

PROMED-MAIL ELECTRONIC DISEASE REPORTING: A CASE STUDY

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SUMMARY

The early warning of disease outbreaks is a critical aspect of disease reporting, monitoring and surveillance at local, regional and international levels. Electronic mail (e-mail) provides a rapid, effective and increasingly accessible forum for disease outbreak reporting (and notification) worldwide. Drawing from their experience respectively as a subscriber and one of the three veterinary moderators to ProMED (the biggest e-mail early disease reporting forum in the world), the authors highlight the benefits of the medium for Nigeria (Africa). The use of ProMED forum for the confirmatory diagnosis of the 2001 epizootic of African swine fever (ASF) in pigs in Ibadan is a case at hand.

KEY WORDS: ProMED, Disease Reporting, Electronic mail

INTRODUCTION

Nigeria has an integrated National Disease Reporting System (NDRS), which became operational in 1977. The NDRS provides for the compulsory reporting of 113 animal diseases listed in the FAO/WHO/OIE Animal Health Yearbook (<http://www.oie.int/> © 2003 OIE World Organisation for Animal Health). The diseases are classified into five groups based on their socio-economic importance and required urgency of reporting. In May 2004, OIE Member countries approved the creation of a single list of diseases notifiable to the OIE. Previously, diseases notifiable to the OIE were classified into two lists, List A and List B (<http://www.oie.int/> ©2003 OIE World Organisation for Animal Health).

The reporting system has three tiers: from livestock farmers and pet owners to the local veterinarian; from veterinarian to state monitoring officers; and finally by the fastest possible means to the National Disease Reporting Centre, Kaduna and National Veterinary Research Institute, Vom. A feedback mechanism is incorporated to keep all veterinary officers informed of the national and international zoo-sanitary situation (FLD, 1982).

Ogundipe *et al.* (1988) evaluated the performances of the NDRS in reporting the outbreaks of two serious livestock diseases (Rinderpest and Newcastle Disease) from 1977 to 1984. They reported that at the first tier reporting level (Livestock owner to local veterinarian), not more than “the tip of the iceberg” of outbreaks was reported, which for Rinderpest and Newcastle Disease from

1977 to 1984 were 65% and 25% respectively. At the second and third tiers, 100% for Rinderpest and a mean of 28.4 % and 68.4% for 2nd and 3rd tiers were respectively reported for Newcastle Disease. Only 19.2% and 48.4% of Rinderpest and Newcastle Disease outbreaks respectively were reported before the midday time limit. Farmers delayed the first set of reports for between 2 and 34 (mean 15) days, and 2 and 12 (mean 5.8) days for Rinderpest and Newcastle disease, respectively. Inefficient national telecommunication system was identified as a hindrance to early reporting.

ProMED-mail<http://www.promedmail.org>

The advent of electronic mail (e-mail) provides a rapid, efficient and increasing accessible forum for communication worldwide. Although the use of e-mail facilities in Nigeria is still relatively low, there is a rapidly increasing access and usage of e-mail facilities by all and sundry.

ProMED-mail – the Program for Monitoring Emerging Diseases – is an Internet-based reporting system dedicated to rapid global dissemination of information on outbreaks of infectious diseases and acute exposures to toxins that affect human health, including those in animals and in plants grown for food or animal feed. Electronic communications enable ProMED-mail to provide up-to-date and reliable news about threats to human, animal, and food plant health around the world, seven days a week. By providing early warning of outbreaks of emerging and re-emerging diseases, public health precautions at all levels can be taken in a timely manner to prevent epidemic transmission and to save lives.

ProMED-mail was established in 1994 with the support of the Federation of American Scientists and Satellite. Since

October 1999, Pro-MED-mail has operated as an official program of the International Society for Infectious Diseases (ISID)<http://www.isid.org>, a non-profit professional organization. Since its establishment in 1994, ProMED has grown from 40 members to over 30,000 in more than 160 countries. During 1999, 2,226 messages were posted, averaging more than six each day, seven a week.

ProMED-mail is open to all sources and free of political constraints. Sources of information include media reports, official reports, online summaries, local observers, and others. ProMED-mail subscribers often contribute reports. A team of expert human, plant, and animal disease moderator screen, review, and investigate reports before posting to the network. Reports are distributed by email to direct subscribers and posted immediately on the ProMED-mail web site (Source: <http://www.isid.org/aboutProMED2001>).

ProMED-mail was established to provide an early global warning of emerging diseases of humans, animals and plants, as well as diseases activities signaling biological warfare and bio-terrorist activities (Hugh-Jones *et al.*, 2000). ProMED-mail has electronically knitted together a global cadre of emerging disease for specialist and other interest parties. Hence, it has been described as “**the CNN of outbreaks**”.

To get the results for this case study, the first author had to subscribe to PROMED-mail,.

Subscription to ProMED

Anyone; layman, farmer or professional can subscribe via e-mail for no fee. To subscribe, simply:

- (a) Send an e-mail message to: **majordomo@promedmail.org**
- (b) Type in the body of the message:

- subscribe ProMED<your email address>; or
- subscribe ProMED-digest <your email address> (for consolidated mailing of all posting); or
- subscribe ProMED-ahead <your email address> (for animal, zoonotic, vector-borne disease generated); or
- subscribe ProMED-ahead <your email address> (for emerging disease new address> (for emerging diseases new outbreak only); or
- subscribe ProMED-ahead-digest <your email address> (for daily posting of consolidated AHEAD post);

It is recommended that new users subscribe to ProMED-digest for convenience.

The case study

An outbreak of severe infections leading to heavy mortalities was recorded in the Teaching and Research Farm of the University of Ibadan, and other parts of Ibadan between 27th June and August 2001. This reduced the herds from a total of 858 pigs on 27th June, to 149 pigs as of 4th August. Intense discussions went on in the Faculty of Veterinary Medicine of the University as to the confirmatory causes of these unexplained mortalities. Anthrax, African swine fever and Hemorrhagic Septicemia were touted as possible diagnoses, based on clinical signs, postmortem lesions and microbiological examination.

On 10th August 2001, the first author sent a posting to ProMED-mail on the situation. This was sent out to the ProMED list by another moderator (Martin Hugh Jones) on 11th August 2001, asking for knowledgeable opinions on the condition. Between then and 14th August 2001, a

number of reactions on possible differential diagnoses were posted. These included:

- x. A posting from Yves Leforban of the FAQ, which listed Encephalomyocarditis Virus (EMCV) infection as possible differential diagnosis.
- xi. A posting from Hans de Smut of Intervet, which listed classical Swine Fever.
- xii. A posting from Dr. Wilna Vosloo of the Exotic Disease Division, Onderstepoort Veterinary Institute (OVI). Onderstepoort, Republic of South Africa, listing African Swine Fever (ASF) as possible differential. This last posting offered to do laboratory examinations for ASF if samples were sent to them.
- xiii. A posting from Nick Knowles of the UK Institute for Animal Health, Pirbright Laboratory, Surrey UK giving information on how to isolate the EMCV and offering diagnostic assistance.

RESULTS AND DISCUSSION

The earliest indication of the definitive diagnosis of the outbreak was the reports on ProMED-mail, between 10th August and 24th September 2001, of concurrent ASF outbreaks in South Africa Tanzania, Kenya and Zambia.

The Offer from OVI South Africa was taken up; relevant samples were collected and formally dispatched with the necessary documentation by UPS courier on 27th August 2001. The samples consist of eighteen (18) specimens of Mesenteric lymph node, Gastro-hepatic lymph node, Renal lymph node, Spleen, Liver, Kidney,

Lung and Heart; Blood in EDTA and Clotted blood. From the preliminary results sent from OVI on 7th September 2001, the sent samples of Gastro hepatic lymph node, Spleen, Liver and Kidney tested positive for ASF on PCR essay and Viral isolation. A confirmatory diagnosis of African Swine Fever (ASF) outbreak was thus got.

ProMED mail provided opportunity for the first known confirmatory diagnosis of the unexplained mortality in pigs; which was first noticed at the University of Ibadan Teaching & Research Farm in June 2001 but has been experienced in other parts of the city as far back as April 2001 (Pig Farmers Association of Nigeria PFAN, Personal communications 2001). The kernel of ProMED's operation is early (global) warning, well in advance of laboratory confirmation. "For those who like their disease reports complete, rounded and error free, ProMED mail is not the right source". Its strength lies in the quality and quantity of its subscribers and ability to channel expertise to those needing it. Back checking has revealed that 99% of initial tentative reports have been confirmed (Hugh-Jones *et al.*, 2000).

Such an early warning model is relevant and appropriate to developing countries like Nigeria, where in any case, diagnosis is mainly symptomatic and tentative because a combination of social and economic factors make laboratory confirmatory diagnosis unavailable or late. There have been sentiments expressed on whether the ProMED mail forum does not circumvent the official disease reporting system. ProMED is a non-governmental organization, which rather than compete with the official media, augment them. ProMED-mail continues to report faster than the WHO and other official outbreak reporting system; and extreme example

being the three months lead on Japanese Encephalitis in India. ProMED does have the advantage that it can report conditions which certain countries are reluctant to report officially to WHO (Hugh Jones *et al.*, 2000).

Two points are importance for African veterinarians. First, the number of reports per subscriber is greater than most other regions of the world. ProMED-mail needs more reporting from Nigeria as well as the rest of West Africa, if truly it is to be a global community of emerging disease specialists. Information is power. With electronic communication, the world has become a global roundtable. Subscription to ProMED links one to the biggest and most rapid medium for emerging diseases globally.

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