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Autochthonous dengue emphasises the threat of arbovirolosis in Europe

As our Review¹ on dengue in the WHO European region went to press in *The Lancet Infectious Diseases*, a new autochthonous dengue case was reported in southern France on Aug 20.² The patient lives in the city of Toulon, in a region where the invasive mosquito species *Aedes albopictus* (an efficient vector of dengue virus) has been established since 2007 and is now abundant. Because a prevention plan for dengue and chikungunya is active in France, control measures were immediately applied in the patient's neighbourhood, including suppression of mosquito larval development sites, spraying of insecticides against adult mosquitoes, and strengthening of disease and entomological surveillance. In 2014, Japan and the USA have been facing the same concern regarding re-

emergence of autochthonous dengue, probably transmitted by *A albopictus*.

This event emphasises the present risk of dengue transmission in Europe in areas where competent mosquito vectors are established. As we reminded readers,¹ dengue used to be a severe threat in southern Europe in areas where *Aedes aegypti* was established before its disappearance in the 1950s. The recent invasion of *A albopictus* in large parts of southern Europe and the resurgence of *A aegypti* in some areas make the return of dengue possible and generate a substantial risk for other mosquito-borne diseases (eg, chikungunya, Zika infections). In Europe, both *A aegypti* and *A albopictus* will definitely spread further, as suggested by statistical and biological models.¹

Thus, this new case stresses the need for action in areas at risk, such as to implement surveillance of mosquito vector, for example by use of guidelines developed by the European Centre for Disease Prevention and Control (ECDC),³ and to develop prevention

plans like in France.⁴ Preparedness is essential for planning adequate and efficient measures in both pre-emptive scheme and outbreak response (panel).

Overall, the risk of vector-borne diseases is increasing, mainly because of the spread of vectors and pathogens as side-effects of globalisation. Introductions of dengue, chikungunya, or Zika viruses, which are widely circulating in tropical areas and which are transmitted by both *A aegypti* and *A albopictus*, could easily cause outbreaks in vector-colonised areas under favourable climatic conditions (eg, summer months). In mainland France, 370 confirmed imported cases of dengue and chikungunya have been recorded from May 1, to Aug 22, in regions colonised by *A albopictus*.^{4,5} As a result, additional cases of autochthonous dengue or chikungunya might be reported in Europe before the end of the 2014 mosquito season.

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- 2 Anon. Dengue, un cas autochtone dans le Var. <http://www.ars.paca.sante.fr/Dengue-un-cas-autochtone-dans.175442.0.html> (accessed Aug 26, 2014).
- 3 Schaffner F, Bellini R, Petric D, et al. Development of guidelines for the surveillance of invasive mosquitoes in Europe. *Parasit Vectors* 2013; **6**: 209.
- 4 Paty MC, Six C, Charlet F, et al. Large number of imported chikungunya cases in mainland France, 2014: a challenge for surveillance and response. *Euro Surveill* 2014; **19**: 20856.
- 5 Anon. Chikungunya et dengue—données de la surveillance renforcée en France métropolitaine en 2014. <http://www.invs.sante.fr/Dossiers-thematiques/Maladies-infectieuses/Maladies-a-transmission-vectorielle/Chikungunya/Donnees-epidemiologiques/France-metro-politaine/Chikungunya-et-dengue-Donnees-de-la-surveillance-renforcee-en-France-metrop-olitaine-en-2014> (accessed Aug 26, 2014).



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Panel: Measures needed to restrict transmission of mosquito-borne pathogens in non-endemic areas

Before disease stage (no autochthonous case detected)

- Survey presence and establishment of putative vector mosquitoes
- Survey presence of cases of imported mosquito-borne infections
- Perform routine mosquito larval control to eliminate invasive mosquitoes at introduction sites and suppress putative vector mosquito populations, thus restricting pathogen transmission
- Achieve information, education, communication, and social mobilisation for suppression of mosquito larval habitats
- Perform mosquito control around imported cases in areas at risk and devise measures to be implemented around autochthonous cases
- Develop research on efficient and sustainable vector control techniques

Disease stage (evidence of autochthonous case)

- Protect infected patients from mosquitoes
- Promote personal protection measures against mosquito bites
- Control presence of adult mosquitoes around cases and reinforce larval control
- Reinforce disease surveillance in areas at risk
- Reinforce information, education, communication, and social mobilisation
- Involve all stakeholders: administrative authorities, medical sector, media, non-governmental organisations, opinion leaders, public agencies, and private companies
- Communicate to neighbouring regions or countries at risk

Adapted from European Centre for Disease Prevention and Control guidelines and diverse vector-borne disease prevention plans.