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| <p>MATERNAL HEALTH AND TRANSPORT ELDIS HEALTH KEY ISSUES GUIDE</p> |
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This health key issues guide examines the relationship between maternal health and transport. Specifically, it looks at how transport affects access to preventative and emergency maternal health services. Access to transport enables women to receive timely obstetric care that is essential for their survival. Transport is therefore an important element that contributes towards reaching the fifth millennium development goal, to reduce maternal mortality by 75 per cent by 2015.

The ‘three delays’ model of maternal mortality is used as a framework to show how transport-related factors affect individuals and families decisions to seek care, identify and reach a facility and receive adequate treatment. The guide provides examples of transport-related interventions that have been implemented to increase access to and use of health facilities and recommendations for policy.

An online version of the guide is available at:

www.eldis.org/go/health/maternal-health-and-transport

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BACKGROUND AND OVERVIEW

Transport infrastructure and services have significantly improved the livelihoods of poor people living in rural areas. Transport facilitates the timely and affordable delivery of basic health, education, water and sanitation services, it connects communities to markets and information, and can empower vulnerable groups. Nonetheless, the development sector is yet to fully acknowledge and understand the role of transport and mobility in improving poor people's health [1].

Transport's important role in access to health services

Transport plays a critical role in the effective and efficient delivery of health care. It enables people to access services and health workers to reach communities, especially in sparsely populated rural areas [2]. Transport is also essential for delivering supplies of resources such as drugs and personnel to health centres, and for transferring patients between health facilities and to the different levels of care [3].

The link between transport and maternal health

Every year more than half a million women die from pregnancy related complications in developing countries. Most maternal deaths are due to five direct causes: haemorrhage, obstructed labour, eclampsia, sepsis, and unsafe abortion. These complications can occur without forewarning and can rapidly become life threatening [2].

Access to appropriate, affordable and timely transport affects women's ability to receive preventative and emergency obstetric care that is essential for their survival. The World Health Organization estimates that 75 per cent of maternal deaths can be prevented through timely access to child-birth related care ([WHO 2001](#)). Evidence suggests that most of the obstetric emergencies can be managed if Comprehensive Emergency Obstetric Care (EmOC) is reached within 12 hours, with the exception of obstetric haemorrhage which requires attention within 2 hours, (see [UNFPA](#)). Timely access to care also helps reduce other long term maternal health problems including obstetric fistula caused by obstructed labour [4].

The transport sector therefore plays an important role in achieving the fifth millennium development goal - to reduce maternal mortality by 75 per cent by 2015 - as well as improving maternal health in general.

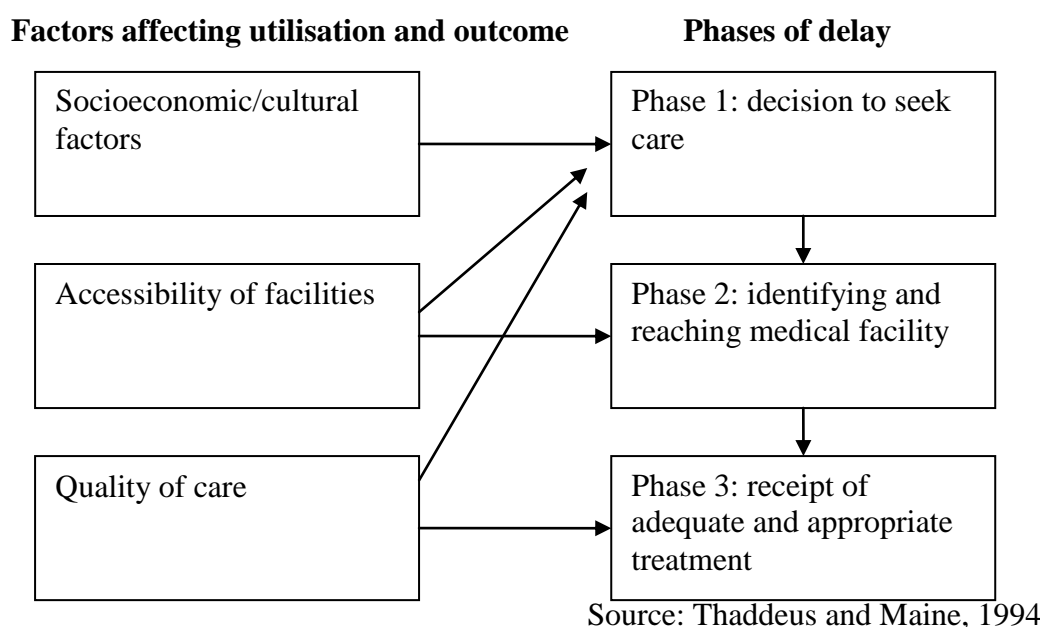
The next section looks in more detail at how a lack of transport can delay access to and use of maternal health services, especially for poor women living in rural areas.

ROLE OF TRANSPORT IN ACCESSING MATERNAL HEALTH SERVICES

The 'three delays' model

The 'three delays' model, developed by Thaddeus and Maine (1994), is used to identify factors that affect the interval between the onset of obstetric complications and the receipt of appropriate care in Ghana, Nigeria and Sierra Leone [5].

Thaddeus and Maine examine how these factors cause delays in reaching adequate care and thus contribute to maternal deaths. They specify three consecutive time periods (*phases*) during which delays can occur. These are: *phase one*, delay in deciding to seek medical care on the part of the individual or family; *phase two*, the delay in reaching a health care facility; *phase three*, the delay in receiving adequate care. Maternal mortality can be a result of all three phases of delay, or any one phase.



Although not directly specified, the transport and mobility of pregnant women are key components contributing to all three phases of delay [1]. The next section will focus on how transport and mobility impact at each of these phases.

Phase one: decision to seek care

Perceived accessibility of health services plays a significant role in influencing people's decision to seek care. In particular, long **distance** to the nearest health facility is a disincentive to seeking care [6]. In Matlab, Bangladesh, the use of a trained attendant at birth dropped by a half when the distance from the home to the health centre was more than one kilometre [7].

The effect of distance becomes stronger with a lack of transportation and poor roads [5]. A study in rural Western Kenya shows that 80 per cent of women delivered

outside a health facility with 22 per cent of women receiving no assistance at all. A contributing factor in their decision to give birth at home is the **length of time** taken to walk to a health facility. Distance also prevented some women from attending an ante-natal clinic during their pregnancy [8].

Long distances entail higher **cost of transport**, another factor that delays both the decision to seek and ability to reach care [3]. Costs include hiring a vehicle and driver, fuel expenses, and the opportunity costs or loss of productive time of the person accompanying the woman [9]. Hamlin (2004) finds that in Ethiopia, even when access to roads is available, women can encounter delays of several days whilst families raise the money to pay for hiring a vehicle [10]. Even short distances are subject to this difficulty. Transport costs of accessing health facilities have been calculated to represent 25% of the total outlay on health in north-east Brazil ([Terra de Souza et al, 2000](#)) and 28% in Cameroon ([Sauerborn et al, 1995](#)).

Women's mobility in times of obstetric emergency may be further limited by **social restrictions on their movement** [11]. For example, in some countries when obstetric complications arise, women must ask their husband's permission to seek care. The Prevention of Maternal Mortality Network (1992) provides an example from Nigeria, where a woman with obstructed labour, who lived ten minutes walk from the hospital, could not leave the house because her husband was away on business. By the time he returned and gave permission for her to be taken to hospital, she had developed obstetric fistula and the baby was dead in utero [11].

See also: [22] [23]

Phase two: identifying and reaching a medical facility

The **distance** to a health facility is an actual obstacle that prevents women from reaching health facilities as well as a factor influencing the decision to seek care. In many developing countries, **facilities are not evenly distributed**, with most located in urban areas [5]. In rural Cambodia, it can take up to a day for a patient, relative, or member of the community to reach a health centre before the woman can be transported to the appropriate facility [12]. In this example, the fees for the ambulance cost Riel 30,000 (US\$7.50) for one trip.

In rural areas, not only are there fewer facilities, necessitating women to travel further to reach them, but women are also more likely to experience problems arising from **scarcity of transportation**. In Masvingo, a rural area of Zimbabwe, lack of access to transport accounted for 28 per cent of maternal deaths compared to three per cent in urban areas ([Fawcus, 1996](#)).

The **unavailability of public transportation** or prohibitive **cost of transport** means that many women have to walk or improvise a way to reach health care. A study in Nepal found that the most common means of reaching a health facility was on foot (67%) followed by stretcher (18%), bus and taxi (15%), these figures account for both emergency and non-emergency transport [13]. Where traditional means are used, such as stretchers, on the backs of animals or other people, or transport by horse or donkey cart, the way that patients are positioned for travel can cause complications ([id21](#),

[2006](#)). The patient's condition may deteriorate on the way which makes treatment more difficult, provided the patient is still alive upon arrival [\[1\]](#).

Even when appropriate transport is available women may not use it. Shresthova et al (In 'Balancing the Load: women, gender and transport', 2002) conducted a study of personal and professional transport use among a women's trade unions association in India. The research reveals that women participating in the study were less likely to hire a rickshaw in cases of personal health emergencies (8%) than for other family members (14%), which illustrates that even where intermediate forms of transport are available to access emergency health services, even better-off professional women are less likely than other family members to use them [\[14\]](#).

Geographical barriers such as **mountainous terrain** or **poor road conditions** also delay access to maternal health care. In Haiti road conditions and geography constrain access to both prenatal care and delivery care for women living in rural areas (see: [Gutmacher Institute, 2007](#)). Poor quality of roads affects travel time, makes it difficult for some modes of transport to pass and can lead to an increase in transport prices [\[2\]](#). Borghi et al (2004) found that the average time it took women to travel to a health facility for delivery in Nepal was 2.8 hours, increasing significantly in the more mountainous regions [\[13\]](#).

Phase three: receipt of adequate and appropriate care

Lack of transportation and transport infrastructure contributes to delays in the **delivery of adequate supplies** to facilities providing EmOC. A basic package of EmOC consists of capabilities for the administration of antibiotics, oxytonics, anticonvulsants, manual removal of placenta, removal of retained products of placenta, and assisted vaginal delivery ([UNFPA, 2003](#)). Comprehensive care also includes caesarean section and blood transfusion.

In Pakistan's Punjab and North West Frontier Provinces, of the 170 public health facilities that are supposed to provide EmOC services, only 22 could offer basic, and 37 comprehensive EmOC services, meeting the needs of only nine per cent of women seeking care [\[15\]](#).

When health centres are unable to provide adequate care, transportation services are needed to transfer women to appropriate facilities. **Poor transportation and communication between health centres and district level facilities** where ambulances are stationed further delays access to care [\[6\]](#). Most hospitals in the aforementioned Pakistan case study had no functional ambulances to transfer patients to a higher level of care [\[15\]](#).

In South Africa, lack of transport to ensure the timely transfer of women between institutions accounted for 13.6 per cent of maternal deaths in 1998. This figure does not include delays in transporting women from their homes to institutions [\[16\]](#).

TRANSPORT INTERVENTIONS TO IMPROVE MATERNAL HEALTH

[Grieco and Turner](#) (2005) have developed a toolkit on gender, transport and maternal mortality that provides examples of transport interventions designed to improve access to maternal health services in Senegal, Mali, Malawi, Uganda and Ghana. Most evidence linking transport interventions to successful maternal health outcomes is limited to localised examples. Evidence of sustainable good practice and the successful scaling up of these interventions to country and regional level is scarce [2].

This section presents a brief overview of interventions aimed at addressing some of the transport-related factors that prolong women or their families' decision to seek care and create obstacles for women in reaching and receiving adequate care.

Interventions aim at doing the following:

Reducing the burden of cost of emergency transport

- Preparing for delivery
- Reducing the distance to EmOC and other child-birth related services
- Improving transport infrastructure
- Increasing access to adequate and acceptable transport
- Improving transport and communication between health centres

Reducing the burden of cost of emergency transport

Reducing or eliminating the cost of emergency transport is particularly important for enabling poor families to access timely care. **Cost sharing, community saving and pooled insurance schemes** are some of the different financing mechanisms that have been used by families and communities to pay for transport, fuel costs and drivers during an emergency. These initiatives make it possible for families to spread the burden of cost thus limiting the impacts of catastrophic expenditures.

In Mpongwe, Masaiti and Lufwanyama, Zambia, committees were set up in villages to collect and keep funds to be used for paying for transport during obstetric emergencies [6]. In Muhororo district, Rwanda, a community set up an **emergency transport scheme** whereby they paid half of the cost of transportation whilst the health committee paid the other half. This scheme has helped poor families that could otherwise not afford to organise emergency transport on time [17].

However, social exclusion can be an issue in the management of emergency funds. [Neupane's](#) 2004 evaluation of Safe Motherhood emergency funds in Nepal, mobilised and managed through local groups, found weak inclusion of Dalits (non-Nepali speaking people who are landless, not eligible for citizenship and citizen-based rights) and the ultra-poor. Many high caste people were not willing to allow Dalits to be members of the community groups, or if members, to be engaged in leaderships roles.

Preparing for delivery

Birth-preparedness and complication readiness is a comprehensive strategy to improve the use of skilled providers at birth and to prepare for an emergency. Birth-preparedness and complication readiness include: (a) knowledge of danger signs; (b) plan for where to give birth; (c) plan for a birth attendant; (d) **plan for transportation**; and (e) plan for saving money.

A district-based model service-delivery system implemented in Koupéla, Burkina Faso, (2001-2004) included a birth-preparedness and complication readiness approach. A cross-sectional survey with a random sample of respondents was conducted to measure the impact of birth-preparedness and complication readiness on the use of skilled providers at birth. Of the 180 women who had given birth within 12 months of the survey, 46.1% had a plan for transportation, and 83.3% had a plan to save money. Women with these plans were more likely to give birth with the assistance of a skilled provider [18].

Reduce the distance to EmOC services

Providing basic obstetric facilities close to every community is not a viable option in sparsely populated and low-resource settings. An alternative way of reducing distance to care is to **train midwives on home deliveries and in emergency management** and position them at a community level.

In Bangladesh, where 91 per cent of births occur at home midwives are posted at the village level. Despite this, a study in Matlab finds that distance continues to prevent women from using the midwives - someone has to travel outside the household to call the midwife, the midwife has to walk or arrange transport (a country boat, rickshaw), and she may have to travel a long distance to reach the home or at night when security is of grave concern [7].

Maternity waiting homes are also used to overcome the geographical difficulties and transport problems faced by pregnant women in the rural areas. These residential facilities located near a qualified medical facility enable women to travel closer to services before they go into labour and await their delivery. The success of waiting homes has been mixed and up to date literature is limited [19].

Improving transport infrastructure

Improvement in rural transport infrastructure can reduce the time that it takes to reach health facilities. **Higher quality of roads** can be used by more types of vehicles and enable local motor services to extend their coverage and reduce costs [2].

A study of the Makete District in Malawi shows that rehabilitation of the road from Njombe to Makete resulted in an increase in patient numbers of around 15 per cent at the mission run hospital. However, improving the condition of roads may not increase access to services for poor women. A study from Kenya showed that, after building

new, direct roads, the better-off increased their use of a district hospital whereas user fees and transport costs continued to be constraints for the poor [3].

Construction of feeder roads providing motorized transport that connect 45 villages in the Darfur region of Sudan are reported to have influenced measurable impacts on community health. The study found that while women's travel time to health facilities was reduced in some locations, in others women continued to contend with a full day's journey to their nearest health centre [14].

Improving access to transport services

A number of initiatives have been set up to provide alternative transport for women needing emergency obstetric care when health sector resources are limited. In Malawi, Mali, Nigeria and other African countries **motorcycle ambulances** take women from remote villages to health facilities, transport passengers between health centres and district hospitals, and supply medical equipment and essential drugs.

For example, in the Southern region of Malawi, eRanger project delivered three Motorcycle Ambulances for the safe transportation of pregnant women to clinics or hospitals. The ambulances have transportation times comparable to four wheeled ambulances, but with considerable savings in terms of initial purchase cost and ongoing maintenance.

Working with **existing transport networks** is another way of improving access to transport. A safe motherhood network in Kebbi, Nigeria, enlisted the support of a local bus drivers union whose members agreed to provide transportation for women with obstetrical emergencies. Drivers received training in how to transport emergency cases and reimbursement for fuel costs from a fund created by community members. A 1995 survey found that 13 percent of women who required transportation for obstetrical care relied on the new system, whereas three years earlier most women had to pay commercial rates for that service [9].

A similar approach is being replicated in Nigeria. Under the DFID funded PATHS programme, in Kano State the community safe motherhood group is collaborating with the National Union of Road Transport Workers. The Emergency Transport Scheme (ETS) drivers engaged in selected communities help in transporting women to hospitals during emergencies.

See also:

- www.eranger.com
- www.transaid.com
- <http://www.pathsng.org>

Improving referral between health centres

The timely transfer of women between health facilities is essential for ensuring access to timely obstetric care if local health centres do not have appropriate facilities. An effective referral system requires **good communication systems** between the different levels of facilities and readily available transport services.

In Mali, the government developed a programme to strengthen its referral system. It invested in radio communication among referral centres and procured vehicles for patient transport. 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 ([Grieco and Turner, 2005](#)). In Sierra Leone, investment in vehicles and improved communication systems lead to a doubling of utilisation of EmOC and a fifty per cent reduction in case fatalities [[20](#)].

In Suba district - Nyanza province, Kenya, the DFID funded Essential Health Services programme has provided cell phones and solar powered battery chargers to all the health facilities. This has made communication between the health centres and the district hospital during an obstetric or neonatal emergency possible. The approach is being monitored under the programmes operational research component (Dr R. Pendame, personal communication 2007).

See also: [[24](#)]

RECOMMENDATIONS FOR POLICY

1. Transport interventions must be implemented alongside other initiatives to increase the demand for services.

Transport is a single component in the complexity of issues surrounding the accessibility of prenatal and emergency obstetric care. The use of transport to access services differs by ethnicity, caste, economic status and gender [21]. Other factors such as the perceived quality of care, the cost of services, and the ability to recognise complications are also important factors that affect the demand for transport and utilisation of health services.

2. Governments, donors and non-governmental organisations need to work directly with communities to identify obstacles to transport and the most appropriate ways of overcoming these.

When communities are involved in planning for emergencies, including the preparation of delivery plans, mobilising resources, and strengthening the referral chain, they are less likely to delay the decision to seek care. The participation of communities also means that transport arrangements are appropriate and socially acceptable.

The factors that affect women's decision and ability to use transport to access maternal health services are context specific. This means that scaling up or replicating successful interventions may not work unless these complex social and cultural factors are taken into consideration.

3. Transport should be affordable and financially sustainable

Community saving schemes have been useful ways of sharing the costs of transportation during emergencies, although problems have occurred when funds are depleted. Some women may be excluded from these schemes if they cannot afford to contribute towards them.

It is important to ensure that policies and interventions reduce, rather than perpetuate existing inequities in access to services. It is the responsibility of local and national governments to target interventions such as providing free emergency transportation for the poorest people.

4. Interventions should be planned as part of a long-term integrated health and transport strategy

Maternal health and transportation systems are interdependent and must be planned and implemented together, along with communication systems to connect all levels of care. Strengthening transportation and referral systems may be

rendered useless if health facilities cannot provide appropriate high quality care or supplies are not available.

5. Governments should build on and improve existing transport and health networks

Governments should consider upgrading strategically located and established primary health care centres to provide EmOC services. This reduces the distance and makes it easier for women to identify services, and is more cost effective than building new clinics. Using existing transport networks has been a successful strategy in increasing access to transportation in areas where there is no public transportation.

6. Better evaluation of the effects of transport interventions and improved transportation systems on access to preventative and emergency maternal health services is required

Building up an evidence base about the impact of transport interventions on maternal health makes it easier to demonstrate the link between transport and maternal health and convince governments, donors and international organisations to invest in this sector. It also enables successful interventions to be replicated or scaled up providing that they are suitably adapted to local contexts.

RECOMMENDED READINGS

1. Mobility and health: the impact of transport provision on direct and proximate determinants of access to health services

K. Molesworth: Swiss Tropical Institute, 2006

The role of mobility and transport in public health remains neglected both in terms of research and inclusion in development agendas. This paper examines the relationship between mobility and access to health services in low income countries, and assesses the impacts of transport interventions on access to health. The paper finds that distance and time taken to travel to health facilities prevents many people from accessing services and the direct costs of transport contribute a substantial proportion of expenditure on health care. Poor mobility and accessibility of maternal services has a major impact on excluding poor rural women from maternity facilities in low-income countries. This in turn impacts negatively upon broader initiatives towards safer motherhood and reducing maternal and neonatal mortality.

The paper concludes that mobility is key for many rural communities to accessing available preventive and curative services, and also supports indirect determinants of health including livelihoods and education. An integrated approach to transport development and health has the potential to indirectly enhance health through non-medical aspects of improved mobility, as well as through more direct health access routes.

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=24669&type=Document>

2. Maternal and child mortality development goals: what can the transport sector do?

J. Babinard, P. Roberts: World Bank, 2006

This report published by the World Bank focuses on the role of transport and road infrastructure in the delivery of and access to maternal and child health services, and in the effectiveness of the health referral process in developing countries. It finds that many households do not have reliable, suitable, and affordable transport services essential for access to care during critical perinatal and neonatal periods. The authors point out that emergency access to care is particularly vital for women and children because many childbirth-related complications are unpredictable and the majority of births in developing countries take place at home.

The report argues that improved transport and roads for poorly served communities can contribute to reducing maternal and child mortality rates. However, they recommend that transport interventions are planned as part of a long-term integrated health and transport strategy, in order to ensure that essential services are affordable and financially sustainable. The report also recommends that community participation and mobilization are integrated into these plans to ensure that transport arrangements are appropriate and socially acceptable. Improved communications are found to be an important complement, along with linking the transport need of both mothers and newborns [adapted from author].

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33302&type=Document>

3. Health issues in transport and the implications for policy

A. Downing, D. Sethi: Department for International Development, UK, 2001

This paper produced by the UK Department for International Development (DFID) reviews current literature on the relationship between health and transport and poor communities. In particular, it focuses on the benefits of facilitating improved access to health and the negative side effects of the spread of disease through transport sector workers and the problem of road accidents. The authors argue that transport improvements have considerable potential to improve the health of the poor if combined with health care provision improvements that tackle the key issues of cost and quality. They point to a clear need for health and transport policies to be developed in an integrated way in relation to the development of rural areas rather than the traditional sectoral approach used in the past.

The paper's overall conclusion is that development programmes need to adopt multi-dimensional approaches even at the project level. Community-based interventions using livelihoods methodologies can encourage this but it is important that transport and road improvement projects recognise and build in positive contributions to health. Similarly, health policies and projects need to consider transport impacts on health and both sectors should make use of each other's specialists [adapted from author].

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33278&type=Document>

4. Transport, (im)mobility and spatial poverty traps: issues for rural women and girl children in sub-Saharan Africa

G. Porter: Overseas Development Institute, London, 2007

This paper produced for a conference at the Overseas Development Institute (ODI) reflects on the experiences of women and girls with poor accessibility to services and markets, and inadequate transport in rural sub-Saharan Africa. It uses examples from field research to look at the impact of these factors on girl's education before going to examine access to health services. The paper reviews evidence regarding the extent to which road construction positively impacts on women and girls, and the potential for Intermediate Means of Transport, including bicycles and motorcycles. Non-transport interventions are also considered: in particular, the diffusion of mobile phones across Africa in the past few years and their growing impact in some remote areas.

The author calls for a stronger focus on gendered mobility and access issues within the development community, arguing that it is a neglected area amongst gender and transport specialists alike. In the meantime, it is argued, the prospects for rural women and their daughters who live in areas with inadequate transportation will remain extremely poor, with evident implications in terms of inter-generational transfers of poverty [adapted from author].

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33305&type=Document>

5. Too far to walk: maternal mortality in context

S. Thaddeus, D. Maine: Social Science and Medicine, 1994

This paper, published in Social Science and Medicine, reviews the Prevention of Maternal Mortality Program, a collaboration between Columbia University's Center for Population and Family Health and multidisciplinary teams of researchers from Ghana, Nigeria and Sierra Leone. The paper focuses on the factors that affect the interval between the onset of obstetric complication and its outcome. It finds that, if prompt, adequate treatment is provided, the outcome will usually be satisfactory. It therefore looks at factors that delay the decision to seek care; those that delay arrival at a health facility; and those that delay provision of adequate care.

The literature indicates that distance and cost are major obstacles in the decision to seek care. However, the authors maintain that the relationships are complicated. Differential use of health services is also shaped by such variables as gender and socio-economic status. Patients who make a timely decision to seek care can still experience delay, because of lack of adequate access to health services. Shortages of qualified staff, essential drugs and supplies, coupled with administrative delays and clinical mismanagement, all contribute to maternal deaths. The paper concludes with examples of efforts to reduce maternal deaths, emphasising strategies to mobilise and adapt existing resources. [adapted from author]

Please note: This document is not freely available online. Photocopies can be obtained from the British Library of Development Studies (BLDS). For more information go to: <http://blds.ids.ac.uk/>

6. Report of the summative evaluation of the essential obstetric care project in Mpongwe, Masaiti and Lufwanyama

J. Alwar, V. Mtonga, B. Sikatoye: United Nations [UN] Children's Fund , 2000

This document reports on a UNICEF project aimed at reducing maternal mortality in three rural districts in Zambia. The strategy adopted was to improve the quality of obstetric care at primary level health facilities and ensure supportive complementary care at second and tertiary level referral hospitals. This is achieved by providing training in: the role of midwives, antenatal care, management of pre-eclampsia, eclampsia, obstructed labour, post-partum haemorrhage, and malaria in pregnancy and nutrition.

The report shows that this intervention led to gradual strengthened capacity of the districts to provide EmOC services. It concludes that with active community mobilisation and demonstration of improvement of care of clients, use of modern health care will be popularised. The authors make several recommendations. These include: postnatal and child health clinics should be integrated to enhance efficiency; the relationship with local communities should be strengthened to enhance utilisation of EmOC; back referrals from hospitals to health centres should be strengthened especially in cases where clients did not pass through health centre; and infrastructure for deliveries and storage of drugs should be improved.

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33331&type=Document>

7. Posting of trained birthing attendants: a comparison of home- and facility based obstetric care

ICDDR, B.: Centre for Health and Population Research, Bangladesh, 2005

This article, published in Health and Science Bulletin, reports on a study conducted between 1987 and 2001 in Matlab, Bangladesh, where both home- and facility-based obstetric care approaches have been implemented. It examines whether a home-based approach to professional birth attendance is associated with a more equitable utilisation pattern than a facility-based approach. The paper finds that between 1987 and 2001, there is a striking increase in the utilisation of skilled attendance at birth in Matlab. There are marked differences in the use of professional attendants according to wealth quintile, mother's and father's education and distance to the attendant. These differences were similar for both home- and facility-based obstetric care.

Obstacles to seeking care include fear and misconceptions about the care provided; long distance to facilities; social taboos associated with women's sexuality; preferences towards using traditional birth attendants; and the expenses associated with emergency obstetrics care. The paper concludes that before reinforcing home-based delivery care strategies, further research comparing the feasibility, cost, effectiveness, and acceptability and equity implications of the different obstetric care strategies is needed.

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33328&type=Document>

8. Use of antenatal services and delivery care among women in rural western Kenya: a community based survey

A. M. van Eijk, H. M. Bles, F. Odhiambo: Reproductive Health, 2006

This survey, published in Reproductive Health, assesses use of antenatal services and delivery care among women who had recently delivered in rural Kenya. Results showed that ninety percent of women had visited the antenatal clinic (ANC) at least once during their last pregnancy, most in the third trimester. Women who did not visit an ANC were more likely to have less than eight years of education and a low socio-economic status. ANC provision of abdominal palpation, tetanus vaccination and weight measurement were high, but provision of other services (such as malaria prevention, iron and folate supplementation, syphilis testing and health talks) was low.

Eighty percent of women delivered outside a health facility; among these, traditional birth attendants assisted 42 percent, laypersons assisted 36 percent, while 22 percent received no assistance. Factors significantly associated with giving birth outside a health facility included: being aged over thirty, low socio-economic status, having less than eight years of education, and being over an a hours walking distance away. The authors conclude that although usage of the ANC was high, this opportunity to deliver important health services was not fully utilized. They argue that almost one in five women delivering unassisted presents a dangerous situation that urgently needs improving [adapted from author].

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33167&type=Document>

9. Making motherhood safer: overcoming obstacles on the pathway to care

E. I. Ransom, N. V. Yinger: Population Reference Bureau , 2002

If motherhood is celebrated around the world, the path to becoming a mother can be a very dangerous one indeed. Half a million women die each year of pregnancy and/or childbirth-related causes. Ninety per cent of these deaths occur in less developed countries, mainly because of the inadequacy of obstetric care, and it is clear that most could be avoided. Produced by the Population Reference Bureau (PRB), this booklet reviews various strategies that have been developed to improve access to care and reduce maternal mortality in poorer countries.

Over the past decade, much research has been done to find which lifesaving policies could be workable in low income settings. The introduction to the booklet discusses the extent of the problem and the various causes and consequences of maternal deaths. The next section explains the importance of governmental support for safe motherhood policies. In the last section, the authors identify four main obstacles to women receiving adequate obstetric care ('the four delays'). They also review various policies that have been shown to work in overcoming these obstacles in some less developed countries.

Looking at the current status of maternal health in the developing world, the paper finds that:

- Four-fifths of maternal deaths are due to direct causes (haemorrhage, infections, hypertensive disorders, obstructed labour, unsafe abortions), most of which could be avoided if women received skilled obstetric care
- Only about half of deliveries in the less developed world take place in the presence of a skilled attendant
- A strong political commitment to maternal death reduction is paramount to the success of lifesaving strategies. In Honduras, maternal mortality ratio halved between 1990 and 1997 thanks to a concerted effort by policy makers
- There are four stages to what governments can do to save mothers' lives: (1) assess the local situation as different interventions will be more or less appropriate depending on the setting; (2) strengthen the existing facilities and resources; (3) monitor progress and make information about maternal deaths available to policy makers as this has been shown to fuel high-level commitment; (4) address the obstacles that women face in receiving lifesaving care.

The authors identify four main obstacles to women receiving adequate and timely obstetric care, and make the following recommendations to overcome them:

- If women and their families fail to seek care because they do not recognise signs of life-threatening complications, they can be educated in recognising these signs and knowing where to seek help
- There might also be delays in the decision to seek care which can be addressed by enhancing women's decision-making power, and making health care facilities more affordable and socio-culturally approachable, as well as by promoting links between communities, traditional healers and skilled health professionals
- Creating emergency transport systems, improving roads, enhancing referral systems and establishing maternity-waiting homes will go a long way toward overcoming geographical obstacles
- Poor quality of care may also deter women from visiting health facilities. To ensure the quality of obstetric care when women do reach facilities, national protocols on how to treat complications should be established, personnel should be trained, and adequate supplies of emergency medicine, blood and essential equipment should be readily available.

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=16099&type=Document>

10. Preventing fistula: transport's role in empowering communities for health in Ethiopia

C. Hamlin: World Bank, 2004

This World Bank mission report addresses the role of transport in preventing obstetric fistula caused by obstructed labour, and providing emergency access to health services in Ethiopia. It argues that obstetric fistulas are preventable through a combination of access to adequate transport services, effective management of child delivery services and empowerment of communities through, among others, promotion of reproductive health at the community level.

Suggested measures to improve transport include: the introduction of Emergency Access Cards with the transport service providers; liaising with NGOs on the provision of emergency vehicles; working with communities on local construction projects of footbridges and drainage to improve access; and the synchronization of rural road construction and rehabilitation efforts nationally. Regarding health services, the report recommends providing appropriate healthcare equipment; creating an appropriate monitoring system and database to better understand the prevalence of fistula throughout the country; and improving communication between the different levels of the health care referral system. It also recommends working with local communities on reproductive health issues and the identification of risk factors [adapted from author].

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33168&type=Document>

11. Challenges to women's reproductive health: maternal mortality

Z. Oxaal, S. Baden: BRIDGE, 1996

Why, despite continual technological and medical advance, do one out of every fifty women in developing countries still die in pregnancy and childbirth? This paper explains how socio-economic, cultural and political factors make women vulnerable to maternal death. It also explores their capacity to access maternal health services and gender biases within these services. Women's domination by men and their inferior status in society has many implications for maternal mortality, including lack of control in sexual relations and decisions about their own health, lack of access to education, and being subject to men's physical and economic control.

The paper recommends that health spending must deliver more quality care to women, and policy must be shifted towards overcoming women's lack of physical, sexual, economic, social, and political autonomy. A variety of long and short-term strategies must be pursued to both directly and indirectly promote safe motherhood, such as guaranteeing women access to family planning and health services, improving women's educational attainment, self confidence, and decision-making capacities. [Summary adapted from Siyanda www.siyanda.org]

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33456&type=Document>

12. Indigenous women working towards improved maternal health: Ratanakiri Province, Cambodia

E. Riddell: Health Unlimited, 2006

This Health Unlimited paper summarises a report which identifies the barriers that indigenous women face in accessing publicly provided maternal health services in Ratanakiri Province, Cambodia. The paper reveals the persistent and deep problems in accessing health care. These include cost of care; distance from health centres and transportation; discrimination; and language. Factors that affect individuals and families decision to access health services include: confidence in the health service; traditional beliefs; the role of traditional birth attendants; transportation; and the referral system.

The paper concludes that some local communities have adapted their local belief systems so that both indigenous and 'modern' health care approaches are mutually valued; their beliefs are essentially flexible and can accommodate both. This stands in contrast to the attitudes of health staff, who see 'modern' health care as the only option. Most were inflexible about the need to incorporate elements of indigenous culture into their health provision and expressed negative views and opinions of indigenous peoples and their cultural beliefs.

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33325&type=Document>

13. Coping with the burden of the costs of maternal health

J. Borghi, T. Ensor, B. D. Neupane, S. Tiwari: Nepal Safer Motherhood Project, 2004

This paper, from the Nepal Safer Motherhood Project, funded by DFID, examines the costs associated with maternal health seeking behaviour in Nepal. The study is based on a survey of women who recently delivered at home and in health facilities, and a willingness-to-pay study that was used to investigate women's preferences for, and valuation of, alternative delivery care services. The paper finds that facility based childbirth leads to considerable transport and time costs that are mostly borne by the household. For poorer families, these costs can leave a considerable dent in household finances and lead to the sale of assets and loans at high rates of interest. Home deliveries are not without costs as households pay for a trained attendant at home. However, within the home, payment methods are flexible and the extent of payment is largely up to the household.

The paper investigates options for addressing the issues of high cost. The authors recommend that governments develop a financed strategy for covering costs of maternal care and improved transparency and funding for exemptions. As transport represents a large and variable proportion of total costs in mountain and hill areas, providing assistance to cover these costs should be a key part of any strategy to increase access to emergency obstetric services.

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33413&type=Document>

14. Balancing the Load: women, gender and transport

Edited by P. Fernando, G. Porter: International Forum for Rural Transport and Development, 2002

This book draws together local level research from 15 countries across Asia and Africa, to help understand how gender affects men and women's access to transport, and what steps can be taken at community provider and policy levels to improve the situation. It presents information about different forms of rural transport in diverse settings; the social roles transport plays; the uneven gender-influenced access to it; and the impacts poverty, culture and gender-insensitive provision have on women's lives in relation to transport.

Three chapters are available for free download. These are:

- Bridging the gap between gender and transport
- Safety and gender issues in rural transport in Busia District, Uganda
- Nkone river bridge and its impact on travel and marketing activities of the Karia community of Meru district in Kenya

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33400&type=Document>

15. Emergency obstetric care in Pakistan: potential for reduced maternal mortality through improved basic EmOC facilities, services, and access

M. Ali, M. Hotta, C. Kuroiwa, H. Ushijima: Elsevier Science, 2005

This article in the International Journal of Gynaecology and Obstetrics, assesses the provision, use and quality of Emergency Obstetric Care (EmOC) at public health centres in Pakistan's Punjab and Northwest Frontier Provinces (NWFP). It finds that of the 170 health facilities in the study, only 22 were providing basic and 37 comprehensive EmOC services and less than six per cent of births occur at these facilities. Government institutions met only nine per cent of the estimated need for care in all the selected districts, meaning that the vast majority of women who had an obstetric emergency did not receive treatment in a government EmOC facility.

The paper concludes that almost all indicators for EmOC were below minimum recommended UN levels. Health policy makers and planners must take immediate, appropriate measures at district and hospital levels to reduce maternal mortality. These measures can include: staff training to increase skills and confidence and to improve management, availability of supplies, and record keeping, as well as with measures to increase the utilisation of EmOC by women suffering major obstetric complications.

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33323&type=Document>

16. Transport for health care delivery

W. Hall, D. du Plessisii, D. McCoyi: Health Systems Trust, South Africa, 2002

This chapter, in the South African Health Review, explores some of the complexities of the present transport management systems for health service delivery within the public sector in South Africa. Data is provided by case studies from three provinces in the country: Limpopo, Mpumalanga and Gauteng. The authors find that support services, such as transport, are essential for delivery of cost effective, efficient health services. However, improvements are needed. In particular, attention needs to be given to strengthening the management, monitoring and evaluation of transport services, which are currently managed through a centralised, bureaucratic system.

The chapter therefore recommends that transport management for health services is decentralised to health district level. In addition, human resource development for transport managers and officers should be provided at all levels of the system. Management information systems for transport are available and it is recommended that they are used for management decisions. Finally, the authors call for further research on the effect of the current transport policy. [adapted from author]

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33304&type=Document>

17. Availability and use of emergency obstetric services: Kenya, Rwanda, Southern Sudan and Uganda

L. Pearson, R. Shoo: Elsevier Science, 2005

This article, published in the International journal of Gynaecology and Obstetrics, assesses the availability and utilisation of emergency obstetric care (EmOC) in Uganda, Kenya, Southern Sudan, and Rwanda in 2003 and 2004. It identifies gaps and obstacles in providing these services. The paper finds that the coverage of basic EmOC services ranged from 0-1.1 per 500,000 people; between 0.6 per cent and 8.8 per cent of all births took place in EmOC facilities, and between 2.1 per cent and 18.5 per cent of all expected direct obstetric complications were treated.

Obstacles to providing 24 hour quality EmOC services include: shortage of trained staff, poor basic infrastructure, inadequate supply of drugs and essential equipment, poor working conditions and staff morale, lack of communication and referral facilities and cost of treatment. The paper concludes that lack of basic EmOC services limits women's access to life-saving services during obstetric complications. To reduce maternal mortality more efforts are needed to improve the coverage, quality and utilisation of EmOC services. This can be achieved through supportive national policy, effective programme strategies, increased budget allocation to maternal health programmes, rural infrastructure development and regular monitoring and evaluation of progress.

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33320&type=Document>

18. Birth-preparedness for maternal health

A. C. Moran, G. Sangli, R. Dineen;

Journal of Health, Population and Nutrition: International Centre for Diarrhoeal Disease Research, Bangladesh, 2006

This paper assesses the impact of birth-preparedness and complication readiness on the use of skilled providers at birth, a key intervention to decrease maternal mortality. It is based on a study of a district-based service delivery system implemented in Koupéla district, Burkina Faso, that included a birth-preparedness and complication readiness approach. Birth-preparedness and complication readiness include many elements, including: knowledge of danger signs; plan for where to give birth; plan for a birth attendant; plan for transportation; and plan for saving money.

The paper finds that of 180 women who had recently given birth, 46 per cent of women had a plan for transportation, and 83 per cent had a plan to save money. Women with these plans were more likely to give birth with the assistance of a skilled provider. Qualitative interviews also find that most women save money for delivery, but have less concrete plans for transportation. The paper concludes that birth-preparedness and complication readiness may be useful in increasing the use of skilled providers at birth, especially for women with a plan for saving money during pregnancy.

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33401&type=Document>

19. Emergency obstetric care: the key to further reducing maternal mortality in Sri Lanka

P. C. Gunasekera; P. S. Wijesinghe; I. M. R. Goonewardene: World Health Organization, 2002

This paper, in the South East Asia Regional Health Forum, discusses ways of reducing maternal mortality in Sri Lanka. Whilst the maternal mortality rate in Sri Lanka compares favourably with that of other countries in the region, much more can be done to bring down this rate further. The paper recommends that emphasis should be directed towards providing emergency obstetric care where all basic facilities for childbirth, including instrumental deliveries are provided. In addition, comprehensive emergency obstetric care must be made available in selected centres where mothers needing Caesarean section and blood transfusion are cared for.

The paper concludes that the majority of maternal deaths occur due to delays in providing emergency obstetric care. This area has to be addressed urgently in order to maintain and improve the rate of reduction of maternal deaths. The political will to make drastic changes is a prerequisite if maternal deaths are to be reduced significantly. The authors argue that preventing maternal death and disability is not only a health issue – it is also a moral issue underpinned by the guiding principles of human rights, social responsibility, participation, and equity [adapted from author].

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33324&type=Document>

20. Emergency medical care in developing countries: is it worthwhile?

J. A. Razzak; A. L. Kellermann: Bulletin of the World Health Organization: the International Journal of Public Health, 2002

This paper from the World Health Organization (WHO) reviews evidence indicating the need to develop and/or strengthen emergency medical care systems in developing countries. It looks at emergency medical care in the community, during transportation, as well as at first contact and in regional referral facilities. The authors find that obstacles to developing effective emergency medical care include a lack of structural models, inappropriate training, concerns about cost and sustainability in the face of a high demand for services. The paper argues that there is a role for emergency medical care in improving the health of populations and meeting expectations for access to emergency care.

Currently, the provision of timely treatment during life-threatening emergencies is not a health system priority for many developing countries. The authors point out that a significant burden of diseases in these countries is caused by time-sensitive illnesses and injuries such as severe infections, hypoxia caused by respiratory infections, dehydration caused by diarrhoea, intentional and unintentional injuries, postpartum bleeding, and heart attack. They conclude that a basic but effective level of emergency medical care would respond to perceived and actual community needs and improve the health of populations [adapted from author].

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33279&type=Document>

21. The road to health

K. Molesworth: International Forum for Rural Transport and Development, 2002

This article, published in Forum News, looks at issues relating to the accessibility of health and reproductive services in rural Nepal and the effects of road construction in improving access these services. It finds that the provision of roads has led to an overall increase in the use of regional facilities; however this trend has varied markedly between communities. The use of motorised transport to access services differs by ethnicity, caste, economic status and gender. In hill regions, cash-poor subsistence farmers and women are least able to afford transport services. While road provision potentially improves accessibility for mobile community health workers, they are often reluctant to make off-road journeys on foot to reach hill and mountain communities.

The paper concludes that transport is a single component in the complexity of issues surrounding the accessibility of health and reproductive services in rural Nepal. Efforts are called for to increase gender, cultural and social sensitivity among existing health service providers, to more effectively meet the needs of all members of society. Disadvantaged groups, and women in particular, need to be encouraged into active roles within the health professions. In so doing, greater equity in access to health care and wider inclusion in the development process might be more effectively achieved.

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33336&type=Document>

22. Overcoming barriers to health service access: influencing the demand side through purchasing

T. Ensor; S. Cooper: World Bank 2004

This study, from the Health, Nutrition and Population family of the World Bank, reviews literature on demand barriers to accessing health services and surveys studies that report and evaluate methods for overcoming these barriers. Evidence suggests that distance, education, opportunity cost, and cultural and social barriers are often at least as important in determining access to services as the quality, volume and price of health services. However, the authors find that relatively little work has been done on how to overcome these barriers. Obstetric care and family planning stood out as the main areas where demand-side initiatives have been tried and evaluated.

From the limited evidence available, the paper finds that while demand-side barriers are important, interventions are likely to work only if services have already reached an adequate standard. The importance of consulting extensively with communities both on the barriers that prevent use of services and the types of interventions that might be acceptable is also stressed. The study calls for a research agenda to stimulate the evaluation of methods to minimize demand-side barriers and incorporate a poverty focus into future work [adapted from author].

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=33303&type=Document>

23. Maternal mortality in the rural Gambia: a qualitative study on access to emergency obstetric care

M. Cham; J. Sundby; S. Vangen: Reproductive Health Journal, 2005

This article, published in the journal Reproductive Health, reports on a study into socio-cultural and health service factors associated with maternal deaths in rural Gambia. Interviews with healthcare staff and other key witnesses using the verbal autopsy technique revealed that in seven out of 32 cases, pregnant women delayed seeking medical attention after becoming aware of a complication. Key reasons for the delay were under-estimation of the severity of the complication, cultural belief, bad experience with the health system, delay in reaching an appropriate medical facility, lack of transportation or prolonged journeys, seeking care at more than one medical facility, and delay in receiving prompt and appropriate care after reaching the hospital.

The authors argue that health system failures, notably disorganised health care and lack of prompt response to emergencies, are a major contributory factor to the high maternal mortality rate in rural Gambia. They conclude that women do try to access health facilities in obstetric emergencies; however, they encounter major obstacles at every stage of the process and once they get there, appropriate care is often delayed. The authors stress the need to improve accessibility and quality of emergency obstetric care (EmOC) services in the region in order to prevent further maternal deaths.

Available online at:

<http://www.eldis.org/go/topics/resource-guides/health&id=20260&type=Document>

24. Report on current situation in the health sector of Ghana and possible roles of appropriate transport technology and transport related communication interventions

J. Heyen-Perschon: Institute for Transportation and Development Policy, 2005

This report, by the Institute for Transportation and Development Policy, provides data on the health sector in Ghana, with an overview of health trends and health and transport policies the country. It shows that Ghana has developed a comprehensive transport policy for regional, district, sub-district and community levels of health care. Transport has been identified as an essential resource and vital tool of the delivery of health services. However, transport guidelines are only in place by law, not by fact and the vehicle mix for the different health vehicles is not in place on the ground. Also, the aging vehicle fleet has resulted in increasing fuel consumption and maintenance costs of those vehicles.

The report discusses experiences of transport related health projects including bicycles for health volunteers and radio communication in health provision. It suggests possible transport interventions to improve rural service provision. Interventions include: integrating a system of communication and transport; providing community health volunteers with California Bikes; strengthening the community with a bicycle- or a donkey ambulance; and strengthening the community health officers with a communication system and motorcycle ambulance.

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<http://www.eldis.org/go/topics/resource-guides/health&id=33334&type=Document>
