Hepatitis E associated with surgical training on pigs

Autochthonous hepatitis E virus (HEV) infections are an emerging problem in industrialised countries.[1] We report here a case of HEV infection associated with exposure to pig blood during surgical training.

A 35-year-old urological surgeon presented in January, 2007, with severe acute hepatitis after a 1-week history of fever (40°C), myalgia, arthralgia, erythematopapulous skin, and mild hepatalgia. The alanine aminotransferase concentration was 621 IU/L, the bilirubin concentration 26 µmol/L, and the prothrombin index 97%. A diagnosis of HEV infection was established by detection of HEV RNA in serum by use of in-house molecular assays.[2] The HEV genotype was 3c. Anti-HEV immunoglobulins G and M were not detected in serum (Adaltis EIAGen kits, Adaltis Italia, Casalecchio di Reno, Italy). However, they were detected in a serum sample collected 3 weeks later (optical densities for anti-HEV immunoglobulin G and M were 7·8 and 4·3, respectively); HEV RNA detection was negative at this point. Other infectious causes of acute hepatitis were excluded.

The patient showed spontaneous full recovery within 3 weeks. Surgical training with 3-month-old pigs 7 weeks before disease onset was the major contamination risk identified. Although consumption of boar was noted, it was too close to hepatitis onset (4 days), and the meat had been cooked for a long time. Neither recent travel nor contacts with travellers in HEV hyperendemic areas was reported.

High HEV seroprevalence rates and high proportions of HEV viraemic pigs have been seen in pig farms in industrialised countries,[1,3] suggesting that exposure to pig blood might represent an important transmission route. Thus, there is a strong body of data about associations between occupational exposure to pigs of farmers, veterinarians, butchers, and slaughterhouse workers and acute hepatitis E cases or higher HEV seroprevalence rates than in non-exposed controls.[1] By contrast, although the possibility of HEV contamination through medical or surgical experiments on pigs has been suggested,[3] no hepatitis E case has been either shown or suspected.

In our patient, no other risk factor for HEV contamination than surgical training could be reasonably assumed. In addition, pigs used for surgical training were within the age strata at higher risk for being viraemic,[1] and the HEV genotype 3c found in our patient has until now only been reported in swine.[4,5]

Therefore, the present case deserves further investigations aimed at testing individuals exposed to pig blood during surgical experiments, as well as preventive HEV RNA testing in pigs before their manipulation.

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Politics of health systems: WHO's new frontier

WHO's announcement of its global health strategy, and the spotlight on health systems strengthening (June 9, p 1915),[1] raises the question of how the agency envisions delivering on that agenda. To be truly meaningful, this could necessitate a revisiting of governance and mechanisms of social service delivery, all of which are linked to political processes. Therefore, as the WHO team sets out to cascade this complex agenda into WHO's layers of planning instruments, it must be mindful of its institutional constraints vis-à-vis the political determinants of health systems performance.

Of the various health systems used across the world, the one that needs attention the most is the mixed model. Here the common triad of insufficient funding, an enabling regulatory environment for the private sector, and lack of transparency in governance act together to compromise the quality of public services and defeat the equity objective (figure). In such settings WHO will have to develop pragmatic solutions to achieve health for all through alternative financing and service delivery arrangements.

This would have implications for the support that WHO provides in countries and would necessitate a change in focus from supporting governments in their delivery of services to reconfiguring the role of ministries of health to provide a stronger normative and regulatory role and engaging with non-state actors that play a major part in delivering health services in mixed health systems. It might also become imperative for

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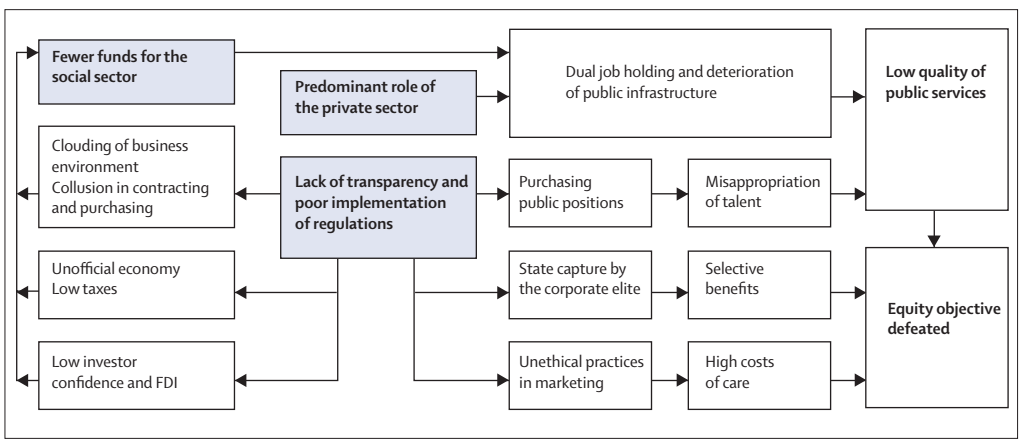

Figure: **The three governance-related determinants of weaknesses of mixed health systems (shaded)**
FDI=foreign direct investment.

WHO to interface intersectorally outside of the traditional health arena such as by promoting frameworks for public–private partnerships, enabling social safety-net arrangements for the non-formally employed, and working with labour ministries to capitalise the potential within social health insurance for the formally employed. WHO will have to develop the will and institutional capacity to raise a stronger voice against commercial interests that channel state investments into areas that do not serve the equity objective.

Notwithstanding the challenge, this is WHO's opportunity to remedy some of the inadvertent weaknesses created in mixed health systems in developing countries through the single disease programmes.[1] Its success will ultimately depend on its will and capacity to address the political determinants of health systems performance. This would be an interesting time for WHO to strike a balance between its technical and political roles.

I declare that I have no conflict of interest.

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Motor traffic and the pollution of the air: 100 years on

100 years ago last month an interesting article appeared in this journal, raising concerns over the pollution caused by motor vehicles.[1] Despite being written not long after the introduction of the car, the (unknown) author lucidly raises concerns over the health effects of the emissions. The article starts: "As at present constructed the petrol motor is far from being a perfect engine. It may be satisfactory enough from the point of view of locomotion, but it is transparently defective from the point of view of hygiene. Not only does the motor engine at times give off offensive fumes which are easily visible, but it also discharges unseen gases which, though apparently inoffensive, are decidedly poisonous."

The article goes on to state that two pollutants are of particular concern: carbon monoxide (CO) and acetylene. It is interesting that this article raises these concerns at a time when not only were there very few vehicles on the road, but domestic and industrial emissions were clearly the principal concern.[2] Only since around 1990 have CO emissions from cars effectively been reduced with the introduction of the three-way catalyst on petrol vehicles.[3]

The article ends: "So long as horse traction is the vogue it is difficult to see how pollution due to physiological combustion can be entirely avoided, but with the new system of locomotion which depends upon a perfectly definite process of chemical combustion prevention should surely be easily accomplished." 100 years on it is apparent that this was not something easily accomplished—in part owing to the enormous increase in motor vehicle use. One pollutant alone (particulate matter) from traffic has been estimated to cause 17 600 premature deaths, 18 700 respiratory and cardiovascular hospital admissions, and many other less serious adverse health outcomes annually in France alone.[4] Our concern will now focus on the other oxide of carbon, its effect on the global climate system, and its indirect health effects. We hope that, in 2107, motor traffic and pollution of the air will be a problem solved.

We declare that we have no conflict of interest.

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