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HEALTH NEEDS ASSESSMENT FOR KISUMU, KENYA

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NB: This needs assessment was compiled by MCI Social Sector Research Manager Dr. Moumié Maoulidi and relied on field research by MCI Researcher Frances Ue, UN Volunteer Innocent Maloba, and MCI Public Health Specialist Beldina Opiyo-Omolo. It was edited by MCI Co-Director Dr. Susan M. Blaustein. The costing model was compiled by Dr. Moumié Maoulidi and was reviewed by UNDP consultant Brian Lutz, who led the work on the health needs assessments at the UN Development Programme.

Figure 1. Map of Kenya Showing Kisumu



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ABBREVIATIONS

CBO	Community-Based Organization
CBS	Central Bureau of Statistics
CHAI	Clinton HIV/AIDS Initiative
CSO	Civil Service Organization
GLUK	Great Lakes University of Kisumu (Previously known as TICH)
IMR	Infant Mortality Rate
KENSUP	Kenya Slum Upgrading Program
KDHO	Kisumu District Health Office
LLITNs	Long Lasting Insecticide Treated Nets
MCK	Municipal Council of Kisumu
MCI	Millennium Cities Initiative
MDGs	Millennium Development Goals
MICS	Multiple Indicator Cluster Survey
MMR	Maternal Mortality Ratio
MoF	Ministry of Finance
MoH	Ministry of Health
MoMS	Ministry of Medical Services
MoPHS	Ministry of Public Health and Sanitation
NGO	Non-Governmental Organization
NHSS	National Health Service Strategy
NLTP	National Leprosy and Tuberculosis Programme
PEPFAR	President's Emergency Plan for AIDS Relief
U5MR	Under-5 Mortality Rate
UN-HABITAT	United Nations Human Settlements Programme
UNICEF	United Nations Children's Fund
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

EXECUTIVE SUMMARY

Kisumu, the capital of Nyanza Province in western Kenya, was designated as a Millennium City by the Earth Institute at Columbia University in 2006. The city is struggling to reduce high maternal and child mortality rates and faces numerous other health challenges, including high rates of malaria and HIV prevalence, lack of qualified health workers and a dilapidated health infrastructure. Poor access to health services, clean water and sanitation facilities also contributes to the high burden of ill-health in the city.

The infant mortality rate (IMR) in Kisumu in 2008 was 123 per 1,000 live births, the under-five mortality rate (U5MR) was 220 per 1,000 live births. These indicators are symptomatic of generally poor health status and are much higher than the national IMR and U5MR (52/1000 and 74/1000 respectively). However, there are indications that efforts to provide children under-five with bed nets to protect them against mosquitoes that spread malaria, to reduce diarrhea and to increase immunization coverage are contributing to improvements in child mortality in Kisumu and throughout Kenya. Additional measures that can enhance child survival include reducing neonatal deaths and encouraging breast-feeding for the first six months of a baby's life.

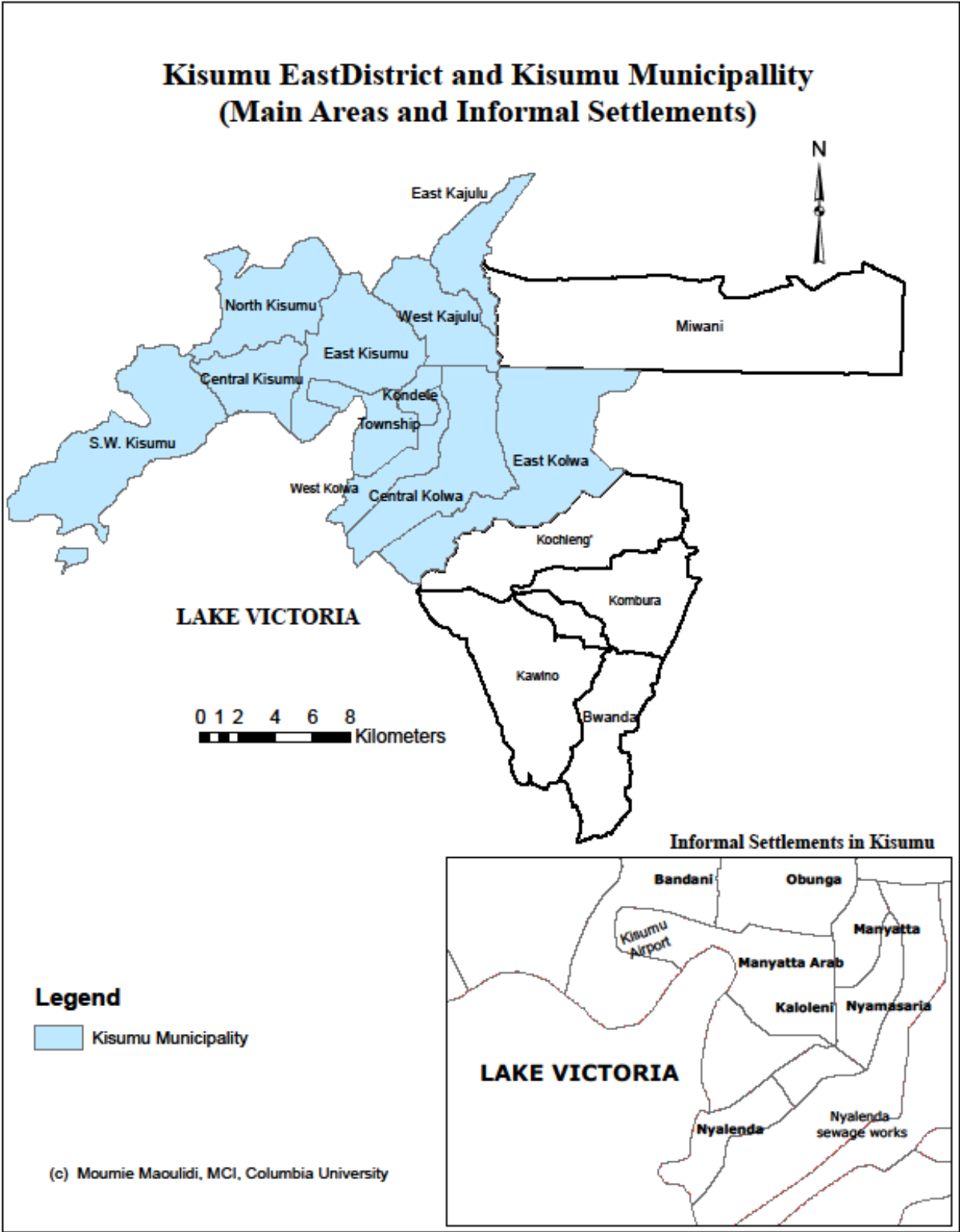
The maternal mortality ratio (MMR) in Kisumu was estimated to be around 456 per 100,000 live births in 2008. Even though this ratio is lower than Kenya's MMR of 488 deaths per 100,000 live births, it could be drastically lowered by improving access to basic antenatal and emergency obstetric care and increasing the proportion of women who deliver with skilled health attendants. In 2008, only 30 percent of women in Kisumu completed four antenatal visits and only 33.3 percent of births were attended by a skilled health professional. Contraceptive prevalence is also low (27 percent). Improving access to family planning services and continuing to provide intermittent malaria prophylaxis and insecticide-treated nets to pregnant women can play a critical role in improving maternal health outcomes.

Malaria remains a leading cause of outpatient morbidity in Kisumu, and the HIV prevalence rate in Kisumu (15 percent) is more than double the national prevalence rate of 7.4 percent. Other common illnesses include diarrhea and respiratory diseases. The city therefore needs to scale up malaria and HIV interventions and to promote both oral rehydration therapy for diarrhea and antibiotics for respiratory diseases.

During the next two years (2011-12), the health sector in Kisumu will focus on preventive health care, with emphasis on the control of communicable and non-communicable diseases and reproductive and child health services. However, there is also a need to expand the training of physicians and nurses. MCI estimates that Kisumu can achieve the health-related MDGs with an average annual per capita investment of \$27 per annum between 2011 and 2015.

This report is organized as follows: an introduction reviews the methodology used and limitations in conducting the research; this is followed by a description of the structure of Kisumu's health care system, an analysis of major health challenges and an outline of costs necessary to attain the three health-related MDGs. The conclusion synthesizes the findings and presents some recommendations.

Figure 2. Kisumu Municipality and Kisumu East District



I. INTRODUCTION

Kenya

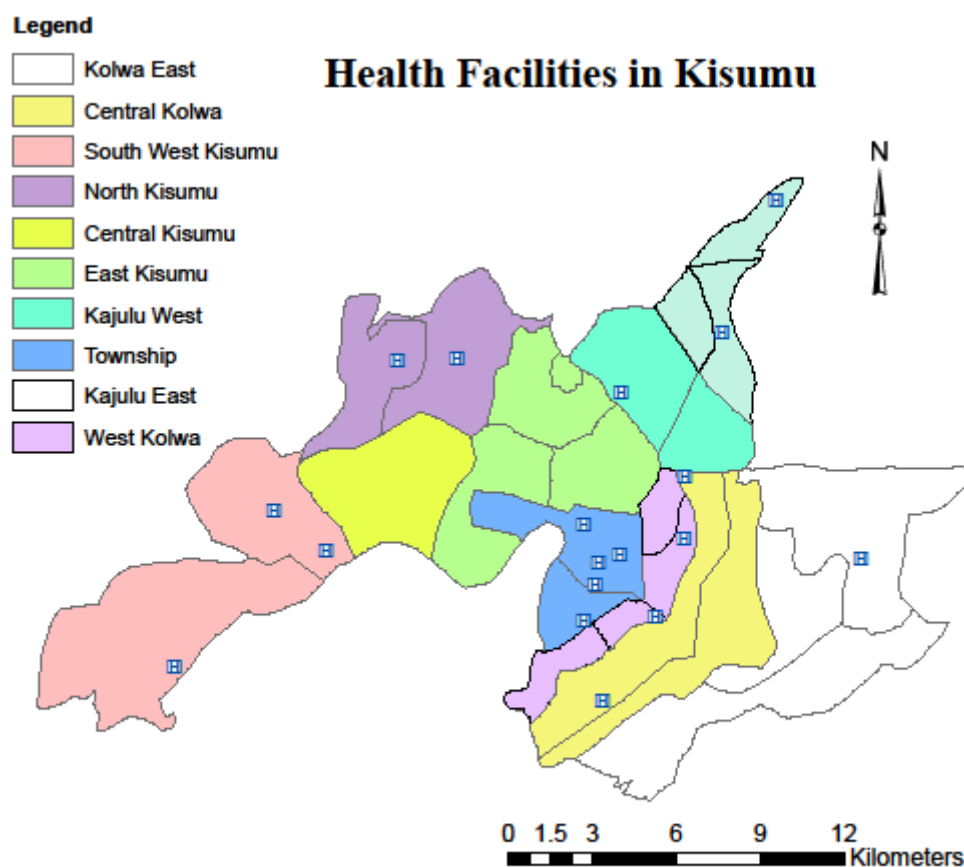
Kenya is an East African country that borders Ethiopia in the north, Sudan in the northwest, Uganda in the west, Tanzania in the south and Somalia in the east (see Figure 1).

Kisumu

Kisumu is Kenya's third largest city and is located about 400 kilometers northwest of the capital city, Nairobi. The city is located in Kisumu East District, one of the 19 districts of Nyanza Province. Kisumu City is the capital of Nyanza Province and is considered western Kenya's most important urban area.

The leading causes of morbidity and mortality in Kisumu City include malaria, respiratory tract infections, malnutrition, diarrhea and HIV/AIDS (Kisumu District Health Office, OP Morbidity Summary Tables 2006-2009). Pneumonia, anemia, skin diseases, ulcers, urinary tract infections, intestinal worms and tuberculosis (TB) are also common diseases.

Figure 3. Health Facilities in Kisumu



1.1. Objectives

This needs assessment focuses on those United Nations' Millennium Development Goals (MDGs) relating specifically to health: MDG 4 (Child Health); MDG 5 (Maternal Health); and MDG 6 (HIV/AIDS, malaria and other diseases).

1.2. Methodology

Field research for this report was conducted in 2007 and in 2009. Data were collected from the Kisumu District Health Office (KDHS), which assembles monthly activity reports from health facilities located in the district's four administrative divisions: Winam, Miwani, Maseno and Kadibo. In addition, this report also relies on the 2003 and 2008 Kenya demographic and health surveys (KDHS), the 2005/6 Kenya Integrated Household Budget Survey (KIHBS), other secondary sources and consultations with local health officials.

The costs of scaling up health services to help the city attain the MDGs by 2015 are estimated using a costing model developed by the United Nations Millennium Project.¹

1.3. Limitations

In recent years, Kisumu has strengthened its health management information systems (HMIS) to better track its progress in meeting the health-related MDGs. However, there are still inconsistencies in the reporting of HMIS data. For instance, in 2004, health records were disaggregated by administrative division and by health facility, but in 2006 some health records were only disaggregated by facility. As a result, MCI had to group facilities by administrative division before analyzing the 2006 data. Moreover, in 2009, Kisumu District was split into Kisumu East (where the city is located), Kisumu West and Kisumu North.² As a result, this needs assessment uses 2004-2006 data for Winam Division and 2008-2010 data for Kisumu East District.

1.4. Demographics

As of the 2009 census, Kisumu had a population of 390,164. Table 1 shows MCI's 2010-2015 projections for the total population and for certain subpopulations.³ It can be seen that children under one constitute four percent of the city's total population; while children under-five make up 16 percent and women of reproductive age (15-49) comprise 27 percent of the population.

Box 1

Health and the MDGs

Three of the eight Millennium Development Goals focus on health:

MDG 4 Reduce child mortality

- reduce by two thirds, between 1990 and 2015, the under-five mortality rate.

MDG 5 Improve maternal health

- reduce by three quarters, between 1990 and 2015, the maternal mortality rate.

MDG 6 Combat HIV/AIDS, malaria and other diseases

- halt and begin to reverse, by 2015, the spread of HIV/ AIDS and the incidence of malaria and other major diseases.

¹ The instrument utilized here was developed through the United Nations Millennium Project, under then-Secretary - General Kofi Annan and Special Advisor to the Secretary-General and Earth Institute Director, Jeffrey D. Sachs. This costing model, now administered by the UN Development Programme (UNDP) and member states for use at the national level, is being applied for the first time at the municipal level by MCI.

² Kisumu Municipality is located in the Kisumu East District, which consists of the following divisions: Winam (Kisumu Town East and West) and Kadibo.

³ Projections are based on the 2009 census, an exponential growth function and a growth rate of 1.9 percent.

Table 1. Kisumu's Population 2009-2015

	2009	2010	2011	2012	2013	2014	2015
Total Population	390,164	397,638	405,254	413,017	420,928	428,991	437,209
Children Under 1	13,728	13,991	14,259	14,532	14,810	15,094	15,383
Children Under 5	61,178	62,350	63,544	64,761	66,002	67,266	68,555
Women (15-49 yrs old)	105,024	107,036	109,086	111,176	113,305	115,475	117,688

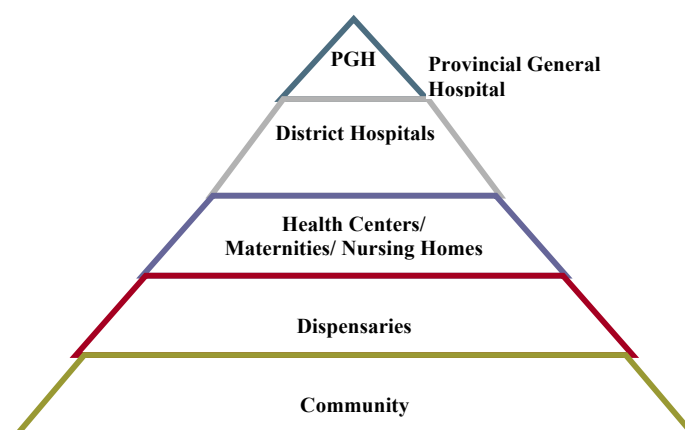
Source: NBS (2009)

II. DATA ANALYSIS

2. Health Facilities and Services in Kisumu

Kenya has a hierarchical public health care system with six levels.⁴ Because there are no national referral hospitals in Kisumu, the city's health tier system consists of five levels, with the provincial hospital at the apex. Figure 4 shows the levels of health care delivery in Kisumu.

Figure 4. Kisumu Health Service Delivery Levels



The provincial hospital provides specialized care, including intensive care and specialist consultations. The district and sub-district hospitals provide curative and preventive care, including clinical services such as obstetrics and gynecology, child health and surgery. Health centers provide basic preventive and curative services as well as maternal and child health services and diagnostic tests. Dispensaries are the lowest level of the public health system and provide outpatient services for simple ailments like uncomplicated malaria and skin conditions.

⁴ The six levels of health services in Kenya are: level 1 (local community facilities); level 2 (dispensaries); level 3 (health centers); level 4 (sub-district and district hospitals); level 5 (provincial hospitals); and level 6 (national referral hospitals -- Kenyatta National Hospital and Moi Teaching and Referral Hospital).

2.1. Health Facilities

The health care delivery system in Kisumu consists of public sector facilities and facilities managed by faith-based organizations (FBOs), non-governmental organizations (NGOs) and private entities. As of February 2010, there were 62 health facilities in Kisumu East District, including three public hospitals, six public health centers and 21 public dispensaries. Table 2 shows the distribution of health facilities according to type and owner.

Table 2. Health Facilities in Kisumu Municipality by Type and Owner, 2010

Owner Category	Total Facilities	Hospital	Health Centre	Dispensary	Maternity and Nursing Home	Medical Clinic
Local Authority	10		4	11		
Ministry of Health	20	3	2	10		
Non-Governmental	8			3	1	4
Private	19	6	1	2	3	7
Faith Based Organization	5	1		2		2
Total	62	10	7	28	4	13

Source: www.ehealth.go.ke/facilities/downloads.aspx

A key challenge facing Kisumu in its efforts to achieve the health-related MDGs by 2015 is the lack of health facilities in informal settlements. Many informal settlement areas do not have government health facilities, and residents typically have to travel long distances to access health care (UN-Habitat, 2005). There are a number of private health facilities in informal settlements, but they usually provide services only to those who can afford them.⁵

Across the city, there is an urgent need to invest in health infrastructure. The average distance to a health facility in Kisumu is about 5.8 kilometers (GoK, 2009a). Moreover, an informal 2008 survey conducted by a MCI researcher found that a number of health facilities have neither regular electricity nor a reliable water supply.⁶ Many health facilities have piped water connections, but the infrastructure is dilapidated, and frequent water shortages have forced several facilities to rely on water vendors, boreholes and rainwater collection to meet basic patient needs.⁷

The first ever Emergency Ward in Kisumu was built by the Israeli government in mid-2010, at Kisumu East District Hospital.⁸ The completion of the physical structure itself was followed by trainings of 41 local medical professionals (doctors, nurses, clinical officers, medical officer interns and paramedics in emergency medicine) in emergency care.⁹

⁵ For instance, there is one health center in Nyalenda.

⁶ Facilities visited include dispensaries such as Airport, Chiga, Simba Opepo, Gita, Got Nyabondo, Mosque, Ojolla, St. Mark and Town Hall. Health centers visited include Lumumba, Migosi Nyalenda, and Ober Kamoth.

⁷ According to MCI Researcher Andrea Castro, at times, piped water does not flow for weeks.

⁸ Financed by the Ministry of Foreign Affairs' Office of International Cooperation (MASHAV), the ward was designed and constructed by Israeli doctors and engineers, with facilitation by MCI.

⁹ The trainings were conducted by Dr. Eliaz Miller and Mr. Elly Haviv, from Tel Aviv's Sourasky Medical Center, with facilitation by MCI's Public Health Specialist. Topics ranged from conducting triage, to the elements of trauma care, to planning for mass casualties.

It needs to be underscored, however, that the availability of health care facilities does not guarantee utilization (Reerink and Sauerborn, 1996). Barriers to utilization include health care costs and the quality of services provided.

2.2. Health Services

In 2008, as part of the creation of the Coalition Government, what was formerly known as the Ministry of Health (MoH) was split into the Ministry of Public Health and Sanitation (MoPHS) and the Ministry of Medical Services (MoMS).¹⁰ Guided by the premise that decentralization leads to improved service delivery to its citizens, the Government of Kenya (GoK) has also taken steps to decentralize the health system. However, delivery of public health care services remains a centralized operation with some responsibilities now devolved to district level representatives of the central ministries.

Provincial health offices, such as the Nyanza Province Health Office, act as intermediaries between the central ministries and the districts. For instance, Provincial Health Management Teams (PHMTs) oversee the implementation of health policy at the district- and sub-district levels within the province. District Health Offices coordinate health activities at the district level. It is envisaged that District Health Management Boards (DHMBs) and District Health Management Teams (DHMTs) will gradually assume responsibilities for the operation of the facilities under their respective jurisdictions. However, provincial and district health offices are still heavily dependent on financial transfers from Nairobi.

Kisumu has a significant shortage of physicians and other skilled health staff. In 2008, Kisumu had one doctor per 15,182 inhabitants, while the nurse-to-population ratio was 1:2,069 (GoK, 2009a). This is well above WHO's recommendation of one medical doctor per 5,000 inhabitants and one nurse per 400 inhabitants (MSF, 2007; Rakoum, 2010). Another related problem is that the provincial hospital has a disproportionately high number of doctors and nurses, while dispensaries and health centers have few nurses. For instance, the MoH staffing norms recommend having 2-5 nurses per dispensary, and 8-12 nurses in health centers (James and Muchiri, 2006). Reducing provincial and district hospitals' nursing staff levels to MoH norms could release more nurses to work in dispensaries.¹¹

Another issue is that the central MoH (now MoPHS) still manages all aspects of human resources in the public sector. As a result, it usually takes several months to fill a vacancy because of the necessary approvals required from MoPHS, the Directorate of Personnel Management and the Public Service Commission. Given that districts are in the best position to understand local health needs and to provide the appropriate staff to meet them, granting them greater autonomy to hire and manage their own staff could more efficiently alleviate staff shortages.

Lack of pre-service and in-service training for health staff is also major concern. A 2006 human resources mapping exercise conducted by the Kenya Department of Policy and Planning notes

¹⁰ See Annex 1 for details of the division of MoPHS and MoMS responsibilities.

¹¹ MCI recommends that more nurses should be reallocated to dispensaries than to health centers because the former tend to have more patients, but they are required to have fewer staff than health centers.

that few health workers actually received any training at all, and when they did, training typically consisted of short one-day courses (James and Muchiri, 2006). Moreover, absenteeism and tardiness are common; hence training to improve health workers' professionalism is essential.

Shortages of medications and medical supplies are also common in Kisumu. Under the current drug supply system, health centers receive standard kits containing essential drugs from the Kenya Medical Supplies Agency (KEMSA). However, this system is inefficient, with drugs at times supplied to facilities that don't need them, which then end up being stolen. To address drug stockouts, KEMSA is piloting a system where drug supply is based on orders from health facilities. In 2009 MCI assisted by facilitating the delivery of five shipments of medical equipment, supplies and medicine donated by AmeriCares, a Connecticut-based non-governmental organization.

Another problem is medical waste disposal. Most facilities use "safety boxes" for needle waste and pits for medical waste disposal, with the exception of Migosi and Lumumba Health Center, which use on-site incinerators. Needle waste is collected and taken to Lumumba Health Center to be incinerated but many facilities experience delays in needle waste collection, making storage a problem.

3. Child Health

3.1. Child Morbidity and Mortality

Surveys such as UNICEF's MICS and the 2003 and 2008 Kenya DHS indicate that child mortality rates in Nyanza Province and urban areas in Kenya are declining.¹² For instance, between 2003 and 2008, infant mortality in Nyanza declined from 133 to 95 per 1,000 live births while under-five mortality declined from 206 to 149 per 1,000 live births.¹³ However, as Table 3 shows, 2008 estimates of the city's infant mortality rate (123/1000) and under-five mortality rate (220/1000) were considerably higher than the national urban and provincial rates.

Table 3. Trends in Infant and U-5 Mortality in Kisumu, Nyanza and Urban Kenya (per 1000)

	Infant Mortality				U-5 Mortality		
	2000	2003	2008		2000	2003	2008
Kisumu East			123				220
Nyanza	117	133	95		194.7	206	149
National Urban	59	61	63		90	93	74

Source: MICS (2000); KDHS (2003); KDHS (2008); GoK (2009)

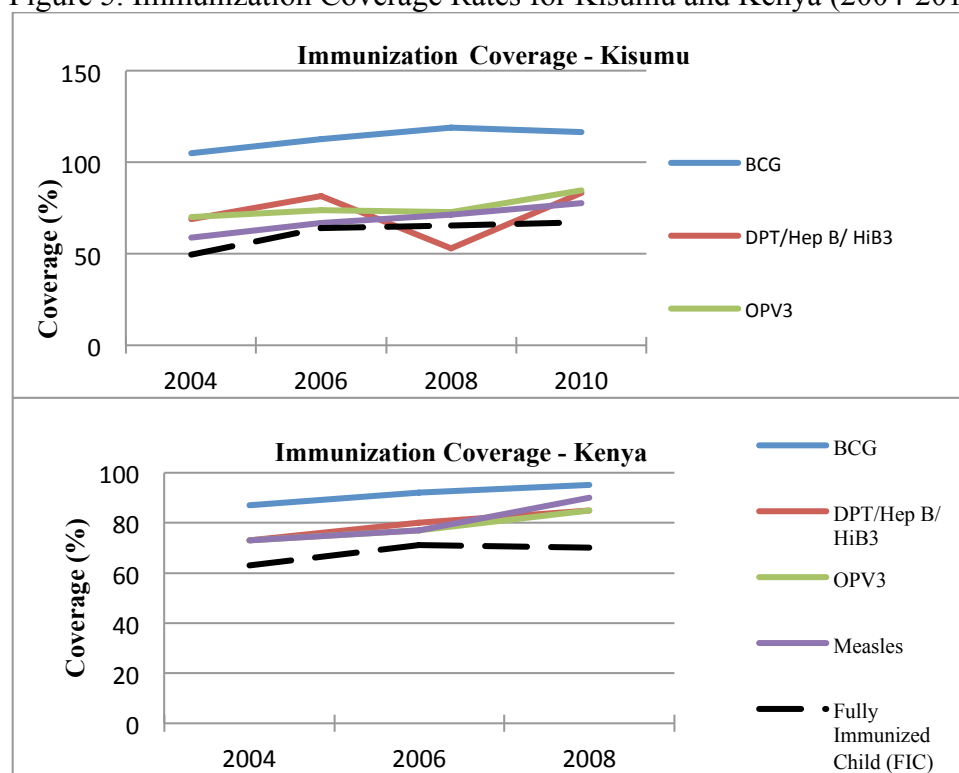
¹² Nyanza has the highest infant and under-five mortality rates in Kenya while Central Province has some of the lowest. For example, a child under-five in Nyanza is three times more likely to die than a child in Central Province (KDHS, 2008).

¹³ It is hard to pinpoint the causes of Kenya's and Nyanza Province's improved infant and under-five survival rates from 2003 to 2007 but the World Bank (2010) cites factors such as successful health programs against malaria, higher immunization rates and the strengthening of the HIV/AIDS program with enhanced prevention of mother to child transmission.

Many child deaths in Kisumu can be attributed to preventable diseases such as malaria, diarrhea and measles. To reduce infant and under-five mortality rates, cases of malaria and diarrhea must decrease. For instance, under-five mortality resulting from malaria can be drastically reduced by increasing the use of insecticide-treated mosquito nets. Households using mosquito nets in Kisumu tend to have much lower child deaths than households not using mosquito nets, as noted in a recent study (Oindo et al., 2009). In slum areas, lack of clean water, poor hygiene and improper faecal disposal also contribute to high morbidity and mortality rates among children (UN-Habitat, 2005). Promoting exclusive breast-feeding of children for the first six months reduces the risk of diarrhea, and low-cost interventions such as oral rehydration therapy (ORT) are known to be effective in managing diarrhea and reducing child deaths. Hygiene awareness campaigns emphasizing hand-washing and proper stool disposal further reduce diarrhea prevalence and associated child mortality.

Arguably the most effective primary health interventions in reducing child mortality are vaccinations against measles, whooping cough, tetanus and tuberculosis. Yet, only 65 percent of children under one were fully immunized in Kisumu in 2008 (GoK, 2009b). As Figure 5 shows, the proportion of children vaccinated against DPT3 and measles in Kisumu is relatively low compared to rest of the country. Nonetheless, great strides are being made by the government and UNICEF in improving immunization coverage.

Figure 5. Immunization Coverage Rates for Kisumu and Kenya (2004-2010)¹⁴



Source: KDHO for city-level data; WHO/UNICEF and DHMIS (2009) for country-level data

¹⁴ NB: 2010 data is for January-October 2010; November and December data are projected. Kisumu immunization coverage data (2004-2006) is for Winam Division, which is part of Kisumu East District.

Malnutrition is also rife in the Kisumu slums and contributes to child mortality. Surveys such as KIHBS (2006) show that Kisumu experiences one of the highest incidents of food poverty in Kenya, and child mortality tends to be highest among poor families. District Health Office records show that, in 2008, 55 percent of children under-five received Vitamin A supplements and Marasmus was a problem.¹⁵

Initiatives such as *Malezi Bora* (Child Health) Week, which are conducted twice a year by the Ministry of Public Health and Sanitation and UNICEF, appear to be accelerating progress towards the attainment of MDG 4. During *Malezi Bora*, the ministry encourages mothers to take their children to health facilities where they receive a comprehensive package of services that includes child immunization, Vitamin A supplementation, de-worming and nutritional services. The ministry also ensures that all health facilities have the supplies needed for the essential child health interventions.

Efforts are also needed to reduce neonatal mortality rates in Kisumu.¹⁶ According to Carlo et al (2010), it will be impossible to reduce under-five mortality rates (MDG 4) without a major reduction in early neonatal mortality. At 33 per 1,000 live births, Kenya has one of the highest neonatal mortality rates in Africa and, as Table 4 shows, although the rate in Kisumu has declined in recent years, it is still quite high. This is probably because, prior to 2009, facilities such as Kisumu East District Hospital did not have a newborn unit, and most health care workers did not have the proper training to resuscitate newborns or perform other basic neonatal procedures. As a result, many infant deaths due to prematurity and birth asphyxia were occurring.

Table 4. Neonatal Mortality in Kisumu East District¹⁷

	2008	2009	2010
Neonatal Deaths	245	194	166
Live Births	9209	9448	9638
Neonatal Mortality Rate (per 1,000 Live Births)	27	21	17

Source: Kisumu East District Health Office

Recent studies on neonatal mortality have identified a number of proven interventions, which, if implemented, could avert most neonatal deaths (WHO, 2010). For instance research suggests that training skilled birth attendants in routine neonatal care and resuscitation significantly reduces neonatal deaths (Carlo et al., 2010; Opiyo-Omolo and Mukhopadhyay, 2010). Together with the American Academy of Pediatrics (AAP) and pediatricians from Harvard Medical School and Boston Children's Hospital, MCI has begun to address the training need, using an

¹⁵ See Annex 2 for 2005-2010 malnutrition data.

¹⁶ Neonatal mortality refers to a death of a live-born baby within the first 28 days of life. Early neonatal mortality covers the first seven days of life, while late neonatal mortality covers the period between 7 and 28 days. The sum of these two represents the neonatal mortality rate. Infant mortality is the number of deaths of children aged one or younger per 1,000 live births, while under-five mortality refers to deaths occurring within the first five years after birth.

¹⁷ Neonatal mortality data for 2010 covers January-October. November and December deaths are projected.

AAP neonatal resuscitation protocol aimed at laypeople as well as caregivers entitled, “Helping Babies Breathe.”

Compiling accurate statistics on causes of death is also essential to reducing neonatal mortality. As Adjuik et al. (2006) note, medical personnel in developing countries often do not record details of deaths, and/or the information on causes of deaths is often of poor quality. With assistance from a volunteer from GlaxoSmithKline’s PULSE programme, MCI has begun to gather this vital information by carrying out a city-wide neonatal and maternal mortality survey.

4. Maternal Health

The fifth MDG calls for a reduction in maternal mortality and morbidity. Unfortunately, maternal health care is one of the greatest challenges facing the health sector in Kisumu. Key reproductive health issues/problems affecting women in the city include poor access to reproductive health services, poor quality of services and a high number of unskilled birth deliveries.

Kisumu East Health District Office records show that problems related to pregnancy and childbirth resulted in the deaths of 42 women in 2008, 41 women in 2009 and 39 women in 2010.¹⁸ This translates to 456, 434 and 405 maternal deaths per 100,000 live births, respectively. These rates are unacceptably high but they are not surprising given that, nationwide, Kenya’s maternal mortality ratio increased from 414/100,000 in 2003 to 488/100,000 in 2008 (KDHS, 2003; KDHS, 2008), which is much higher than the developing country average of 290/100,000.

Most maternal deaths are due to obstetric complications such as severe bleeding, obstructed labor, malaria, and anemia, and many of these deaths are avoidable. Hemorrhage, for instance can be prevented or managed through a range of interventions administered by a skilled health provider equipped with adequate supplies. Yet, as of February 2010, only 73 percent of health facilities in the city provided basic obstetric care (BEOC), and a mere 10 percent of the facilities had the capacity to offer comprehensive emergency obstetric care (CEOC).¹⁹ To reduce maternal mortality rates, Kisumu needs to strengthen emergency obstetric services, which includes the training of skilled birth attendants, upgrading of facilities and upgrading equipment and supplies.

Pregnant women in Kisumu are not completing the recommended four antenatal care visits prior to delivery, and a substantial number of women still do not deliver in hospitals. According to the 2008-2012 Kisumu East District Development Plan, 71 percent of women accessed antenatal care, and only 33.3 percent of births occurred in a health facility (GoK, 2009a). These rates are much lower than the 92 percent antenatal coverage and the 44 percent health facility deliveries recorded in Kenya in 2008 (UNDP, 2010).²⁰ One of the reasons for the low levels of antenatal visits by women in Kisumu is the poor quality of antenatal services (Parise et al. 2003). To ensure that all expectant mothers receive quality health services, the government has abolished user fees in all public maternity hospitals and clinics. Moreover, in August 2010, the MoPHS

¹⁸ Maternal mortality data for 2010 is provisional and covers the January-October 2010 period.

¹⁹ See Annex 3 for a table showing facilities providing BEOC and CEOC in Kisumu.

²⁰ The 2008 KDHS shows that only 39.4 percent of deliveries in Kenya were in health facilities.

launched the Maternal and Newborn Health (MNH) Road Map, which seeks to reduce maternal and newborn morbidity and mortality.

The contraceptive prevalence rate is also low in Kisumu, even though 57 out of the 62 health facilities provide family planning services. According to the latest Kisumu East District Development Plan, the 2008 contraceptive acceptance rate was 27.1 percent, much lower than the 46-percent contraceptive acceptance rate for Kenya in 2008 (GoK, 2009; UNDP, 2010). This is disconcerting because family planning can prevent many maternal deaths by reducing women's exposure to risks involved in pregnancy and childbirth. A 2009 UNFPA feature observes that low contraceptive usage is mostly due to men's rejection of family planning.²¹ Another reason is the lack of family planning products. The GoK's Contraceptive Security Strategy (2007-2012), which seeks to ensure uninterrupted supply of contraceptives, might alleviate this problem.

Another worrisome trend is that 23 percent of Kisumu's women of reproductive age are between 15 and 19 years old.²² This has troubling implications for maternal mortality, because adolescents are less likely to seek reproductive health services and are more likely than older women to experience childbirth complications.

Additional factors contributing to maternal mortality in Kisumu include malaria and anemia (GoK, 2005; Ondemu, 2000). Currently women who visit antenatal clinics during pregnancy receive intermittent preventive treatment against malaria, ITNs, tetanus immunization and treatment for anemia. Immunizing pregnant women against tetanus is especially important because the tetanus toxoid vaccine protects both mothers and newborns. If a pregnant woman is not immunized, and tetanus bacteria enter her body, it puts her life and the life of her baby at risk.

Community Health Workers (CHWs) also have a role to play in improving maternal health. For instance, they can be used to ensure that women are attending antenatal clinics and children are immunized. However, in informal settlements like Manyatta, most CHWs are unpaid volunteers, and although some receive training by NGOs specializing in maternal care, the training is not consistent.

5. HIV/AIDS, Malaria and Other Diseases

The sixth MDG is to combat HIV/AIDS, malaria, and other diseases. Malaria is endemic in Kisumu and accounts for approximately one-third of all new outpatient cases reported.²³ After malaria, other common illnesses include HIV/AIDS, TB, diseases of the respiratory system, skin diseases, diarrhea, intestinal parasites, urinary tract infections, eye infections and rheumatism.

5.1. Malaria

²¹ According to the article, available at <http://www.unfpa.org/public/News/pid/3015>, community health workers providing family planning education and contraceptives often face hostility from men in Kisumu.

²² This figure is based on 2009 census results.

²³ Data provided by the Kisumu Health District Office.

Outpatient records from the Kisumu Health District Office show that malaria is a major public health concern in Kisumu and the leading cause of morbidity, as stated above. Malaria is particularly dangerous for children under-five and pregnant women, among whom it can cause severe anaemia, miscarriages, stillbirths and contribute to low birth-weight (Kennedy, 2000).

Consequently, in recent years, the GoK has been focusing on distributing, cost free, long-lasting insecticide-treated nets (LLITNs) to pregnant women and children under-five at antenatal clinics, as a means to prevent malaria. Some clinics sell these nets at a subsidized cost of Ksh. 50 (less than \$1).²⁴ There has been progress in scaling up prevention and treatment efforts to achieve full coverage among pregnant women and children under-five. As Table 5 shows, the numbers of LLITNs and intermittent preventive treatments (IPTs) provided to women have been increasing.²⁵

Table 5. LLITNs and IPTs Distributed in Kisumu 2008-2010

	2008	2009	2010
LLITNs	8211	13155	9530
IPT1	11551	12861	11087
IPT2	8631	8813	7356

Source: Kisumu East District Health Office

In addition to these preventive measures, strategies such as indoor residual spraying and eradication of mosquito breeding grounds also need to be more actively pursued. The National Malaria Strategy (NMS) also places considerable importance on the availability of sulfadoxine-pyrimethamine, artemisinin-based combination therapies (ACT), and other drugs for treatment of malaria.

5.2. HIV/AIDS

HIV prevalence rates have not changed significantly in Kisumu City or District during the past four years. In 2006, official statistics showed that the prevalence rate in the city was 15 percent or higher while the district's prevalence rate was 11.1 percent (UN-HABITAT, 2006).

According to the Kisumu East District Development Plan, in 2008 the HIV prevalence rate in Kisumu City was still 15 percent, more than double the national prevalence rate of 7.4 percent, while the district rate remained roughly the same as in 2006, at 11.2 percent (GoK, 2009; UNDP, 2010).

Women are infected at relatively younger ages than men and tend to have much higher HIV prevalence rates than men (KDHS 2003; KDHS, 2008). Studies such as Glynn et al (2001) indicate that behavioral factors do not fully explain the discrepancy in HIV prevalence between men and women. One possible explanation is that women tend to have older partners, but a

²⁴ These nets normally cost \$8-10.

²⁵ The Millennium Villages Project, MCI's sister project, begun at The Earth Institute and now continued together with the non-profit Millennium Promise, has always distributed LLINs without charge to the entire population not only to pregnant women and children under-five. Indeed, the effort of the UN Secretariat and such partner organizations as Roll Back Malaria, Malaria No More and the WHO now advocate free universal distribution, a policy proven effective in national trials in Ethiopia and Rwanda and now being adopted by Tanzania and for whole districts in Kenya, Uganda and numerous other countries.

more plausible cause for women having higher HIV infection rates is that they have greater susceptibility to the virus.²⁶ Moreover, a 2007 randomized controlled trial of 2,784 men aged 18–24 years suggests that men in Kisumu may have lower HIV prevalence rates because male circumcision significantly reduces the risk of HIV acquisition in young men (Bailey et al., 2007). Another challenge is reducing HIV prevalence among youth in informal settlements. Poverty facilitates the spread of the pandemic by forcing poor and vulnerable youths to resort to survival strategies that include sexual transactions, which expose them to higher risks of HIV transmission (Barnett and Whiteside, 2002). To date, most interventions have focused on high-risk groups, such as commercial sex workers and single persons. However, there is a need to focus on married couples as well, because sex workers and single persons are not the only high-risk groups in Kisumu.

Prevention is the most effective strategy against the spread of HIV/AIDS. Although condoms remain an effective method of HIV prevention, many women do not have the negotiating power to make their husbands/partners use male condoms, and many men in Kisumu refuse to allow women to use female condoms. The recent development of a vaginal microbicide gel that can block HIV has the potential to be a more effective prevention method. This is because women do not have to receive their intimate partners' permission to use the gel, which they can apply before or after intercourse.²⁷

Voluntary medical male circumcision is another important weapon against HIV. Unfortunately, this often leads to the misconception among young men that they can practice unsafe sex and will not contract HIV simply because they have been circumcised.

Additional challenges include reducing mother-to-child transmission (MTCT). In recent years, clinics funded by President's Emergency Plan for AIDS Relief (PEPFAR) have decreased mother-to-child transmission of HIV in Kisumu, and the District Health Office has taken steps to ensure equity in access to drugs for the prevention of mother-to-child-transmission (PMTCT). Currently, 32 facilities offer PMTCT services (GoK, 2008). However, utilization of PMTCT services is still low, and given Kisumu's high HIV prevalence rates, a lot more needs to be done.

When a person living with HIV has a CD4 count²⁸ below 350, they are given antiretroviral (ARV) drugs which, when taken as directed, can lengthen and improve a patient's quality of life. ARV drugs and medication for PMTCT of HIV are free in Government health facilities.²⁹ Unfortunately, HIV-related stigma continues to hinder many from accessing HIV testing and ARV medication.

Patients are only required to pay Ksh. 200 (less than \$3) for their laboratory tests and medications.³⁰ With an annual per capita of around \$300, the antiretroviral medications are out of reach for the majority of those living with HIV/AIDS in Kisumu.³¹ The discontinuation of

²⁶ Other risk factors for HIV/AIDS in women include the inability to negotiate safer sex and economic privation.

²⁷ The gel is laced with an antiretroviral drug called tenofovir.

²⁸ A measure of the number of helper T-cells per cubic millimeter of blood dips.

²⁹ USAID helps fund these ARVs.

³⁰ Average cost of HIV test \$0.80.

³¹ <http://www.povertyalleviation.org/projects.htm>

support in 2010 by the Clinton HIV/AIDS Initiative (CHAI) is expected to further reduce the number of people accessing ARVs.

5.3. Tuberculosis

The TB case detection rate in Kisumu was 32 percent in 2008, and the cure rate was 31.8 (GoK, 2008). Given that the WHO target for case detection is 70 percent, Kisumu needs to do much more to reduce TB. The 2005-2010 National Health Service Strategy (NHSS II) improved case detection and cure rates but the number of TB cases keeps increasing. A worrying trend is that many people with HIV also contract TB and vice versa. Another challenge is that people still have the misconception that TB is not treatable (GoK and UNDP, 2010).

Most TB patients are on first-line treatment funded by the Global Drug Facility [GDF]), but patients with recurrent TB or failed treatment are considered candidates for second-line treatment. The direct-observed therapy short-course advanced strategy (DOTS+) has proven effective in encouraging people diagnosed with TB to start treatment.

5.4. Waterborne and Communicable Diseases

Waterborne diseases such as cholera, amoebas, e-coli and typhoid are among the leading causes of death in Kisumu, particularly among children. Each year Nyanza Province experiences cholera outbreaks and Kisumu East District is usually one of the worst affected localities. This is mainly because Kisumu's surface water and high water tables are contaminated with both human and animal faeces, particularly during floods.

In 2008, in response to a cholera outbreak in Kisumu East District and other areas in Nyanza Province, UNICEF chlorinated over 300 contaminated shallow wells and provided three vehicles with public address systems for awareness campaigns, 58,000 household water storage containers and one portable water testing kit. In 2009, the public health response to the cholera outbreak included the distribution of oral rehydration kits, chlorine tablets for water and hygiene education materials. Latrines and shallow wells were also disinfected by MCK and UNICEF.

The incidence of waterborne diseases can be reduced by improving access to clean water. For instance, research by the Center for Global Safe Water at Emory University has found that shallow well users in Kisumu are 2.5 times more likely to have fecal contamination in their water.³² Initiatives such as providing well owners with chlorine powder and reducing the number of people relying on shallow wells could reduce the frequency of diarrhea and other water-borne diseases.

³² See http://mci.ei.columbia.edu/sitefiles/file/Kisumu%20Water-Sanitation%20Report_May_2010F.pdf for MCI's water and sanitation needs assessment.

6. Financing of Public Health Care

Between 2003 and 2008, Kenya allocated 1.3-1.7 percent of its gross domestic product (GDP) to the health sector (PER, 2010). As Table 6 shows, Kenya has spent approximately \$6-\$13 per capita on health, less than half the amount WHO recommends (\$34 per capita).

Table 6. Health Expenditures in Kenya

Indicator	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Health as a percentage of GDP	5.80	6.30	9.10	10.50	11.60	13.40
Health per capita (US\$)	1.31	1.25	1.58	1.51	1.65	1.70

The MoPHS and MoMS are the providers of health care services in Kenya. The GoK, via the Ministry of Finance, determines how much the health sector should receive and then disburses the funds to the MoPHS and MoMS. The MoPHS then disseminates the funds it receives through District Health Management Boards. However, although adequate resources are critical to sustainable provision of health services at the local level, funds from the MoPHS (formerly MoH) are often not disbursed to districts in a timely manner, which leads to inadequate operation and maintenance activities (World Bank, 2010).

Public health expenditure mostly consists of recurrent and capital spending from government (central and local) budgets. In 2009, total revenue was Ksh. 578.7 million (\$7.2 million), of which 56 percent was from the central government while 44 percent was from local sources.³³ According to the MCK Treasurer's budget speech for Fiscal Year 2010/11, it is expected that 37 percent of total revenue will come from the central government, and 63 percent from local sources. In 2009 and 2010, it is estimated that total public health spending was nine percent of the total MCK budget.³⁴ Table 7 shows MCK's public health budget in 2009 and 2010.

Table 7. MCK Public Health Budget-FY 2009/2010 and FY 2010/2011 (Ksh.)

	FY 2009/2010	FY 2010/2011
Total Expenditure	77,727,089	90,753,427
Total Revenue	10,799,603	21,573,885
Deficit	(66,927,486)	(69,179,542)

Source: MCK

Kenya is increasingly dependent on external funds to supplement the national health budget. Tax revenues are unreliable sources of health finance, and macroeconomic conditions such as sluggish economic growth and inflation often affect health allocations. In 2006, 14.8 percent of Kenya's health funding came from external donor sources; Kisumu is also increasingly relying on donors for financial resources and equipment needed for the health sector.

In order to improve the funding of the health care system and to give more Kenyans access to better health care, the government has introduced a National Health Insurance Fund (NHIF), an insurance scheme to which all salaried employees contribute a percentage of their salary.

³³ In 2009, 68 percent of the health budget was allocated to salaries and 32 percent was for operations and maintenance.

³⁴ Total public health expenditure includes spending on personnel, operation and maintenance.

Membership is voluntary for individuals who are self-employed. According to USAID, there is a private health insurance sector,³⁵ but it is still relatively small (USAID, 2009).

Donor agencies need to continue providing financial and material support to improve Kenya's health care system and service delivery at the local level. It is equally important, of course, that the development partners help Kisumu and Kenya become more self-sufficient, so that domestic health care financing can become sustainable over the long term.

III. RESULTS FROM THE UNDP COSTING MODEL

The UN Millennium Project Integrated Health Model (IHM) used in this study assumes that universal health care can be achieved by (1) providing communities with affordable, accessible, available and appropriate care; (2) expanding facility effectiveness; and (3) reducing morbidity and mortality, particularly amongst women and young children.

The main underlying assumptions of the model are:

- There will be political and financial stability in Kenya until 2015, and municipal, district and national governments will remain committed to attaining MDGs 4, 5 and 6;
- Donors and multilateral organizations will continue providing financial assistance throughout this period to the public sector health facilities in Kenya;
- Cost projections from 2010-15 assume the 2008 exchange rate. Inflation is not considered in these projections.

The IHM costing model differs from other costing models such as the World Bank/UNICEF Marginal Budgeting for Bottlenecks (MBB) in that MBB estimates marginal, or additional costs required whereas the IHM estimates total costs (i.e., funds already being spent in the health system plus additional health cost required).

The costing model for Kisumu assumes that the population will grow at an annual growth rate of 1.9 percent between 2011 and 2015. The average number of people served by health facilities is as follows: Dispensaries (15,000); Health Centers (25,000); District Hospital (250,000); Provincial Hospital (900,000). The model also takes into account the following three interventions to raise awareness and increase demand: mass media campaigns; community-based awareness campaigns; and school-based awareness programs. Conditional cash transfers are not taken into account because data were not available. Capital and recurrent costs of a functioning commodity supply chain system for health are also taken into account. These include costs for facilities and transportation equipment, as well as staff in the commodity supply chain system. In terms of human resources, we assume that five percent of health workers leave the health system each year. This loss is due to many causes including death, emigration, and loss of workers to other sectors of the economy.

³⁵ Private health insurance sector is provided by insurance companies (underwriters) and medical insurance providers (MIPs – the local equivalent of managed care organizations). The average premium is approximately Ksh. 7,000 (\$100) per person per annum, hence a family of four needs Ksh. 28,000 (\$400) per annum. Given that the average teacher's salary is about Ksh. 30,000 (\$429) per month and a policeman earns about Ksh. 20,000 (\$286), the majority of formal employment workers cannot afford private health insurance.

Unit Cost Assumptions

Unit cost data were collected from national and international sources. Specifically, when country-specific unit costs were not available, the model relied on unit costs derived from such sources as UNFPA. In addition, to accommodate international and domestic shipping charges, a cost mark-up of 27 percent has been included. Human resource needs are based on desired levels of service coverage. In-service training costs are assumed to be 15 percent of annual salary while operating and maintenance costs are assumed to be 10 percent of capital costs. Moreover, although the model includes cost estimates for HIV prevention and the creation and maintenance of a HIV-enabling environment and malaria treatment, this needs assessment does not provide a cost for malaria prevention due to lack of reliable data.

Based on these assumptions, MCI projects that Kisumu can achieve the health-related MDGs by 2015, given an average annual per capita investment of \$27 between 2011 and 2015. Table 8 outlines the annual per capita costs associated with reaching these MDG targets.

Table 8. Costing Model Summary for Kisumu (in \$)

	2011	2012	2013	2014	2015	Average
MDG 4 - Child Health	0.1	0.1	0.1	0.1	0.1	0.1
MDG 5 - Maternal & Reproductive Health	2.0	1.9	1.8	1.7	1.7	1.8
MDG 6 - HIV/AIDS, Malaria and Other Diseases	6	6	7	7	7	6
Malaria Treatment	0.7	0.7	0.6	0.6	0.6	1
Tuberculosis	0.1	0.1	0.1	0.2	0.2	0
HIV/AIDS	5.2	5.4	5.7	6.1	6.4	6
Commodity Supply System	0.9	0.9	0.9	0.9	0.9	1
Facilities, HR, Health Systems	18.1	17.7	17.1	16.8	16.5	17
Cost per Capita (\$)	27	27	26	26	26	27

Health infrastructure and human resources are the most costly investment, with the 65 percent of per capita costs going to these expenses. Costs for HIV, malaria and TB constitute 24 percent of the average per capita costs, followed by commodity supply system costs, at three percent. Child health costs are the least expensive, constituting less than one percent of the per capita costs in each year. This is reasonable, since a lot of progress has been made towards attaining MDG 4.

These resources cannot be financed through public resources alone and will require support from international partners.

IV. CONCLUSION AND RECOMMENDATIONS

In recent years, the Government of Kenya has undertaken several policy initiatives aimed at reducing the disease burden and accelerating progress towards the attainment of health-related MDGs. For instance, the 2002-2008 National Health Sector Plan identified drug supply and human resource development as areas that needed to be improved if the country was to achieve the health-related MDGs, and the 2005-2010 Kenya National Health Service Strategy II focused on improving service delivery and ensuring equitable access to health services. The Government has a new development blueprint, the Vision 2030 Medium Term Plan, which aims, *inter alia*, to extend health services to those who cannot afford it and to devolve the responsibility for financial management to districts. The main goal is to provide affordable and quality health care to all citizens.

Health priorities identified in the 2008-2012 Kisumu East District Development Plan include training community health extension workers; reducing under-five mortality rates from 220 to 100 per 1,000; improving immunization coverage to 85 percent and reducing HIV prevalence to six percent (GoK, 2008). Unfortunately, numerous health facilities in Kisumu still experience chronic shortages of medications and medical supplies. Kisumu also has a deficit of skilled health workers, and there is an urgent need to provide pre- and in-service training to staff in health centers and dispensaries.

To improve child survival, progress must also be made in Kisumu to reduce neonatal mortality, through such interventions as the AAP's "Helping Babies Breathe" protocol introduced by MCI. The incidence of diarrhea, cholera and other water-borne diseases also need to be reduced, particularly in such slum areas as Nyalenda, Manyatta and Obunga.

Kisumu is presently not on track to meet MDG 5, and progress in meeting MDG 6 has been slow. In order for the city and the district to achieve these two MDGs by 2015, swift interventions must be put in place during the 2011-2015 period. To improve maternal health, Kisumu should raise the proportion of women who deliver with skilled attendants, enhance emergency obstetric services and continue providing free LLITNs and IPT to pregnant women. Health-care services should also be taken to the mother, and health staff must be trained to treat pregnant women with professionalism and compassion. Although there has been progress on prevention and control of malaria, interventions such as vector control, using insecticide-treated nets and indoor spraying, still need to be scaled up. Moreover, MDG 6 will not be attained unless health authorities in Kisumu significantly reduce the numbers of new cases of HIV/AIDS and TB.

Finally, to promote progress towards the attainment of the health-related MDGs and *all* MDGs, MCI further recommends that authorities in Kisumu need to engage communities as critical partners in the implementation of interventions. With Kenya's adoption of decentralization as a strategy, the need to involve communities has taken on even greater importance. Initiatives such as *Malezi Bora*, which seek to promote good infant feeding practices, including breastfeeding, Vitamin A supplementation, immunization and environmental sanitation, cannot be successful without active participation by families, communities, local authorities and government ministries.

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APPENDIX

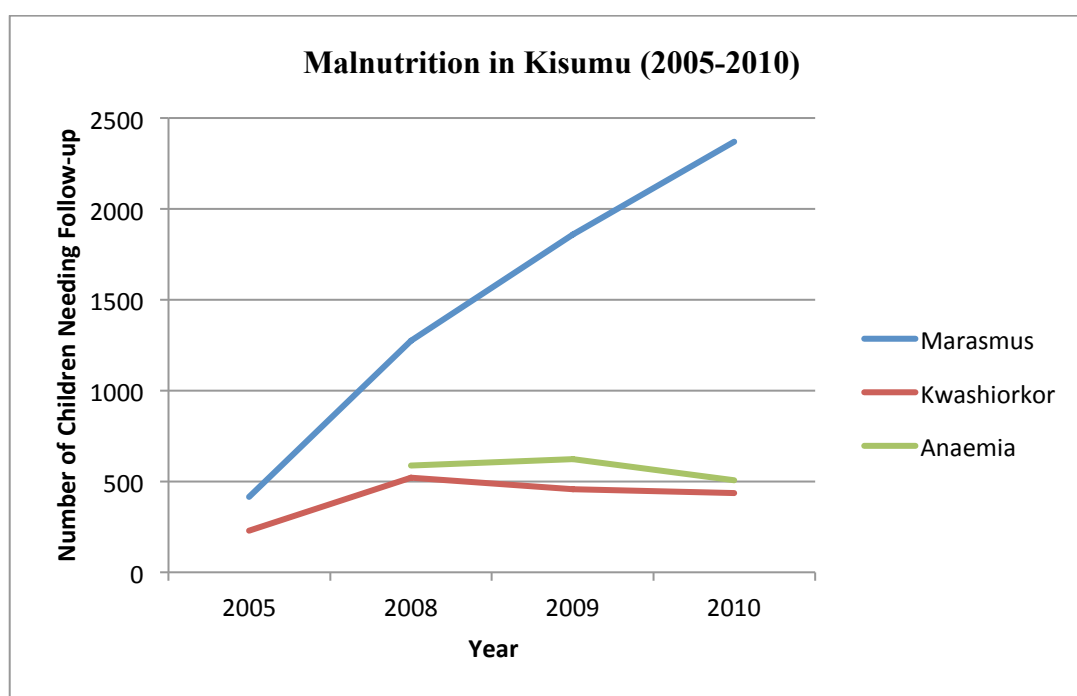
Appendix 1. Division of MoPHS and MoMS Responsibilities

Ministry of Public Health and Sanitation (MoPHS)	Ministry of Medical Services (MoMS)
<ol style="list-style-type: none"> 1. Public Health and Sanitation policy 2. Preventive and Promoting health services 3. Community health services 4. Health education 5. Reproductive health 6. Food quality and hygiene 7. Health inspection and other public health services 8. Quarantine administration 9. Oversight of all sanitation services 10. Preventive health programme including vector control 11. National public health laboratories 12. Government chemist 13. Dispensaries and health centres (i.e. Levels II & III) 14. Kenya Medical Research Institute (KEMRI) 15. Radiation Protection Board 16. Member of KEMSA Board 17. Member of KMTC Board 	<ol style="list-style-type: none"> 1. Medical services policy 2. Curative services 3. HIV/AIDS and other Sexually Transmitted Infections (STI) Treatment and Management 4. Maternal Services 5. Rural Medical Services 6. Clinics and hospitals 7. Registration of doctors and paramedics 8. Nurses and midwives 9. National Hospital Insurance Fund 10. Clinical laboratory services 11. Kenya Medical Training College 12. Government Chemist 13. Kenya Medical Supplies Agency (KEMSA) 14. Regulatory bodies for pharmacy and Medicine.

Appendix 2. Malnutrition in Kisumu East District (Children Needing Follow-up)

	2005	2008	2009	2010
Marasmus	414	1,273	1,859	2,371
Kwashiorkor	229	521	457	435
Anaemia		588	623	505
Underweight (0-59 months)			4,484	5,032

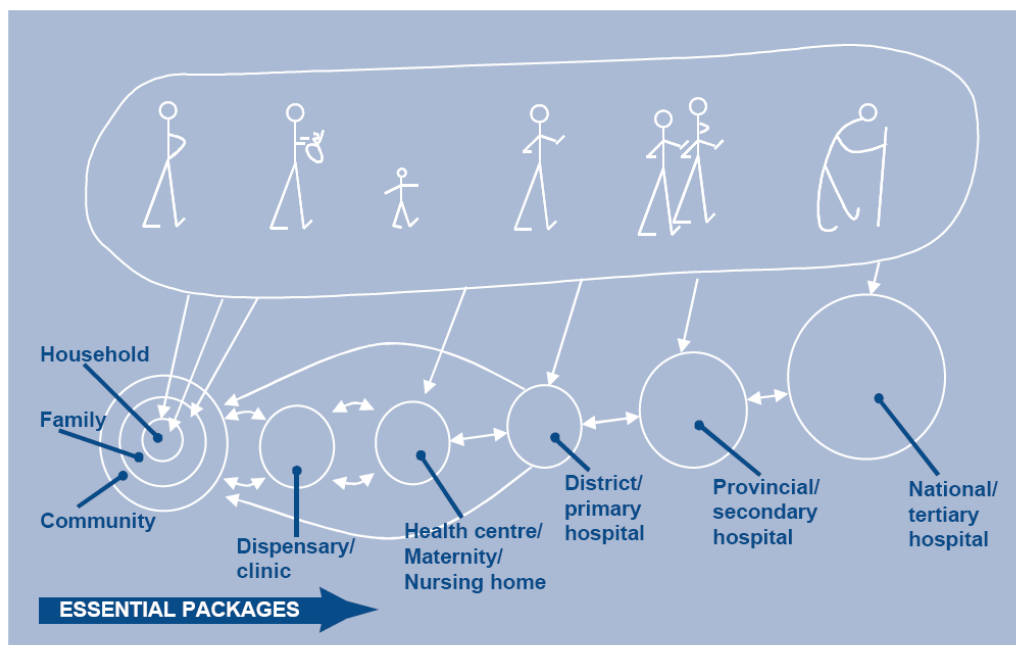
Source: Kisumu East District Health Office



Appendix 3. Facilities Providing BEOC and CEOC in Kisumu

Facility	Owner	Type	Location	BEOC	CEOC
Administration Police Dispensary (Kisumu East)	Ministry of Health	Dispensary	Township	Y	N
Aga Khan Hospital (Kisumu)	Enterprise	Other Hospital	Township	Y	Y
Airport Dispensary (Kisumu)	Ministry of Health	Dispensary	Central Kisumu	Y	N
Avenue Health Care Clinic	Enterprise	Medical Clinic - Other	Township	Y	N
Chiga Dispensary	Ministry of Health	Dispensary	East Kolwa	Y	N
Disciples of Mercy Clinic	Conference-Catholic	Medical Clinic - Other	Kajulu East	Y	N
Dunga Nursing Home	Enterprise	Other Hospital	Township	Y	N
Family Health Options Kenya (FHOPK) Dispensary	Organizations	Dispensary	West Kolwa	Y	N
GK Prisons Dispensary (Kibos)	Ministry of Health	Dispensary	Miwani	Y	N
Gods Will Clinic	Enterprise	Maternity	West Kolwa	Y	N
Got Nyabondo Dispensary	Local Authority	Dispensary	East Kajulu	Y	N
Guru Nanak Dispensary	Enterprise	Dispensary	Township	Y	N
Jalaram Nursing Home	Enterprise	Maternity	Township	Y	N
Kajulu/Gita Dispensary	Ministry of Health	Dispensary	East Kajulu	Y	N
Kanyagwal Dispensary	Ministry of Health	Dispensary	Bwanda	Y	N
Kisumu District Hospital	Ministry of Health	Primary Hospital	Township	Y	Y
Kodiaga Prison Health Centre	Ministry of Health	Health Centre	Township	Y	N
Lumumba Health Centre	Local Authority	Health Centre	Township	Y	N
Marie Stopes Nursing Home (Kisumu)	Organizations	Maternity	Township	Y	Y
Migosi Health Centre	Local Authority	Health Centre	Kondele	Y	N
Milimani Hospital	Enterprise	Other Hospital	West Kolwa	Y	N
Miwani Dispensary	Ministry of Health	Dispensary	Miwani	Y	N
MV Patel Clinic	Enterprise	Medical Clinic - Other	Township	Y	N
Nightingale Hospital	Enterprise	Other Hospital	Kondele	Y	N
Nyahera Sub District Hospital	Ministry of Health	Primary Hospital	North Kisumu	Y	N
Nyalenda Health Centre	Local Authority	Health Centre	West Kolwa	Y	N
Nyalunya Dispensary	Ministry of Health	Dispensary	Kolwa Central	Y	N
Nyangande Dispensary	Ministry of Health	Dispensary	Kawino	Y	N
Nyanza Provincial General Hospital (PGH)	Ministry of Health	Secondary Hospital	Kolwa	Y	Y
Ober Kamoth Health Centre	Local Authority	Health Centre	S.W Kisumu	Y	N
Ojola Dispensary	Ministry of Health	Dispensary	S.W Kisumu	Y	N
Pand Pieri Dispensary	Conference-Catholic	Dispensary	West Kolwa	Y	N
Port Florence Hospital	Enterprise	Other Hospital	Township	Y	Y
Raburor Health Centre	Ministry of Health	Health Centre	West Kochieng	Y	N
Railways Dispensary (Kisumu)	Local Authority	Dispensary	Township	Y	N
Rota Dispensary	Ministry of Health	Dispensary	Sw Kisumu	Y	N
Simba Opepo Dispensary	Local Authority	Dispensary	West Kajulu	Y	N
St Consolata Clinic	Enterprise	Medical Clinic - Other	Kajulu East	Y	N
St Elizabeth Chiga Dispensary	Conference-Catholic	Dispensary	East Kolwa	Y	N
St Jude's Clinic	Enterprise	Medical Clinic - Other	Township	Y	N
St Luke's Hospital	Enterprise	Other Hospital	Township	Y	N
St Mark's Lela Dispensary	Ministry of Health	Dispensary	Central Kisumu	Y	N
St Monica Hospital	Conference-Catholic	Other Hospital	West Kajulu	Y	Y
St Vincent Clinic (Kisumu East)	Enterprise	Medical Clinic - Other	Township	Y	N
Star Maternity & Nursing Home	Enterprise	Maternity	Township	Y	N
Central Clinic (Kisumu East)	Enterprise	Medical Clinic - Other	Township	N	N
Elim Family Community Care	Organizations	Medical Clinic - Other	Township	N	N
Hongo Ogosa Dispensary	Local Authority	Dispensary	Katho	N	N
K- MET Clinic	Organizations	Medical Clinic - Other	Kolwa Central	N	N
Kibos Sugar Research Dispensary	Ministry of Health	Dispensary	Miwani	N	N
Kowino Dispensary	Ministry of Health	Dispensary	Kolwa West	N	N
Dispensary	Company Medical Service	Dispensary	East Kisumu	N	N
Liverpool VCT (Kisumu East)	Organizations	Medical Clinic - Other	Township	N	N
Mosque Dispensary	Ministry of Health	Dispensary	Township	N	N
MTC Clinic (Kisumu)	Enterprise	Medical Clinic - Other	Kolwa West	N	N
OLPS Clinic	Conference-Catholic	Medical Clinic - Other	Kolwa Central	N	N
Reachout Dispensary	Organizations	Dispensary	Nyamware	N	N
Ring Road Health Centre	Enterprise	Health Centre	Township	N	N
Sayid Aysha Dispensary	Organizations	Dispensary	Township	N	N
Town Hall Dispensary	Local Authority	Dispensary	Township	N	N
Tuungane Youth Centre (Kisumu East)	Organizations	Medical Clinic - Other	Township	N	N
Usoma Dispensary	Local Authority	Dispensary	Central Kisumu	N	N

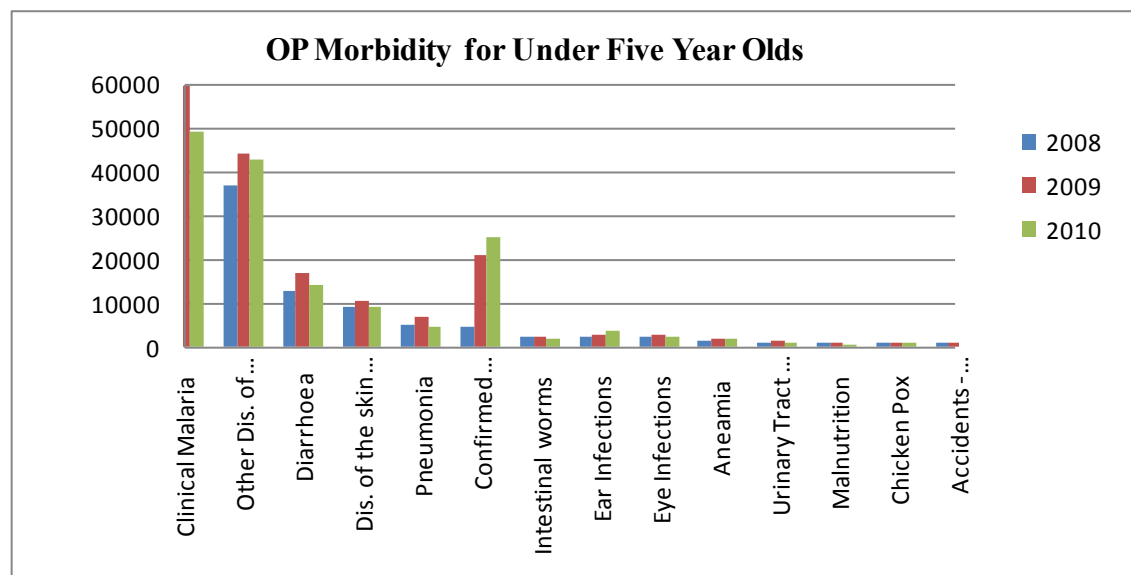
Appendix 4. Kenya Essential Package for Health (KEPH) Approach Chart



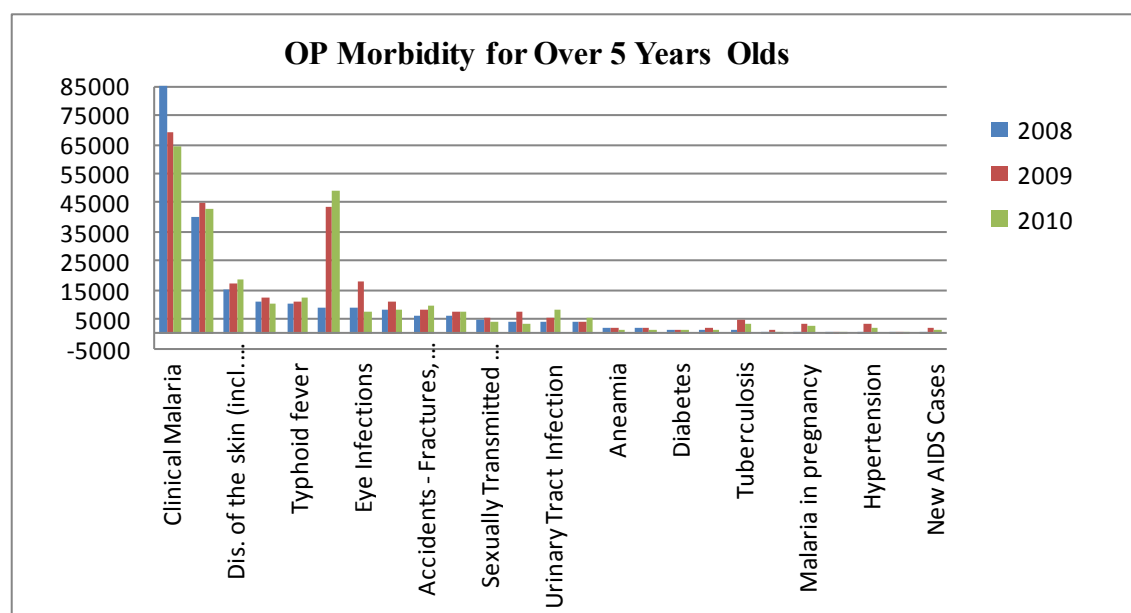
The KEPH approach defines six service delivery levels:

- Level 1, the community level, is the foundation of the service delivery priorities, because it allows the community to define its own priorities so as to develop ownership and commitment to health services. Communities will be empowered with information and skills. Only in this way can real change towards healthy lifestyles be achieved.
- Level 2 and 3 are, respectively, the dispensaries and the health centers and maternity/nursing homes, which will primarily handle preventive care, but also some curative services.
- Levels 4-6 are the primary, secondary and tertiary hospitals, which will focus mainly on the curative and rehabilitative aspects of the service delivery package.

Appendix 5. Major Causes of Outpatient Morbidity, 2008-2010



Source: Kisumu East District Health Office, OP Morbidity Summary Tables 2008-2010



Source: Kisumu East District Health Office, OP Morbidity Summary Tables 2008-2010