Saturday 26 November 2005
BMJ

Veterinary public health

We need an integrated medical and veterinary approach

The World Health Organization defines veterinary public health as, "The sum of all contributions to the complete physical, mental and social well-being of humans through an understanding and application of veterinary medical science."[1] With this definition every veterinary surgeon contributes to public health, whether through provision of health care for pets, protection of animal welfare, biomedical research, or ensuring adequate food animal production and food safety.

Veterinary public health impacts on human health by reducing exposure to hazards arising from animals, animal products, and their environment. Examples of these hazards include zoonoses, vector borne infections and other communicable diseases, chemicals and drugs used in animals, envenomations, and injuries from exposure to animals.[1]

The concept of veterinary public health originates in ancient Egypt, when healer priests drew no distinctions between caring for human patients and animals. They gained much knowledge from the anatomy and diseases of animals, which they applied to the healing of humans.[2] This "one medicine" approach prevailed until the 19th century. Since then, the gulf between human and animal physicians has been increasing, mainly because of changes in political and cultural rules rather than scientific logic.[2] Although public and political interest in veterinary public health declined in Britain towards the end of the 20th century, it remained an important part of veterinary education and is now a recognised specialty in the United Kingdom and the rest of Europe.[3]

Newly emerging and re-emerging infections are recognised as a global problem, and 75% of these are potentially zoonotic.[4] The general public and health professionals perceive that the emergence of a new "killer" disease in any area of the world is a threat for all humans.[5] Recent examples that support this belief include the outbreaks of H5N1 avian influenza in Asia, bovine spongiform encephalopathy in the United Kingdom, West Nile virus and monkeypox in North America, and H7N7 avian influenza in the Netherlands.[6]

The re-emergence of zoonoses, together with other issues such as bioterrorism, pollution incidents, antimicrobial resistance, xenotransplantation, and the socioeconomic importance of food production, make a collaborative interprofessional approach to veterinary public health more urgent. The specialty may also offer early insights into the cause of unusual or unexplained illness.[7] Multidisciplinary teams comprising all those who contribute to the treatment, control, and prevention of diseases of animal origin are essential, not only to determine the source of disease but also to assess the risk of further outbreaks and to make recommendations for future controls.[8 9]

LOREN CALLAGHAN / AP

Raptor keepers at the Woodland Park Zoo in Seattle give Otus, a Western Screech Owl, a vaccination for the West Nile virus

BMJ 2005;331:1213–4

Likewise, liaison between organisations at government and national levels is a prerequisite for deciding policies and disseminating information clearly and quickly. Local collaboration also has an important role in discussing local and national issues. Meetings are currently mostly confined to regular and ad hoc meetings between professionals from organisations such as the state veterinary service, health protection agencies, and local and water authorities. [10] Little routine local collaboration occurs between the medical and veterinary professions in general practice.

But sharing local knowledge and expertise would have real benefits for the immediate human and animal populations. Sporadic or community and animal outbreaks of salmonellosis may, for example, have a common source of which only one profession is aware. Other potential benefits include reduced incidence of antibiotic resistance through sharing and comparing use, highlighting common environmental hazards such as farm discharges, and identifying research priorities.

The time has surely come for medical and veterinary general practitioners to get together to share knowledge and voice concerns. Local concerns, which may become national problems, can be identified only through an open and integrated professional approach. Willingness by both the veterinary and medical professions at both local and national levels to collaborate and share information is therefore essential for the protection and promotion of public health.

Cameron Stewart *specialist in veterinary public health*
(cameron.stewart@svs.gsi.gov.uk)

John Cowden *consultant in health protection*
Jim McMenamin *consultant in health protection*
Bill Reilly *consultant in veterinary public health*

Health Protection Scotland, Glasgow G3 7LN

Competing interests: None declared.

1 World Health Organization Study Group. Future trends in veterinary public health. *World Health Organ Tech Rep Ser* 2002;907:1-85. http://whqlibdoc.who.int/trs/WHO_TRS_907.pdf (accessed 9 Nov 2005).
2 Schwabe CW. *Cattle, priests, and progress in medicine.* Minnesota: University of Minnesota Press, 1978.
3 European College of Veterinary Public Health. www.vu-wien.ac.at/ausland/ECVPH.htm (accessed 9 Nov 2005).
4 Taylor LH, Latham SM, Woolhouse MEJ. Risk factors for human disease emergence. *Philos Trans R Soc Lond B* 2001;356:983-9.
5 Meslin FX, Stohr K, Heymann D. Public health implications of emerging zoonoses. *Rev Sci Tech* 2000;19:310-7.
6 World Health Organization. *Epidemic and pandemic alert response.* www.who.int/csr/en/ (accessed 9 Nov 2005).
7 McGuigan CC, Penrice GM, Gruer L, Ahmed S, Goldberg D, Black M, et al. Lethal outbreak of infection with Clostridium novyi type A in Scottish drug users. *J Med Microbiol* 2002;51:971-7.
8 Scottish Executive Health Department, Food Standards Agency (Scotland). *Report of the E coli O157 task force.* Edinburgh: Stationery Office, 2001. www.food.gov.uk/news/newsarchive/2001/oct/ecolitask (accessed 9 Nov 2005).
9 Bräunig J, Hensel A. Risk assessment of foodborne infections. *Dtsch Tierärztl Wochenschr* 2004;111:304-7.
10 Scottish Centre for Infection and Environmental Health. *Guidelines for the investigation of zoonotic disease in Scotland.* www.show.scot.nhs.uk/scieh/PDF/Updated_Guidelines_Zoonoses_Oct03.pdf (accessed 9 Nov 2005).

A walk on the wild side—emerging wildlife diseases

They increasingly threaten human and animal health

Emerging infectious diseases have been creeping up the research agenda since at least 1992, when the US Institute of Medicine defined them as infectious diseases that have recently increased in incidence or geographical range, recently been discovered, or are caused by newly evolved pathogens.[1] Diseases that have recently moved into new species can be added to this defining list.[2] More recently, the emergence of diseases with high case fatality rates—such as AIDS, severe acute respiratory syndrome (SARS) and H5N1 avian influenza—have catapulted emerging infectious diseases to the top of the medical and political agendas, simultaneously highlighting the importance of wildlife as reservoirs or vectors for disease.

A topical example is avian influenza, which can cause human pandemics after genetic mutation or reassortment between influenza viruses of wild and domestic birds, other animals, and humans. The prospect of a global pandemic of H5N1 is very real, at least for wild birds and mammals, and possibly also for humans. Another example is HIV infection and AIDS, which emerged from at least two non-human primate reservoirs in Africa.[3] Fruit bats have been implicated as reservoirs of several high profile viral zoonoses that have emerged over the past decade, including SARS.[4] For some pathogens, secondary "amplifier" hosts are required for transmission to humans: thus, Hendra virus emerged from fruit bats to horses and then to humans in Australia in 1994-5, and Nipah virus emerged from fruit bats to pigs and dogs to humans in Malaysia in 1998-9.[2] Nipah virus has since emerged in Bangladesh, where the virus is genetically distinct from that in South East Asia,[5] and human to human transmission possibly occurs.[6] Nipah virus should be kept on the "radar screen" for potential human pandemics: in the 1998-9 outbreak 106 people died in the absence of transmission between humans.

Of the 1415 known human pathogens, 61% are zoonotic.[7] Of pathogens causing emerging infectious diseases, however, 75% are zoonotic, with wildlife being an increasingly important source.[2] This is not surprising, as non-zoonoses will likely already be endemic while zoonoses from domesticated species probably emerged over millenniums of close association with humans. Indeed, some established human diseases, such as measles, probably originated from these animals around the time of domestication.[8] Wildlife, however, continue to be a reservoir of unfamiliar microorganisms from which previously unknown pathogens continue to emerge. It is estimated that only about a fifth to a 50th of species have been documented,[9] so the reservoir of potential zoonotic pathogens is vast. But why are we now seeing an appar-

See *Papers,* p 1242
Education and Debate, p 1256-60

BMJ 2005;331:1214–5