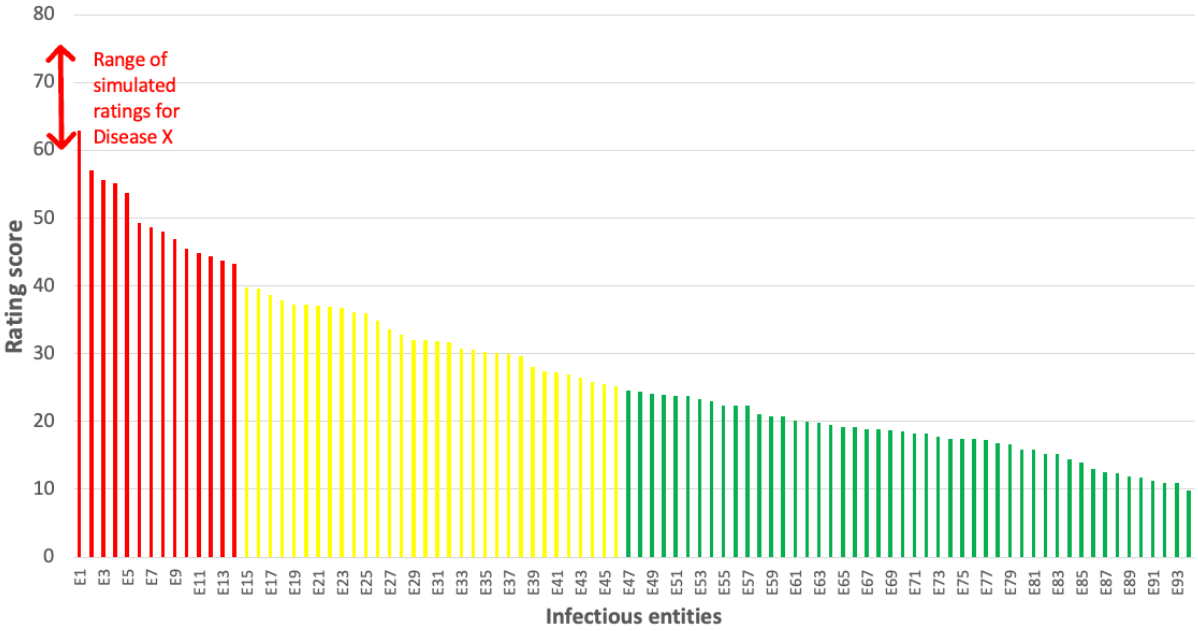
Supplementary Figure S2: Inter-rater rating homogeneity analysis. Inter-rater rating homogeneity was analysed by ranking the average score of the 98 raters on a Z-score scale and identifying values that differed by ± 2 ds.



Supplementary Figure S3: Consistency of responses between complete and partial raters



Supplementary Figure S4: Assessment of inter-rater dissensus (Disease X included). Entities in the upper-right quarter of the diagram require particular attention as they are associated with high dissensus (ordinate) and high scores (abscissa); by contrast, entities in the middle of the diagram do not seem to generate strong dissensus despite relatively high scores.



Supplementary Figure S5: Distribution of the rating scores of the 94 entities as well as Disease X and categorisation according to three priority levels. The entities with a rating score higher than 40 were considered as high-priority (red), those with a rating score between 25 and 40 were considered as low-priority (yellow), and those under 25 were categorised as non-priority (green). The simulated ratings for E0—Disease X range from 59.4 to 75.4.