“Unfettered flow”: how ProMED-mail keeps the world alert

For almost 30 years, contributors to ProMED-mail have flagged new and emerging infectious threats to health. Talha Burki reports.

“Have you heard of an epidemic in Guangzhou? An acquaintance of mine from a teacher’s chat room lives there and reports that the hospitals there have been closed and people are dying.” ProMED-mail appreciates the preliminary information above and would be grateful for any additional information. The etiology and extent of this apparent outbreak of pneumonia are unclear, as is whether the outbreak is secondary to influenza.”

ProMED-mail post (Feb 10, 2003)

The story of how Programme for Monitoring Emerging Diseases (ProMED)-mail alerted the world to the emergence of severe acute respiratory syndrome (SARS) has attained something like folklore status in global health circles. An infectious disease specialist in Maryland, USA, forwarded an email from someone who had heard rumours of unusual goings-on in China. The ProMED moderator responded as ProMED moderators usually do when they receive unverified reports of disease outbreaks. They issued a request for information to the thousands of researchers, health-care workers, veterinarians, public health officials, journalists, and members of the public who subscribe to ProMED-mail. Within 24 hours, officials from Guangdong province, for which Guangzhou is the capital, publicly acknowledged for the first time 305 cases of the atypical pneumonia that became known as SARS. The ensuing epidemic infected more than 8000 people around the world and killed 774.

It was precisely the kind of scenario that Jack Woodall, Stephen Morse, and Barbara Hatch Rosenberg had in mind when they founded ProMED in 1994. SARS-CoV was a new virus spreading in human populations, yet it was not being publicised by local, national, or international authorities. It was not until after the ProMED-mail post that WHO received its first notification of the outbreak from the Chinese Ministry of Health.

“万里無敵流”: 如何讓 ProMED-mail 保持全球警覺

在过去的30年里，ProMED-mail的贡献者们已经标记了新的和正在出现的传染病威胁。Talha Burki报道。

“你有听说过广州的疫情吗？一位来自老师聊天室的熟人报告说，那里的医院已经关闭，人们在死亡。”ProMED-mail欣赏以上初步信息，并会很乐意得到额外的信息。肺炎的病因和范围尚不清楚，这是是否为SARS的二次感染。它可能吗？”

ProMED-mail帖子（2月10日，2003年）

故事讲述了Programme for Monitoring Emerging Diseases (ProMED)-mail如何在2002年首次告警世界，告知严重急性呼吸道综合症（SARS）的出现。这个故事被赋予了在国际健康圈的流行病学“传奇”地位。在马里兰州，美国的一位传染病专家收到了来自中国某人关于当地人健康状况的可疑报告。ProMED的调解者回答了ProMED调解者通常的做法，当他们收到未经证实的疾病爆发报告时。他们向成千上万的科学家、医务人员、兽医、公共卫生官员、记者和公众发出了请求，询问是否有进一步的信息。24小时内，广东省的官员对广州的305例病例进行了公开承认。随后，这个疾病在全世界感染了超过8000人并导致774人死亡。

这正是Jack Woodall、Stephen Morse和Barbara Hatch Rosenberg在1994年建立ProMED所希望看到的情景。SARS-CoV是一种新的病毒，它在人类人群中传播，但它并未被公开。直到ProMED邮件发出报告后，WHO才收到了来自中国卫生部的首例报告。

“‘Unfettered flow’: how ProMED-mail keeps the world alert”

For almost 30 years, contributors to ProMED-mail have flagged new and emerging infectious threats to health. Talha Burki reports.

“Have you heard of an epidemic in Guangzhou? An acquaintance of mine from a teacher’s chat room lives there and reports that the hospitals there have been closed and people are dying.” ProMED-mail appreciates the preliminary information above and would be grateful for any additional information. The etiology and extent of this apparent outbreak of pneumonia are unclear, as is whether the outbreak is secondary to influenza.”

ProMED-mail post (Feb 10, 2003)

The story of how Programme for Monitoring Emerging Diseases (ProMED)-mail alerted the world to the emergence of severe acute respiratory syndrome (SARS) has attained something like folklore status in global health circles. An infectious disease specialist in Maryland, USA, forwarded an email from someone who had heard rumours of unusual goings-on in China. The ProMED moderator responded as ProMED moderators usually do when they receive unverified reports of disease outbreaks. They issued a request for information to the thousands of researchers, health-care workers, veterinarians, public health officials, journalists, and members of the public who subscribe to ProMED-mail. Within 24 hours, officials from Guangdong province, for which Guangzhou is the capital, publicly acknowledged for the first time 305 cases of the atypical pneumonia that became known as SARS. The ensuing epidemic infected more than 8000 people around the world and killed 774.

It was precisely the kind of scenario that Jack Woodall, Stephen Morse, and Barbara Hatch Rosenberg had in mind when they founded ProMED in 1994. SARS-CoV was a new virus spreading in human populations, yet it was not being publicised by local, national, or international authorities. It was not until after the ProMED-mail post that WHO received its first notification of the outbreak from the Chinese Ministry of Health.

“‘There is an honest, frank, and unfettered flow of information free from political constraints and without being subject to delay or suppression of reporting by governments’”

“WHO and other official sources are constrained in their reporting by the need for bureaucratic clearance”, Woodall pointed out in 2001. “ProMED-mail has no such constraints, and posts outbreak reports 7 days a week.” A 2017 study subsequently linked SARS-CoV to a set of very similar virus strains in a horseshoe bat population in Yunnan province, China. The authors noted that “the risk of spillover into people and emergence of a disease similar to SARS is possible”. Morse, who is now Professor of Epidemiology at the Columbia University Medical Center, New York, NY, USA, was the first to apply attention to bovine spongiform encephalopathy. “It was all veterinary stuff, and I would barely glance at it”, she recalled. “But when variant Creutzfeldt-Jakob disease suddenly emerged, I went back over the earlier posts; that was when I realised I needed to be reading about everything that was happening in the animal world.” “COVID-19 has really amplified the message of One Health as it relates to zoonotic diseases. We have watched SARS-CoV-2 spill into human populations from animals and back again”, added Madoff. “Who could have predicted that mink or white-tailed deer would feature in a human pandemic?”

Marjorie Pollack, former Deputy Editor at ProMED, initially paid scant attention to bovine spongiform encephalopathy. “It was all veterinary stuff, and I would barely glance at it”, she recalled. “But when variant Creutzfeldt-Jakob disease suddenly emerged, I went back over the earlier posts; that was when I realised I needed to be reading about everything that was happening in the animal world.” “COVID-19 has really amplified the message of One Health as it relates to zoonotic diseases. We have watched SARS-CoV-2 spill into human populations from animals and back again”, added Madoff. “Who could have predicted that mink or white-tailed deer would feature in a human pandemic?”

ProMED employs dozens of subject matter experts from around the world. These are specialists in fields such as virology, parasitology, epidemiology, entomology, and veterinary and
plant diseases who are paid a stipend and act as moderators, screening and commenting upon reports submitted to ProMED. They also track disease outbreaks using social media and the internet, news reports, press releases, and government statements. “ProMED has always been about transparency”, said Madoff. “It is free to subscribe and anyone can submit a report, confidentially if they wish. We are not beholden to any government or organisation.”

For the week of Jan 16–22 2023, ProMED posts included two cases of brucellosis in French Guinea caused by a novel species of brucella; an outbreak of diphtheria in Nigeria; and updates on the situation with COVID-19 and mpox. There were also reports on foot and mouth disease in livestock in Iraq and Jordan; Newcastle disease in French poultry; and suspected squirrelpox in Scotland. A link to a news report from an agricultural radio network highlighted the emergence of mysterious leaf spots on maize fields in the American midwest. Sources included a range of news outlets, the US Centers for Disease Control and Prevention, WHO, the World Animal Health Information System, and several academic journals.

Given the welter of information, it can be tricky to decipher what is important and what is not. "We have experts involved at all levels of discovery. They are very good at recognising patterns and aberrations”, said Madoff. A post made on Dec 30, 2019, provides a vivid example:

“...The type of social media activity that is now surrounding this event is very reminiscent of the original ‘rumors’ that accompanied the SARS-CoV outbreak... More information on this outbreak including demographics of cases, possible known common contacts, and a clinical description of the illness would be greatly appreciated. And if results of testing are released.”

ProMED-mail post (Dec 30, 2019)

The moderator who made the comment was Pollack. "I checked my email after dinner and one of my colleagues in Taiwan had sent me a Chinese language social media report about a disease outbreak in Wuhan, China. For the next hour and a half we went searching for a second, independent source. As far as I was concerned, this was SARS-like until proven otherwise”, she said. At the same time, an artificial intelligence system based in the USA issued its own alert on the outbreak. Yet it only rated it 3 out of 5 for seriousness.

Prof Sir Ali Zumla, Infectious Diseases and International Health, University College London, London, UK, said: "It has been extremely useful for us working in the One Health field to have event-based surveillance and possible epidemic intelligence conveyed rapidly with a daily follow-up by ProMED.”

“There is an honest, frank, and unfettered flow of information free from political constraints and without being subject to delay or suppression of reporting by governments”, Zumla added. SARS might be the most famous example of ProMED being the first, or among the first, to draw attention to a disease outbreak, but there are plenty of others, some relatively small, such as meningococcal meningitis in Vietnamese immigrants in Russia (1997), others more sizeable. After ProMED posted on Middle East Respiratory Syndrome in 2012, the Saudi Government issued a notice to the website.

As ProMED approaches its 30th anniversary, the prospects for its future are uncertain. Although it only costs around US$1 million per year to run, it has always struggled to obtain funding. Donor organisations can be reluctant to pay for salaries, stipends, and recurring costs such as those associated with informational technology, though these are the largest expense for ProMED. "Philanthropists are always looking to fund the next big thing, new and shiny initiatives involving machine-learning or artificial intelligence, and ProMED has been around for a long time now, operating in more or less the same way, so it sometimes gets overshadowed”, said Madoff. There are other organisations that are involved in monitoring disease outbreaks, but none of them are purely crowdsourced, as ProMED continues to be.

"Our moderator core is incredibly valuable; working with all these diseases for so many years allows you to develop a feel for when something is going on”, Pollack told The Lancet. "It was my gut that told me that we should be worried about what was happening in Wuhan in late 2019.” Perhaps disease surveillance is as much art as it is science.

Talha Burki