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Comparative Healthcare: Diabetes Mellitus.

Abstract

In the third in this series of 'comparative healthcare' medical practitioners explore the approach to diabetes in Bangladesh and Australia respectively. The social and medical consequences of this chronic condition are highlighted through the approach to patients at various stages of the disease from two national perspectives. An astonishing 7% of the 153 million people are reported to have diabetes in Bangladesh. Many remain undiagnosed. Delays in diagnosis or management of diabetes have life limiting consequences for those who can ill afford private health care in the poorer nation. Screening and early intervention appear to be denied to many in the developing country. The context is very different with Australians very fortunate to have a coordinated primary health care sector. The outlook for Bangladeshis with uncontrolled diabetes or with treatable sequela would be unacceptable in Australia. At every stage in the disease trajectory the doctors emphasise the importance of life style modification, a particular challenge in affluent Australia with its growing incidence of life style related pre morbid conditions in an increasingly sedentary population. A corner stone of the support of people with diabetes is the role of nurses and allied health professionals. With a funded commitment to multidisciplinary care in the community people with diabetes in Australia have access to support closer to home whereas those in Bangladesh remain heavily dependent on specialist, hospital based services. One can only speculate how Bangladesh will cope as its population ages and there are an ever increasing proportion of people who require urgent and expensive medical interventions. At the very least there is a strong case for greater investment in primary care especially to limit the economic consequences of diabetes and other chronic conditions. Finally as in other articles in this series we would like to emphasise that, the views expressed are those of the authors and do not necessarily reflect health policy or practice in their respective countries. Nonetheless we believe they offer a valuable perspective on common health care issues and commend the article to our readers.

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Diabetes Mellitus

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Background



Bangladesh

This South Asian country is one of the most densely populated places in the world, with a population of 153 million people crammed into an area slightly larger than Tasmania. More than 40% of the population lives on less than US\$ 1 a day (UNDP, 2008). The public health sector is severely under-resourced, with less than 1% of the GDP being spent on it (UNDP, 2008). The private health care sector is largely unregulated, with both qualified and unqualified practitioners operating in the areas of modern medicine, homoeopathy, herbal medicine, and spiritual healing. There are 19 qualified physicians per 100,000 people (World Bank, 2003), and most of these are concentrated in urban areas even though more than 80% of the population live in rural areas. While there are no systematic surveillance data on chronic diseases in the country, recent studies suggest that the prevalence of diabetes among Bangladeshis is 7% and of hypertension 11.3% (Rahim et al, 2008 and Zaman & Rouf, 1999).



Australia

In Australia total expenditure on health by all levels of government and the private sector accounts for 9.8 per cent of Australia's gross domestic product. In 1984 a comprehensive health care system, Medicare, was introduced. Medicare facilitates access by all eligible Australian residents to free or low-cost medical, optometric and public hospital care, while leaving them free to choose private health services. Individuals' financial contributions to the public health care system are based on their income and are made through a taxation levy known as the Medicare levy. People admitted to public hospitals as public (Medicare) patients receive treatment by doctors and specialists nominated by the hospital. They are not charged for care and treatment or after-care by the treating doctor. Private patients in public or private hospitals can choose the doctor who treats them. Medicare pays 75 per cent of the Medicare schedule fee for services and procedures provided by the treating doctor. For patients who have private health insurance, some or all of the outstanding balance may be covered. Private patients are charged for hospital accommodation and items such as theatre fees and medicine. These costs may also be covered by private health insurance but are not covered by Medicare. Medicare Australia is the agency within the Department of Human Services responsible for processing and paying Medicare benefits for approved services. Medicare Australia also pays pharmaceutical benefits under the Pharmaceutical Benefits Scheme, which subsidises an agreed list of prescription drugs. For both medical and pharmaceutical services, safety net arrangements exist to make sure patients who need a high level of treatment or medication during a financial year do not incur significant out-of-pocket expenses. Out-of-pocket costs are the difference between the Medicare benefit and what the patient is actually charged. The Australian Government also provides medical, pharmaceutical and hospital services for veterans, war widows and their eligible dependants under legislation administered by the Department of Veterans' Affairs. The Australian Government provides about two-thirds (67 per cent) of public sector expenditure on health, and state, territory and local governments provide the rest. (Aus Gov)



A 45 year old man was diagnosed with non-insulin dependent diabetes five years ago. He is now on maximum oral therapies and has a glycosylated haemoglobin sustained above 8mmol/l. He remains symptomatic with persistent frequency, lethargy and weight loss. It has been determined that the patient should start insulin therapy. How would this case be managed in your practice?



There are many studies from Bangladesh which have found that socio-economic status of the patient is the most important determinant of seeking any care. It costs twice as much to consult a public health service than an unqualified practitioner, and about twice as much again as to consult a qualified private practitioner, a crucially important consideration for the 40% of the population who live on less than a dollar a day. It is thus fortuitous that the country is unique among developing countries in having a tertiary diabetes institution, the Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders' (BIRDEM), which is a WHO Collaborating Centre for Research on Prevention and Control of Diabetes, Endocrine and Metabolic Disorder, and that provides care through the hospital and its district branches to more than a million registered diabetics.

However, given that up to 7% of the population (more in urban than rural areas) is diabetic, a large proportion of the diabetic population go undiagnosed, untreated or inadequately treated. There is also a marked gender disparity in diabetes health care seeking, with two thirds of the patients registering at BIRDEM being males, and anecdotal evidence that female diabetics in poor families are often abandoned or divorced by their husbands.

In the scenario above, the BIRDEM guidelines for the initial insulin regime would be 0.2-0.4 units per kg body weight/day, divided into two thirds of the dose half an hour before breakfast and one third of the dose half an hour before dinner (Mahtab et al, 2003). The insulin injections would be made up of equal proportions of rapidly acting and intermediate insulin. As home blood glucose monitoring is only possible for wealthier patients, the patient would be asked to follow up 3 to 7 days later to assess the response, and increase the dosage if required.

In the non-BIRDEM setting, the management of the patient would largely be dictated by the patient's socio-economic position and the type of practitioner he consults. It is unlikely though that he would be prescribed insulin by any of the unqualified allopathic practitioners in the country or most GPs, and if he was fortunate enough to be able to consult an internal medicine specialist or qualified GP, he may or may not be put on a similar insulin regimen as that by BIRDEM.



We are fortunate in Australia to have free access to an excellent publication jointly auspiced by our professional college and the national patient support group Diabetes Australia. (Diab Aus) I increasingly refer to this document when planning care in diabetes. This patient meets the recommendation for commencement of insulin in that he is on maximum oral therapies, he is symptomatic and his HbA1C is above



target. A fascinating trend in Australia has been the swing back to primary care from secondary care of a significant proportion of diabetic care. Australian general practitioners are regaining skills in managing diabetes including commencing insulin. Depending on what time of day this man's monitored sugars are high I would commence 10 units of insulin glargine (morning or evening) and increase this by increments of 10 – 20% every 2 – 4 days. In doing this I am supported by a state funded diabetes educator who visits our practice once a fortnight. At my current level of confidence and skill I would seek specialist advice if this did not result in acceptable monitored blood sugar levels. Specialist support is available through a diabetes service available free of charge in clinics at our local hospital. Alternatively this man might choose to attend a specialist endocrinologist "privately" and pay fees partially subsidized by his universal health insurance.

Commencement of insulin is no replacement for adequate lifestyle changes and an activated and effective patient. Every effort would be made to optimize these aspects of care in this man which may include visits to a dietician, diabetes educator, exercise physiologist and participation in a small group program. There is limited funding for these activities through the universal health insurance scheme on referral by a general practitioner.

A 56 year old obese lady presents with an impaired glucose tolerance test. What is your approach to such patients in your practice?



The management of the problem would depend on what level and type of health care service the lady would seek. On the assumption that this lady comes from a relatively well off family, and would be able to afford seeing a private qualified practitioner. Most GPs would probably advise lifestyle modifications such as weight reduction, if overweight, reducing total intake of fat and intake of saturated fat, increasing intake of dietary fibre, and increasing physical activity, and ask the patient to repeat the GTT after a period of time.

Whether they would check for other conditions or diabetogenic drugs such as thiazide diuretics or corticosteroids, or start pharmacologic treatment in high-risk patients with ACE inhibitors, angiotensin receptor antagonists and thiazolidinedione would depend on individual physicians. As qualified practitioners in developing countries such as Bangladesh seldom adhere to established protocols on the management of conditions such as diabetes or obesity, it is difficult to speculate on the specific management in this case.



This patient is at increased cardiovascular risk as well as increased risk of developing diabetes mellitus type 2. She can reduce her risk in both areas by lifestyle change. This will involve assessing her diet and exercise. An individualized approach is required to maximize her chance of achieving sustained behavioural change. This is particularly difficult in a society where there is easy access to plentiful calories and little requirement for physical exertion in everyday living.



Smoking and alcohol intake should be assessed and addressed. There are many resources available in Australia which may help her address her risks including small group interventions, psychological interventions, dieticians, exercise physiologists, and diabetes educators. Depending on her comorbidities there may be some government health funding available to help her access these services. Some services are available in a limited way at no cost through hospital clinics.

Medications such as glucocorticoids and antipsychotics may be affecting her glucose metabolism. She should be monitored annually by fasting blood sugar level to detect the onset of diabetes. We do this through the use of a computerized recall system within the electronic medical record used by our practice.

A 60 year old insulin dependent diabetic has poor vision and impaired sensation in her limbs. She is prone to frequent hypoglycaemic attacks. What support is available to allow her to function as a carer for her disabled son?



There is no formal social security system as such in Bangladesh that would be able to provide the necessary support for this woman to look after her disabled son. However, informal support networks of family, relatives and/or neighbours would likely operate in such a situation to provide whatever support is practicable given the poverty of most people in the country. Figures for the number of disabled people in Bangladesh vary, but range from 7 million to 14 million people (Alam et al, 2005). People with disabilities are extremely vulnerable and disadvantaged in Bangladesh, receiving little or no rehabilitative assistance from the overstretched health and social welfare agencies in the country. Assistive devices are not available at the community level, there are only a small handful of physiotherapists and occupational therapists in the country, and the main rehabilitative centre for the physically disabled, which is a non-government organization, is located in the capital city. Essentially, families are left to their own devices to look after members with disabilities.



Australia has a comprehensive social security system which will offer support to this patient and her son. Depending on the amount and type of care her son needs she may qualify for a carer's pension. If her vision is very poor she may qualify for a range of social supports for people with blindness. Her own health may qualify her for a disability support pension. Her son may qualify for a disability support pension which will augment the household income. There is an extensive range of discounted services including telephone subsidies, transport and taxis subsidies and more to make it easier for this family to remain in their home and self care. A centralized government service with local branches provides Australians with advice on the social security they qualify for. Certification of eligibility is often required from local general practitioners.

It is important to optimize her diabetic control which will be done in the ways already described. She may qualify for some help with home cleaning. There may be some provision for respite institutional or home based care for her son.



A 60 year old diabetic has moderate peripheral vascular disease with intermittent claudication and calf pain after walking 100 meters. He attends your clinic for advice about his impotence. How would you manage this case in your practice?



For a diabetic with the above presentation of peripheral vascular disease, a GP would advise regarding smoking cessation, weight reduction if overweight or obese, regular exercise including walking through discomfort, checking diabetes, hypertension and cholesterol control and instituting antiplatelet therapy with clopidogrel if the patient can afford it or with aspirin if he is poor, ACE inhibitor, and a peripheral vasodilator such as cilostazol.

However, as indicated earlier, within the unregulated health sector in Bangladesh, where standardized management protocols for common disease presentations are rarely followed or enforced, it would be difficult to speculate to what degree the above management plan would be prescribed for this patient.

Further, modern pharmacologic treatment of impotence in Bangladesh can be problematic, as sildenafil and related drugs are not licensed for sale, although newspaper reports indicate that there is a black market for these products. Given that around 16% of men in Bangladesh have a psychosexual complaint including impotence (Hawkes, 1998), there are very few treatment options available except for the handful of dermatologist-venereologists in the country who practice mainly in the capital or large district towns.



I would begin by assessing this patient's cardiovascular risk and optimizing the modifiable factors. I may be able to help with smoking cessation through counselling and the prescription of a course of subsidized medication. We may be able to lower his blood pressure and any abnormal lipids through help with lifestyle change and subsidized medication such as varenicline (Champix). I would recommend antiplatelet therapy such as aspirin.

This man requires assessment of his peripheral vascular disease by a specialist vascular surgeon. In our area this is accessed to referral to a private specialist. Operable arterial obstruction may be treated by surgery or angioplasty. If this patient does not pay for his own health insurance (in addition our universal health insurance) I will need to ensure that the specialist has an appointment at a public hospital where he may receive treatment at no cost. Elective surgery may involve a wait of many months even years.

I would recommend systematic and regular exercise through walking to encourage the development of collateral circulation. The progressive lengthening of claudication distance through exercise is encouraging to the patient in this clinical context.

Abdominal aortic aneurysm if present will require annual monitoring by ultrasound. This will be affected by computerized recall systems.



Impotence may be improved through the prescription of sildenafil and similar medications. These are available on prescription but are not subsidized by health funding.

A 57 year old diabetic patient has end stage renal failure, severe retinopathy and bilateral below knee amputations. He requires haemodialysis. What is your role in supporting this patient in the community?



Every year many thousands of Bangladeshi patients go overseas for treatment of conditions such as heart disease, kidney disease and cancers. However, there are no published statistics, with only one from 1997 indicating annually 200,000 patients travel abroad for treatment. The state of treatment for end stage renal failure in Bangladesh is tragic and critical. Of the estimated 14,000 new cases of ESRD every year, less than 10% receive any sustained forms of dialysis, with the rest fated to an early, pre-mature death (World Bank, 2003). Most dialysis treatments are offered by private hospitals, and the costs are prohibitive for the vast majority of patients. Many well-off patients travel to neighbouring India, and some to Singapore and Thailand, for dialysis.



This patient will require intense community services in order to maintain him at home. Home haemodialysis is available by outreach from hospital based services. It may be necessary to transport this patient to the nearest haemodialysis unit about an hour away from where I practice. These services will have their own criteria for judging which a viable option is for this patient.

My role as a GP will be to continue to provide comprehensive medical care including preventive services as well as acting as an advocate and coordinator within the health system. I will need to do regular home visits. I will have a role in completing documentation to certify eligibility for some services and in meeting requirements for supplying prescribed medications.

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