

ZOONOSIS SURVEILLANCE USING THE INTERNET: HOW THE ProMED-MAIL SYSTEM WORKS AND A DESCRIPTION OF DISEASE COMMUNICATIONS IN 1996

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Ce texte décrit le système de courrier Pro-MED, de communication sur les foyers de maladie, de surveillance et de discussion sur les conséquences en santé publique. Il fournit aussi des informations de statistique descriptive sur les 2.124 messages échangés en 1996. Pro-MED est l'acronyme de « Program for Monitoring Emerging Diseases ». C'est une structure non commerciale soutenue par la Federation of American Scientist. Ce réseau se concentre sur les foyers de maladie survenant dans le monde entier. En mai 1997, ce réseau comporte plus de 11.500 membres de 135 pays. Etant donné qu'il ne dépend pas d'un gouvernement ou d'une seule organisation, il peut être indépendant et objectif.

En 1996, le nombre mensuel de messages a été stable, sauf en mars-avril où le nombre a beaucoup augmenté à cause de la BSE. Le nombre de messages sur la liste AHEAD (santé animale) a été de 705 pour 687 membres. Le système général, PRO, a eu 887 messages de 344 membres. La région d'Afrique au sud du Sahara a été bien représentée avec 49 messages de 47 membres. Il y a eu peu de communications à partir de l'Afrique du nord (1 seule) et du sud-ouest asiatique (2). L'Amérique du nord a fourni le plus grand nombre de messages (128 sur 379) et comprend 5.986 membres sur 8.644. Les sujets abordés ont été : le choléra, la dengue, la fièvre Ebola, les encéphalites équine, les encéphalopathies spongiformes, E. coli alimentaires, hantavirus...

THE IMPORTANCE OF EMERGING INFECTIOUS DISEASE

Only a little over a decade ago, both physicians and veterinarians in developed countries viewed infectious diseases as a thing of the past. Physicians concentrated on chronic disease while veterinarians in food animal practice concentrated on health and productivity. However, after HIV, PRRS, ebola and BSE it is clear that infectious diseases are a substantial threat. In fact, there may be structural reasons why the threat from infectious diseases will only intensify over the coming years. In 1992, the U.S. National Academy of Science's Institute of Medicine issued a report on Emerging Microbial Threats to Human Health (1). They cited the following reasons for emergence of new infectious diseases: ongoing genetic change; modern methods of transport leading to rapid movement of agents around the world; changes in personal behaviors i.e. sex and drug usage; changes in technology for food production, distribution and preparation (BSE); rapidly increasing human population living in unsanitary conditions - increasing numbers of homeless people in developed countries and rapidly growing urban areas in developing countries; movement of people into previously unoccupied ecological zones such as suburban housing pushing into temperate forests (Lyme's disease) and new farms in tropical rainforests; resistance to drugs and pesticides; increased numbers of immunosuppressed individuals (TB); civil unrest and war with its sequelae of refugees and displaced populations. An analogous situation may have occurred in modern animal agricultural systems with vertically integrated, intensive, "management for productivity" type of farming systems for poultry, beef and swine.

WHAT IS PROMED-MAIL?

ProMED is the acronym for the Program for Monitoring Emerging Diseases. It is sponsored by the Federation of American Scientist and is a not-for-profit entity. ProMED helps to fill the current "response gap" in addressing the threat of emerging diseases by gathering information concerning the global disease occurrence situation. ProMED recognizes that increased epidemiologic and diagnostic capacity in developing countries is crucial to monitoring the emergence of new diseases. ProMED has also crafted an ongoing electronic conference, ProMED-mail, to report, describe and discuss developments concerning the emergence of new diseases. As of May, 1997 this electronic conference, which is the subject of this report, has over 11,500 subscribers from 135 countries (See Table I). Most participants have direct "email" access to the conference via the internet while approximately 3000 participants in remote areas of the world are connected via orbiting satellites. Conference members are public health workers, physicians, veterinarians, microbiologists, plant pathologists, science journalists, retired farmers and others. Members are affiliated with universities, government service, large and small commercial entities, practice and other endeavors. SatelLife, a non-profit organization supplies the technical knowledge to run the conference communications via email listserv and satellite hookups. ProMED-mail is divided into 3 sublists: EDR- Emerging Disease Reports; AHEAD - Animal Health Emerging Animal Diseases and PLANT - which covers diseases in the plant kingdom. To join the conference, send an email message to majordomo@usa.healthnet.org. Put only «subscribe promed» in the body of the message. ProMED has been recognized recently as an innovative approach to infectious disease surveillance and global communication of disease outbreaks by President of French Society for Microbiology, Lancet and TIME magazine among others. Unfortunately, we still need more input from subscribers since we sometimes lack

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critical information on important outbreaks. Subscribers numbered 260 in Jan. 1995, 3500 in Jan. 1996, while presently there are approximately 11,500 subscribers.

Table I
Conference subscribers by geographic location – 5/97. (can subscribe to more than one)

Region	Pro	EDR	Ahead	Plant	Digest	Total
Africa: Northern	2	0	0	0	1	3
Sub-Sahara	14	8	5	2	18	47
Southern	49	10	38	3	36	136
Americas: North	2359	707	371	55	2494	5986
Mainland Middle	25	6	18	0	20	69
Caribbean Middle	4	2	0	2	8	16
Tropical South	74	15	18	4	49	160
Temperate South	21	5	4	1	6	37
Asia: East	76	16	10	0	37	139
Eastern South	42	12	4	1	41	100
Middle South	14	5	2	1	12	34
Western South	25	7	7	1	26	66
Europe: Northern	330	109	87	9	293	828
Southern	157	42	38	8	116	361
Oceania: Australia and New Zealand	254	57	85	5	252	653
Micronesia and Melanesia	2	3	0	0	4	9
TOTAL	3448	1004	687	92	3413	8644

HOW DOES PROMED-MAIL WORK ?

The ProMED-mail conference monitors outbreaks of disease as they occur around the world. The ProMED-mail global electronic conference begins when one of the conferees decides that something is relevant to the emerging disease situation in his/her local area. The individual types out a short (or sometimes long) email message that is then forwarded to the SatelLife facilities. The message (posting) is sorted into the proper list, reviewed (or rejected!) and formatted by one or more moderators. Moderation of the list is important for «quality control». Moderators sometimes comment on the implications of the posting, solicit comments from individuals particularly knowledgeable about a particular subject or verify claims. For instance, it was decided to build new housing at a South African hospital which contained a smallpox burial ground. There was a message posted on ProMED requesting information on the validity of concerns about the potential to reintroduce smallpox since bodies might be exhumed. One of the moderators contacted Prof. Frank Fenner, a chief architect of the global smallpox eradication program. Within 24 hours a message was posted which authoritatively informed the conference that the longest known survival was 13 years in scabs in a Dutch laboratory and the threat of reintroduction from buried bodies was «vanishing remote». The telephone number of an expert in South Africa was included in the message. If the message elicits a response from a second conference member, the second message is posted in sequence. Sometimes the numbers of comments, updates, ancillary information on a particular thread are quite extensive (see Table II). For example, there were 8 different suggestions when a undiagnosed human disease condition was described in Costa Rica. The number of comments on Spongiform Encephalopathy controversy reached 57 on a single thread. Since ProMED is operated by a volunteer coalition and not supported by a government or single organization, it can be independent, objective and report disease conditions some governments would prefer keep unpublicized.

Table II
Number of communications in a discussion «thread» (see text).

Thread Length	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16	34	57
Number	579	148	83	45	24	22	14	8	7	4	10	2	2	2	1	1	1

Descriptive statistics for ProMED-mail Jan-Dec. 1996 : ProMED-mail maintains archives on a website. By searching the archives a summary of the disease communication for 1996 was obtained. Number of postings per month by conference (Table III) indicates relatively little monthly variation except for a large number of «postings» in March and April, probably relating to concerns about Spongiform Encephalopathies. Lowest number was in August, when death and everyone else takes a holiday. Quite remarkably, the number of postings on the AHEAD list (animal health) was 705 from 687 subscribers. Meanwhile the overall conference, PRO, had 887 «postings» from 3448 subscribers. Geographic distribution of disease communications (Table IV) was not in proportion to the number of subscribers. The sub-Sahara African region was well represented with 49 postings from 47 subscribers. There were few disease communications from Northern Africa (only 1) and Western South Asia (2). North America had the highest number of postings (128 of 379) but also had 5986 of the 8644 subscribers to different ProMED conferences. The subject of conference discussions include individual reports of disease – the most frequent included cholera, dengue, ebola, equine encephalitis, spongiform encephalopathies, foodborne E. coli, hantavirus, infection control descriptions, infectious disease reports from

Russia, influenza, legionellosis, meningitis, MMWR and WER contents, rabies, salmonella and yellow fever. Discussion, however, ranged broadly in terms of topics such as India and the Internet, antibiotics in animal feeds, climate change and mosquito-borne disease and one posting on cormorant mortality in Texas.

Table III
Number of postings by month and ProMED conference

	Pro	Pro/EDR	Pro/AH	Pro/AH/EDR	Pro/PL	total/month
January	104	10	38	31	0	183
February	73	25	41	12	0	151
March	115	22	57	17	0	211
April	93	19	104	24	2	242
May	67	14	90	3	4	178
June	91	19	56	1	11	178
July	37	58	67	4	5	171
August	60	17	39	7	12	135
September	84	15	55	8	4	166
October	73	40	54	14	10	191
November	30	29	48	36	5	148
December	60	31	56	16	7	170
total/year	887	299	705	173	60	2124
diseases	Pro-all discussions from promed-edr, ahead, plan	Pro/EDR-emerging disease reports only	Pro/AH-animal and zoonotic diseases disease reports	Pro/AH/EDR-emerging animal and zoonotic	Pro/PL-plant	

Table IV
Geographic origin of disease outbreaks according to WHO classification for travelers

WHO region:		Jan-Mar	Apr-Jun	Jul-Sept	Oct-Dec	Total
http://www.iss.it.yellow/region.htm						
Africa:	Northern	1	0	0	0	1
	Sub-Sahara	15	8	12	14	49
	Southern	1	2	1	3	7
Americas:	North	30	27	41	30	128
	Mainland Middle	0	3	4	6	13
	Caribbean Middle	2	3	2	1	8
	Tropical South	9	2	4	4	19
	Temperate South	2	0	0	1	3
Asia:	East	0	3	5	7	15
	Eastern South	4	8	6	3	21
	Middle South	5	3	6	4	18
	Western South	1	0	1	0	2
Europe:	Northern	12	19	8	5	44
	Southern	5	5	8	8	26
Oceania:	Australia and New Zealand	6	4	5	3	18
	Micronesia and Melanesia	3	2	1	1	7
	Total	96	89	104	90	379

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