Recent alerts demonstrate that the transmission of avian influenza to humans, which re-emerged at the beginning of 2004, is far from over in South East Asia [1]. As efforts to control the epidemic and prevent further human cases continue, the need to assess the effectiveness of current control measures grows. An executive summary of the final report of the outbreak of avian influenza A/H7N7 in the Netherlands has recently been Published in English [2].

Between March and May 2003, an unprecedented outbreak of avian influenza occurred in humans in the Netherlands. During an extensive epizootic of influenza A virus H7N7 on commercial poultry farms, 86 cases in poultry workers and 3 cases in people with no poultry contact were initially confirmed by PCR. The predominant symptom was conjunctivitis [3]. One veterinarian developed fatal respiratory distress syndrome after close contact with infected poultry [4].

A questionnaire survey was carried out as a follow up to the outbreak. Approximately 400 poultry farmers and their families and almost 900 people who were involved in controlling the epidemic participated in this investigation. Blood samples were taken from 500 of these participants to determine possible infection with the avian flu virus. Additional studies were performed for 62 household contacts of 25 persons with avian flu virus infection.

Routine serological tests failed to detect any antibodies, even in the group of persons with confirmed avian influenza virus conjunctivitis. A modification of the haemagglutination assay was developed, based on observations that avian influenza viruses favour binding to red blood cells from horses rather than turkeys [5]. As at least 50% of the people exposed to infected poultry had H7 antibodies detectable with the modified assay, it was estimated that avian influenza A/H7N7 virus infection occurred in at least 1000, and perhaps as many as 2000 people. The seroprevalence of H7 antibodies in people without contact with infected poultry, but with close household contact to an infected poultry worker, was 59%. This suggests that the population at risk for avian influenza was not limited to those with direct contact to infected poultry, and that person to person transmission may have occurred on a large scale. Specificity of the unconventional assay was confirmed by the absence of reactivity in sera from 100 controls recently vaccinated with influenza vaccine (2002/2003) (specificity 100%). Assay specificity was further supported by the results of the cohort study: having measurable antibodies was associated with having conjunctivitis (RR 1.72; 95% CI 0.99-2.99), and a lower proportion of the exposed persons who took prophylactic antiviral medication developed antibodies (corrected OR 0.48; 95% CI 0.25-0.89).

Neither poultry farmers nor those engaged in controlling the epidemic complied satisfactorily with preventive measures. Only 6% of farmers reported consistent use of facial masks and 1% reported consistent use of goggles while working with infected poultry. In cullers, compliance was only slightly better: 25% consistently used facial masks and 13% used goggles. The results of the epidemiological study suggest that oseltamivir protected against conjunctivitis (corrected OR=0.14; 95% CI=0.08–0.27) as well as against infection without specific symptoms. No protective effect was demonstrable for safety goggles or mouth-nose masks [2].

After the outbreaks of group A subtype H5N1 (A/H5N1) avian influenza viruses in Hong Kong in 1997, in which 6 people died, the hypothesis was put forward that not only pigs but also humans themselves might serve as mixing vessels for the next pandemic influenza virus [6]. The outbreak of avian influenza A/H7N7 in the Netherlands and the recent unprecedented expansion of avian influenza A/H5N1 in Asia have reinforced this concern. A review of the outbreak and control efforts in the Netherlands highlights important lessons for preparedness: while separate systems are in place to signal and control animal diseases and human diseases, an outbreak of a zoonotic disease illustrates the importance of coordination between the two. In the Netherlands, the people infected came from a wide geographic region, and included foreign poultry workers. While the movement of animals was restricted, these people were out of the reach of the public health authorities while infectious and shedding the virus.

Although the disease in humans is more severe for A/H5N1, both avian influenza outbreaks illustrate that crossing the species barrier is less rare than previously recognised, that avian influenza virus adaptation occurs rapidly, and that if such jumps between species occur, human behaviour in the broad sense may accelerate dissemination [7].

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Immigration and HIV/AIDS prevention in Germany – an interdisciplinary challenge

E Steffan, V Kerschl, S Sokolowski,

SPI Forschung, Berlin, Germany

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The availability of STI and HIV/AIDS prevention services and also general medical and social services for immigrants to Germany, needs to be better according to many health professionals. Possible solutions have been discussed for several years both in Germany and other European countries. There is awareness of barriers in foreigners' rights, cultural barriers and not least, language barriers. To develop effective solutions, the help-seeking behaviour of immigrants and their basic knowledge about HIV/AIDS and STIs was studied [1].

In 2004, in 5 European countries (Germany, Austria, Italy, Spain and Greece), over 1500 immigrants were asked, most often in their mother tongue, about their experiences, knowledge and assessment of healthcare and social services (http://europa.eu.int/comm/health/ph_projects/2002/com_diseases/commdis_2002_04_en.htm, [2]). The survey contained about 100 questions about experiences and assessments of health and social services. The results of the quantative study were discussed and validated by two focus groups made up of immigrants and health and social work professionals.

In Germany, 315 people were surveyed in Berlin and the surrounding Brandenburg region. They included 55 prostitutes, whose experiences are not discussed in this article, so the total was 260 people. Recruitment of participants was defined by criteria set out in the study design. With the help of migrant organisations, participants were recruited using the 'snowball effect' (the first contact is via the organisation, and each contact was asked to supply two more contacts).

Demographics

The largest group of interviewed people were from southeast Europe (35%), followed by sub-Saharan Africa (32%), eastern Europe (24%) and Asia (5%). The average age of participants was 30.4 years old, for both men and women. About 30% of interviewees

were married, 36% were single, 18% were separated or divorced, 15% lived together with a partner (multiple answers possible), and 18% were single parents.

Interviewees were generally well-educated with 48% having a college or university qualification. Although the level of education was good, 32% were unemployed (women 29%, men 36%). Thirty percent had full-time or part-time jobs, and 58% had a monthly income under 1000 Euro, which is below the poverty line of 1100 Euro per month in Germany. Thirty-six percent of the participants left their native country to join family, 20% left because of political reasons and 17.5% for economic reasons.

Results

Basic knowledge of HIV/AIDS and infection risk

The majority of the immigrants asked felt that they were not well informed on this topic. Only half of those surveyed felt sure what HIV/AIDS was, about 25% were fairly sure, and a further 24% were 'unsure' or 'did not know'. In contrast with German citizens (almost 100% are certain what HIV/AIDS is, [3]), this level of knowledge is very low.

Only 81% knew for certain that infection can occur through sexual contact, 32% thought that transmission could occur by kissing, and 13% believed that sharing a cup or glass could pass infection on. Only 77% knew that sharing needles was a very risky. These results show uncertainty and worry, but also indifference towards possible risk of contracting HIV. More than half the immigrants from eastern Europe were very worried about acquiring HIV. Women from southeast Europe were the group with the least knowledge and least awareness of risky behaviour.

Seventy-three percent of interviewed immigrants had already received information about HIV/AIDS, 49% in a language that they understood well. The men interviewed were generally better informed about HIV/AIDS than the women, and immigrants from sub-Saharan Africa were better informed than southeast Europeans. As with the German population, mass media (television, billboards) was the most important way of getting information (although only 41.5% of immigrants surveyed were informed this way compared with 92% of the German population2. As a source of information about HIV/AIDS, personal contacts such as friends were mentioned (25%), and health services (28%) or teachers (20%).

Knowledge and experience of HIV tests in Germany

Fifty-two percent of immigrants surveyed got information about health services from friends, 38% from family members, and 26% from other immigrants. The knowledge about HIV testing services in Germany was worryingly low. Only 24% knew that an HIV test is free and anonymous in Germany. Only 52% of those who had already undergone HIV testing in Germany could remember being counselled before the test, although this is required. The proportion of people tested who did not receive advice afterwards (or could not remember being advised) was similarly high at 57%.

Conclusions for HIV/AIDS prevention

The results of this survey indicate that HIV/AIDS educational messages are not reaching immigrants as effectively as German citizens. Important basic knowledge was lacking in many cases, and information was not supplied about HIV testing or even during testing. The existence of free and anonymous testing by health services is too often not known. The fact that female immigrants are mostly informed about HIV by personal contacts makes specific tailored prevention activities required. As well as this, institutions which serve immigrants should be sensitised to this topic. Not least, it would help if HIV health information was advertised regionally, for example in buses, in the main languages of immigrants to that country.

This article was translated from reference 1 by the Eurosurveillance editorial team.

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Emergence and dissemination of a new mechanism of resistance to aminoglycosides in Gram-negative bacteria: 16S rRNA methylation

M Galimand, T Lambert, P Courvalin

Unité des Agents Antibactériens and Centre National de Référence de la Résistance aux Antibiotiques, Institut Pasteur, Paris, France

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Despite the development of new ß-lactams and fluoroquinolones, aminoglycosides are still a very important class of antibacterials for the treatment of severe illness caused by a variety of pathogens, including Gram-negative bacteria, particularly if the pathogen has developed resistance to third-generation cephalosporins.

Aminoglycosides act by causing translational errors and by inhibiting translocation [1]. Their target sites include ribosomal domains in which the accuracy of codon-anticodon is assessed [2]. In particular, they bind to a highly conserved motif of 16S RNA which leads to alterations in ribosome function [3]. There are four known mechanisms of resistance to aminoglycosides in bacterial human pathogens:

1. decreased intracellular accumulation of the antibiotic by altering the outer membrane permeability, less inner membrane transport, or active efflux;
2. enzymatic modification of the drug, primarily through *N*-acetylation, *O*-nucleotidylation, or *O*-phosphorylation, which is the most common;
3. modification of the target by mutation in ribosomal proteins or in 16S RNA;
4. trapping of the drug.

Microorganisms that produce aminoglycosides have developed an additional pathway to avoid suicide. This self-defence mechanism involves post-transcriptional methylation of ribosomal RNA using S-adenosyl-methionine as a cofactor [4].

The *armA* (**a**minoglycoside **r**esistance **m**ethyltransferase) gene, which confers resistance to 4,6-disubstituted deoxystreptamines (kanamycin, amikacin, isepamicin, gentamicin, netilmicin, sisomicin, and tobramycin) and to the structurally unrelated compound fortimicin, was initially characterised in *Klebsiella pneumoniae* BM4536. This was isolated from a urinary tract infection in 2000 in France. Possession of the *armA* gene did not confere resistance against the 4,5-disubstituted deoxystreptamines (lividomycin, neomycin, paromomycin, ribostamycin).

Table

Minimum inhibitory concentrations (MICs) of various aminoglycosides against *E. coli* with and without plasmid pIP1204 carrying *armA*

	MICs (mg/L)[a]							
Strain	AMI							
		GEN	ISE	NET	TOB	APR	PAR	STR
	STR							
BM694	2	0.5	0.5	0.5	0.5	2	4	4
BM694 (pIP1204)	1024	256	1024	256	256	2	4	8

a- Abbreviations: AMI, amikacin; APR, apramycin; GEN, gentamicin; ISE, isepamicin; NET, netilmicin; TOB, tobramycin; PAR, paromomycin; STR, streptomycin.