



## Urban Health Bulletin: A Compendium of Resources

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[http://www.ehproject.org/uh/urban\\_health.html](http://www.ehproject.org/uh/urban_health.html)

The *Urban Health Bulletin* is a periodic update of USAID and non-USAID information on a range of urban health issues.

In this issue, we highlight 2 reports and 23 abstracts of recently published journal articles covering a diverse set of issues. Links to the full-text and/or author email addresses are included if available.

We welcome your comments and suggestions. If you are not already, please send your email address to receive future *Urban Health Bulletins*. If you have questions or comments about urban health issues, please contact Anthony Kolb, USAID Urban Health Advisor at: [akolb@usaid.gov](mailto:akolb@usaid.gov)

### Table of Contents

<a href="#">Urban Health Analysis</a>	<a href="#">Urban Health Programming</a>	<a href="#">Urban Environmental Health</a>	<a href="#">Urban Vector Disease</a>	<a href="#">HIV/AIDS</a>
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## Urban Health Analysis

### Reports/Case Studies

International Society for Urban Health. **Health and Social Conditions in the Dhaka Slums**. Link to full-text: <http://www.isuh.org/download/dhaka.pdf>

Data from 100 heads of households in the slums of Dhaka was collected by a 115-question survey, which included questions on migration, housing, rent, security, water, sewage, child and adult health, health care, mortality, contraception, nutrition, work and income. Results: The survey represented a total 511 people. Habitation in the slums was due to economic migration in 93%. Subjects had 296 children, 89 of whom died. Protein consumption was scarce. 81% had no schooling. Contraception was used by 68%. Acute and chronic health conditions were reported. Work was mainly in the service sector, household income was 56.4 USD/month. Conclusions: Slum living has important social and health consequences. The majority described migrated to Dhaka for economic reasons, and once there had unacceptable levels of malnutrition, hygiene and health, deprivation of essential services, and financial instability. Meaningful data is required to inform public policy in order to formulate poverty alleviation strategies.

Urban Health Resource Centre. (2007). **State of Urban Health in Delhi.**

Link to full-text:

<http://www.uhrc.in/name-CmodsDownload-index-req-viewsingledownload-lid-63.html> - This report is an attempt to bridge the information gap on health of the urban poor in Delhi. UHRC analyzed the National Family Health Survey data to arrive at health estimates of the urban poor and additionally undertook analyses of policies and programs aimed at improving health of urban poor in the state.

### Journal Articles

*Arch Dis Child.* 2007 Oct 4

#### **Infant morbidity in an Indian slum birth cohort.**

Gladstone BP, Muliylil J, Jaffar S, Wheeler JG, Lefevre AM, Iturriza-Gomara M, Gray JJ, Bose A, Estes MK, Brown DW, Kang G.

*Objective:* To establish incidence rates, clinic referrals, hospitalizations, mortality rates and baseline determinants of morbidities among infants in an Indian slum. Design A community-based birth cohort with twice-weekly surveillance.

*Setting:* Vellore, South India. Subjects 452 newborns recruited over 18 months, followed through infancy.

*Main outcome measures:* Incidence rates of gastrointestinal illness, respiratory illness, undifferentiated fever, other infections and non infectious morbidity. Rates of community-based diagnoses, clinic visits and hospitalization. Rate ratios of baseline factors for morbidity. Results Infants experienced 12 episodes (95% confidence interval (CI): 11 to 13) of illness; spending about one fifth of their infancy with an illness. Respiratory and gastrointestinal symptoms were most common with incidence rates (95% CI) of 7.4 (6.9 to 7.9) and 3.6 (3.3 to 3.9) episodes per child year. Factors independently associated with a higher incidence of respiratory and gastrointestinal illness were age (3 to 5 months), male sex, cold/wet season and household involved in 'beedi'work. The rate (95% CI) of hospitalization, mainly for respiratory and gastrointestinal illness, was 0.28 (0.22 to 0.35) per child-year. *Conclusions:* The morbidity burden due to respiratory and gastrointestinal illness is high in a south Indian urban slum, with children ill for approximately one-fifth of infancy, mainly with respiratory and gastrointestinal illnesses. The risk factors identified were younger age, male sex, cold/wet season and household involvement in 'beedi'-work.

*J Bras Pneumol.* 2007 Jun; 33(3):318-22.

#### **Peculiarities of tuberculosis control in a scenario of urban violence in a disadvantaged community in Rio de Janeiro, Brazil.** [Article in Portuguese]

Souza FB, Villa TC, Cavalcante SC, Ruffino Netto A, Lopes LB, Conde MB.

Escola de Enfermagem Alfredo Pinto, Universidade Federal do Estado do Rio de Janeiro, Rio de Janeiro, RJ, Brasil.

*Objective:* To describe the difficulties and peculiarities encountered by health professionals during the treatment and investigation of contacts of tuberculosis (TB) patients in disadvantaged communities.

*Methods:* A qualitative study carried out at health care facilities in Health Programming Area 1.0, located in the city of Rio de Janeiro, Brazil, which has a TB

incidence rate of 240/100,000 inhabitants. From among the professionals responsible for visiting and treating TB cases and their contacts, two home visit agents and one clinical nurse were selected to be interviewed for the study. Data were transcribed and structured in the form of quotations, emphasizing the predominant ideas.

*Results:* The central ideas focus on the issue of violence, one significant facet of which is the set of rules imposed by narcotraffickers, and on the barriers to the movement of patients/health professionals for TB treatment, as well as on public safety (police).

*Conclusion:* This study provides public health officials, as well as institutions that graduate health professionals, data for reflection and analysis of the difficulties that urban violence creates for the control of TB in a disadvantaged community.

*J Coll Physicians Surg Pak. 2007 Sep; 17(9):527-30.*

### **Perceptions of a literate community regarding causation, presentation and treatment practices of intestinal worms among children.**

Mubeen SM, Subhani A, Hassan SS, Barni F. Department of Community Medicine, Hamdard College of Medicine and Dentistry, Karachi.

*Objective:* To find out the perceived common causes of intestinal worms, their presentations and treatment options taken by the respondents, among children.

*Design:* A cross-sectional study

*Place and Duration of Study:* Urban suburbs of Karachi during April and June 2004.

*Subjects and Methods:* A total of 2000 families responded to a self-administered questionnaire that was designed to obtain the study objectives. A single adult individual from each family was asked to respond to the questionnaire. Families having health care workers or health professionals were excluded. Medical students were properly trained to ensure competence in collecting a reliable data. Results: The majority of the total respondents were females (66.3%) and were between 15-25 years of age (mean age = 25.4 years) with 100% literacy rate. A noticeable number of respondents (31%) revealed that overeating of sugar causes intestinal worms and that they mainly presented as altered eating habits / appetite (51.8%), abdominal pain (40.8%) and generalized weakness (26.3%). Regarding perceptions of drug treatment, nearly 2/3 of the respondents felt that the de-worming agent should be given to suspected child only ( $p < 0.001$ ), whereas 65% of the participants expected to observe worms after de-worming treatment ( $p < 0.001$ ). Contrary to the common use of self-medication in most other illnesses, self-treatment of worms on suspicion was declared by only 21.5% of the respondents ( $p < 0.0001$ ).

*Conclusion:* This study confirms that misconceptions about intestinal worms in children were prevalent within the community. In addition to the issue of environmental sanitation, removal of the mistaken beliefs is a prerequisite for an effective and long-lasting parasitic control among children.

*J Pak Med Assoc. 2007 Aug; 57(8):391-5.*

### **Assessment of EPI (expanded program of immunization) vaccine coverage in a peri-urban area.**

Siddiqi N, Khan A, Nisar N, Siddiqi AE. Department of Epidemiology, Michigan State University, USA.

*OBJECTIVE:* To determine the age-appropriate EPI coverage of under one year old

children and Tetanus Toxoid (TT) coverage of their mothers (15-49 years) in peri-urban Karachi and to determine the factors associated with low coverage.

*METHODS:* A cross-sectional study was carried out by utilizing WHO thirty-cluster sampling technique, seven households with infants, were randomly selected per cluster. Child's mother was interviewed by using a structured pre-tested questionnaire, regarding the EPI coverage of her child, her own TT coverage and other demographic and potential risk factors for low vaccination coverage.

*RESULTS:* Forty five percent of the infants were age-appropriately vaccinated. The TT coverage of mothers for the index pregnancy was 57.3% for both doses of the vaccine. In the multivariate model four factors i.e., type of house construction (proxy indicator of socio-economic status), mother's TT vaccination status, years since marriage and parents' educational status were found to be significantly associated with children's immunization status.

*CONCLUSIONS:* We concluded that the EPI coverage of Gadap town, Karachi is quite low. Education of both parents plays a significant role in child's immunization coverage. Improving the educational status of parents can potentially improve the immunization coverage.

*J Urban Health 84(1) May 2007 Supplement*

### **Emerging Disease Burdens and the Poor in Cities of the Developing World**

Link to full-text: <http://www.springerlink.com/content/900016p183818601/fulltext.pdf>

Campbell T, Campbell A.

Patterns of future urban growth, combined with advances in the treatment of traditional scourges of communicable diseases, will cause a shift in the burden of disease toward category 2 (noncommunicable) and 3 (injury) conditions over the next 30 years. Communicable diseases, particularly HIV/AIDs, will continue to be the most important killers among the poor. However, new risks will emerge for several reasons. First, the marked sprawl of cities in the developing world will make access to care more difficult. Second, increasing motor vehicles and the likelihood of inadequate infrastructure will make air pollution and accidents in road traffic more common than in the past. Third, impoverished urban populations have already shown a propensity toward undernourishment, and its obverse, obesity, is already emerging as a major risk. Also, the large projected increase in slums suggests that violence and homicide will become a more important burden of health, and very large hazards will be created by fire-prone, insubstantial dwellings that will house nearly two billion people by 2030. In addition, decentralized governance will exacerbate the tensions and discontinuities that have plagued the management of health issues on the urban fringe over the past decade. Accordingly, public health agencies will need to adjust to the regional and country-specific factors to address the changing profile of risk. This analysis suggests that four factors – levels of poverty, speed of city growth, sprawl in cities, and degree of decentralization – will have importance in shaping health strategies. These factors vary in pace and intensity by region, suggesting that health care strategies for Category II and III conditions will need to be differentiated by region of the world. Also, interventions will have to rely increasingly on actors outside the ranks of public health specialists.

*Natl Med J India. 2007 May-Jun; 20(3): 115-20.*

**Are the urban poor vulnerable to non-communicable diseases? A survey of risk factors for non-communicable diseases in urban slums of Faridabad.**

Anand K, Shah B, Yadav K, Singh R, Mathur P, Paul E, Kapoor SK.

Centre for Community Medicine, All India Institute of Medical Sciences, Ansari Nagar, New Delhi 110029, India. [kanandiyer@yahoo.com](mailto:kanandiyer@yahoo.com)

**BACKGROUND:** Non-communicable diseases have modifiable risk factors, which are easy to measure and can help in planning effective interventions. We established a community-based sentinel surveillance to estimate the prevalence and level of common risk factors for major non-communicable diseases as part of a joint Indian Council of Medical Research/WHO initiative.

**METHODS:** This survey was done from February 2003 to June 2004 and included 1260 men and 1304 women 15-64 years of age living in urban slum areas of Ballabgarh block, Faridabad district, Haryana. A list of all slums in Ballabgarh block was obtained from the Municipal Corporation of Faridabad. Slums were selected by stratified cluster sampling. All households in the selected slums were visited and men and women interviewed in alternate households. The study instrument was based on the STEPS approach of WHO. It included questions related to tobacco use, alcohol intake, diet, physical activity, and history of treatment for hypertension and diabetes mellitus. Height, weight, waist circumference and blood pressure were measured. To estimate prevalence at the population level, age adjustment was done using the urban Faridabad population structure from the 2001 Census of India.

**RESULTS:** The age-adjusted prevalence of smoking among men was 36.5% compared with 7% in women. Bidi was the predominant form of smoked tobacco used. The use of smokeless tobacco was reported by 10.2% of men and 2.9% of women. While 26% of men reported consuming alcohol in the past 1 year, none of the women did. The mean number of servings per day of fruits and vegetables was 2.7 for men compared with 2.2 for women. Overall, only 7.9% and 5.4% of men and women, respectively took  $\geq$  5 servings per day of fruits and vegetables. Women were more likely to be physically inactive compared with men (14.8% v. 55%); 67% of men and 22.8% of women reported mean physical activity  $>$  150 minutes per week. The mean body mass index (BMI) was lower in men than in women (20.9 v. 21.9 kg/m<sup>2</sup>). The prevalence of overweight (BMI  $\geq$  25 kg/m<sup>2</sup>) was 16% among men and 21.9% among women. The prevalence of hypertension (blood pressure  $\geq$  140/ $\geq$  90 mmHg or on an antihypertensive drug) was 17.2% in men and 15.8% in women.

**CONCLUSION:** The high prevalence of risk factors for noncommunicable diseases across all age groups in this urban slum community indicates the likelihood of a high future burden of illness. Immediate action for prevention and control is required to prevent the situation from worsening.

*Public Health. 2007 Sep 18*

**Socio-demographic characteristics of children infested with scabies in densely populated communities of residential madrasahs (Islamic education institutes) in Dhaka, Bangladesh.**

Karim SA, Anwar KS, Khan MA, Mollah MA, Nahar N, Rahman HE, Al Mamun M, Goni N, Hossain MM, Rahman MS, Begum HA, Das SK.

Department of Dermatology, Holy Family Red Crescent Medical College Hospital, Eskaton, Dhaka 1000, Bangladesh.

**BACKGROUND:** Outbreaks of scabies in institutions and the socio-economic consequences have not been reported from overpopulated countries such as Bangladesh.

**STUDY DESIGN:** A community-based study among children from six residential Islamic education institutes (madrashas) in Dhaka. Multistage random sampling was used.

**OBJECTIVES:** To study the socio-economic profile, water-sanitation facilities, personal hygiene and living conditions of these children.

**METHODOLOGY:** Direct interviews were used to collect the data and clinical check up was performed in all children.

**RESULTS:** In total, 492 children received clinical check-ups; 92.5% were boys (mean age: 11.2+/-2.4 years). 63.4% of fathers and 98.5% of mothers were either illiterate or had only received primary education, 55.1% of fathers were in low-paid labouring jobs, and 99% of mothers were housewives. Of the 98% of children who had scabies, 71% had been re-infected (96% during the winter). Randomly assigned anti-scabies drugs revealed an average cure rate of 85.5%. Seventy-four percent of children were living in poorly ventilated buildings with overcrowded sleeping arrangements. They had poor personal hygiene: 21% shared towels; 8% shared undergarments; 30% shared bed linen; and 81% kept their used clothes on a communal line or shelf. Sanitation was also poor: 39% bathed infrequently, although 97% carried out mandatory ablution. Most children (61%) washed their clothes (including undergarments) two or three times a fortnight, 35% did so every 2-3 days, and 3.7% washed their clothes on alternative days. Disease severity and re-infection were associated with infrequent washing of clothes ( $P<0.001$ ) and bed linen ( $P<0.001$ ), overcrowded sleeping arrangements ( $P<0.001$ ) and infrequent bathing ( $P<0.001$ ) with soap ( $P<0.001$ ). This was further related to household income ( $P<0.001$  for both).

**CONCLUSION:** The study findings have potentially dangerous implications for public health. Immediate attention should be given to developing a sustainable long-term intervention programme to combat scabies hyperendemicity, and to save thousands of children from impending complications.

## Urban Health Programming

*BMC Pregnancy Childbirth. 2007 Oct 11; 7(1):23*

### **Use of antenatal services and delivery care in Entebbe, Uganda: a community based survey.**

Tann CJ, Kizza M, Morison L, Mabey D, Muwanga M, Heiner G, Elliott AM.

**BACKGROUND:** Disparities in perinatal health care occur worldwide. If the UN Millennium Development Goals in maternal and child health are to be met, this needs to be addressed. This study was conducted to facilitate our understanding of the changing use of maternity care services in a semi-urban community in Entebbe Uganda and to examine the range of antenatal and delivery services received in health care facilities and at home.

**METHODS:** We conducted a retrospective community survey among women using structured questionnaires to describe the use of antenatal services and delivery care.

*RESULTS:* In total 413 women reported on their most recent pregnancy. Antenatal care attendance was high with 96% attending once, and 69% the recommended four times. Blood pressure monitoring (95%) and tetanus vaccination (91%) were the services most frequently reported and HIV testing (47%), haematinics (58%) and presumptive treatment for malaria (66%) least frequently. Hospital clinics significantly outperformed public clinics in the quality of antenatal service. A significant improvement in the reported quality of antenatal services received was observed by year ( $p < 0.001$ ). Improvement in the range and consistency of services at Entebbe Hospital over time was associated with an increase in the numbers who sought care there ( $p = 0.038$ ). Although 63% delivered their newborn at a local hospital, 11% still delivered at home with no skilled assistance and just under half of these women reported financial/transportation difficulties as the primary reason. Less educated, poorer mothers were more likely to have unskilled/no assistance. Simple newborn care practices were commonly neglected. Only 35% of newborns were breastfed within the first hour and delayed wrapping of newborn infants occurred after 27% of deliveries.

*CONCLUSIONS:* Although antenatal services were well utilised, the quality of services varied. Women were able and willing to travel to a facility providing a good service. Access to essential skilled birth attendants remains difficult especially for less educated, poorer women, commonly mediated by financial and transport difficulties and several simple post delivery practices were commonly neglected. These factors need to be addressed to ensure that high quality care reaches the most vulnerable women and infants.

*Bull World Health Organ. 2007 Aug; 85(8):580-5.*

### **Can Malawi's poor afford free tuberculosis services? Patient and household costs associated with a tuberculosis diagnosis in Lilongwe.**

Kemp JR, Mann G, Simwaka BN, Salaniponi FM, Squire SB.

Equi-TB Knowledge Programme, Malawi and Liverpool School of Tropical Medicine, UK. [jkemp@africa-online.net](mailto:jkemp@africa-online.net)

*OBJECTIVE:* To assess the relative costs of accessing a TB diagnosis for the poor and for women in urban Lilongwe, Malawi, a setting where public health services are accessible within 6 kilometers and provided free of charge.

*METHODS:* Patient and household direct and opportunity costs were assessed from a survey of 179 TB patients, systematically sampled from all public and mission health facilities in Lilongwe. Poverty status was determined from the 1998 Malawi Integrated Household Survey (MIHS).

*FINDINGS:* On average, patients spent US\$ 13 (MK 996 or 18 days' income) and lost 22 days from work while accessing a TB diagnosis. For non-poor patients, the total costs amounted to 129% of total monthly income, or 184% after food expenditures. For the poor, this cost rose to 248% of monthly income or 574% after food. When a woman or when the poor are sick, the opportunity costs faced by their households are greater.

*CONCLUSION:* Patient and household costs of TB diagnosis are prohibitively high even where services are provided free of charge. In scaling up TB services to reach the Millennium Development Goals, there is an urgent need to identify strategies for diagnosing TB that are cost-effective for the poor and their households.

**Health care utilisation under the 30-Baht Scheme among the urban poor in Mitrapap slum, Khon Kaen, Thailand: a cross-sectional study.**

Coronini-Cronberg S, Laohasiriwong W, Gericke CA.

*BACKGROUND:* In 2001, the Government of Thailand introduced a universal coverage scheme with the aim of ensuring equitable health care access for even the poorest citizens. For a flat user fee of 30 Baht per consultation, or for free for those falling into exemption categories, every scheme participant may access registered health services. The exemption categories include children under 12 years of age, senior citizens aged 60 years and over, the very poor, and volunteer health workers. The functioning of these exemption mechanisms and the effect of the scheme on health service utilisation among the poor is controversial.

*METHODS:* This cross-sectional study investigated the prevalence of 30-Baht Scheme registration and subsequent self-reported health service utilisation among an urban poor population in the Teparuk community within the Mitrapap slum in Khon Kaen city, northeastern Thailand. Furthermore, the effectiveness of the exemption mechanisms in reaching the very poor and the elderly was examined. Factors for users' choice of health facilities were identified.

*RESULTS:* Overall, the proportion of the Teparuk community enrolled with the 30-Baht Scheme was high at 86%, with over one quarter of these exempted from paying the consultation fee. User fee exemption was significantly more frequent among households with an above-poverty-line income (64.7%) compared to those below the poverty line (35.3%),  $\chi^2$  (df) = 5.251 (1); p-value = 0.018. In addition, one third of respondents over 60 years of age were found to be still paying user fees. Self-reported use of registered medical facilities in case of illness was stated to be predominantly due to the service being available through the scheme, with service quality not a chief consideration. Overall consumer satisfaction was high, especially among those not required to pay the 30 Baht user fee.

*CONCLUSION:* Whilst the 30-Baht Scheme seems to cover most of the poor population of Mitrapap slum in Khon Kaen, the user fee exemption mechanism only works partially with regard to reaching the poorest and exempting senior citizens. Service utilisation and satisfaction are highest amongst those who are fee-exempt. Service quality was not an important factor influencing choice of health facility. Ways should be sought to improve the effectiveness of the current exemption mechanisms.

## **Urban Environmental Health**

*Waste Manag. 2007 Sep 8*

**Household solid waste characteristics and management in Chittagong, Bangladesh.**

Sujauddin M, Huda SM, Hoque AT. Institute of Forestry and Environmental Sciences, Chittagong University, Chittagong-4331, Bangladesh.

Solid waste management (SWM) is a multidimensional challenge faced by urban authorities, especially in developing countries like Bangladesh. We investigated per capita waste generation by residents, its composition, and the households'

attitudes towards waste management at Rahman Nagar Residential Area, Chittagong, Bangladesh. The study involved a structured questionnaire and encompassed 75 households from five different socioeconomic groups (SEGs): low (LSEG), lower middle (LMSEG), middle (MSEG), upper middle (UMSEG) and high (HSEG). Wastes, collected from all of the groups of households, were segregated and weighed. Waste generation was 1.3kg/household/day and 0.25kg/person/day. Household solid waste (HSW) was comprised of nine categories of wastes with vegetable/food waste being the largest component (62%). Vegetable/food waste generation increased from the HSEG (47%) to the LSEG (88%). By weight, 66% of the waste was compostable in nature. The generation of HSW was positively correlated with family size ( $r(xy)=0.236$ ,  $p<0.05$ ), education level ( $r(xy)=0.244$ ,  $p<0.05$ ) and monthly income ( $r(xy)=0.671$ ,  $p<0.01$ ) of the households. Municipal authorities are usually the responsible agencies for solid waste collection and disposal, but the magnitude of the problem is well beyond the ability of any municipal government to tackle. Hence dwellers were found to take the service from the local waste management initiative. Of the respondents, an impressive 44% were willing to pay US\$0.3 to US\$0.4 per month to waste collectors and it is recommended that service charge be based on the volume of waste generated by households. Almost a quarter (22.7%) of the respondents preferred 12-1pm as the time period for their waste to be collected. This study adequately shows that household solid waste can be converted from burden to resource through segregation at the source, since people are aware of their role in this direction provided a mechanism to assist them in this pursuit exists and the burden is distributed according to the amount of waste generated.

## Urban Vector Disease

*Acta Trop. 2007 Aug 15*

### **Marked differences in the prevalence of chloroquine resistance between urban and rural communities in Burkina Faso.**

Meissner PE, Mandi G, Mockenhaupt FP, Witte S, Coulibaly B, Mansmann U, Frey C, Merkle H, Burhenne J, Walter-Sack I, Müller O.

**BACKGROUND:** Chloroquine (CQ) resistance has reached high levels in Africa in recent years. Little is known about variations of resistance between urban and rural areas.

**OBJECTIVES:** To compare the rates of in vivo resistance to CQ and the prevalences of the main molecular marker for CQ resistance among young children from urban and rural areas in Burkina Faso.

**METHODS:** The current analysis used the frame of a randomized controlled trial (ISRCTN27290841) on the combination CQ-methylene blue (MB) (n=177) compared to CQ alone (n=45) in young children with uncomplicated malaria. We examined clinical and parasitological failure rates as well as the prevalence of the Plasmodium falciparum chloroquine resistance transporter gene (pfcr) T76 mutation.

**RESULTS:** Clinical and parasitological failure rates of CQ-MB differed significantly between urban (70%) and rural areas (29%,  $p<0.0001$ ). Likewise, CQ failure rates were higher in the urban setting. Matching this pattern, pfcr T76 was more frequently seen among parasite strains from urban areas (81%) when compared to rural ones (64%,  $p=0.01$ ). In the presence of parasites exhibiting pfcr T76, the odds of overall clinical failure were increased to 2.6-fold ([1.33, 5.16],  $p(LR)=0.005$ ). CQ

was detected at baseline in 21% and 2% of children from the urban and the rural study area, respectively ( $p(\text{Chi})=0.002$ ).

**CONCLUSION:** Even within circumscribed geographical areas, CQ efficacy can vary dramatically. The differences in the prevalence of pfprt T76 and in CQ failure rates are probably explained by a higher drug pressure in the urban area compared to the rural study area. This finding has important implications for national malaria policies.

*Ann Trop Med Parasitol. 2007 Oct; 101(7):601-9.*

**Personal-protection measures against mosquitoes: a study of practices and costs in a district, in the Indian state of Orissa, where malaria and lymphatic filariasis are co-endemic.**

Babu BV, Mishra S, Mishra S, Swain BK.

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In a study undertaken among rural and urban communities in a district of Orissa, India, the personal-protection measures used against mosquitoes, and the household costs of these measures, were investigated. Most people living in the study communities perceived mosquitoes as a problem, both as a biting nuisance and as vectors of human disease. Almost all (99%) of the urban households investigated and most (84%) of the rural each reported the use of at least one measure against mosquitoes. Most of the study households (92% of the urban and 64% of the rural) used a 'modern' chemical method (coils, vaporizing mats, liquid vaporizers or sprays), with mosquito coils used more frequently than any other personal-protection measure. Untreated bednets were also used by most of the households investigated (76% of the urban and 58% of the rural) and some households (about 10% of the urban and 8% of the rural) still used the more traditional method of burning dried dung or vegetation indoors, specifically to create smoke to drive away mosquitoes. Setting, house type, as indicated by the material used as roofing, and number of people in the household were each a significant predictor of the use of personal protection, with households in an urban setting, large households, and households occupying a concrete-roofed building relatively more likely to use some form of personal protection. Although 'modern', chemical-based methods were frequently employed, about one in every two interviewees (57% of the urban and 43% of the rural) considered the use of such methods to be harmful to their health. The mean monthly expenditures on personal-protection measures were 101 Indian rupees (U.S.\$2.20)/urban household and 72 Indian rupees (U.S.\$1.60)/rural household. Setting, family income, family size and number of sleeping rooms in the house each affected such expenditure significantly. As a proportion of household income, expenditure on controlling mosquitoes was surprisingly high.

*J Am Mosq Control Assoc. 2007 Jun; 23(2):172-6.*

**An evaluation of some Trinidadian plant extracts against larvae of *Aedes aegypti* mosquitoes.**

Mohammed A, Chadee DD. Department of Life Sciences, The University of the West Indies, St. Augustine, Trinidad, West Indies.

In recent times, bioprospecting for plants that show bioactive properties has yielded many chemicals that can be used in controlling mosquitoes. Crude extracts of 4 terrestrial and 3 mangrove plants were assayed against 2-3 larval instars of *Aedes aegypti*. Among the plants tested, *Cordia curassavica* showed the highest levels of activity for all the extracts tested. *Azadirachta indica* showed the least activity, whereas the 2 cultivars of *Mangifera indica* showed substantial activity for the aqueous extracts. The mangrove species proved to be relatively nontoxic to *Ae. aegypti* larvae when compared to the terrestrial plants. The results of this study suggest that some common plants in Trinidad may be highly effective in controlling the urban vector of yellow fever and dengue fever, *Ae. aegypti*.

*J Med Entomol.* 2007 Sep; 44(5): 851-60.

### **Characterization of *Aedes aegypti* (Diptera: Culcidae) production sites in urban Nicaragua.**

Hammond SN, Gordon AL, Lugo Edel C, Moreno G, Kuan GM, López MM, López JD, Delgado MA, Valle SI, Espinoza PM, Harris E.

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To characterize the production patterns of the dengue virus vector *Aedes aegypti* (L.) (Diptera: Culcidae), pupal surveys were conducted in selected neighborhoods of two major cities in Nicaragua. In León, 833 houses were visited in July and September 2003, corresponding to the beginning and middle of the dengue season; in Managua, 1,365 homes were visited in July 2003. In total, 7,607 containers were characterized, of which 11% were positive for *Ae. aegypti* larvae and 4% for pupae. In addition to barrels, potted plants and superficial water on tarps and in puddles were identified as highly productive sites. Univariate and multivariate analysis revealed frequency of container use, use of a lid, and rainwater filling as key variables affecting pupal positivity. Importantly, this survey demonstrated the risk associated with the presence of lids, the limited temporal efficacy of temephos, and the lack of association of water availability with risky water storage practices. Finally, we introduce the concept of an efficiency value and an accompanying graphical display system that can facilitate development of targeted pupal control strategies. These data underscore the importance of entomological surveillance of pupal productivity to gather information from which to derive streamlined, efficient, and effective vector control measures to reduce the density of *Aedes* mosquito larvae and pupae and thus the risk for dengue.

*Malar J.* 2007 Sep 19; 6(1):126

### **Interdependence of domestic malaria prevention measures and mosquito-human interactions in urban Dar es Salaam, Tanzania.**

Geissbuhler Y, Chaki P, Emidi B, Govella NJ, Shirima R, Mayagaya V, Mtasiwa D, Mshinda H, Fillinger U, Lindsay SW, Kannady K, Caldas de Castro M, Tanner M, Killeen GF.

**BACKGROUND:** Successful malaria vector control depends on understanding

behavioural interactions between mosquitoes and humans, which are highly setting-specific and may have characteristic features in urban environments. Here mosquito biting patterns in Dar es Salaam, Tanzania are examined and the protection against exposure to malaria transmission that is afforded to residents by using an insecticide-treated net (ITN) is estimated.

*METHODS:* Mosquito biting activity over the course of the night was estimated by human landing catch in 216 houses and 1,064 residents were interviewed to determine usage of protection measures and the proportion of each hour of the night spent sleeping indoors, awake indoors, and outdoors.

*RESULTS:* Hourly variations in biting activity by members of the *Anopheles gambiae* complex were consistent with classical reports but the proportion of these vectors caught outdoors in Dar es Salaam was almost double that of rural Tanzania. Overall, ITNs confer less protection against exophagic vectors in Dar es Salaam than in rural southern Tanzania (59% versus 70%). More alarmingly, a biting activity maximum that precedes 10pm and much lower levels of ITN protection against exposure (38%) were observed for *Anopheles arabiensis*, a vector of modest importance locally, but which predominates transmission in large parts of Africa.

*CONCLUSIONS:* In a situation of changing mosquito and human behaviour, ITNs may confer lower, but still useful, levels of personal protection which can be complemented by communal transmission suppression at high coverage. Mosquito-proofing houses appeared to be the intervention of choice amongst residents and further options for preventing outdoor transmission include larviciding and environmental management.

*Niger J Med. 2007 Jul-Sep; 16(3):223-6.*

### **The use of insecticide-treated bed net in a semi-urban community in south-south, Nigeria.**

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*BACKGROUND:* Insecticide-treated bed net (ITN) is currently being rigorously promoted as a tool for malaria control. This study was to find out whether the buyers of the ITN sold by a social marketing programme in a semi-urban community in south-south Nigeria, did so because they wanted to prevent malaria or control the nuisance of mosquito.

*METHODS:* A cross-sectional study design was used to assess adherence. The proper deployment of the nets was directly observed in the houses of the buyers just before dawn, between March and April, 2004, when the night-time temperature is hottest and the nuisance of mosquito is at the lowest in the community. Study participants were also asked, in an unstructured interview, possible means why the ITN might not be deployed.

*RESULTS:* Out of the 268 ITNs bought by the households visited, only 49 (18.28%) of the nets were found to be properly deployed during the monitoring visit. Most of these nets (53.06%) were occupied by under-five children that slept with their parents on bed. The probability of proper deployment of the net was poorer when users slept on mat, than when they slept on bed ( $P < 0.05$ ). The reasons given why under-five children might not use the net include: hot night time temperature (63%), no mosquitoes (43%) and "forgot to put up the net" (33%).

*CONCLUSION:* This study showed that despite the rigorous promotion of ITN for malaria control, its use is still determined mostly by the abundance of mosquitoes and night-time temperature.

*Trop Med Int Health. 2007 Sep; 12(9):1026-36.*

### **Cost-effectiveness of annual targeted larviciding campaigns in Cambodia against the dengue vector *Aedes aegypti*.**

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**OBJECTIVE:** To assess the cost-effectiveness (CE) of annual targeted larviciding campaigns from 2001 to 2005 against the dengue vector *Aedes aegypti* in two urban areas of Cambodia with a population of 2.9 million people.

**METHODS:** The intervention under analysis consisted of annual larviciding campaigns targeting medium to large water storage containers in households and other premises. The CE compared the intervention against the hypothetical alternative of no intervention. The CE was calculated as the ratio of disability adjusted life years (DALYs) saved to the net cost of the intervention (in 2005 US dollars) by year. A sensitivity analysis explored the range of study parameters.

**RESULTS:** The intervention reduced the number of dengue cases and deaths by 53%. It averted an annual average of 2980 dengue hospitalizations, 11,921 dengue ambulatory cases and 23 dengue deaths, resulting in a saving of 997 DALYs per year. The gross cost of the intervention was US \$567,800 per year, or US \$0.20 per person covered. As the intervention averted considerable medical care, the annual net cost of the intervention was US \$312,214 (US \$0.11 per person covered) from a public sector perspective and US \$37,137 (US \$0.01 per person covered) from a societal perspective. The resulting CE ratios were: US \$313/DALY gained from the public perspective and US \$37/DALY gained from the societal perspective. Even under the most conservative assumption, the intervention remained cost effective from both perspectives.

**CONCLUSIONS:** Annual, targeted larviciding campaigns appear to have been effective and cost-effective medium-term interventions to reduce the epidemiologic and economic burden of dengue in urban areas of Cambodia.

### **HIV/AIDS among the Urban Poor**

*Cochrane Database Syst Rev. 2007 Oct 17; (4):CD006493.*

#### **Home-based HIV voluntary counseling and testing in developing countries.**

Bateganya M, Abdulwadud O, Kiene S.

**BACKGROUND:** The low uptake of HIV voluntary counseling and testing (VCT), an effective HIV prevention intervention, has hindered global attempts to prevent new HIV infections, as well as limiting the scale-up of HIV care and treatment for the estimated 38 million infected persons. According to UNAIDS, only 10% of HIV-infected individuals worldwide are aware of their HIV status. At this point in the HIV epidemic, a renewed focus has shifted to prevention, and with it, a focus on methods to increase the uptake of HIV VCT. This review discusses home-based HIV VCT delivery models, which, given the low uptake of facility-based

testing models, may be an effective avenue to get more patients on treatment and prevent new infections.

**OBJECTIVES:** (1) To identify and critically appraise studies addressing the implementation of home-based HIV voluntary counseling and testing in developing countries. (2) To determine whether home-based HIV voluntary counseling and testing (HBVCT) is associated with improvement in HIV testing outcomes compared to facility-based models.

**SEARCH STRATEGY:** We searched online for published and unpublished studies in MEDLINE (February 2007), EMBASE (February 2007), CENTRAL (February 2007). We also searched databases listing conference proceedings and abstracts; AIDSearch (February 2007), The Cochrane Library (Issue 2, 2007), LILACS, CINAHL and Sociofile. We also contacted authors who have published on the subject of review.

**SELECTION CRITERIA:** We searched for randomized controlled trials (RCTs) and non-randomized trials (e.g., cohort, pre/post-intervention and other observational studies) comparing home-based HIV VCT against other testing models.

**DATA COLLECTION AND ANALYSIS:** We independently selected studies, assessed study quality and extracted data. We expressed findings as odds ratios (OR), and relative Risk (RR) together with their 95% confidence intervals (CI). **MAIN RESULTS:** We identified one cluster-randomized trial and one pre/post-intervention (cohort) study, which were included in the review. An additional two ongoing RCTs were identified. All identified studies were conducted in developing countries. The two included studies comprised one cluster-randomized trial conducted in an urban area in Lusaka, Zambia and one pre/post-intervention (cohort) study, part of a rural community cohort in Southwestern Uganda. The two studies, while differing in methodology, found very high acceptability and uptake of VCT when testing and or results were offered at home, compared to the standard (facility-based testing and results). In the cluster-randomized trial (n=849), subjects randomized to an optional testing location (including home-based testing) were 4.6 times more likely to accept VCT than those in the facility arm (RR 4.6, 95% CI 3.6-6.2). Similarly, in the pre/post study (n=1868) offering participants the option of home delivery of results increased VCT uptake. In the intervention year (home delivery) participants were 5.23 times more likely to receive their results than during the year when results were available only at the facility. (OR 5.23 95% CI 4.02-6.8).

**CONCLUSIONS:** Home-based testing and/or delivery of HIV test results at home, rather than in clinics, appears to lead to higher uptake in testing. However, given the limited extant literature and the limitations in the included existing studies, there is not sufficient evidence to recommend large-scale implementation of the home-based testing model.

*Int J STD AIDS. 2007 Oct; 18(10):680-687.*

### **Decline in HIV prevalence among women of childbearing age in Moshi urban, Tanzania.**

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The objective of this study was to describe trends over time in HIV prevalence, sexually transmitted infections (STIs) and sexual behaviour among women in Moshi urban, Tanzania. Two cross-sectional studies were conducted in 1999 and in 2002-04 among women attending three primary health-care clinics. They were interviewed and screened for HIV and STIs. There was a significant decrease in HIV prevalence (11.5-6.9%). The decline was greatest among women aged 15-24 years. Syphilis, trichomoniasis, bacterial vaginosis, genital ulcers and reported STI symptoms also

decreased significantly over the three-year inter-survey period. The proportion of women reporting casual sex decreased and knowledge of STI symptoms and health-care seeking behaviour improved. Herpes simplex virus type 2, genital warts, age at sexual debut, age at first pregnancy and condom use remained unchanged. In conclusion, decline in curable STIs and casual sex partners may partly explain the observed decline in HIV seroprevalence. Both STIs and sexual behaviour should be monitored in HIV sentinel surveillance. There remains a gap between knowledge of preventive behaviour and actual preventive practices.

*Medinfo. 2007; 12(Pt 1):372-6.*

### **The AMPATH medical record system: creating, implementing, and sustaining an electronic medical record system to support HIV/AIDS care in western Kenya.**

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Providing high-quality HIV/AIDS care requires high-quality, accessible data on individual patients and visits. These data can also drive strategic decision-making by health systems, national programs, and funding agencies. One major obstacle to HIV/AIDS care in developing countries is lack of electronic medical record systems (EMRs) to collect, manage, and report clinical data. In 2001, we implemented a simple primary care EMR at a rural health centre in western Kenya. This EMR evolved into a comprehensive, scalable system serving 19 urban and rural health centres. To date, the AMPATH Medical Record System contains 10 million observations from 400,000 visit records on 45,000 patients. Critical components include paper encounter forms for adults and children, technicians entering/managing data, and modules for patient registration, scheduling, encounters, clinical observations, setting user privileges, and a concept dictionary. Key outputs include patient summaries, care reminders, and reports for program management, operating ancillary services (e.g., tracing patients who fail to return for appointments), strategic planning (e.g., hiring health care providers and staff), reports to national AIDS programs and funding agencies, and research.

*S Afr Med J. 2007 Jul; 97(7):524-9.*

### **Cost to patients of obtaining treatment for HIV/AIDS in South Africa.**

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**BACKGROUND:** South Africa is providing antiretroviral (ARV) drugs for HIV/AIDS free of charge in order to increase access for poorer patients and promote adherence. However, non-drug costs of obtaining treatment may limit access. We estimated the costs that South African patients incur in obtaining antiretroviral therapy (ART).

**METHODS:** A random sample of adult pre-ART and ART patients attending a public urban hospital (site 1), a peri-urban (informal settlement) non-governmental

organisation (NGO) clinic (site 2), and a rural NGO clinic (site 3) were interviewed during a routine clinic visit. Mean and median costs were calculated for each site. **RESULTS:** Ninety-one per cent of subjects paid for transport to attend the clinic. The median cost was modest (R10 - R28), but patients in the top decile at sites 1 and 3 paid R50 or more. Mean transport costs were substantially higher at site 1 (R75) than at site 2 (R18) or Site 3 (R47). Site 1 waived its R45 visit fee for most subjects, but more than 80% of subjects at sites 2 and 3 paid fees of R30 and R70, respectively. Few subjects at any site paid for substitute labour (7%) or suffered income loss (12%) during the visit. In the previous week, 60% of all subjects purchased non-prescription medicines or special foods, at a median cost of R81, R45 and R50 for sites 1, 2 and 3, respectively. The upper quartile of patients paid more than R150 for these purchases. Twelve per cent of patients reported paying for other medical care in the previous week, while 48% said that they had utilised caretakers' time.

**CONCLUSIONS:** Patients must visit a treatment clinic at least 6 times in the year in which they start ART. The average cost per visit is R120, plus travel and waiting time. Patients and caregivers also spend considerable time and money between visits. Patient costs should be considered in efforts to sustain adherence and expand access.

*Water Sci Technol. 2007; 56(5):125-31.*

**A pilot assessment of water, sanitation, hygiene and home-based care services for people living with HIV/AIDS in rural and peri-urban communities in South Africa.**

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A short-term assessment of water, sanitation, hygiene and home-based care services in two rural and two peri-urban communities in South Africa was made using specially designed questionnaires. The results from this assessment indicated the shortcomings of various sections in the service provision to people affected and living with HIV/AIDS in South Africa. This paper is a summarised version of the assessment and aims to give an indication of the inadequacies of some of these services.