A meeting devoted to analyzing challenges related to undertaking research on migrant health and imported diseases was held in CosmoCaixa, Barcelona, on March 9th and 10th. Organized by the International Centre for Scientific Debate, ‘la Caixa’ Foundation, the Barcelona Centre for International Health Research and the Institute for Global Health of Barcelona, the meeting gathered specialists in international and public health, clinical research, social sciences and anthropology, entomology, and climate, among other fields, in order to explore priority areas and to improve research on the abovementioned subjects.

The meeting was organized around debate sessions, to foster discussion among speakers and the audience. Three topics were dealt with: current challenges in clinical research on migrants’ health; researching the social determinants of migrants’ health and improving access to healthcare; and, the relevance of imported diseases and the possibility of their introduction into Europe. In the afternoon of the second day, an open symposium entitled “Challenges posed by the introduction of imported diseases in Catalonia” tackled such subjects as possible scenarios linked to climate change and the presence of vectors in Catalonia, lessons learnt from recent experiences and local capacity to react to emerging or re-emerging diseases.

**Key conclusions**

- Migrants are a most vulnerable population, in the front line of current economic crisis and facing problems that are specific to their migrant condition, though difficult to identify. Disentangling which determinants of health are related to immigration and which are linked to socioeconomic and environmental conditions, is therefore a key challenge for research. Besides, health is not only an individual but a community issue, which makes necessary undertaking research beyond health facilities, at the community and family levels. Transdisciplinary approaches as to incorporate social sciences knowledge in clinical settings and clinical and epidemiological data in policy making, are crucial.

- Within migrants, undocumented people are at the extreme of vulnerability, as they lack protection provided by citizenship and suffer from the constant stress of living in uncertainty, which in turn influences their health.

- Outcomes of both clinical and social research ought to be interpretable across different settings, making standardized definitions and common parameters urgent. However, defining who is a migrant and what data are relevant is most challenging. When targeting migrants for health care and doing research, it is crucial to consider not only the first, but the second
generation of also, as well as tracking migrants back to their countries of origin and avoiding misrepresentation of the existing heterogeneity within this group.

- Effective prevention and health promotion are as urgent as health care.

- We need not to underestimate the capacity of policies to influence the outcomes of health care and facilitating encounters between population groups and health professionals. There is an urgent need for policy and decision making to be informed by research, and that both researchers and citizens in decision making get involved in the setting of priorities.

- The community and socioeconomic determinants of migrants’ health imply that dealing with it may affect structural issues, which in turn makes the subject very sensitive from a political point of view.

- Chagas disease is paradigmatic of a successful flow of information between clinical research and policy making in Spain. Recent research has forced changes in organ and blood donation regulations, maternal screening programs, follow up programs and diagnostic technologies.

- The effect of climate change in the dispersion of vectors and diseases is highly controversial. It may influence bird migration patterns, distribution of vectors, and moisture, humidity and rainfall parameters, all factors which influence disease distribution. However, global trade and increasing travels seem to have a more direct influence and the links with other factors such as decreasing biodiversity and environmental changes also need to be assessed.

- Imported diseases are not likely to modify the general distribution of disease burden in Europe, nor is it likely that malaria and other vector borne diseases become endemic again. However, there are many intriguing questions to be solved, i.e. why the west Nile virus (WNV) has not expanded in Europe even in the presence of the vector and in comparison to its quick spread through the United States, or the reasons for recent outbreaks in Romania.

- In recent years there have been cases of mosquito borne diseases in Europe, including WNV, chikungunya, dengue and malaria, sometimes including autochthonous transmission. However, globalization of diseases is not new, and there are many historical examples of past outbreaks of imported diseases, including the Eighteenth century yellow fever epidemics in the Canary Islands and Barcelona, favoured by what seems to have been a constant reintroduction of Aedes aegypti through slave trade. Importation of diseases ought to be considered as an always changing situation, and efforts need to be done in defining how to work against transmission.
Minutes of the meeting

Lecture
European research on the health of migrants and their access to appropriate health care

Despite the fear that migration causes among Europeans, people are actually not becoming more mobile than 50 years ago and migration is a more stable phenomenon than it may be thought of. This was the key message by David Ingleby when introducing his lecture on migrants’ health and access to health care, two issues that need to be taken seriously not only on moral reasons but also because of the economic crisis, as we don’t have enough money to waste in bad health care, he said.

Ingleby highlighted how difficult it is to define migrants as a target group, and insisted in the importance of also considering the second generation that usually has more health problems than their parents. If health systems and interventions are to be evidence based, whatever clinical research is undertaken needs to reflect the diversity of the population, including migrants. However, he added, it is difficult to define which data deserve to be collected and how to deal with the plurality of conceptual frameworks among studies, both issues constituting crucial challenges for research today, together with the performance of population studies, and research on mental health problems and on best ways to overcome language and cultural barriers, among other topics.

In Ingleby’s view, migrants suffer from health problems derived not only from their living conditions in their countries of origin but also in Europe, where they face precarious jobs, discrimination and continuous stress. As an example, he said that this group shows increased rates of psychosis that appear to be closely linked to social disadvantage, even if this condition was supposed to be not that much affected by environmental factors.

Professor Ingleby showed the audience some sources about minorities health, including the “Information network on good practice in health care for migrants and minorities in Europe” (http://mighealth.net), the “Migrant and ethnic health observatory”, some reviews articles by himself and the “Healthcare in nowHereland” project (http://www.nowhereland.info/), which was presented in more detail during next session of the meeting.

Regarding migrants’ access to appropriate health services, Ingleby distinguished between entitlement and affordability, and highlighted the relevance of appropriateness and quality of care, which constitute all important lines for research, as in most occasions providing the same services to everyone means providing inferior services to migrants and ethnic minorities, because these services are not well matched.

Finally, Ingleby warned against simple generalizations across European countries and against stigmatizing migrants as a source of contagion while performing clinical and epidemiological research. He argued that any classification of people implies accepting categories that may be biased and determine outcomes of research, and called broader views that consider social determinants of health in its widest sense.

Session 1
Current challenges in clinical research on migrants health.

First session of the meeting gathered together experts in clinical research and in public health, who discussed on challenges when researching migrants’ health and in setting appropriate policies. Chair of the session, Zeno Bissofi, regretted the few attention drawn by migrants’ health in comparison to travel medicine, despite the existence of most interesting subjects for research, which range from specific features of such diseases as tuberculosis, malaria and HIV, to the effect of legislations in clinical outcomes and the possible discovery of diseases thought to be already eliminated from Europe.
Ildefonso Hernández Aguado took the floor with an overview of European policies on migrants’ health. He noted some significant advances in the policy framework during the last years, with an increasing financial support and more attention to health inequalities. Hernández Aguado also highlighted the role of clinical research not only in policy making but in advocacy, by making problems visible. Given the rapid changes in migration flows, he called for more flexibility within health systems as to adapt services to the patterns of use of health facilities and acknowledging the diversity of immigrated populations which, he concluded, need to be defined according to standardized parameters that allow a better assessment of the information emerging from clinical research.

Antoni Plasència, general director of public health at the Catalan Ministry of Health, provided the audience with general data on immigration in Catalonia, where 15.95% of the population are foreigners, reaching rates of up to 25% in determined areas. Migrants, he said, suffer of much higher rates of HIV infection, measles, hepatitis, malaria, Chagas disease, early pregnancies, early births, abortions, injuries, and domestic violence, all problems that need to be dealt with taking into consideration socioeconomic, cultural and environmental factors and from a community point of view.

Plasència informed that health care is free and universal in Catalonia, whose recently renewed public health act specifically deals with immigration and health inequalities. However, there is still pending job to be done to connect knowledge to decision making, he concluded.

Working in Bolivia in close collaboration with Spanish researchers, Faustino Torrico brought the perspective from the endemic countries into the debate by recalling that most migrants were at risk of neglected diseases before leaving their countries of origin. Torrico identified key challenges in clinical research, among others, accessibility to health care, self exclusion of health benefits and migrants’ civil, cultural, economic, political and social rights. In the case of Chagas disease, he highlighted the need for better measurements of the problem, new tools for diagnosis, new drugs and biomarkers as cure criteria.

Last speaker in the session was José Muñoz, who also referred to Chagas disease but now from the perspective of a country that does not expel, but rather receive, migrants. Since the beginning of the century, when health professionals faced the new challenge of many Latin Americans looking for treatment and diagnosis without being prepared, much has been attained, he recalled: protocols for blood and organ donation were modified, physicians are much more aware of the disease, there are initiatives to control vertical transmission, disease management protocols are available and there is research ongoing on the identification of new drugs that would benefit patients in Europe and Latin America. On the contrary, he regretted the lack of more comprehensive social and epidemiological studies, better assessments of the burden of disease, new treatments and standardized definitions and diagnostics. In Muñoz’s view, prevalence, morbidity and mortality derived from Chagas disease were certainly influential in the abovementioned achievements, but the most crucial factors were the possibility of transmission and the presence of a group of researchers, which shows the important role scientists have to play in public health, he said.

Among key challenges for the future, Muñoz highlighted funding for research on imported diseases, particularly for community studies, and better use of the outcomes of social and anthropological research in clinical assistance.

During the turn of questions and answers, clinical research on immigrants’ health was depicted as an opportunity to fill evidence on neglected diseases, thanks to the availability of different technologies, specific biological conditions such as the absence of reinfection and the facility to monitor patients, which crucial in early phases of clinical assays. Funding also raised interest, as did the role of researchers in doing advocacy given the capacity of clinical research to bring forward neglected topics, although citizens also need to be more participative in the setting of priorities and in demanding better accountability of research, which should be evaluated according to its social impact, privileging groups that work on problems with immediate returns.
Finally, participants recognized that, although clinical work is very relevant, it does not deal with determinants of health problems, including the socioeconomic dimension and specific vulnerabilities to crucial problems such as mental health and violence. This makes interdisciplinary approaches a crucial challenge, with needed research ranging from basic knowledge to the study of equity issues.

Session 2  
Researching the social determinants of migrants’ health and improving access to healthcare

The anthropological, socioeconomic and community perspective on migrant’s health was leading during the session devoted to access to health care by migrants, and social determinants of health. Participants agreed on the complexities of dealing with such a heterogeneous population group as migrants, whose health is in turn determined by a variety of factors, some of them directly related to migration (social support, discrimination, stress and cultural factors), and others more closely linked to living conditions, poverty, legal structures, and the organization of healthcare services.

Marie Karen Kristiansen set the scene by defining health inequities as unfair and avoidable differences in health status within a given population, and highlighted the key role of policies in the distribution of money, power and resources and in encounters between migrants and health care services. In her view, a proper approach to such a complex phenomenon as migrants' health demands moving away from descriptive research and purely quantitative methodologies, undertaking instead collaborative, comparative and theoretically laden research that allows the disentanglement of different determinants of health and a better understanding of causal mechanisms for health inequities. Community and family studies, the recognition that people live in different arenas that have different impact in their health, and life span perspectives, are also crucial, she said, as risks begin before migration and persist years after even if migrants move up in socioeconomic factors.

In Kristiansen opinion, outcomes of social and anthropological qualitative research should inform policy making and the general public on what may happen if we make health care facilities accessible not only for migrants but also for other disadvantaged groups. However, we need not to forget that taking social determinants of health seriously implies targeting not only individuals but social structures as well, which makes migrants’ health a politically sensitive issue.

Kristiansen coincided with the morning’s speakers on the difficulty of finding common grounds for classification of migrants, and validated study instruments. “Wording is very important”, she said, as well as more refined statistical analysis that do not obscure, but rather highlight, complexities.

Ursula Karl-Trummer presented the abovementioned “Healthcare in nowHereland” (http://www.nowhereland.info/), an EU funded project on policy frameworks and practices on undocumented migrants, a group of population estimated to be of between 7 and 13% of the foreign population in Europe. Karl-Trummer identified three types of countries depending on whether migrants have not even access to emergency health care, hospitals can not deny emergency health care or governments provide access to from primary care on, irrespective of the person’s legal status. However, she warned that even if everyone has the same entitlement there may be important disparities in access to health care because of its costs.

Karl-Trummer proposed to undertake further research on successful experiences and good health practices both among Non Governmental and Governmental Organizations, and mentioned that migrants’ health care is facilitated by, among other factors, the availability of interpretation and cultural mediation services, flexible opening hours, appropriate staff training and outreach.
In her turn, Heide Castañeda also identified key gaps in the knowledge of social determinants of migrants’ health, including access to health care/expense care, clinical ethics, practical decision making by health care workers and administrators, medical implications of increased border control, the role of NGOs, occupational health hazards, oral health and public health threats derived from denial of care. She called for considering illegality as a specific axis when researching health disparities, given the biocultural effects of uncertain legal status and the stress of living in fear and insecurity. We also need to understand how illegality interacts with other problems like discrimination and poverty, and to go beyond the biomedical view when explaining issues such as progression to disease, where social issues like relative deprivation may have an important effect.

Castañeda stressed the importance of focusing on health outcomes rather than on access barriers, avoiding oversimplification and stereotyping of migrants when researching on their health care. She coincided that mixed quantitative and qualitative methods are needed, and that researchers are called to preventing systematic silencing of critical frames on the social determinants of health, an issue that is by definition politically charged. Above all, she concluded, research ought to provide useful insights and recommendations for healthcare policy makers and practitioners.

Josep María Comelles centred his intervention in the regrettable lack of representation of social sciences in medical research and medical training. He identified as a most crucial question how to manage cultural diversity and heterogeneity, both factors that are relevant not only from the point of view of health care receivers, but also of that of providers of health. It is crucial –he said- that the health sector accepts the role of social and cultural factors as determinants of health, the study of which is quite far away from the taxonomic criteria prevailing in clinical research.

In Comelles view, among most relevant research gaps are organizational cultures in primary health care across Europe, as many problems of access to health care derive from the rigidity of bureaucracies. He also called for dealing with the extremely high number of citizens, migrants or not, that do not go to any health care at all.

Comelles insisted in the need for anthropological research being done by properly trained scientists, as well as for a more fluid dialogue between biomedical and social researchers. He agreed that undocumented migrants are most vulnerable among the vulnerable, although it is extremely difficult to quantify the effect of living in such a state. As a conclusion, he stated that it may be the case that migrants are not the real problem, but rather the trigger to open a debate on the role of cultural and social factors in health within Europe.

During the discussion, a highlighted issue was the need for speeding up policy making, taking action even in the lack of comprehensive data. The message was that we need to continue building knowledge, but that we can also take action with what we already know from qualitative methods and talking to people. If they are not happy with how things are working, panellists said, this is enough to start changing things.

Lecture. A mollusc on the leg of a beetle: human activities and the global dispersal of vectors and vector-borne pathogens

Paul Reiter opened the second day of the meeting with a lecture on the dispersion of organisms (both vectors and pathogens), in particular that of Aedes albopictus, introduced worldwide from its original Asian ecosystems through the global trade of used tires, as he discovered while investigating the appearance of this mosquito in Houston, Texas, in 1985. Dispersion of organisms through the action of man is as old as travels, openings of roads, new forms of transportation and commerce, Reiter said; however, the current acceleration of trade poses specific challenges, as inspecting every container is absolutely unfeasible. As a result, Aedes albopictus, commonly called Asian tiger mosquito and vector for dengue and chikungunya, is currently a specific problem in Catalonia, where it was first discovered in Sant Cugat.
Reiter recounted other stories on tracking the origins of different imported diseases outbreaks, and went on to discussing whether global warming is affecting dispersal of vectors and pathogens. In his view, this is not the case, but rather globalization of trade and increasing travels, a situation in face of which all we can do is be vigilant and expect the unexpected. There is no solution, he added, as by the time a new vector or pathogen is recognized, it is usually already too late. We can always develop new surveillance systems and diagnostics methods and work in prevention before the problem occurs, but given that impact of interventions is doubtful from an epidemiologic point of view, in most occasions simple and stable sanitation is the only way to go.

Discussion after the lecture focused on the effect of climate change in vectors and diseases’ dispersion and pending questions such as Why there is no yellow fever in Asia, or why the WNV that spread so fast in USA, didn’t do so in Europe. It was also agreed that the ecology of the vector and behaviour of people are most influential, and therefore we won’t have malaria in Europe again despite the vector is still present in the continent.

Session 3
Relevance of imported diseases and the possibility of their introduction into Europe

Assessing the risk of arboviral disease transmission in Catalunya was the subject of next session of the meeting. Ned Hayes, chair of the session, explained as an introduction that arboviral diseases have two separate cycles, affecting humans as incidental hosts only by accidental transmission. The most spectacular dispersion of such virus is that of the WNV that after a 1999 outbreak in New York City, spread rapidly across USA, but not throughout Latin America, which is indeed intriguing, according to him. Chikungunya, transmitted by Aedes aegypti and Aedes albopictus, spread from Africa to Asia and then to Italy, with a mutation of the virus on its way. There have also been cases of autochthonous transmission of dengue and chikungunya in France in Croatia during the last few years. The question that remains is whether there is a true risk of arbovirus transmission in Catalunya, given the current presence of the tiger mosquito. Answering this question was the task of next speaker, Carlos Aranda, who talked from the point of view of the entomologist.

After exposing the different types of vectors existing in Europe and the diseases they can transmit, including yellow fever, dengue and malaria, Aranda entered the debate on the effect of climate change in the distribution of vector borne diseases, as vectors are very dependant on rainfall, temperature and moist, but also -and mostly- on human activity, which can be clearly noted in the case of the tiger mosquito that breeds in small habitats like patios full of flowerpots. Other aspects that affect vectors in mosquito borne disease transmission are vectorial competence and vectorial capacity, ecology, globalization (trade, travels), socioeconomical factors and the reduction of biodiversity, which may increase transmission.

Aranda mentioned recent outbreaks of WNV in Greece and the few cases detected in Spain, as well as the chikungunya and dengue cases in France and Croatia, most probably transmitted by Aedes albopictus. Finally, he wondered whether this is an issue related to climate change, globalization, environmental factors, decreasing of biodiversity, or trade, but stressed that the hardest is to know how to work against transmission.

On his side, Xavier Rodó defended the role of climate in diseases by facilitating or making difficult their spread. Rodó explained mathematical models used to understand how climate, together with immunity, susceptibility and other factors, acts in modelling diseases, and gave some examples of observed correlation between cholera incidence and extreme rainfall. Rodó made clear that in the presence of appropriate sanitation systems rainfall would have no effect, but in many countries such system does not exist. Climatic extremes are also often related to rises in disease incidence and outbreaks, with some predictability detected. In other cases such as that of Leishmania infantum, outbreaks occur when human and non human cycles approach.
In Rodó’s opinion, future challenges for research include gathering information on reservoirs, the vector dynamics and its interaction with human population, as to have enough data to inform models that in turn allow better understanding of the disease behaviour.

Mathias Niedrig presented the European Network for Diagnostics of "Imported" Viral Diseases, and showed a general overview of vector borne diseases, reservoirs for virus infections, distribution of flaviviruses and most frequent diagnostics in migrants into Europe and European international travellers. Africa is the epicentre of viral threats, he said, but dispersion is favoured by the increase of world tourism, immigration, international transport of goods and vectors, living conditions and animal migrations.

Niedrig noted differences in diagnostics of travellers, suffering mostly from diarrhoea, viral syndromes, respiratory infections and malaria, from those of migrants recently arrived, suffering mainly from malaria, AIDS-HIV-syphilis-gonorrea, tuberculosis, hepatitis, respiratory infections, diarrhoea, viral syndromes, and rabies. To be prepared, he added, we need to keep in mind the situation both in endemic and receiving countries, as the increasing urbanization in western Africa affects disease dynamics, as do the presence of introduced vectors. The 2007 outbreak of Chikungunya in Italy infected 292 people out of a single infected traveller from India, and there were 100 cases before it was recognized as a new disease.

Niedrig concluded by calling for a better training of physicians that ought to consider all circumstances and be able to recognize imported diseases. Finally he highlighted the importance of diagnostics methods, not only by PCR but also by serological tests during the later phases of infection. Collaboration with veterinarians in detecting zoonotic viral diseases, and better education of risk of contagion, are also crucial, he concluded.

The need for intersectorial collaboration was also highlighted during the discussion, as well as for better surveillance systems, good diagnostics, informed physicians and bureaucratic structures receptive enough to the emergence of new diseases.

Another subject of debate was how transmission is affected by the killing of adult mosquitoes, given the lack of evidence that there has any effect and the controversial aspects of spreading insecticide in protected wetlands. Discussants also talked about the difficulty to find infected mosquitoes in entomological surveys, the scarcity of mosquito control services in Europe and the potential use of climate models to inform prevention measures.

Regarding the biggest enigmas for current researchers, a number was listed: recrudescence of virus in nature (appearance and disappearace), interaction among viral strains, zoonotic diseases, fund raising for surveillance of diseases that are not causing an immediate problem, the challenges of models that do not always predict what actually happens (as in the recent catastrophic effects predicted for influenza), the difficulties and perils of making predictions on vector borne diseases based on climate or bird migrations, and intriguing cases such as WNV outbreaks in Romania and differences in disease transmission of this virus in Europe and America.

**Symposium**

A symposium on challenges that imported diseases pose to Catalonia opened debate to a broader audience during the afternoon of the second day. After short presentations of the International Centre for Scientific Debate and “la Caixa” Foundation, Antoni Trilla, head of Preventive Medicine and Epidemiology at the Barcelona Hospital Clinic, presented the speakers and the subject, which he depicted as always uncertain given complex links of diseases with people, climate, water, rainfall, travels, behaviours and many other factors that affect transmission. The leading question was whether cases recently reported in Europe are only anecdotes or pose a true challenge, and how we should prepare. The conclusion was that despite it is no likely that imported diseases may change the general distribution of disease burden in Catalonia, their presence may affect the economy of territories and we need to be prepared.
Carlos Aranda was the first to take the floor exposing that good transmitters of the WNV disease, dengue, malaria, yellow fever and chikungunya are currently present in Catalonia, which means that the risk of introduction of new diseases is a true one. However, he recalled historical cases of disappearance of mosquito like Aedes aegypti, most probably due to stopping of the constant reintroduction of the vector in a particular type of ships to the fact that this species does not tolerate severe winters. Despite these vectors, Aranda made clear that given the epidemiological patterns observed to date no significant outbreaks or diffusion of dengue nor chikungunya are foreseeable, and was sceptical on the possible elimination of specific species of mosquitoes in Europe, where they are not perceived as a significant threat.

Pedro Alonso discussed on in his view extremely low risk of malaria becoming again endemic in Spain, a malarious territory until 50 years ago. Malaria, he recalled, reached very northern latitudes, though currently it concentrates in sub Saharan Africa where he plays a crucial role in maintaining the vicious circle of poverty and disease.

After giving an historical overview of the malaria burden in Europe during the last 15 centuries, most probably affected by the likely introduction of more efficient vectors, he dealt with an alleged case of autochthonous malaria transmission in Spain in 2010. He declared himself very sceptical about this being the case, as no blood analysis were systematically made to demonstrate where the infection came from and that parasites were not actually transmitted by an imported mosquito, even if the patient had not travelled abroad. Beyond this specific case, he explained that the risk of having again endemic malaria depends on the so called malarious potential, which is dependent on the local vulnerability (gametocyte carriers in a community), receptivity of the vector and infectivity, which are all extremely low. Besides, vectors in Spain can only transmit Plasmodium vivax, a less lethal species than the African Plasmodium falciparum.

Ned Hayes described a number of events related to imported diseases, with the objective of framing the question on what is the risk of these arboviral diseases being transmitted in Catalonia and the rest of Spain. He explained that it is relevant that arboviruses are transmitted by arthropods in a cycle human-mosquito-humans, allowing to reaching rates up to 40% of the population infected with dengue or chikungunya, in comparison to the 3-5% rates of WNV where the primary cycle is between birds and mosquitoes and humans are only infected by accident.

Hayes recalled the spread of WNV throughout the United States and of chikungunya from Africa to Asia and then Italy, as well as dengue transmission in France and Croatia in 2010, and left the floor open to pending questions such as the risk of introduction in Europe of such diseases and the different epidemiological behaviour of WNV in North and South America.

Finally, Antoni Plasencia deepened in the concept of risk, decision making and confidence as key issues of public health, a field comprising such varied activities as surveillance, analysis, intervention, promotion and prevention. The particularity of public health, he added, is that its action is not clearly perceived until something unexpected happens or there is an emergency, and this is hard to communicate.

In Catalonia, every week there is an average of 20 alerts that are dealt with through research, leadership, evaluation and communication, among other responses, Plasencia said. Besides, there are also surveillance systems in place, established in coordination with other departments to identify significant events such as dead birds, mosquitoes or veterinary diseases.

Plasencia called for a better communication of risks and for the involvement of experts both to create a network of reference centers and to widen the network of interlocutors to health workers, citizens, surveillance services and the media, and ended his intervention with a mention to the recently reformed Catalan public health, which he expects will be crucial for improving their tasks.
For the future, panellists recalled the pending issue of observing whether this spring and summer there is chikungunya transmission following last year’s case, and researching on a variety of subjects including resistance to winter by different species of mosquito or the role of climate in the prevalence of diseases, a highly controversial issue. While in South America there is a fairly clear relation between malaria incidence and the ‘Niño’ and the ‘Niña’ phenomena, there are no good descriptions in sub-Saharan Africa that indicate such trends. In any case, it was agreed, climate affects transmission for its dependence on rainfall, temperature and moist, which does not mean however that epidemiological and distribution patterns are actually being modified by the global climate change. Although panellists recognized that there may be changes in the distribution of vectors, most of them agreed that this not seem to be the case and that it is simpler to attribute dispersion of pathogens to transport, travels and trade, turning urbanization, overpopulation, surveillance, diagnostics and new methods to eliminate the vector into the most urgent and challenging issues.

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