

the duration of fever was longer, and that the density of asymptomatic parasites was significantly higher during the pregnancy and in the following two months.

In areas where malaria is endemic, pregnant women are the main group of adults at risk. Infection by *Plasmodium falciparum*, one of four parasites that cause malaria in humans, increases the chances of maternal anaemia, abortion, stillbirth, prematurity, growth retardation in the womb, and low birth weight.

In sub-Saharan Africa, where 90% of deaths from malaria occur, it is infants who are most likely to die as a result of maternal infection. Malaria is one of the main reasons why 3.5 million low-birth-weight infants are born each year in the region.

Precisely why the risk of malaria increases in pregnancy is not clear, and several theories have been put forward, including changes to the cellular immune responses affecting protection.

In the new study, researchers analysed 71 pregnancies in 38 women in a village in Senegal. The women were monitored for two years, from the year before conception through to 12 months after the birth. In an accompanying editorial (*New England Journal of Medicine*, 343: 651–652), Dr Bernard Nahlen of the World Health Organization in Geneva, challenged one of the conclusions of the researchers, namely that the increased susceptibility found during the immediate post-birth period may have severe consequences. “[The authors] provide no clinical data to support this conclusion. Thus, it is difficult to accept their recommendations that weekly chemoprophylaxis against malaria should be continued for at least two months after delivery, and it unlikely that extension of this strategy to the postpartum period would result in a major decrease in the burden of malaria among mothers,” he said.

He also pointed out that the emergence of chloroquine resistance and problems of compliance have limited the effectiveness of weekly chemoprophylaxis with chloroquine. The latest studies in Kenya and Malawi (*American Journal of Tropical Medicine and Hygiene*, 1998, 59: 813–822; *Annals of Tropical Medicine and Parasitology*, 1998, 92: 141–150) have found that a new and simpler control strategy of two doses of sulfadoxine–pyrimethamine has proved effective in decreasing maternal anaemia and low birth weight.

Dr Nahlen added that malaria during pregnancy is potentially the most controllable part of the global malaria problem. “However, despite the availability of an effective control strategy, the implementation of programmes to prevent malaria in pregnancy has been rare. WHO’s Roll Back Malaria Programme has brought a new emphasis to malaria-control efforts and has identified the need for control strategies in areas of intermittent or unstable *P. falciparum* transmission, where women have little acquired immunity, as well as in areas of *P. vivax* transmission.”

WHO now recommends intermittent preventive treatment with an effective, preferably one-dose, antimalarial drug such as sulfadoxine–pyrimethamine in areas where *P. falciparum* is resistant to chloroquine and sensitive to sulfadoxine–pyrimethamine. Such intermittent treatment should be made available to women in highly endemic areas, especially for women in their first and second pregnancies. Treatment should be started from the second trimester onwards at intervals of not less than one month apart. ■

Roger Dobson, *Abergavenny*

Outdoor air pollution has a large impact on public health

Outdoor air pollution, although usually of small immediate risk to the health of individuals, has a large impact on long-term public health in Europe, says a report presented at the World Congress on Lung Health in Florence this September. The report was also published to coincide with the congress (*Lancet*, 2000, 356: 795–801).

Dr Nino Künzli from the Institute for Social and Preventive Medicine at the University of Basel, Switzerland, headed a team of specialists who estimated the impact of outdoor and traffic-related air pollution on public health in Austria, France and Switzerland.

The authors attributed around 6% of total mortality or more than 40 000 deaths per year to air pollution. There were more than 48 000 hospital admissions, and about half a million asthma attacks. Traffic accounted for half of this public health impact and also for 25 000 new cases of chronic bronchitis, 290 000 episodes

of bronchitis in children, and 16 million person-days of restricted activities.

Total costs estimates, soon to be published in an Organisation for Economic Cooperation and Development report by the economist Dr Heini Sommer and colleagues, reached 600–700 Euro per capita per year, in all three countries, giving a final total cost of approximately 50 000 million Euro. However the estimates are based on prudent assumptions and the overall impact may be larger.

These findings are significant because they are the first data that can be compared across the participating countries. Cross-country comparisons are possible because population exposure was modelled for each square kilometre and identical assumptions and methods were used.

Given that air pollution is mainly due to the excessive burning of fossil fuels, the promotion of energy efficiency and renewable energies is urgently required to protect both the climate and public health. Dr Künzli emphasized the need for international clean air regulation and enforcement. He said: “the paper strongly underlines the public health relevance of WHO efforts to improve air quality. The opportunistic decisions of governments in many countries to subsidize the use of gasoline and, thus, to support air pollution and the related health effects, is a drastic example for the fundamental failure of politicians to base decisions on scientific evidence, public health relevance, and the vision of sustainable development. WHO will have a long way to go.”

Independently, WHO held a strategy meeting on Air Quality and Health in Geneva in the second part of September that identified major areas to be addressed on the way to creating a WHO strategy on air pollution and health. “WHO would like to provide its 191 Member States with a sound environmental policy framework and actions applicable to different settings and to different socioeconomic conditions” explained Dr Michael Repacholi, WHO Coordinator for Occupational and Environmental Health. He added: “But first all parties involved should hammer out a unified methodology for collecting comparable data worldwide to support science-based assessments of health impacts”. ■

Tudor Toma, *London*