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Urban Health Bulletin: A Compendium of Resources

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Introduction

We found a strong set of abstracts for this edition. Here's hoping that many of these authors will find their way to Nairobi in October for the **2009 International Urban Health Conference** to share their findings.

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:

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[Urban Health Analysis](#)

[Urban Environmental Health](#)

[Urban Vector Disease](#)

[Urban HIV/AIDS](#)

Urban Health Analysis

1 - *Am J Hum Biol.* 2009 Jun 16.

Children's work, earnings, and nutrition in urban Mexican shantytowns.

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For many children living in conditions of urban poverty, earning money can provide additional resources to them and their families, and this raises interesting questions about the potential biological consequences (costs and benefits) of children's work in 'modern' settings. This study uses time allocation, ethnographic, dietary, and anthropometric data collected with 96 urban Mexican shantytown children (aged 8-12 years) and their older and younger siblings (aged 1-18 years) to test hypotheses related to the effects of children's cash earning and cash contributions to their households for their own and their sibs' nutritional status. Regression models show that children's contributions to household income and the time they allocate to working outside the home makes no difference to their own or their younger siblings' nutritional status assessed anthropometrically. Dietary quality, based on food recalls, is worse in working than non-working children, even taking household income into account. Children's allocation of time to work and their cash contributions to the household do however significantly improve the weight of their older siblings, especially sisters. This suggests children's work in urban ecologies might have different constraints and opportunities for their own and siblings' growth and nutrition than typically observed in subsistence settings.

2 - *Arch Dis Child*. 2009 Jul 1.

The effects of social variables on symptom-recognition and medical care-seeking behaviour for acute respiratory infections in infants in urban Mongolia.

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OBJECTIVE: To investigate potentially modifiable factors associated with carers' recognition of symptoms and timely presentation of infants with acute respiratory infections (ARI) in urban Mongolia.

METHODS: A prospective cohort study nested in a randomised controlled trial of infant swaddling. Data were collected on social, educational and childcare variables and all doctor contacts for ARI in primary and secondary care by regular questionnaires to carers of infants during the first six months of life. Findings: Analyses were based on 9024 ARI-related doctor contacts for 4554 illness episodes in 1218 infants. Delay in medical care-seeking (>3 days from Acute Lower Respiratory Infection (ALRI) symptom onset) was associated with younger maternal age (OR (95%CI) 3.8 (1.2-11.6)), single child families (3.8 (1.2-11.61)), absent father (4.1 (1.2-14.4)), and residence more than 1 kilometre from clinic (3.5 (1.2-10.2)).

CONCLUSION: There is a continuing need to educate carers of infants in the management of ARI, particularly those of younger age and those with limited family support.

3 - *BMC Cardiovasc Disord*. 2009 Jun 8; 9:23.

The effect on cardiovascular risk factors of migration from rural to urban areas in Peru: PERU MIGRANT Study.

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BACKGROUND: Mass-migration observed in Peru from the 1970s occurred because of the need to escape from politically motivated violence and work related reasons. The majority of the migrant population, mostly Andean peasants from the mountainous areas, tends to settle in clusters in certain parts of the capital and their rural environment could not be more different than the urban one. Because the key driver for migration was not the usual economic and work-related reasons, the selection effects whereby migrants differ from non-migrants are likely to be less prominent in Peru. Thus the Peruvian context offers a unique opportunity to test the effects of migration.

METHODS/DESIGN: The PERU MIGRANT (PERU's Rural to Urban MIGRANTs) study was designed to investigate the magnitude of differences between rural-to-urban migrant and non-migrant groups in specific CVD risk factors. For this, three groups were selected: Rural, people who have always lived in a rural environment; Rural-urban, people who migrated from rural to urban areas; and, Urban, people who have always lived in a urban environment.

DISCUSSION: Overall response rate at enrolment was 73.2% and overall response rate at completion of the study was 61.6%. A rejection form was obtained in 282/323 people who refused to take part in the study (87.3%). Refusals did not differ by sex in rural and migrant groups, but 70% of refusals in the urban group were males. In terms of age, most refusals were observed in the oldest age-group (>60 years old) in all study groups. The final total sample size achieved was 98.9% of the target sample size (989/1000). Of these, 52.8% (522/989) were females. Final size of the rural, migrant and urban study groups were 201, 589 and 199 urban people, respectively. Migrant's average age at first migration and years lived in an urban environment were 14.4 years (IQR 10-17) and 32 years (IQR 25-39), respectively. This paper describes the PERU MIGRANT study design together with a critical analysis of the potential for bias and confounding in migrant studies, and strategies for reducing these problems. A discussion of the potential advantages provided by the case of migration in Peru to the field of migration and health is also presented.

4 - *BMC Public Health*. 2009 May 22; 9: 149.

Prevalence and correlates of smoking among urban adult men in Bangladesh: slum versus non-slum comparison.

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BACKGROUND: Smoking is one of the leading causes of premature death particularly in developing countries. The prevalence of smoking is high among the general male population in Bangladesh. Unfortunately smoking information including correlates of smoking in the cities especially in the urban slums is very scarce, although urbanization is rapid in Bangladesh and slums are growing quickly in its major cities. Therefore this study reported prevalences of cigarette and bidi smoking and their correlates separately by urban slums and non-slums in Bangladesh.

METHODS: We used secondary data which was collected by the 2006 Urban Health Survey. The data were representative for the urban areas in Bangladesh. Both slums and non-slums located in the six City Corporations were considered. Slums in the cities were identified by two steps, first by using the satellite images and secondly by ground truthing. At the next stage, several clusters of households were selected by using proportional sampling. Then from each of the selected clusters, about 25 households were randomly selected. Information of a total of 12,155 adult men, aged 15-59 years, was analyzed by stratifying them into slum (= 6,488) and non-slum (= 5,667) groups. Simple frequency, bivariable and multivariable logistic regression analyses were performed using SPSS.

RESULTS: Overall smoking prevalence for the total sample was 53.6% with significantly higher prevalences among men in slums (59.8%) than non-slums (46.4%). Respondents living in slums reported a significantly ($P < 0.001$) higher prevalence of smoking cigarettes (53.3%) as compared to those living in non-slums (44.6%). A similar pattern was found for bidis (slums = 11.4% and non-slums = 3.2%, $P < 0.001$). Multivariable logistic regression revealed significantly higher odds ratio (OR) of smoking cigarettes (OR = 1.12, 95% CI = 1.03-1.22), bidis (OR = 1.90, 95% CI = 1.58-2.29) and any of the two (OR = 1.23, 95% CI = 1.13-1.34) among men living in slums as compared to those living in non-slums when controlled for age, division, education, marital status, religion, birth

place and types of work. Division, education and types of work were the common significant correlates for both cigarette and bidi smoking in slums and non-slums by multivariable logistic regressions. Other significant correlates of smoking cigarettes were marital status (both areas), birth place (slums), and religion (non-slums). Similarly significant factors for smoking bidis were age (both areas), marital status (slums), religion (non-slums), and birth place (both areas).

CONCLUSION: The men living in the urban slums reported higher rates of smoking cigarettes and bidis as compared to men living in the urban non-slums. Some of the significant correlates of smoking e.g. education and division should be considered for prevention activities. Our findings clearly underscore the necessity of interventions and preventions by policy makers, public health experts and other stakeholders in slums because smoking was more prevalent in the slum communities with detrimental health sequelae.

5 - International Journal of Drug Policy, Volume 20, Issue 3, Risk Environment and Drug Harms, May 2009, Pages 237-243

The social context of initiation into injecting drugs in the slums of Makassar, Indonesia

Sudirman Nasir, Doreen Rosenthal

Background: The association between socio-economic marginalisation in urban poor neighbourhoods and the prevalence of violence, crime, drug use and drug dealing has been well documented. However few studies have explored the social context of the transition to, initiation and maintenance of drug injection career in slum areas in developing countries. This study examines the lived experience of young men in initiating and maintaining drug injection in slum areas, commonly named lorong, in the city of Makassar, Indonesia

Method: In-depth interviews were conducted with 18 male injecting drug users who attended a drop-in centre for drug users in the city.

Results: The interviews revealed that the pharmacological effects of putaw (street grade heroin) and the economics of injection were factors in initiating and maintaining injection. Importantly, the intersection of socio-economic deprivation with pursuing the status of rewa (local concept of masculinity) and the dynamics of gang participation led many members of the lorong into a drug injection career, making them vulnerable for HIV and other blood-borne viral infections.

Conclusion: To be more effective, the existing harm reduction programmes in Makassar that focus on individualistic behavioural changes need to be complemented with community-based programmes that take into consideration the social and structural context of risk-taking practices amongst young people in the lorong.

6 - Int J Equity Health. 2009 Jun 5;8:21.

Inequalities in maternity care and newborn outcomes: one-year surveillance of births in vulnerable slum communities in Mumbai.

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BACKGROUND: Aggregate urban health statistics mask inequalities. We described maternity care in vulnerable slum communities in Mumbai, and examined differences in care and outcomes between more and less deprived groups.

METHODS: We collected information through a birth surveillance system covering a population of over 280 000 in 48 vulnerable slum localities. Resident women identified births in their own localities and mothers and families were interviewed at 6 weeks after delivery. We analysed data on 5687 births over one year to September 2006. Socioeconomic status was classified using quartiles of standardized asset scores.

RESULTS: Women in higher socioeconomic quartile groups were less likely to have married and conceived in their teens (Odds ratio 0.74, 95% confidence interval 0.69-0.79, and 0.82, 0.78-0.87, respectively). There was a socioeconomic gradient away from public sector maternity care with increasing socioeconomic status (0.75, 0.70-0.79 for antenatal care and 0.66, 0.61-0.71 for institutional delivery). Women in the least poor group were five times less likely to deliver at home (0.17, 0.10-0.27) as women in the poorest group and about four times less likely to deliver in the public sector (0.27, 0.21-0.35). Rising socioeconomic status was associated with a lower prevalence of low birth weight (0.91, 0.85-0.97). Stillbirth rates did not vary, but neonatal mortality rates fell non-significantly as socioeconomic status increased (0.88, 0.71-1.08).

CONCLUSION: Analyses of this type have usually been applied across the population spectrum from richest to poorest, and we were struck by the regularly stepped picture of inequalities within the urban poor, a group that might inadvertently be considered relatively homogeneous. The poorest slum residents are more dependent upon public sector health care, but the regular progression towards the private sector raises questions about its quality and regulation. It also underlines the need for healthcare provision strategies to take account of both sectors.

7 - Int J Health Geogr. 2009 Jun 8;8:32.

The 2005 census and mapping of slums in Bangladesh: design, select results and application.

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BACKGROUND: The concentration of poverty and adverse environmental circumstances within slums, particularly those in the cities of developing countries, are an increasingly important concern for both public health policy initiatives and related programs in other sectors. However, there is a dearth of information on the population-level implications of slum life for human health. This manuscript describes the 2005 Census and Mapping of Slums (CMS), which used geographic information systems (GIS) tools and digital satellite imagery combined with more traditional fieldwork methodologies, to obtain detailed, up-to-date and new information about slum life in all slums of six major cities in Bangladesh (including Dhaka).

RESULTS: The CMS found that Bangladeshi slums are very diverse: there are wide intra- and inter-city variations in population size, density, the percent of urban populations living in slums, and sanitation conditions. Findings also show that common beliefs about slums may be outdated; of note, tenure insecurity was found to be an issue in only a small minority of slums.

CONCLUSION: The methodology used in the 2005 Bangladesh CMS provides a useful approach to mapping slums that could be applied to urban areas in other low income societies. This methodology may become an increasingly important analytic tool to inform policy, as cities in developing countries are forecasted to continue increasing their share of total global population in the coming years, with slum populations more than doubling in size during the same period.

8 - Reprod Health. 2009 Jun 16;6(1):9.

Maternal health in resource-poor urban settings: how does women's autonomy influence the utilization of obstetric care services?

Fotso JC, Ezeh AC, Essendi H.

BACKGROUND: Despite various international efforts initiated to improve maternal health, more than half a million women worldwide die each year as a result of complications arising from pregnancy and childbirth. This research was guided by the following questions: 1) How does women's autonomy influence the choice of place of delivery in resource-poor urban settings? 2) Does its effect vary by household wealth? and 3) To what extent does women's autonomy mediate the relationship between women's education and use of health facility for delivery?

METHODS: The data used is from a maternal health study carried out in the slums of Nairobi, Kenya. A total of 1,927 women (out of 2,482) who had a pregnancy outcome in 2004-2005 were selected and interviewed. Seventeen variable items on autonomy were used to construct women's decision-making, freedom of movement, and overall autonomy. Further, all health facilities serving the study population were assessed with regard to the number, training and competency of obstetric staff; services offered; physical infrastructure; and availability, adequacy and functional status of supplies and other essential equipment for safe delivery, among others. A total of 25 facilities were surveyed.

RESULTS: While household wealth, education and demographic and health covariates had strong relationships with place of delivery, the effects of women's overall autonomy, decision-making and freedom of movement were rather weak. Among middle to least poor households, all three measures of women's autonomy were associated with place of delivery, and in the expected direction; whereas among the poorest women, they were strong and counter-intuitive. Finally, the study showed that autonomy may not be a major mediator of the link between education and use of health services for delivery.

CONCLUSION: The paper argues in favor of broad actions to increase women's autonomy both as an end and as a means to facilitate improved reproductive health outcomes. It also supports the call for more appropriate data that could further support this line of action. It highlights the need for efforts to improve households' livelihoods and increase girls' schooling to alter perceptions of the value of skilled maternal health care.

Urban Environmental Health

9 - *Cities*, Volume 26, Issue 3, June 2009, Pages 125-132

Community-led infrastructure provision in low-income urban communities in developing countries: A study on Ohafia, Nigeria

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The changing role of government in infrastructure provision and the need for community-based approach are widely gaining increasing recognition, but the extent to which local communities are involved in urban infrastructure provision in developing countries has not been given adequate attention in the literature. This study examines how community-based organizations are filling the gap created by partial withdrawal of the state from urban infrastructure provision in six low-income urban communities in Ohafia, Nigeria. Drawing on the role of social capital in community development, this paper reported how, and in what context situations the organizations are addressing the infrastructure challenge in their communities. Relying on the data from a survey, the study identified six organizations and three funding arrangements in urban infrastructure provision in the communities. Using this case-study, this study attempted to identify how the mobilization of resources in project initiation, design, implementation and funding influenced the type of infrastructure projects. The findings have conceptual and policy implications for understanding the socio-economic and political dynamics in harnessing local resources and integrating community-based approaches into urban development process in developing countries.

10 - *International Journal of Hygiene and Environmental Health*, Volume 212, Issue 4, July 2009, Pages 387-397

Purchase of drinking water is associated with increased child morbidity and mortality among urban slum-dwelling families in Indonesia

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In developing countries, poor families in urban slums often do not receive municipal services including water. The objectives of our study were to characterize families who purchased drinking water and to examine the relation between purchasing drinking water and child morbidity and mortality in urban slums of Indonesia, using data collected between 1999 and 2003.

Of 143,126 families, 46.8% purchased inexpensive drinking water from street vendors, 47.4% did not purchase water, i.e., had running or spring/well water within household, and 5.8% purchased more expensive water in the previous 7 days. Families that purchased inexpensive drinking water had less educated parents, a more crowded household, a father who smoked, and lower socioeconomic level compared with the other families. Among children of families that purchased inexpensive drinking water, did not purchase drinking water, or purchased more expensive water, the prevalence was, respectively, for diarrhea in last 7 days (11.2%, 8.1%, 7.7%), underweight (28.9%, 24.1%, 24.1%), stunting (35.6%, 30.5%, 30.5%), wasting (12.0%, 10.5%, 10.9%),

family history of infant mortality (8.0%, 5.6%, 5.1%), and of under-five child mortality (10.4%, 7.1%, 6.4%) (all $P < 0.0001$).

Use of inexpensive drinking water was associated with under-five child mortality (Odds Ratio [O.R.] 1.32, 95% Confidence Interval [C.I.] 1.20-1.45, $P < 0.0001$) and diarrhea (O.R. 1.43, 95% C.I. 1.29-1.60, $P < 0.0001$) in multivariate logistic regression models, adjusting for potential confounders. Purchase of inexpensive drinking water was common and associated with greater child malnutrition, diarrhea, and infant and under-five child mortality in the family. Greater efforts must be made to ensure access to safe drinking water, a basic human right and target of the Millennium Development Goals, in urban slums.

11 - Transactions of the Royal Society of Tropical Medicine and Hygiene, Volume 103, Issue 5, May 2009, Pages 506-511

Improved sanitation and income are associated with decreased rates of hospitalization for diarrhoea in Brazilian infants

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Diarrhoeal diseases remain a major cause of morbidity and mortality in Brazilian children. However, from 1992 to 2001 there was a significant decline in hospitalizations for acute diarrhoea in children below 1 year of age in Brazil. A significant improvement in child health was also observed in the state of Rio Grande do Norte (RN), with a decrease in child mortality from 70 to 40 deaths per 1000. Using distributed lag analysis we analysed a number of factors possibly connected with decreased hospitalization in RN and found that hospitalization was correlated up to lag 3 with poverty ($P < 0.001$) and inflation ($P < 0.001$). Improvements in public health infrastructure such as better waste collection, presence of city water supply and increased sanitation, socio-economic variables such as education and literacy, and increased investment in health services were all important in reducing severe early childhood diarrhoeas and thus directly associated with the decrease in hospitalization. We also observed a positive seasonal correlation between rainfall and hospitalizations with an increased in rainfall impacting positively on hospitalization in all lags. The data suggests that increased buying power and reductions in poverty played a crucial role in reducing hospitalizations for acute diarrhoea in infants in RN.

12 - Water Sci Technol. 2009;59(12):2341-50.

Community-focused greywater management in two informal settlements in South Africa.

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South Africa is struggling to provide services to the millions of poor people migrating to the major centres and living in informal settlements (shanty towns). Whilst the local authorities are generally able to provide potable water from the municipal network to communal taps scattered around the settlements, there is usually inadequate provision of sanitation and little or no provision for the drainage of either stormwater or greywater. This paper describes an investigation into ways of engaging with community structures in

the settlements with a view to encouraging "self-help" solutions to greywater management requiring minimal capital investment as an interim "crisis" solution until such time that local and national government is able to provide formal services to everyone. The work was carried out in three settlements encompassing a range of different conditions. Only two are described here. It has become clear that the management of greywater has a low priority amongst the residents of informal settlements. The lack of effective political structures and the breakdown in communication with Ward Councillors and local government officials have contributed to the lack of progress. As the project progressed it became evident that greywater cannot be considered separately from stormwater, sanitation and refuse removal.

Urban Vector Disease

13 - Cad Saude Publica. 2009 Jul; 25(7): 1543-51.

Factors associated with the incidence of urban visceral leishmaniasis: an ecological study in Teresina, Piauí State, Brazil.

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The objective of this study was to identify socioeconomic and environmental factors associated with the incidence of visceral leishmaniasis in the city of Teresina, Piauí State, Brazil. This was an ecological study based on 1,744 cases reported from 1991 to 2000, and the city's neighborhoods served as the unit of analysis. Mean annual incidence rates were related to socioeconomic and demographic indicators and a vegetation index derived from remote sensing images by means of spatial multiple linear regression models. The neighborhoods with the highest incidence rates were mostly located in the city's peripheral areas. Multivariate analysis identified an interaction between population growth and the vegetation index, so that areas with high population growth and abundant vegetation showed the highest incidence rates. The percentage of households with piped water was inversely associated with visceral leishmaniasis incidence. Spatial distribution of visceral leishmaniasis in Teresina during the 1990s was heterogeneous, and incidence of the disease was associated with the peripheral neighborhoods with the heaviest vegetation cover, subject to rapid occupation and lack of adequate sanitation infrastructure.

14 - Ethn Dis. 2009 Spring; 19(1 Suppl 1): S1-37-41.

Leptospirosis: a worldwide resurgent zoonosis and important cause of acute renal failure and death in developing nations.

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Leptospirosis, a spirochetal zoonosis, is a globally re-emerging infectious disease that has disseminated from its habitual rural base to become the cause of urban epidemics in poor communities of industrialized and developing nations. This review addresses the issues in the epidemiology, clinical features, and management of the disease, as well as progress

made toward understanding the pathogenesis of leptospiral nephropathy. In developing nations, leptospirosis plays an important role as a potentially preventable cause of acute renal failure. The data indicate that in certain developing regions, such as the city of Salvador, Brazil, leptospirosis is misdiagnosed with other infectious disease such as dengue and the overall disease burden is likely underestimated partly because of the protean and nonspecific presentation. Severe forms of the disease are associated with high case-fatality rate. In urban Brazil, outbreaks of leptospirosis can be predicted by heavy rain and flooding and this may serve to indicate which resources should be allocated to prevent the disease. Advancements in the basic research and epidemiology of leptospirosis should contribute to the development of more accurate diagnostic tests and of an effective vaccine. Policy makers should be urged to address the underlying conditions of poverty as well as environmental issues, which have led to the emergence of leptospirosis.

15 - Geospat Health. 2009 May; 3(2):189-210.

Urban agriculture and Anopheles habitats in Dar es Salaam, Tanzania.

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A cross-sectional survey of agricultural areas, combined with routinely monitored mosquito larval information, was conducted in urban Dar es Salaam, Tanzania, to investigate how agricultural and geographical features may influence the presence of Anopheles larvae. Data were integrated into a geographical information systems framework, and predictors of the presence of Anopheles larvae in farming areas were assessed using multivariate logistic regression with independent random effects. It was found that more than 5% of the study area (total size 16.8 km²) was used for farming in backyard gardens and larger open spaces. The proportion of habitats containing Anopheles larvae was 1.7 times higher in agricultural areas compared to other areas (95% confidence interval = 1.56-1.92). Significant geographic predictors of the presence of Anopheles larvae in gardens included location in lowland areas, proximity to river, and relatively impermeable soils. Agriculture-related predictors comprised specific seedbed types, mid-sized gardens, irrigation by wells, as well as cultivation of sugar cane or leafy vegetables. Negative predictors included small garden size, irrigation by tap water, rainfed production and cultivation of leguminous crops or fruit trees. Although there was an increased chance of finding Anopheles larvae in agricultural sites, it was found that breeding sites originated by urban agriculture account for less than a fifth of all breeding sites of malaria vectors in Dar es Salaam. It is suggested that strategies comprising an integrated malaria control effort in malaria-endemic African cities include participatory involvement of farmers by planting shade trees near larval habitats.

16 - *Malar J.* 2009 Jun 24; 8(1): 138.

Highly focused anopheline breeding sites and malaria transmission in Dakar.

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Urbanization has a great impact on the composition of the vector system and malaria transmission dynamics. In Dakar, some malaria cases are autochthonous but parasite rates and incidences of clinical malaria attacks have been recorded at low levels. Ecological heterogeneity of malaria transmission was investigated in Dakar, in order to characterize the *Anopheles* breeding sites in the city and to study the dynamics of larval density and adult aggressiveness in ten characteristically different urban areas. \

METHODS: Ten study areas were sampled in Dakar and Pikine. Mosquitoes were collected by human landing collection during four nights in each area (120 person-nights). The *Plasmodium falciparum* circumsporozoite (CSP) index was measured by ELISA and the entomological inoculation rates (EIR) were calculated. Open water collections in the study areas were monitored weekly for physico-chemical characterization and the presence of anopheline larvae. Adult mosquitoes and hatched larvae were identified morphologically and by molecular methods.

RESULTS: In September-October 2007, 19,451 adult mosquitoes were caught among which, 1,101 were *Anopheles gambiae* s.l. The Human Biting Rate ranged from 0.1 bites per person per night in Yoff Village to 43.7 in Almadies. Seven out of 1,101 *An. gambiae* s.l. were found to be positive for *P. falciparum* (CSP index = 0.64%). EIR ranged from 0 infected bites per person per year in Yoff Village to 16.8 in Almadies. The *An. gambiae* complex population was composed of *Anopheles arabiensis* (94.8%) and *Anopheles melas* (5.2%). None of the *An. melas* were infected with *P. falciparum*. Of the 54 water collection sites monitored, 33 (61.1%) served as anopheline breeding sites on at least one observation. No *An. melas* was identified among the larval samples. Some physico-chemical characteristics of water bodies were associated with the presence/absence of anopheline larvae and with larval density. A very close parallel between larval and adult densities was found in six of the ten study areas.

CONCLUSIONS: The results provide evidence of malaria transmission in downtown Dakar and its surrounding suburbs. Spatial heterogeneity of human biting rates was very marked and malaria transmission was highly focal. In Dakar, mean figures for transmission would not provide a comprehensive picture of the entomological situation; risk evaluation should therefore be undertaken on a small scale.

17 - *Malar J.* 2009 May 14; 8: 103.

Development of vegetable farming: a cause of the emergence of insecticide resistance in populations of *Anopheles gambiae* in urban areas of Benin.

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BACKGROUND: A fast development of urban agriculture has recently taken place in many areas in the Republic of Benin. This study aims to assess the rapid expansion of urban

agriculture especially, its contribution to the emergence of insecticide resistance in populations of *Anopheles gambiae*.

METHODS: The protocol was based on the collection of sociological data by interviewing vegetable farmers regarding various agricultural practices and the types of pesticides used. Bioassay tests were performed to assess the susceptibility of malaria vectors to various agricultural insecticides and biochemical analysis were done to characterize molecular status of population of *An. gambiae*.

RESULTS: This research showed that: (1) The rapid development of urban agriculture is related to unemployment observed in cities, rural exodus and the search for a balanced diet by urban populations; (2) Urban agriculture increases the farmers' household income and their living standard; (3) At a molecular level, PCR revealed the presence of three sub-species of *An. gambiae* (*An. gambiae* s.s., *Anopheles melas* and *Anopheles arabiensis*) and two molecular forms (M and S). The *kdr* west mutation recorded in samples from the three sites and more specifically on the M forms seems to be one of the major resistance mechanisms found in *An. Gambiae* from agricultural areas. Insecticide susceptibility tests conducted during this research revealed a clear pattern of resistance to permethrin (76% mortality rate at Parakou; 23.5% at Porto-Novo and 17% at Cotonou).

CONCLUSION: This study confirmed an increase activity of the vegetable farming in urban areas of Benin. This has led to the use of insecticide in an improper manner to control vegetable pests, thus exerting a huge selection pressure on mosquito larval population, which resulted to the emergence of insecticide resistance in malaria vectors.

18 - Trop Med Int Health. 2009 Jun 28.

Spatial distribution and risk factors of dengue and Japanese encephalitis virus infection in urban settings: the case of Vientiane, Lao PDR.

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Objectives: To evaluate the prevalence of flavivirus infection in Vientiane city (Lao PDR), to describe the spatial distribution of infection within this city, and to explore the link between flavivirus seroprevalence and urbanization levels of residential neighbourhoods.

Methods: A seroprevalence survey was carried out in 2006 including 1990 adults (≥ 35 years) and 1568 children (≥ 6 months and < 6 years) randomly selected.

Results: The prevalence of individuals with previous flavivirus infection (i.e. negative for both DEN and JE IgM but positive for DEN IgG) was 57.7%, with a significantly ($P < 0.001$) higher prevalence among adults (84.6%; 95% confidence interval (CI) = 82.4-86.8) than children (9.4%; 95% CI = 7.2-11.6). The prevalence of individuals with recent flavivirus infection (i.e. positive for DEN and/or JE IgM) was 6.5% and also significantly ($P < 0.001$) higher among adults (10.0%; 95% CI = 8.3-11.7) than children (2.5%; 95% CI = 1.5-3.5). In terms of spatial distribution, IgG prevalence was significantly ($P < 0.001$) higher among individuals living in the central city (60.1%; 95% CI = 56.2-64.1) than among those living in the periphery (44.3%; 95% CI = 41.5-47.2). In contrast, seroprevalence of recent flavivirus infections was significantly ($P < 0.001$) higher among individuals living in the periphery (8.8%; 95% CI = 6.9-10.7) than in the central city (4.0%; 95% CI = 2.9-5.2). This association was also statistically consistent ($P < 0.01$) in

multivariate logistic regression after controlling for individual risk factors.

Conclusions: Our findings indicate that the level of urbanization of residential neighbourhoods influences the risk of flavivirus infection. The spatial distribution of flavivirus infection varies, even within a small city of less than 300 000 habitants such as Vientiane.

Urban HIV/AIDS

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Factors influencing consent to HIV testing among wives of heavy drinkers in an urban slum in India.

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The study examined the influence of socio cultural factors, perception of risk and exposure to violence on consent to HIV testing among at risk women in an urban slum. Married women chosen via a multistage probability sampling in a section of Bangalore, India, between 18 and 44 years, sexually active and considered to be at risk because of their husband's hazardous drinking were recruited for the study. Written informed consent was obtained and measures of risk behavior and violence were administered. Pretest HIV counseling was then conducted and consent for HIV testing was sought. Factors influencing refusal of and consent to HIV testing were documented. Data collected on 100 participants indicated that over half the sample (58%) refused consent for HIV testing. There were no significant differences between the groups who consented and those who refused on perception of risk and exposure to violence. Reasons women refused testing include the following: spouse/family would not allow it (40%), believed that they were not at risk or would test negative (29%) and underwent HIV testing during an earlier pregnancy (21%). Among those who consented for HIV testing, 79% did so because the testing site was easily accessible, 67% consented because testing was free and because the importance of HIV testing was understood. The findings highlight the role of social, logistic and awareness related factors in utilizing voluntary counseling and testing services by women in the slum community. They have important implications for HIV testing, particularly among at risk monogamous women.

20 - BMC Public Health. 2009 May 27;9:153.

HIV/AIDS and the health of older people in the slums of Nairobi, Kenya: results from a cross sectional survey.

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BACKGROUND: The proportion of older people is increasing worldwide. Globally, it is estimated that older people (those 60 years or older) constitute more than 11% of the population. As the HIV/AIDS pandemic rages in sub-Saharan Africa (SSA), its impact on older people needs closer attention given the increased economic and social roles older

people have taken on as a result of increased mortality among adults in the productive age groups. Few studies have looked at older people and their health in SSA or indeed the impact of HIV/AIDS on their health. This study aims to assess the effect of being directly or indirectly affected by HIV/AIDS on the health of older people in two Nairobi slums.

METHODS: Data were collected from residents of the Nairobi Urban Health and Demographic Surveillance area aged 50 years and above on 1st October 2006. Health status was assessed using the short SAGE (Study on Global AGEing and Adult Health) form and two outcome measures--self-rated health and a composite health score--were generated. To assess HIV/AIDS affected status, respondents were asked: Have you personally been affected by HIV/AIDS? If yes, a follow up question: "How have you been personally affected by HIV/AIDS?" was asked. Ordinal logistic regression was used in models with self-rated health and linear regression in models with the health score.

RESULTS: About 18% of respondents reported being affected by HIV/AIDS in at least one way, although less than 1% reported being infected with HIV. Nearly 60% of respondents reported being in good health, 27% in fair health and 14% in poor health. The overall mean health score was 70.6 (SD: 13.9) with females reporting worse health outcomes than males. Respondents directly or indirectly affected by HIV/AIDS reported worse health outcomes than those not affected: mean health score: 68.5 and 71.1 respectively ($t = 3.21$, $p = 0.0007$), and an adjusted odds ratio of reporting poor health of 1.42 (95%CI: 1.12-1.80).

CONCLUSION: Poor health outcomes among older people affected by HIV/AIDS highlight the need for policies that target them in the fight against HIV/AIDS if they are to play their envisaged care giving and other traditional roles.