At the invitation of the Nordrhein Westfalen authorities, the Robert Koch-Institut in Berlin has assisted with interviewing 1200 people and determining the vaccination status at a school in Duisburg where there were 37 patients. Current studies aim to determine the contribution of areas of low coverage to the outbreak and vaccination records are being studied. All patients whose records show that they are not protected will receive an information leaflet provided by the Deutsches Grünes Kreuz e.V. (DGK, http://www.dgk.de).

The Nordrhein Westfalen state health authorities are also carrying out a telephone survey of all known patients in Duisburg. This survey will provide data needed to compile comprehensive information on the extent of the outbreak, illness length, possible infection sources and transmission routes.

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

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Chikungunya risk assessment for Europe: recommendations for action

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Since March 2005, 255 000 cases of chikungunya fever are estimated to have occurred on the island of Réunion, a French overseas department in the Indian Ocean [1]. An huge increase in estimated cases occurred at the end of December 2005, culminating in an estimated peak incidence of more than 40 000 cases in week 5 of 2006 [2]. Since then, the estimated weekly incidence trend is downwards, although there have been an estimated 3000 new cases per week since week 13 of 2006. In total, 213 deaths have been linked to the disease [1]. In Mayotte, the nearby French territorial collectivity, 5834 cases have been notified [3]. Chikungunya cases have also been reported on other islands in the Indian Ocean, and imported cases have been confirmed in several European countries (Table).

Table. Number of chikungunya cases reported by various countries, February 2005 to April 2006*.

Country	No. of cases	Suspected (S) or confirmed (C)	Reporting period
Indian Ocean and Asia			
Réunion	255 000	S	28 Feb 05 – 30 Apr 06
Mayotte	5834	S	1 Jan 06 – 16 Apr 06
Seychelles	8818	S	1 Jan 06 - 26 Feb 06
Seychelles	158	S	29 Mar 06 – 2 Apr 06
Comoros	8	C	20 – 26 Mar 06
Madagascar	2	C	6 – 12 Mar 06
Mauritius	6000	4800 S + 1200 C	1 Jan 06 – 5 Mar 06
India	> 100 000	S	Dec 05 - 23 Apr 06

Malaysia	200	S	1 Jan 06 - 21 Apr 06
Europe (imported cases)			
France	307	C	1 Apr 05 – 28 Feb 06
Germany	17	C	1 Jan 06 – 21 Apr 06
United Kingdom	9	2 C + 7 S	1 Dec 05 – 20 Apr 06
Belgium	12	C	Dec 05 – 26 Apr 06
Czech Republic	1	C	1 Jan 06 – 20 Apr 06
Norway	1	C	1 Jan 06 – 19 Apr 06

*The data in this table is not meant to be exhaustive, and is based on information supplied by Eurosurveillance editorial advisors and the Institut de Veille Sanitaire in April and May 2006.**

In light of the extent of the epidemic and the extensive travel between affected areas and Europe throughout the year, the short term risk of introduction and transmission of Chikungunya virus in Europe was assessed by a multidisciplinary European expert panel that met at the end of March 2006 at the European Centre for Disease Prevention and Control (ECDC).

Two main elements were identified for the risk assessment for Europe. Firstly, the virus, which appears to be a variant of previously characterised strains, is currently being imported into Europe by infected people travelling from high incidence areas in the Indian Ocean to Europe*. A large proportion of these travellers have family ties to the area and travel there to visit friends and relatives, and may not realise the importance of taking preventive measures to reduce the risk of Chikungunya virus infection during their stay abroad. France and several other European countries have confirmed Chikungunya virus infections in tourists returning from the Indian Ocean. The likelihood of virus introduction through the importation of infected vectors, or contamination through breach of universal precautions when handling blood samples or through blood transfusions, was considered to be relatively low, although more research is needed. However, there has already been a laboratory confirmed case in a nurse in France who became infected after taking a blood sample from an acutely ill chikungunya patient.

Secondly, the *Aedes albopictus* mosquito that has been the epidemic vector in Réunion has already been introduced into several European countries, including Belgium, Bosnia and Herzegovina, Croatia, France, Greece, the Netherlands, Serbia and Montenegro, Slovenia, Spain and Switzerland. Importation is thought to have occurred through the trade of used tyres (the mosquito lays eggs in pools of water in the tyres) and ornamental plants which are transported in water, notably species of *Dracaena* trees and shrubs (including 'lucky bamboo'). This has resulted in the establishment of this mosquito in Albania, Northern/Central Italy, and limited foci in other countries [4,5,6]. Most of southern Europe has potentially favourable climate and ecological conditions for local establishment of *A. albopictus*. However, the vectorial competence and capacity of *A. albopictus* for transmission of Chikungunya virus in infested areas is not yet known, and research is currently being carried out in France. Based on current knowledge, it is considered highly likely that this mosquito species is able to transmit the virus within Europe, but the efficiency of virus transmission is not yet known.

Conclusion

There is a risk of Chikungunya virus transmission in Europe, but although the magnitude of this risk cannot be precisely determined at this time, it is thought that any risk is likely to be limited to small areas within certain countries.

There is a risk of Chikungunya virus importation from other parts of the world, including Africa, India, and South East Asia, where the virus is endemic. More than 100 000 chikungunya cases have been reported in India since December 2005. With the risk of importation of other vector-borne viruses into Europe such as the dengue virus for example [7] (which can also be transmitted by the *A. albopictus* mosquito), the recommendations presented below could be used as the basis for broadening the scope of the discussions, to ensure that measures to prevent the emergence of imported viral diseases are strengthened in Europe.

Recommendations
In the short term, recommendations include:

- Providing information to all people travelling from the affected areas with high disease incidence
- Providing Chikungunya virus fact sheets to physicians, as returning travellers may present with the disease,
- Reminding medical staff of the need to follow universally accepted precautions when handling samples from all patients, including those presenting with chikungunya fever
- Advising European Union member states on blood donation policies;
- Assessing the capability and capacity of laboratories in Europe to diagnose chikungunya fever.

In the longer term, further studies and documentation of vector competence and capacity of *A. albopictus* would be useful in areas in Europe where these vectors are known to be present. Areas at risk of vector establishment need to be identified and regularly monitored, and vector surveillance implemented or strengthened in these areas. Finally, measures to prevent the introduction of *A. albopictus* through the used tyre trade and plants transported in water (e.g Dracaena species) should be considered.

*Eurostat estimated that in 2004, a total of 1 474 218 people travelled from Madagascar (153 766), Mauritius (657 312), Mayotte (63 372) Réunion (498 388) and Seychelles (101 380) to the European mainland.

This report summarises the main conclusions of the meeting of the one-day consultation held at the European Centre for Disease Prevention and Control (ECDC) in Stockholm on 30 March 2006, and the recommendations that the ECDC Chikungunya risk assessment group has made to EU member states.

**Correction. This note was missing from the article as originally published on 11 May. It was added on 15 May 2006.
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Mounting evidence of the efficacy of human papillomavirus vaccines

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Since virus-like particles (VLP) generated by the synthesis and self-assembly in vitro of the major human papillomavirus (HPV) capsid protein (L1) were shown to work in principle as a vaccine candidate [1], Phase II vaccine trials over the past two years have shown good results for safety,

- Intention to treat	100% (42-100) [0:8]	100% (56-100) [0:10]
Geometric mean antibody titre at last reported follow-up compared to that of natural infection (per protocol)	Month 51-53	Month 36
	HPV16: 17-fold	HPV16:18-fold
	HPV18: 14-fold	HPV18: 2-fold
Patients reporting serious adverse events	22(4%):19 (3.5%) (months 0-27)	2(1%):2(1%) (months 0-36)
	16 (4%):19 (5%)(months 27-53)	None related to vaccination.
	None related to vaccination.	
Injection site adverse events	499(94%):472(88%)	234(86%):212 (77%)

* IN= intraepithelial neoplasia

These trial results suggest that HPV vaccines may soon be available that are well tolerated and can protect both against persistent HPV infection and cervical intraepithelial neoplasia and, by implication, against cervical cancer. Marketing applications have been submitted for review to European and United States drug regulatory authorities. Licensure is expected for women only in the first instance. HPV vaccination is expected to be most effective at preventing cervical disease when given to girls and young women who are uninfected with HPV 16 or 18. Ongoing and further trials are expected to produce more data on these vaccines' safety and immunogenicity in both women and men, at different ages, and for individuals who have already been exposed to HPV infection, as well as information on the duration of vaccine-induced antibodies and protection from HPV infection and related disease.

Around 30% of cervical cancers worldwide are associated with 11 other oncogenic HPV types (31, 33, 35, 39, 45, 51, 52, 56, 58, 59 and 66). Cross-protection from the bivalent vaccine against infection with HPV types 31 and 45 with efficacy of 55% (95%CI 12-78) and 94% (95%CI 63-100), respectively, has been reported [5]. Increases in titres of type-specific antibodies for HPV types 31, 45, 52 and 58 following vaccination with the quadrivalent vaccine have been shown [8]. However, efficacy of the quadrivalent vaccine against infection with any non-vaccine HPV type, and efficacy of either vaccine against disease associated with non-vaccine HPV types has not yet been reported. Evidence of efficacy against other cancers (e.g. some ano-genital and head and neck cancers) associated with HPV 16 and 18 may also be relevant to the expected impact and cost-effectiveness of HPV vaccination.

In many European countries, cervical screening and the resulting treatment of cervical disease detected at early stages have been very successful at reducing the incidence and mortality of cervical cancer. If prophylactic HPV vaccines are introduced, cervical screening is expected to remain important for non-immunised women, for older (previously infected) women and for the detection of disease associated with non-vaccine HPV types.

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