# Maternal mortality: Africa's burden

## Toolkit on Gender, transport and maternal mortality. Vs4 -04-2005

Margaret Grieco, Professor of Transport and Society,

Transport Research Institute, Napier University and Visiting Full Professor, Institute for African Development, Cornell University

and

Jeff Turner, Independent Consultant,

United Kingdom - email: jeffreymturner@hotmail.com

A health clinic in Benin: maternal and infant mortality rate
Africa remain the highest in the world.
Photo : UNICEF / Maggie Murray-Lee. Sourced @
http://www.un.org/ecosocdev/geninfo/afrec/bpaper/maine

This web site is dedicated to the memory of Vera Nyarko, a talented student of the University of Ghana, who died in childbirth.

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The basic argument is found at:

http://www.geocities.com/transport_and_society/classnotes10.html

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## *Introduction: Why gender and transport?*

There is a relationship between mobility, power and well being. The differences between male and female travel patterns and the cultural rules and roles associated with these differences are undercharted in the policy environment. The impact of constrained mobility on bargaining also has its impact on what comes to be available as resource and service within local constraints. No better demonstration of these constraints can be found than in Africa's portrait of maternal mortality: constraints on mobility and on the resources for mobility and accessibility have devastating consequences for women's health on the African continent.

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|  | Transport of water<br><br>@http://www.mts.net/~gcg/resourc |
| Transportation of water, Ethiopia, Africa<br>Source: M. Marzot, FAO Photo, 1992<br>Reference Number: 17067<br><br>@<br>http://www.mts.net/~gcg/resources/images/indexes/index1.html |  |

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## *Why Africa?*

There is a need for a re-examination of 'the politics of priority': health or wealth? Many of the heated policy discussions around growth versus poverty reduction as the priority are had without reference to the scale of the crisis in maternal well being. Maternal mortality is not simply fatal but is often a cruel and harsh lived experience for Africa's women. And yet OECD's evaluation of the costs of drastically reducing maternal mortality in Africa indicates that this can be done without the need for significant increases in the wealth of the continent. It is a matter of organisation and part of that organisation is the provision of transport facilities and hostel provision for those in need of, or likely to need, emergency obstetric care.

- Ironically, maternal mortality - death because of distance from health facilities - is increasing in Africa at the same point as there is a global discourse on the 'death of distance'.
- The mapping of mobility entitlements and accessibility patterns against gender, and the consequences of these patterns, is not adequate.
- Similarly the measurement of maternal mortality and women's health has been under-resourced with the consequence that current overviews are inadequate and operational and evaluative knowledge on best practice interventions is weak.
- There does seem to be a strong relationship between poor transport organization and high levels of maternal mortality.
- There is a clear ground in which improvements in information technology could help reduce rates of maternal mortality.
- A set of mobility and empowerment factors need to be considered and addressed in any campaign to reduce maternal mortality.
- The reduction of maternal mortality is a Millennium Development Goal.
- The policy discussion is short on suggestions on how to realise this goal - and the contribution that safe motherhood transport plans could make to this reduction is under-operationalised.

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| Rough journeys at best - rural transport in Africa |  |
|  | When a large tree f<br>description by Phil |

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## *Expert evidence*

The expert advice is clear: maternal mortality in Africa is a crisis and it is a crisis which is likely to worsen.

> 'Africa has the highest maternal mortality rate in the world.
>
> Experts on reproductive health have painted a grim picture of maternal and child health in the region and warned that the situation could worsen in the next decade if no immediate remedial actions were taken by Africa's governments and development partners**.** Many African countries have been hit by an exodus of medical personnel to overseas destinations in recent years.
>
> "Only 42% of births in the African region are attended by skilled personnel," an expert at the regional conference on maternal and new-born health in Zimbabwe emphasised. Unsafe abortions are also high among adolescents, according to him. Experts, who are drawn from various international organisations, are examining the extent of the problem on the continent and will suggest ways of reducing the death rates among mothers and infants. African governments' health budgets were also identified as inadequate to deal with obstetric cases.
>
> "The percentage of GDP (gross domestic product) devoted to health in sub-Saharan Africa remains at between one percent and 3,7% compared to the large percentage spent on arms," they conveyed. "If nothing is done to arrest the trend (of high and growing maternal and child deaths), it is estimated that there will be 2.5 million maternal deaths, 2.5 million child deaths and 49 million maternal disabilities in the region over the next 10 years", Prof. Joseph Kasonde noted. He states that more than half of the 600,000 women who die every year from pregnancy-related causes were in the African region which constitutes only 12% of the world's population and 17% of its births. Maternal mortality ratio in Africa remains the highest in the world with the average actually increasing from 870 per 100,000 live births in 1990 to 1,000 per 100,000 live births in 2001.
>
> According to a WHO-sponsored study made available at the regional workshop on improving maternal and neonatal health in Zimbabwe, neonatal morbidity and mortality rates is currently estimated at 45 deaths per 1,000 live births and contribute about 50% of the infant mortality rate in the region. The findings of the study, presented by Dr Office Chidede, a Consultant Neonatologist at the University of Zimbabwe, also show that stillbirths and deaths within the first seven days of life in the Region was estimated at 76 per 1,000 live births.

He also indicated that 70% of deliveries take place in the community where maternal and newborn births are usually not recorded. Eight countries were covered by the study conducted between February 2001 and August 2002. Its goal was to develop or recommend evidence-based strategic interventions and establish sustainability in the institutionalization and implementation of identified remedial measures.

The study documents some of the causes of death as provided by health providers and facility records. These include: birth asphyxia (suffocation during birth), 40%; prematurity and low birth weight, 25%; infections, 20%; congenital defects, 10%, and acute surgical conditions, 3%. Other findings relate to unavailability of basic supplies and equipment, staff shortages and low morale, bad roads and long distances between referral points, continued use of traditional birth attendants (who are still popular and highly regarded) and preference of mothers to deliver in health facilities, although these are still largely perceived as not user-friendly.

Pregnancy in adolescence presents a unique and frightening picture," he highlighted, adding that 13% of all maternal deaths occurred in adolescents, 14 million of whom gave birth annually worldwide. Prof. Kasonde conveyed that in spite of the somber picture, two major initiatives launched in the past two decades had helped to stem the tide of maternal and child deaths in Africa. These include the Safe Motherhood Initiative launched in 1987 which drew attention to the multifaceted nature of the problem and the need to invest in five key critical areas: human rights, empowerment of women, education, socio-economic development and the improvement of health systems. The Making Pregnancy Safer Initiative, launched in 2000, focused on the health sector and its crucial role in accelerating maternal maternity reduction. The aim of the Initiative was to ensure that women and their newborns have access to the care they need through the strengthening of health systems and appropriate community-level actions."

He stated that in spite of the harsh economic environment prevailing in Africa, the application of appropriate policies by governments would lead to improvements in the outcome of pregnancies irrespective of the economic status of countries. According to him, it was now time for African governments to focus on the availability of and accessibility to emergency obstetric care because emergencies constituted a major risk for maternal mortality in Africa. Other essential interventions, he said, were the reorganization of health systems, the strengthening of midwifery skills, and increasing the number of skilled birth attendants. He further concluded his presentation with a four-pronged call for action: action to place maternal and newborn health high on the agenda of governments and partners; to review policies, guidelines and programmes; to allocate and release resources and action to harness resources from communities and

partners." http://www.sahims.net/regional/exec-review/2004/02_feb'/reg_review_04_02_20.htm

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|  | Twelve post-operative women at the Addis Ababa Fistula Hospital in Ethiopia are ready to go home. They have had their obstetricfistulae repaired, and they have been given new dresses (the constant leakage of body waste, caused by fistulae, ruins clothing). Only a few have live babies. Most have given birth to stillborn babies.<br><br>309-16 Addis Ababa, Ethiopia<br>Credit: © Ruth C. Kennedy, Courtesy of Photoshare @ http://www.photoshare.org/ |
| Women from the Akpamanya hamlet in the Nimbo community of Nigeria engage in a health situation analysis activity as a way to express their perceptions and experiences related to women's<br>health. This activity took place as part of the formative research component of the Ndukaka Project (Female Genital Cutting - FGC) in the Enugu State. In this photo, a participant draws her idea of a healthy woman.<br><br>529-11 Akpamanya, Nigeria<br>Credit: © 2002 Serena Williams/CCP, Courtesy of Photoshare @ http://www.photoshare.org/ |  |

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## *Map of maternal mortality, Africa:*

***Click on the link below for the map of maternal mortality for Africa:***

http://www.overpopulation.com/faq/Health/mortality/maternal_mortality/maps/africa.html

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## *Overview of African data:*

***Click on the link below for an overview of maternal mortality data for Africa:***

http://www.overpopulation.com/faq/Health/mortality/maternal_mortality/africa.html

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## *Problems and solutions: networking in Africa.*

This section draws attention to forms of networking around the problem of rising maternal mortality rates: there has been local, regional and web-based data base construction as well as the development of safe motherhood action networks within localities historically afflicted by high maternal mortality rates. The links below provide an insight into some of this activity.

- There is a rising maternal mortality rate in Africa. http://www.gfmer.ch/Endo/Course2003/Maternal_mortality.htm This link provides access to information on the sisterhood methodology for collecting data on maternal mortality - this is a network methodology which is useful in contexts where traditional data collection provisions have been inadequate and under-resourced.

A women's ward at the Buwenge Health Center in the Jinja District of Uganda; woman lying in bed.

426-17 Uganda Credit: © 2001 Harvey Nelson, Courtesy of Photoshare @ http://www.photoshare.org/

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| A health worker examines a pregnant client in the DISH Project video "Caring Completely," set in Uganda.<br><br>77-74 Uganda Credit: © 1996 CCP, Courtesy of Photoshare @http://www.photoshare.org/ |  |

- The evidence is that maternal and child health care is deteriorating: and regional networks are forming to combat the crisis.

  "It is estimated that 585,000 women die each year as result of pregnancy and childbirth. Almost all of these deaths (99%) occur in developing countries, particularly Africa. Therefore there is an urgent need to address the problem of maternal mortality with effective programs to reduce the unacceptable number of deaths that occur in the world's poorest countries."

"From 1988 to 1996 a Network of eleven multi-disciplinary teams in West Africa, (Ghana, Nigeria, Sierra Leone) the Prevention of Maternal Mortality (PMM) Network, collaborated with a team at Columbia University, New York ."

"In June 1996, the PMM Network presented the results of eight (8) years of research at an International Conference in Accra. This marked the end of the 1st Phase of the Network and the beginning of the 2nd Phase. The Network has now become a complete African entity with its regional headquarters in Accra - Ghana. It is now known as the Regional Prevention of Maternal Mortality (RPMM) Network.

Five disciplines form the RPMM Network, namely Community Physicians, Nurse-Midwives, Obstetricians, Social Scientists, and Anaesthetists. Their projects focus on interventions that improve the availability, quality and utilization of emergency obstetric care. Activities range from improving services at health facilities to improving access to care."

@ http://www.rpmm.org/ (site presently under reconstruction) Regional prevention of maternal mortality network.

- Policy goals, mortal failure: displaying the scale of the gap.

  Despite the various policy calls to action and international networking amongst development agencies on the topic, in Africa the situation is worsening. In addition to displaying the scale of the gap there is a need for

a rapid identification of immediate operational measures which can be taken to redress this glaring inequity.

"The complications of pregnancy and childbirth are the leading cause of death and disability among women of reproductive age in developing countries. It is estimated that around 515,000 women die each year from maternal causes. And for every woman who dies, approximately 30 more suffer injuries, infection and disabilities in pregnancy or childbirth. This means that at least 15 million women a year incur this type of damage. The cumulative total of those affected has been estimated at 300 million, or more than a quarter of adult women in the developing world…..

Though much has been learned during the past decade about the causes of maternal death, there is little evidence of significant progress towards the ambitious goal of halving maternal mortality. Every year, over half a million women continue to lose their own lives to the hope of creating life. Women in Sub-Saharan Africa continue to face a 1 in 13 chance of dying from pregnancy and childbirth, when the risk for women in the industrialized world is only 1 in 4,085."
http://www.childinfo.org/eddb/mat_mortal/

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|  | Women in Zambia meet twice a week on Tuesdays and Fridays at a referral center to learn about family planning, reproductive health, and birth spacing, in order to reduce the dangers of child-bearing, STIs, and poverty.<br><br>2004-416 Zambia Credit: © 2004 Yesaya Banda, Courtesy of Photoshare @http://www.photoshare.org/ |
| Health educators in Nigeria use a large flip chart to speak to a group of women about women's health issues.<br><br>58-36 Nigeria Credit: © 1990 CCP, Courtesy of Photoshare @ http://www.photoshare.org/ |  |

- Mali, an important case study: the social organisation of local women around reproductive health/ best practice http://allafrica.com/stories/200408130726.html (link no longer working on a free basis):

  "The small Malian town of Zegoua - population 22,000 - doesn't have a great many "claims to fame". In one respect, however, it has achieved something remarkable.

"Since January 2002, there's not been one case of neonatal or maternal mortality in Zegoua or any other nearby village," Yaya Coulibaly, director of the Zegoua Community Health Centre, told a group of local and international journalists recently. The centre caters for nine villages, which are divided into 16 zones. Zegoua is located almost 500 kilometres south of the Malian capital, Bamako - near the country's border with the Ivory Coast.

According to Coulibaly, the secret of the area's success in reducing neonatal and maternal mortality lies in the determination of its women to tackle these problems. They have organized themselves into teams for taking charge of their health care.

"In spite of their meager financial resources, these women pay the fees for postnatal consultations, vaccinations and family planning," Coulibaly said.

According to the United Nations Children's Fund (UNICEF), an average of 1,530 women fall pregnant every day in Mali. Of these, 230 experience complications during pregnancy, while 20 die. About 100 of the children they deliver also die. In addition, several women develop serious postnatal conditions such as fistulas and descended uteruses.

Before the women of Zegoua and its surroundings started grouping together to address these problems, the approach that some had to healthcare was a little haphazard."

"We never thought about our health problems," says Mariam Ouatara, from the village of Katele, adding that scarce funds were sometimes spent on entertainment. "After these big parties, some of us couldn't even afford to pay the 100 CFA francs (about 18 cents) it costs for a simple vaccination card."

The women have now formed groups that plant cotton, peanuts and rice. A share of the revenues generated by these crops is used to pay for consultations to check on the health of babies and new mothers, and to discuss family planning issues. The funds also extend to vaccinations, and buying drugs for treating malaria.

*In the event that severe problems develop during a pregnancy, the coordinator of each village team must ensure that the woman concerned is transferred to a clinic that is equipped to deal with such emergencies."*

Click here for map giving location of Zegoua

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## *The transport issue:*

Disciplinary divides have prevented the transport profession's explicit focus on maternal mortality as a measure of transport failure. An inventory or toolkit of transport measures, and associated measures, aimed at reducing maternal mortality could usefully be developed by international agencies such as the World Bank (click on link for access to World Bank embryonic site on maternal mortality and transport).

"In addition to contraception, women need access to a broad range of services. The primary means of preventing maternal deaths is to provide rapid access to emergency obstetrical care, including treatment of hemorrhages, infections, hypertension, and obstructed labor. It is also important to ensure that a midwife, or doctor is present at every delivery.

In developing countries only about half of deliveries are attended by professional health staff. Skilled attendants must be supported by the right environment. Life-saving interventions – such as antibiotics, surgery, and transportation to medical centers – are unavailable to many women, especially in rural areas. These women may lack the money for health care and transport, or they may simply lack their husbands' permission to seek care. "
http://www.developmentgoals.org/Maternal_Health.htm

In order to appreciate the importance of transport and accessibility interventions in the reduction of maternal mortality, only one statistic is necessary - there is an accessibility time of 30 minutes to services which is crucial for women's health and survival.

The reason the maternal mortality fell in the US this century was because of the advent of antibiotics and blood transfusion more than anything else. There is simply no scientific evidence to prove the falling mortality was because birth was moved into the hospital.(1) The evidence does show that as long as there is a system in place to transport women in labor to a facility within 30 minutes where there are antibiotics, blood transfusion and cesarean section capacity, there should be very little maternal mortality.

Maternal mortality is quite different from perinatal mortality and infant mortality. The latter two are much influenced by socioeconomic factors while maternal mortality is much more directly a function of the quality of the health care available. If midwives (traditional, direct entry, or nurse-midwives) are trained to know the signs of serious complications and have the means of transport, there is no need for a doctor at the site of primary care of pregnant and birthing women who have had no complications. But at the site of the place where the woman is transported, there is need for a doctor who has surgical skills and, ideally, obstetrical skills, to manage the complications. Wagner, M @ http://www.geocities.com/Wellesley/5510/wagner.html (link no longer working)

Measuring women's access to maternal health services in Africa using this figure has not yet been undertaken but there seem to be good planning reasons why it should. And the use of new information communication technologies can make both planning and service delivery more timely.

The transport lessons around the reduction of maternal mortality in Africa clearly involve communication and organisation issues as well-

- fast information links can save lives,
- rendering services locally can reduce the need for mobility, and
- operating hostels for those at risk can temporarily reduce distance within critical windows of care.

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## *Best Practice - Specific transport and maternal mortality projects:*

The specific projects identified here all have explicit transport dimensions which can be replicated elsewhere. Currently, there is an institutional vacuum in respect of the transport arrangements required for safe motherhood. The evaluation of the projects identified below and their systematic emulation and replication within a "Safe motherhood transport planning" framework is clearly an activity which

can be undertaken within the remit of the development agencies in alignment with meeting the Millenium Development Goals.

- Safe motherhood transport plans - Malawi (Click on link for case study)

  'A government-backed Safe Motherhood programme has reportedly established village committees on safe motherhood, organized transportation plans and provided training to traditional birth attendants so that they can recognize signs of obstructed labour and act efficiently to get a woman to a facility. Telephones and radios have been installed in some health centres to communicate with the referral hospital and request ambulance transport for women in distress.....Pervasive gender inequities sometimes prevent women's access to transportation and emergency obstetric care. Decisions about when and where to seek care are usually made by an uncle (or, occasionally, by the husband); without their input, a woman would be unlikely to seek care on her own.'

- Transport within Safe motherhood unions - Zegoua, Mali (link no longer working on free basis but see above and below text on topic)
  'The small Malian town of Zegoua - population 22,000 - doesn't have a great many "claims to fame". In one respect, however, it has achieved something remarkable.

"Since January 2002, there's not been one case of neonatal or maternal mortality in Zegoua or any other nearby village," Yaya Coulibaly, director of the Zegoua Community Health Centre, told a group of local and international journalists recently. The centre caters for nine villages, which are divided into 16 zones. Zegoua is located almost 500 kilometres south of the Malian capital, Bamako - near the country's border with the Ivory Coast.

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- Targeted approaches which integrate transport - Senegal and Mali (Click on link for case study)

'In Mali, interagency collaboration has enabled the country to build and equip seven new community health centers in three regions and a new maternity unit. The government of Mali, with support from various donors, developed a programme to bolster its referral system with a rapid-response component. The country has invested in radio communication among referral centers, and has procured vehicles to use for patient transport. District hospitals and local health centers are now linked by a two-way system of radio communication and transportation. A car, equipped with a stretcher, is available to transport women from health centers to district hospitals. Under this system, the time required to transmit an urgent message and transport a patient is reduced from up to a day to just a few hours.'

- Walkie-talkies, transport strategies and a 40% reduction in maternal mortality: RESCUER, a Ugandan case study/ eastern Uganda's Iganga district. (Click on link for case study)
  ' The project has three components: communications, transport and provision of quality health services. The communications system uses VHF radios installed in base stations and health units, in the referral hospital ambulance and the District Medical Officer's vehicle, while the birth attendants have walkie-talkies. The midwives and birth attendants got additional training and now there is better quality care. But transport has been the biggest problem as the ambulance sometimes breaks down.

  The initial cost of the project was under $124,000, covering the cost of the radio and monitoring equipment and training for technicians and users. After this phase, running costs decreased. According to Ms. Musoke, the system uses solar energy for electricity. "After the initial expenses, there are the usual maintenance costs, but these are small and easy to bear, which means that even when donors pull out, the project will still be sustainable.

Because of its positive results, the RESCUER project is already being replicated in three other districts and there are plans to extend it in phases to 30 more." See also http://iconnect.osc.nl/stories/articles/Story.import47

- Using the existing fleet of vehicles: the yellow flag initiative in West Africa (Click on link for case study)

  Some innovative new schemes are working. Another BBC producer spoke with Pramila Seneyaki, from the International Planned Parenthood Federation, who described an initiative in West Africa which uses a local truck drivers union to provide emergency transport for women. "If there is a woman in difficulty in a village what we will do is get her family to plant a yellow flag on the main road," she stated."When you see a yellow flag you

know there is a woman in trouble."Somebody will be there to tell you, 'look my mother is in trouble. If we bring her up to the lorry can you take her the 200 miles?'."They were delighted to be able to help and we reduced maternal mortality quite significantly because of this initiative."

- Emergency obstetric care motorised ambulances: the Ghanaian Matercare Project (Click on link for case study)
  The operation and evaluation of an Emergency Obstetric Transport Service: This service will provide the ability to resuscitate and to safely transfer mothers with severe childbirth complications from the villages to the district hospital

| | |
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|  | The operation and evaluation of an Emergency Obstetric Transport Service - photo sourced @ http://www.matercare.org/westafr.html |
| The Emergency transport provides safe and quick transport for obstetric emergencies - photo sourced @ http://www.matercare.org/westafr.html |  |

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## *Suggested interventions:*

Mobile maternal health clinics?: learning from AIDS/HIV interventions The international focus on the AIDS/HIV crisis has led to innovative designs for mobile health facilities in the African context of highly restricted rural accessibility to health facilities. The overlap between AIDS/HIV and maternal health is a

strong one and these facilities could be developed to give greater attention to this overlap.

Roadside welllness centres: the intersection of health needs? The link between transport routes and the transmission of HIV/AIDS has been documented by a range of international agencies including the World Bank. The recognition of this link has led to the development of wellness centres or health posts along major transportation routes in Africa to service the male truckers using these routes. Services are also provided to local female sex workers. There is a need to investigate whether such facilities could be used in tackling the maternal mortality rates of rural Africa - at the very least such health posts could provide a link to emergency obstetric transportation for mothers in crisis.

Toolkit for assessing the impact of safe motherhood interventions. The Dugald Baird Centre for research on women's health under the leadership of Professor Wendy Graham and funded by the Department for International Development, UK is developing a toolkit for assessing the impact of safe motherhood interventions. This toolkit should be expanded to include transport interventions.

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## *Policy discussion:*

Within the policy discussion there is a need for:

- more accurate measurement,
- more focused solutions,
- more sensitive social scientific analysis of the relationship between mobility, gender and health.

There is now a policy goal of dramatically reducing maternal mortality in Africa and there is a body of evidence which speaks to the scale of the problem but the literature on concrete measures for bringing about this goal and the operational activities of development agencies in pursuit of this goal are thin on the ground, most particularly in respect of the transport and maternal mortality link.

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| | A bicycle ambulance in Malawi - bicycles can be the link from remote rural locations to the motorised highways. Radio |

connections can be used to make sure a vehicle awaits the patient. Bicycle ambulances have been used in some maternal mortality reduction transport interventions - an evaluation of the role bicycle ambulance can play is now needed.

Source:

http://www.transaid.org

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## *Conclusion:*

There is sufficient evidence that transport organisation and provision is highly gendered in both the developing and developed context. Gender methodologies have not yet been sufficiently mainstreamed to tackle this existing pattern of equity. The reduction of maternal mortality in Africa - a Millenium Development Goal - provides an operational ground in which such methodologies are in need of urgent development.

There is evidence that more systematic approaches are beginning to be adopted but as of yet transport and gender statistics are of a limited character as evidenced by the World Bank's own gender statistics site. The development of a web site which provided consolidated information on the relationship between gender, transport and maternal mortality and carried detailed information on best practice and how to effect it would be a useful addition to the toolkit and process necessary to achieving the Millenium Development Goal of reduced maternal mortality in Africa.

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## *References and on line resources on transport and maternal mortality:*

Auxiliary technologies related to transport and communication for obstetric emergencies: K. Krasovec*/Program for Appropriate Technology in Health (PATH), Washington, DC, USA link This article is a key resource and provides a rare and useful review of studies of the relationship between transport and maternal mortality.

Maternal mortality update 2002: a focus on emergency obstetric care / UNFPA This document explicitly considers the need for transport interventions and suggests important innovations such as prepaid transport arrangements to enable women to travel to emergency facilities.

The road to safe motherhood -WHO/Africa Regional Office This document identifies transport as an issue but then fails to develop the analysis of transport strategies necessary to the reduction of maternal mortality

Maternal mortality: helping mothers live. OECD Observer. OECD argues that reductions in maternal mortality can be achieved at very low cost and is not dependent on high levels of economic growth.

West Africa Project **-** *hosted on Harvard Web Site*

WHO/ World Bank - on maternal mortality and transport

Reducing maternal deaths - transport dimensions: WHO/ Africa Regional Office

http://www.rpmm.org/ (site presently under reconstruction) Regional prevention of maternal mortality network.

http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14516306 -"CONCLUSION: Despite the limitations of this ecological study, there can be little doubt that the huge rural-urban differences in maternal mortality are due, at least in part, to differential access to high quality maternity care. Whether any of the indicators examined here will by themselves be good enough as a proxy for maternal mortality is doubtful however, as more than half of the variation in mortality remained unexplained by any one of them.".

http://www.sahims.net/regional/exec-review/2004/02_feb'/reg_review_04_02_20.htm

Africa Recovery Briefing Paper Number 11, April 1998

Maternal mortality - South Africa: failures of the transport and referral systems between health institutions - to give an indication, "In Mpumalanga, lack of emergency transport between health institutions was identified as a major factor in at least 38% of maternal mortalities last year"

Maternal mortality and Africa - a Canadian review of problems and solutions.

Maternal mortality and transport - a World Bank powerpoint summary. The final argument on this PowerPoint is that transport intervention is not a silver bullet for the reduction of maternal mortality: a better summary of the situation would be that transport is an important intervention and a critical tool in the reduction of maternal mortality.

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## *Safe motherhood galleries of images:*

Ghana: A gallery of images by Nancy Durrell McKenna on Safe Motherhood in Ghana in collaboration with Save The Children - Canada

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If you are aware of other maternal mortality and transport projects, please get in contact and provide the information for display on this site.

e-mail mg294@cornell.edu

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## *Appendix:*

**1. Definition: Maternal Mortality**

Maternal mortality is defined as "the death of a woman while pregnant or within 42 days of termination of pregnancy, regardless of the duration of the pregnancy, from any cause related to or aggravated by the pregnancy or its management."

**2. Contextualising a specific case: Ethiopia**

Ethiopia: maternal mortality, the context in indicators - http://www.globalis.no/country.cfm?country=ET&lang=en

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Note of thanks: thanks to the students of the Gender and Development Course, Napier University 2004/2005 who gave such good company in the researching of this topic. Their encouragement and search for detailed information on maternal mortality made the task of building this tool kit a collective endeavour.