Polio emergence in Syria and Israel endangers Europe

WHO has confirmed an outbreak of at least ten cases of polio in Syria, where vaccination coverage has dramatically decreased during the civil war. Furthermore, wild-type poliovirus 1 (WPV1) has been isolated from sewage and faeces from asymptomatic carriers in Israel since February, 2013. Tourists and travellers could bring the infection to other countries. Precautions during the Hajj in Saudi Arabia in October, 2013, ensured that visitors from regions with known polio transmission were vaccinated, but Syria was not on the list.

Moreover, hundreds of thousands of people are fleeing Syria and seek refuge in neighbouring countries and Europe. Because only one in 200 unvaccinated individuals infected with WPV1 will develop acute flaccid paralysis (case/infection ratio C=0·005), infected individuals can spread the virus unrecognised. Inactivated polio vaccine, which is used throughout Europe, only partly prevents vaccinees from infection, but it reduces transmission and is highly effective in prevention of acute flaccid paralysis, and thus further reduces the ratio of acute flaccid paralysis to infection. In regions with low vaccination coverage (eg, Bosnia and Herzegovina [87%] or Ukraine [74%]), particularly those with low coverage of inactivated polio vaccine (eg, Austria [83%]), herd immunity might be insufficient to prevent sustained transmission.

Assuming a borderline effective reproduction number R of 1·1, we expect to see $C(R^{n+1}-1)/(R-1)$ cases of acute flaccid paralysis within n transmission generations. It might take more than 30 generations of 10 days—nearly 1 year of silent transmission—before one acute flaccid paralysis case is identified, although hundreds of individuals would carry the infection. Vaccinating only Syrian refugees—as has been recommended by the European Centre for Disease Prevention and Control1—must be judged as insufficient; more comprehensive measures should be taken into consideration. Oral polio vaccination provides high protection against acquisition and spreading of the infection, but this vaccine was discontinued in Europe because of rare cases of vaccination-related acute flaccid paralysis. Only some of the European Union member states still allow its use and none has a stockpile of oral polio vaccines. Routine screening of sewage for poliovirus has not been done in most European countries, but this intensified surveillance measure should be considered for settlements with large numbers of Syrian refugees.

We declare that we have no conflicts of interest.

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