Quaternary prevention and diabetes
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Sixtyeight year old man, a farmer by profession, with diabetes for the past 10 years, experienced chest pain, and was referred to a cardiology centre in the city, after the family physician diagnosed coronary artery disease. The cardiologist suggested a coronary artery bypass graft (CABG), an expensive proposition for the middle class family. His wife borrowed the money from the village money lender, at exorbitant interest rates, in the hope that he would be cured. After the surgery, the gentleman can hardly walk 10 metres without getting breathless, and has had to stop farming, thus losing the only sustainable source of income for his family. He feels he could have prevented this state of affairs, had he paid attention to control of diabetes earlier.

Certainly, diabetes is a preventable condition. The natural history of the syndrome is such that it offers multiple windows of opportunity where progression can be arrested. The concept of prevention, initially developed for infectious disease, can therefore easily be adapted to diabetes care.

Conventional Prevention
Primordial prevention is defined as prevention of the emergence and development of risk factors in population groups in which it has not yet appeared.1 Thus, efforts are directed towards discouraging children from adopting harmful lifestyles. For example, teaching school children healthy food habits can make them less prone to diabetes. In the context of diabetes, this is practiced when healthy lifestyle messages are conveyed to the population at large. Mass media campaigns related to good dietary habits, regular physical activity and avoidance of tobacco are example of primordial preventive strategies.

Primary prevention is defined as action taken prior to onset of disease, which removes the possibility that disease will occur.2 This is relatively more focused. Persons identified to be at high risk of diabetes are the target of primary preventive interventions. These include those with pre diabetes, with prior history of gestational diabetes mellitus, and with positive family history of diabetes. Lifestyle modification advice, delivered through multiple means, by the health care team, is recommended to halt or slow progression to diabetes. Strategies to achieve weight loss, encourage healthy diet, and increase physical activity are included in this. Current recommendations now suggest preventive pharmacotherapy as well, with metformin and acarbose as drugs of first choice.3

Secondary prevention deals with action which halts the progress of disease at its incipient stage and prevents complications.4 Secondary prevention is concerned with early diagnosis and treatment by screening. By early diagnosis and adequate treatment secondary prevention seeks to restore health by seeking out unrecognised disease and treating it before reversible changes can occur. Treatment as a part of secondary prevention is achieved by ensuring optimal non-pharmacological as well as pharmacological therapy, crafted to maintain a eu-metabolic environment. Secondary prevention interventions are planned to prevent chronic complications of diabetes. Thus, the management of diabetes serves a dual purpose: therapeutic as well as preventive.

This dual purpose serves to inform management strategy even if complications develop, when it is termed tertiary prevention. While management of glycaemia continues to be part of the overall strategy, it also includes interventions which aim to related progression of these complications. Tertiary prevention also includes treatments which try to minimize the disability due to complications.5 Examples include medical and invasive procedures designed to prevent worsening of chronic renal failure to end stage renal disease (ESRD), to preserve vision in diabetic retinopathy, and prevent heart failure or acute coronary syndromes in established coronary artery disease (CAD).

It is also interesting that primordial and primary prevention are cost effective from the perspective of developing countries.6 Peoples' perceptions regarding primordial and primary prevention, however, are unattractive and non-glamorous.

The Journey or the Destination?
Thus, care of diabetes involves a strong preventive component. This simple fact, however, is sometimes
obscured by the over medicalization of diabetes praxis. The modern diabetes care professional works under the pressure of various guidelines and recommendations, with numerous targets to be achieved. He or she often forgets that the goal of diabetes management is to achieve optimal quality of life, and prevent (not necessarily cure) further disease. This prevention-based goal is usually replaced by a misguided effort to achieve arbitrary number-based goal-posts, even at the cost of iatrogenic complications. This is more akin to the strategy used in curative services. In such a scenario, the professional sacrifices the patient’s joy of a safe journey with diabetes, in (vain) quest of an elusive destination.

A parallel can also be drawn of the need to place patient’s interests over and above all other interests, while analysing the distinction between the goals of acute versus chronic care. In acute care, the focus is on the immediate problem, its rapid definition and exclusion of more serious alternative diagnoses, and the initiation of professional treatment. The primary aim is the patient’s interest, even though the patient’s role is largely passive. In chronic disease, on the other hand, the clinician’s role is to help the patient choose an appropriate management strategy for him or her, based upon clinical, as well as pragmatic psychosocial realities. Here too, the aim of the treating physician is to ensure that patients’ quality of life is optimized. To achieve this, while preventing overmedicalisation, it is perhaps necessary for the patient to play a more active role in deciding the course of treatment...

**Quaternary Prevention**

Focus on the curative aspect of diabetes, is no doubt, essential. However, single-minded pursuit of this aspect, while neglecting the preventive aspect of the syndrome, can be harmful. It is to prevent such “over-management” or “mis-management” that the term “quaternary prevention” has been coined. Originally proposed by Jamoulle, quaternary prevention is defined as “action taken to identify patient at risk of over-medicalization, to protect him from new medical invasion and to suggest him intervention ethically acceptable”. This definition can be used as a basis for critical analysis of current diabetes practice.

**“At Risk of Over Medicalization”**

For persons living with diabetes, medicalization is a part of life. As long as it serves a beneficial purpose, medical intervention, both diagnostic and therapeutic, is welcome. At the same time, medical care must be non-maleficent, i.e., not harmful. Protecting the person with diabetes from over medicalization, therefore, is an important aspect of diabetes care.

Regular self-audit of prescriptions, discussion with patients about the necessity of each investigation and drug advised to them, and peer-review of one’s therapeutic plans, help achieve this. To be effective, such checks (by one self, by patients, and by peers) must be accepted by the diabetes care professional as a tool for improvement. These checks should be viewed positively, instead of being considered as punishment or insult.

The diabetologist should be aware of current developments in related specialties such as cardiology, vascular medicine, interventional radiology, nephrology, ophthalmology, and gynaecology. This will help him or her provide appropriate guidance to patients who seek opinions on intervention suggested by super specialists.

**“Protect From New Medical Invasion”**

The person with diabetes, who presents for medical care, is already living a “medically invaded” life. Regular visit to the clinic, planned and unplanned, for investigations and follow up, are an integral part of life. While it is important not to miss necessary medical contacts, it is equally important not to unnecessarily intrude in to a patient’s life. As far as possible, medical invasion or intrusion should be minimized. This can be achieved by imparting self-management end decision making skills to people with diabetes at every medical contact.

As we talk about overmedicalisation it is also important to remember the section of populace who do not have access to even primary level of care or a substantial proportion who are pushed to poverty due to out of pocket expenditure. Private spending on health as a percentage of total costs ranges from 69-73% in Pakistan and India, of which 83% is out of pocket pushing people
into poverty. Universal health coverage—the new mantra, would help to reduce inequities. At this critical juncture, the concept of quaternary prevention becomes all the more important.

“Ethically Acceptable Intervention”
Evidence-based medicine has its strengths, but may conflict with ethics or ‘common sense.’ In diabetes, the necessity of a particular medical intervention has to be weighed against its possible harms. Biological factors such as old age or limited life expectancy, psychological factors such as suicidal tendencies, or social factors like lack of family support may sometimes impact choice of therapy. Intensive glycemic control, which may otherwise be scientifically appropriate, will be unacceptable in all the afore-mentioned clinical situations. Similarly, invasive cardiology or nephrology procedures, which may be appropriate for most patients, may be unethical in these scenarios.

The concept of quaternary prevention addresses these medical dilemmas well. If the use of medical interventions creates ethical concerns, they can be resolved by shared decision making between patients, family members, and diabetes care professionals. The case can be referred to a bioethicist, if available.

The Bio Psychosocial Model
It is often difficult for diabetes care professionals to reconcile their medical or clinical training with the concept quaternary prevention. There is often a clash of two opposing principles: “primum succurrere” (first hasten to help) versus “primum non nocere” (first do no harm.)

The cardiologist who performs a coronary artery bypass surgery (CABG) on an 80 year old person with advanced carcinoma prostate and hepatic metastasis, citing triple vessel disease as an indication, may medically be on sound footing, as he follows the “primum succurrere” philosophy. At the same time, the diabetes care professional who requests conservative medical anti-anginal therapy for this patient is equally correct, as he applies the "primum non nocere" dictum.

Resolving these two guidelines may be challenging at times. The bio psychosocial model can be used to inform decision making in diabetes related situations characterized by equipoise, or uncertainty. Psychological and social issues must be taken in to consideration while planning interventions which are ethically and medically appropriate.

The Way Forward
The concept of quaternary prevention is an all-pervasive concept which has utility at every step of diabetes management. It is a concept which should be internalized by the diabetes care team, and which should find expression in every patient-provider contact. Following the principles of shared decision making, team work, and bioethics will help in quaternary prevention, and will create an environment in which optimal therapeutic outcomes can be achieved.

References