2008

Proceedings
Diabetes in Asia Study Group Conference

Diabetes in Asia Study Group

In Collaboration with

International Diabetes Federation

Nepal Diabetes Association

Theme

Implementation of Primary Prevention Strategies for Type 2 Diabetes

October 16 – 18, 2008
Kathmandu, Nepal

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Message from His Excellency Dr. Ram Baran Yadav, President of Nepal

On behalf of H.E. Dr. Ram Baran Yadav, President of Nepal, I am glad to learn that the Diabetes in Asia Study Group (DASG) 2008 Conference, in collaboration with Nepal Diabetes Association and International Diabetes Federation, with the theme "Implementation of Primary Prevention Strategies for Type 2 Diabetes", is being organized at Hotel Yak and Yeti, Kathmandu, from October 16-18, 2008.

It is my pleasure to greet all international and national participants, particularly Prof. Martin Silink, the President, and Prof. Jean Calude Mbanya, the President Elect. of the International Diabetes Federation, Sir. Michael Hirst, Chairman Diabetes UK, and Prof. Samad Shera, Chairman, Diabetes in Asia Study Group.

I wish all the success of the Diabetes in Asia Study Group 2008 conference.

Lalit

(Lalit Bahadur Basnet)

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Government of Nepal
Ministry of Health & Population

Hon'able Girirajmani Pokharel
Minister for Health and Population
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Ref:

Date: 1st Oct 2008

Message from Hon. Mr. Giri Raj Mani Pokharel,
Minister of Health and Population, Nepal.

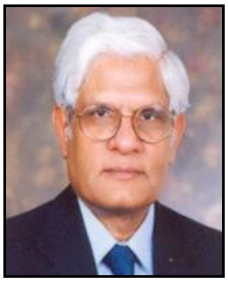
It is my great pleasure to know that the Diabetes in Asia Study Group 2008 Conference, in collaboration with Nepal Diabetes Association and International Diabetes Federation, with the theme "Implementation of Primary Prevention Strategies for Type 2 Diabetes", is being organized at Hotel Yak and Yeti, Kathmandu, from October 16-18, 2008.

This conference is being held at a critical time when there is rapidly rising incidence of diabetes in Nepal. I believe the key lies in prevention and this is appropriately reflected in the theme of the conference. I am confident the interactions and deliberations by the experts in the conference will come to appropriate consensus on prevention of type 2 diabetes.

I extend a warm welcome to all the participants of the conference. A special thanks to our guests from abroad who have graced this meeting and the country. I wish all the success of the Diabetes in Asia Study Group 2008 Conference.

Hon. Mr. Giri Raj Mani Pokharel
Minister of Health and Population Nepal

Foreword



It gives me great pleasure to write the foreword for the 'Proceedings of the Diabetes in Asia Study Group (DASG) Conference'.

The theme of the Conference is 'Implementation of Primary Prevention Strategies for Type 2 Diabetes'.

Presently over 246 million people are affected by diabetes and these numbers are predicted to rise to 380 million by the year 2025. Of the 380 million people, more than 180 million will be from Asian Continent and more than 80 million from the South East Asian Region. India alone will have more than 20 % of the world's diabetic population. Diabetes can therefore be rightly called as the 'Disease of the Developing Countries'.

The Countries with larger population in the Asian Continent are also low resource countries. Therefore, despite the high prevalence of diabetes and its complications, the essential health care requirements and facilities for diabetes care are often inadequate.

I am convinced that the policy makers and health care providers in the developing Countries have to get their priorities right and need to shift their focus to Primary Prevention of Diabetes.

The present health care setup in most of the Asian countries is structured to deal with acute and episodic illnesses and is not designed to provide the optimal array of services necessary to manage a complex, multisystem chronic illness like diabetes. If we are serious in preventing the prevailing epidemic of diabetes, we have to mobilise our available resources to implement Primary Prevention Strategies for Type 2 Diabetes.

Leading Physicians and diabetologists from the Asian continent and outside will present their research papers during the Conference. The representatives from the National Diabetes Associations and the Pharmaceutical industry will also deliver lectures.

The academic exchange of experiences with the experts will provide impetus to increase the research efforts at all levels - clinical, laboratory and operational. Such deliberations will pave the way for increasing cooperation among the developing and developed countries, aimed at improving and strengthening the diabetes health care. The proceedings will provide a deep insight into the academic content of the Conference.

I would like to thank my colleagues in the DASG Steering Committee for their support and guidance in planning the Scientific Programme of the Conference and other activities.

My special thanks to Dr D.L. Singh and Prof Madhur Bhattarai and their team for their hard work and devotion in making the Conference successful.

I would like to extend my warm welcome to all the participants, invited speakers, Chairpersons and the young researchers.

I am indebted to Prof Martin Silink, IDF President, Prof JC Mbanya, IDF President – Elect, Dr Mahen Wijesuriya, Chair IDF SEA Region, Prof Morsi Arab, Chair IDF MENA Region and Mr. Gordon Bunyan, Chair IDF WP Region for their help and cooperation and for their participation.

Prof A. Samad Shera
Chairman, Diabetes in Asia Study Group (DASG)
Honorary President, International Diabetes Federation (IDF)

Preface

It is a privilege for the Nepal Diabetes Association to host, as a local organizer, the Diabetes in Asia Study Group 2008 Conference, in collaboration with the International Diabetes Federation, in Kathmandu from October 16 – 18, 2008. The theme of the conference "Implementation of Primary Prevention Strategies for Type 2 Diabetes" is timely and pertinent considering the epidemic proportions that diabetes has assumed in the world, particularly in the Asian Countries. We hope that this conference will bring out the practical and appropriate guidelines for the primary prevention of Diabetes considering the local and environmental factors.

We are happy to welcome delegates from home and abroad countries to Kathmandu in this conference. We anticipate broad representation not only from within Asia but also from other parts of the world which will encourage an exchange focused on the prevention of type 2 diabetes. Prevention of diabetes is an area which gets overshadowed by the management of diabetes and its complications.

I would like to express my heartfelt sincere gratitude to all national and international distinguished guests and participants who have made effort to actively participate in the conference in spite of all the difficulties. I sincerely thank the Diabetes in Asia Study Group and its Chairman Prof. A. Samad Shera for their decision to hold the conference in Kathmandu, in collaboration with Nepal Diabetes Association. I am particularly grateful to Prof. Martin Silink, the President, and Prof Jean Claude Mbanya, the President Elect, of the International Diabetes Federation for their willingness to participate in the conference. I hope you'll bear with us for any short-comings in the process of organizing the conference.

I sincerely express gratitude to all executive members and staffs of Nepal Diabetes Association and other staffs of Local Organizing Committee whose sincere efforts have made the event to occur. I also thank the Ministry of Health and Population, pharmaceutical companies, hotels, event managers, volunteers, and postgraduate residents for their kind cooperation and contribution.

Dr. D.L. Singh FRCP Edin
Chairman, Local Organising Committee
President, Nepal Diabetes Association

Contents

LIST OF SPEAKERS

* Speakers are chairpersons also in other sessions

* Speakers are chairpersons also in other sessions

LIST OF CHAIRPERSONS

LIST OF FREE PAPERS

Papers and speakers

* Speakers are chairpersons also in other sessions

Mobilising The Resources To Address The Diabetes Epidemic

- Prof. Martin Silink

Professor Martin Silink AM, MB BS (Hons1), MD, FRACP is President of the International Diabetes Federation for the 2006-2009 triennium. Professor Silink is also Chair of the IDF Child Sponsorship programme which provides life-saving medications to children with diabetes in 17 developing countries. Professor Silink is Professor of Paediatric Endocrinology at the University of Sydney and The Children's Hospital at Westmead, Sydney, Australia. His main research interests are diabetes complications in the young and the changing patterns of diabetes in childhood and adolescence. Professor Silink is a member of various professional societies including Australian Diabetes Society, American Diabetes Association (ADA), European Association for the Study of Diabetes (EASD) etc. His CV includes over 120 peer-reviewed articles and invited chapters. Previous appointments include President-Elect of IDF (2003-2006), Vice President of IDF (2000-2003), Chairman of the IDF Consultative Section on Childhood & Adolescent Diabetes (1994-2003), and President of the International Society of Pediatric and Adolescent Diabetes (ISPAD) (1999-2002).

In 2006 the International Diabetes Federation led the campaign which resulted in the United Nations (UN) unanimously adopting the UN Resolution on Diabetes (Resolution 61/225). Diabetes joined AIDS as the only other disease to have its own UN Resolution. For the first time, all Governments recognized that diabetes posed severe risks for the entire world. The Resolution declared the current World Diabetes Day, November 14, a UN World Day and encouraged all Member States to develop national programs for the prevention, care and treatment of diabetes in line with sustainable development of their health-care systems.

Type 2 diabetes is projected to affect 380 million people by 2025 with the largest increase in diabetes taking place in developing and middle income countries. It is the fourth leading cause of death by disease globally and is estimated to have caused 3.8 million deaths worldwide in 2007 about the same as HIV/AIDS and malaria combined. In

Mexico, diabetes is now the leading cause of death. By 2025, the number of adults with diabetes in China and India is expected to reach 59 and 70 million, respectively.

Type 1 diabetes is also increasing at approximately 3% per annum (5-6% in the very young). It presents a particular threat to children in poor countries; a child with type 1 diabetes survives less than 12 months in Mali and 4 years in Mozambique.

The devastating human, social and economic effects and the dramatic increases in prevalence underscores the urgent need to address the diabetes epidemic, especially in developing and transitional countries. The increased political momentum following the passage of UNR 61/225, the existence of an increasingly coordinated global diabetes community and the availability of cost-effective interventions create a window of opportunity to mobilize world action against this still largely under-recognized threat to world health.

Acquiring Of Expertise In Educational Technology Is A Basic Qualification For Successful Diabetes Educators

- Prof Morsi Arab

Prof. Morsi Arab is the Chairman MENA Region, International Diabetes Federation. Prof. Morsi Arab received all under and post-graduate medical education at the University of Alexandria (MB BCH, DM, MD). He is now Emeritus professor at the University of Alexandria. He is the Founder of The Alexandria Diabetes Association, The Egyptian Diabetes Association, The Pan African, The Arab and The Mediterranean Diabetes Study Groups. He has a very long continued service at The International Diabetes Federation Leadership ; as IDF Vice –President (two terms) and as Regional Chairman (Four terms). He is also a member of several scientific organizations, editor in-chief or reviewer of several Diabetes Journals and co-author of several books in Diabetes including the International TB of Diabetes. He has published more than 300 articles. Prof. Arab has wide activities in social welfare organizations at national and international levels and he is the Founder of the Morsi Arab Humanitarian Foundation and a member of The Egyptian Union of Writers.

Education is an important key to successful diabetes management. This applies to education of patients and also to the training courses for health caring personnel. Inspite of very extensive efforts in education, there are still strong evidences that the current education programmes were not quite successful to achieve the intended goals. Such evidences come from the monitoring of high prevalence of uncontrolled diabetes, high frequency of un necessary admissions to hospitals and poor acquirements by patients of proper knowledge and skills or appropriate attitudes.

Among the causes of this unsatisfactory outcomes in education programmes are the lack of professional expertise in educational methodology, the in coordination in diabetes programmes, unclear objectives, lack of evaluation of outcomes and absence of accountability.

In order to achieve the strongly needed success in education programmes, careful planning of such programmes should take in consideration:

(1) well defined objectives, with careful consideration for the basic needs and backgrounds of the learners. (2) adequate selection of the contents of the programmes and the methods of their delivery, and (3) adequate preparation of well trained educators who are not only knowledgeable about diabetes, but also capable of gaining interest and capturing attention of the learners. They should be able to promote knowledge, skills and favorable attitude at all levels i.e. from the one-to- one education, to leading of small group discussions or large group presentations, and up to wide confrontation with mass population through the media.

This presentation throws some light on the essential landmarks for getting more successful outcome from education programmes.

The National Diabetes Program, Japanese Trial.

- Prof. Naoko Tajima

Naoko Tajima, MD, PhD, MSHyg, is Chairman and Professor of Medicine, Jikei University School of Medicine, and Head, Division of Diabetes, Metabolism and Endocrinology at Jikei University Hospital, Tokyo. Dr. Naoko Tajima has graduated from Jikei University School of Medicine in 1970 with top honors and finished a 2 year-residency at Jikei University Hospital (MD degree). She received PhD degree in 1979. Dr. Tajima's current research interests include long-term prognosis of type 1 diabetes, population-based approach to childhood obesity/type 2 diabetes, and prevention and treatment of type 2 diabetes. She has been engaged in a nationwide, NIH (US)- and the Ministry of Health, Welfare and Labor (Japan)-funded ongoing research program evaluating the prognosis of children with type 1 diabetes (Diabetes Epidemiology Research International: DERI Mortality Study) since 1986. She is currently a member of the Metabolic Syndrome in Children and Adolescents Advisory Board, International Diabetes Federation (IDF). She has been involved as a co-principal investigator in a number of key international collaborative studies including the DERI Study, WHO DIAMOND Study, and DECODA Study. Dr. Tajima has lectured extensively in Japan and abroad, and her publications include over 200 peer-reviewed articles. Dr. Tajima serves on the Executive Board of the Japan Diabetes Society (JDS), in charge of International Affairs and the Committee of Childhood Diabetes. Dr. Tajima is an executive member of the IDF Western Pacific Region (IDF/WPR) since 2007, and an active member of many other key diabetes organizations.

The population longevity has become longer and longer after the 2nd World War, with improvements in living conditions and advances in medicine. However, the lifestyle changes among the Japanese people and the rapid aging of society that occurred, have led to the structure of disease affecting the society becoming altered. As a result, the medical expenditure drastically increased, so that the Japanese medical insurance system which allowed all Japanese citizens wide access to medical services is now on the verge of collapse.

Therefore, the Japanese government launched a project called Health Japan 21 in 2000, where the prevention of diabetes received particular mention, as diabetes is a costly

disease and places affected patients at greater risk for cardiovascular disease. Health Japan 21 has set specific targets for FY2010 in an effort to increase life expectancy in the Japanese population. Goals of diabetes management include: 1) reducing obesity among adults; 2) promoting walking (number of steps taken in daily living); 3) promoting well-balanced meals both in quality and quantity; 4) increasing the number of persons who undergo screening for diabetes; 5) promoting counseling after diabetes screening; 6) decreasing the number of patients with new-onset diabetes from 6.9 million in 1997 to 10 million in 2010; 7) reducing drop-outs from regular clinic visits from 55% in 1997 to 0% in 2010; and 8) decreasing the two major diabetic complications, nephropathy and blindness.

In accord with the national health vision, “Health Japan 21”, several nationwide projects on the primary, secondary and tertiary prevention of diabetes were planned as a joint effort by the Japan Diabetes Society (JDS), the Japan Association for Diabetes Education and Care (JADEC) and the Japanese Medical Association (JMA). Following the launch of a 5-year plan by the JDS in 2003, the JDS, the JADEC and the JMA jointly established the Japan Council for the Promotion of Countermeasures Against Diabetes, the first nationwide health council to be guided and endorsed by the Ministry of Health, Labour and Welfare (MHLW).

Quite apart from this, the MHLW has launched in 2006 a new large-scale research project named the Japan Diabetes Outcome Intervention Trial (1,2,3). This was followed by the launch in 2007 of the Japan Diabetes Complication and Prevention Prospective Study (JDCP Study) as a primarily JDS-funded project, which will account for a database of approximately 10,000 people with type 2 diabetes, allowing the status of diabetic complications and their progression to be examined in these patients. A new policy regarding control of lifestyle related diseases in the context of the “metabolic syndrome” has just been put in place from the current fiscal year onwards, which, hopefully, will become a strong driving force for decreasing the obesity-related behavioral and health risks in the population.

One Last Look At Cost Of Diabetes Worldwide

- Prof. Rhys Williams

Rhys Williams is Foundation Dean of Medicine and Professor of Clinical Epidemiology at the School of Medicine, Swansea University, UK. This is a new medical school which enrolled its first students (on a graduate entry only 4-year course) in 2004. His main research interests relate to diabetes epidemiology, the provision of health care to people with diabetes and related long-term conditions, the epidemiology of the metabolic syndrome and the monitoring and prevention of childhood obesity. He is a member of Diabetes UK's Advisory Council, Chair of its Wales Advisory Council and was, until recently, a Vice President of the International Diabetes Federation. He is a member of IDF's Prevention Task Force and of its Diabetes Atlas Editorial Board. He is also a visiting consultant to the World Health Organization, Geneva. He is currently Editor-in-Chief of Primary Care Diabetes and is a member of the editorial boards of a number of other diabetes-related journals.

The study of the economics of diabetes and diabetes care has come a long way since the very early, crude estimates of health care expenditure made, in Europe (for presentation at the St Vincent conference) and in the USA (as developed by the American Diabetes Association). Since then, methods for estimating the societal costs of diabetes have become more sophisticated and the economic burden of the condition has become greater as a result both of increased prevalence and escalating unit costs. Estimates are now available (in the second and third editions of IDF's *Diabetes Atlas*) for every country in the world. These estimates have been calculated from knowledge of diabetes prevalence, total health care expenditures and knowledge of the ratio of the cost of the care of a person with diabetes compared with the cost of the care of a person without diabetes. It is time we took stock of this information and decided what economic information will be of most use in the global campaign to increase awareness of the condition and its long term consequences. Comparatively little attention has been given to the consequences to families of having a relative or relatives with diabetes. What benefits have to be foregone when this occurs? What are the most cost-effective preventive and therapeutic strategies in different health care systems and what are the methods we should use to identify them? What new information should we be

assembling to carry awareness of diabetes to new levels in both high, medium and low income countries? This presentation will seek to answer some of the questions and set out a route for the future of diabetes health economics.

Can Recognition By The United Nations Help The Cause Of Diabetes?

- Dr. Shaukat M. Sadikot

Dr. Shaukat M. Sadikot, aged 56 years, is the Vice President of the International Diabetes Federation and is also the President of Diabetes India. Presently working as a Consultant in Endocrinology at the Jaslok Hospital and Research Center, Mumbai, he has been actively involved with the cause of diabetes and associated metabolic disorders for the past 30 years. He is the editor-in-Chief of the International Scientific Journal "Diabetes and the Metabolic Syndrome: Clinical Research and Reviews", has written four books and has 87 publications to his credit. He has been closely associated with the activities of the IDF for many years and is a member of the IDF task Force on Insulin, Test strips and other diabetes supplies, a member of the IDF Consensus group on the Prevention of Prediabetes, Diabetes and the Metabolic Syndrome, as well as the IDF group on Diabetes and Obstructive Sleep Apnoea. He is on the Executive Committee of BRIDGES. He is a member of the Scientific Committee of the Metabolic Syndrome Institute and a member of the Executive Board of the International Atherosclerosis Society.

On the 20th of December, 2006, (at 5:59 pm New York Time, to be exact) the U.N.General Assembly adopted a resolution declaring November 14 as the UN World Diabetes Day. This recognition by the United Nations of diabetes is definitely a significant first step in what the U.N. can, and should do, to overcome the veritable "tsunami" of diabetes.

But is it going to be "one giant leap for mankind?"

There is no doubt that diabetes with its attendant complications and the confounding diseases with which it is frequently associated such as hypertension, dyslipidemias, obesity, especially visceral obesity, leading to significantly increased numbers of people with cardiovascular disease and death often occurring earlier, at a relatively younger age group, has reached pandemic proportions.

By the time you have read the above paragraph, one person will have died of diabetes related causes and two people would have been diagnosed as having diabetes!

The prevalence of diabetes, especially Type 2 diabetes mellitus (T2DM) is increasing in leaps and bounds and presently is thought to be in the vicinity of around 246 million people (representing 5.9% of the adult population (20-79 age group) with the vast majority of the diabetes affected subjects living in developing countries. Seven out of the ten countries with the highest number of people living with diabetes are in the developing world. The number is expected to reach some 380 million by 2025, representing 7.1% of the adult population. For developing countries, there will be a projected increase of 170% of cases; for developed countries, there will be a projected rise of 41%. More than 80% of the affected people will be living in the poor and transitional nations of the 3rd world [1, 2]. (Table 1).

Prevalence of DIABETES (AGE 20-79 YEARS)	2007	2025
COMPARATIVE PREVALENCE (%)	5.9	7.1
NUMBERS OF PEOPLE WITH DIABETES	246	380

Table 1. Comparative prevalence of diabetes in the years 2007 and 2025 [1, 2]

In 2007, diabetes will cause 3.8 million deaths globally. In fact, diabetes is a global killer, rivalling HIV/AIDS in its deadly reach. The death rates are predicted to rise by 25% over the next decade [1].

In many countries, diabetes related complications are a major problem to their health and socio-economic structures. Diabetes is responsible for over one million amputations each year. People with diabetes are 15 to 40 times more likely to require a lower-limb amputation compared to the general population and in most countries, it is second biggest cause for lower limb amputations after accidents. It is estimated that more than 2.5 million people worldwide are affected by diabetic retinopathy and in most countries, it is the leading cause of legal blindness. Diabetes is the largest cause of kidney failure in developed countries and is responsible for huge dialysis costs. 10% to 20% of people with diabetes die of renal failure. Cardiovascular disease is the major cause of death in diabetes, accounting for some 50 % of all diabetes fatalities, and much disability. On average, people with T2DM will die 5-10 years before people without diabetes and most of this excess mortality is due to cardiovascular disease [1].

The economic consequences of diabetes and its related complications are a tremendous burden to the health economics of many countries as well as the socio-economic fall out on its citizens, the vast majority of whom are living in the developing and transitional countries in the 3rd world.

In 2007, the world will spend an estimated 215-375 billion USD to care for diabetes and its complications. If nothing is done over the next 20 years, the figure will rise to between 234 billion and 411 billion USD. More than half of this will be spent in the U.S.A., the European Region will spend about half of the US amount (25%) whilst 12.5% of the

global spending will be spent in the Western Pacific Region which includes Australia, China, Japan and Korea. The remaining 9.2% of global spending will be divided among South-East Asia, the Eastern Mediterranean and Middle East, South and Central America, Africa and the remainder of North America.

India, the country with the largest population of persons living with diabetes, will spend an estimated USD 2.0 billion whilst the 47 countries in the African Region will spend, in total, USD 0.7 billion for diabetes.

Thus, more than 80% of expenditures for medical care for diabetes are made in the world's economically richest countries, not in the low- and middle-income countries where 80% of persons with diabetes will soon live. By 2025, if the resources devoted to diabetes in low- and middle-income countries are not increased, this disparity will widen.

One also cannot ignore the financial losses to the economy of the country and it has been estimated that the loss in economic growth may be felt much more in developing countries. The World Health Organization (WHO) estimates that diabetes, heart disease and stroke together will cost about $555.7 billion in lost national income in China over the next 10 years, $303.2 billion in the Russian Federation; $336.6 billion in India; $49.2 billion in Brazil and $2.5 billion even in a very poor country like Tanzania. These estimates are based on lost productivity, resulting primarily from premature death
disability that untreated diabetes causes. Perhaps 25 million years of life are lost annually to mortality caused by diabetes. Reduced quality of life may reach a similar magnitude among the living [1].

In other words, the question should not be whether recognition by the United Nations will help the cause of the people with diabetes.

The answer is clear…..YES!

The question should be…..HOW?

Annual celebrations of Diabetes Day would be meaningless if concrete programs directed to help the people with diabetes, especially the most vulnerable, are not launched, monitored and funding provided for them. It is thus imperative that recognition by the U.N. and its relevant agencies does not end with the commemoration.

So what can the U.N. do about this pandemic which is threatening to engulf us?

One would feel that the first step in fashioning a global response to the problem of diabetes would be for the U.N. or one of its agencies to co-ordinate with all major organizations, societies, and federations dealing with diabetes as well as complications such as renal, ophthalmic, lipid, nutrition, hypertension, obesity, atherosclerotic, metabolic societies, associations and federations.

Why involve these other organizations?

Diabetes is not just a simple matter of controlling the blood glucose levels. More than 70-80% of people with diabetes suffer from vascular complication associated morbidities and mortality. Thus, the optimal manner of managing diabetes and helping a person with diabetes avoid the morbid complications would be to simultaneously offer optimal management of confounding co-morbid conditions in an effort to avoid or at least delay the onset of vascular disease and other complications which have been referred to above.

The coming together of many of these organizations as a loose “confederation” under the co-ordination and umbrella of the U.N. and its agencies, would give it strength and authority. It would be a neutral platform for co-ordination between the main organizations to come up with a clear cut time bound program of initiatives and projects which would have a direct positive impact on people with diabetes where ever they may live. They must have inbuilt validation measures and changes could be made even in the midst of such schemes. Although there are many initiatives which one can easily think of, and the “confederation” would inevitably lead to many more ideas.

Speaking to so many people in numerous countries, it would seem that the general feeling is that one of the key areas should be to evolve initiatives which increase “down to earth” awareness and knowledge about diabetes not only amongst the medical fraternity, especially the family practitioners, but also amongst those with known diabetes as well as the general population.

In recent years there seems to be a plethora of clinical guidelines on practically every aspect of disease states and their management. As new data comes in many of these clinical guidelines are updated and so we have newer versions of these guidelines. Clinical guidelines which are developed in keeping with correct methodology are an important source of information and can go a long way to help make clinical decisions.
In spite of this, there does not seem to be a commensurate improvement in having our patients, especially those with diabetes, achieve their targeted goals and prevent or at the very least ameliorate the microvascular as well as the atherosclerotic cardiovascular disease complications which continue unabated.

One of the basic problems is that knowledge about managing diabetes and its complications as well as attendant co-morbidities is very poor amongst most family physicians and even internists in most countries and especially in the poor and transitional countries. It is also a known fact that in many of these vulnerable countries, 98-99% of the people are only seen by family physicians. If the basic fundamentals in treating patients is lacking, then academic guidelines have really no meaning.

Let us take the case of India. India has a wide spread of family physicians, and it is this network which must be mobilised to make the diabetes care program accessible to the people. More than 98-99% of all subjects with diabetes in India are seen and managed by family practitioners. Even amongst the small percentage of patients which are seen by the internists and diabetologists, it is often seen that that the advise given has to be vetted by the family physician before the patient will follow it.

At the same time, one must realize that many of the family physicians even if they are trained in the allopathic branch of medicine have a poor knowledge of diabetes management. The family physician network is further complicated by the fact that many of the family physicians are trained in the traditional systems of medicine, such as homeopathy, ayurveda, unani and other branches of traditional or ethno-medical traditions, where not only is not much attention paid to diabetes, but it is possible that one may not necessarily agree with the concepts of diabetes care which are taught [3].

What the "confederation" could do is use the available guidelines in different languages, to make up a rough draft of a "Clinical Pointers" handbook and would definitely be more inclusive in the sense that one would also ask participating countries and regions to add or subtract and give their opinions on this. Thus, the rough draft would only be a working draft open to alterations and also be much more widely "inclusive". Today many in the medical fraternity, especially those from the 3rd world countries feel "dictated" to by many of the guidelines which they feel have been drafted by a chosen few without asking many of the others for their opinion and also without having adequate knowledge of the ground realities in many countries. Once the inputs are in, the draft can then be modified and altered and again sent to the associations and key opinion leaders for further comments or acceptance.

Once this is done, and we have a final draft, which may take 2-3 rough drafts, the next step would be to use this widely inclusive draft of clinical pointers by the medical fraternity in a country to modify them on the basis of ground realities in their country or region. This would be extremely practical and focused on the use by family practitioners and even other physicians.

In the same vein, one has to take steps to increase awareness about diabetes and its consequences not only amongst people who already know they have diabetes but even amongst the general population. This message again must be moulded and made suitable for local sensibilities.

There is an increasing feeling that prevention is the answer to our problems. Whilst there is no denying that prevention is definitely on the radar, are we to forget the problems faced by the many millions who already have diabetes. Moreover, it is now well accepted that there are many people who have diabetes and are still unaware of this. In one of the only all India study on the prevalence of diabetes, we found that four out of five people with diabetes in rural areas, two out of three in smaller urban towns and one out of two in large cities and metros had diabetes were not aware of it [4, 5]! Such patients are more often from the more underprivileged classes and are therefore more prone to the complications and often present with the complications such as foot ulcers leading to amputations, end stage kidney disease, blindness, premature heart disease and it is at this time that diabetes is discovered as the sole cause of the problems.

By then it is too late.

Thus it is important for such a confederation to bring out relevant material in different languages, these again being modified according to local ground realities

At the same time, there are excellent handbooks which are available in countries, in languages besides English, and many also have good implementation programs which other countries and regions could use easily if this meets with their ground realities. Unfortunately, there is little, if any, mechanism available for such interactions and often much time, effort and money is lost re-inventing the wheel, so to say, when this has already been done and validated in other countries. The aim is to have an ongoing interaction and inputs between all of us to help our people with diabetes between all the associations who can help each other.

Importantly, what is the use if knowledge is "available' but cannot be afforded by many people especially in the poor and developing countries. It becomes imperative that the UN in consultation with many of these recognized organizations draw up a list of the basic minimum drugs which are needed to treat diabetes, its complications, prevention, and the other confounders and insist on the countries not levying taxes on them and also keeping them under price control.

Whilst there is no doubt that prevention or for that matter early diagnosis and optimal management of the complications may avert the complications from becoming serious. But things happen. The consequences can have significant detrimental consequences not only for the patient, but the family and the society as a whole. This is again something which the U.N. can look at especially in conjunction with the relevant associations and organizations.

Let us take the complication of foot problems.

With increasing awareness about prevention of the complications and foot care, one can possibly prevent severe foot problems needing major amputations, data shows that more than a million people with diabetes undergo lower limb amputations. Are we then to leave these people aside to act as a burden to their family and to the society and the national economies? And what happens to the family if the person is the only bread earner for the family?

It is not that artificial limbs are not available. But the question is…. are they affordable? Today, a good western style lower limb prosthesis is very costly, and prohibitively so, in many countries especially in the poor sections of society. An artificial foot which is often used as a benchmark costs around U.S. Dollars 8000. Even cheaper versions for below knee amputation replacements can cost around a third of this. Compare this to the cost of below knee Jaipur Foot replacement (or one of its modifications) of U.S. Dollars 70 and an above knee replacement of around U.S. Dollars 140-150! Unfortunately, whilst this may be known to people dealing in podiatry, this may not be too well known amongst others.

Moreover, many of these western style artificial limbs may not be suitable for the lifestyles and habits of people in other countries. The lower limbs are not meant only for locomotion. They serve a number of diverse functions and must be culturally and socially acceptable to people of different ethnicity.

Take India, for instance.

The life style of an average Indian demands long times spent in position of squatting, sitting cross legged on floor etc. While squatting the ankles have to dorsiflex fully, the knees have to flex till the soft tissues of the thighs and calf can flatten against each other.

It is this which allows our center of gravity to fall within our point of support to provide a stable equilibrium so that we do not fall backwards. An average Indian would also disapprove of using the street shoes inside the house. Also, the "shoe" attached to the old artificial limb was made of heavy sponge, making it worthless for any farmer working in the rain or in irrigated paddies, and 72% of India lives, and works, in its villages.

The foot example is just one. The interaction under the auspices of the U.N. could allow an ongoing interaction which would help in dispersing knowledge about many affordable alternatives available to the people with diabetes.

Whilst there is no dispute to the fact that much needs to be done about diabetes presently, one needs also to look into the future. Type 2 diabetes prevalence is rising at alarming rates as can be seen from Table 1. The increasing burden will be felt in the poor and developing countries which will see a 170% increase in the numbers of people with diabetes as compared to a 40% increase in the developed world. In 2025, 80% of all cases of diabetes will be in low- and middle-income countries possibly ill-equipped to cope with this epidemic.

Although increased urbanization, high prevalence of obesity, sedentary lifestyles and stress, among other factors, have been implicated in this tsunamic rise, there are studies which have shown that a significant percentage (some report as high a figure as 80%) of type 2 diabetes is preventable by adopting a healthy diet and increasing physical activity. Here again, awareness is key and the importance of increasing awareness not only amongst those who already have diabetes but even in the general population has already been alluded to [1].

To give an example, overweight and obesity are increasing and play a key role in the increasing prevalence of diabetes and cardiovascular disease. This increase in weight is seen even in developing world populations especially in the urban areas as the economy does become better and also in those who may not be economically well of but have increasing access to relatively cheap mass produced “fast foods”. The increase in weight is seen in children and adolescents and may be a reason why diabetes and heart disorders are seen in a much younger age group.

It is here again that the U.N. can play an important role. Allowing for the fact that in many poor and transitional countries, a focus on acute diseases will take precedence, it can request these countries that chronic metabolic disorders such as overweight and obesity amongst others, should at least come on the radar of their health policies. Moreover, it can work with many of the fast food and cola chains which are mushrooming across the world in this age of globalization to ask them to look into healthy alternatives. This is already being done in most developed countries, not only with the availability of healthy

food options but also using health friendly cooking media and decreasing trans fats in their meals.

There are many such initiatives which can be taken by the U.N. and one can only give examples of what the U.N. can do.

The U.N. can act as a facilitator for initiatives, especially by acting as a forum for an interaction amongst various federations, organizations and societies, both medical as well as those with lay membership, which deal with diabetes and the components of the metabolic syndrome. It should be made clear that one is not asking for a one off involvement by the U.N., but a continuos relatively long term association so that this health problem which has already reached frightening proportions and is due to increase in geometrical proportions, can be adequately dealt with now, and in the future, and be very focused to the target population.

It could also consider setting up a Global Fund which would act as a one point source for funding for initiatives which would be meticulously validated in an open transparent manner, independently audited, and focused to the most deserving.

Mahatma Gandhi once said, “when undertaking any initiative think of the most poor and vulnerable. If what you are doing is going to make their life a little better, then this must be done irrespective of all difficulties”. It is with this in mind that one would like to see the U.N. take proactive steps to make optimal diabetes care “Available, Accessible and Affordable” to all peoples, irrespective of socio-economic class, colour or creed.

NOTE: Most of the epidemiological and economic data is taken from the Diabetes Atlas 2006, brought out by the International Diabetes Federation and I would sincerely like to thank them for allowing the use of the data.

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Patients are an important resource

- Dr. Arun Baksi

Arun Baksi is Emeritus Consultant Physician at the Isle of Wight, UK. He has had a distinguished career, and was the recipient of The Outstanding Achiever of the Year Award, given by the Department of Health. Despite his retirement, he continues with clinical activities and patient education with great vigour. He is particularly proud of having been the founder editor of Practical Diabetes International.

People with diabetes have always received informal advice from others, who have had diabetes. However, society has not been aware of the quality of advice provided. This paper describes the effect of formal training given to people with diabetes to undertake some of the functions traditionally delivered by health professionals. The paper concludes that people with diabetes can be an important resource in the delivery of health care.

Post CABG Glycemic Control-Tighter The Better.

- Dr. Anil Bhoraskar

Anil Bhoraskar finished his MD in 1980 and was Hon. Asst Prof. in Grant Medical college for 15 years. He is a Post graduate teacher in Diabetology till date at All india Institute of diabetes mumbai and is presently attached to Raheja Hospital which is a 200 beded tertiary care hospital for diabetes and Asian Heart Institute Mumbai. He has received many distinguished awards and is involved with many health organizations. He has over 35 papers and publications in national & International journals & many chapters on diabetes in API publications.

Aggressive glycemic control in hospitalized patients improves clinical outcomes. Management of diabetes in an inpatient setting requires familiarity with the use of both iv and sc insulin, both in intensive care units and wards. The time-honored traditions of “sliding scale” insulin, and of withholding insulin for procedures and euglycemia should be buried along with fractional urine testing. Not only hypoglycemia but also hyperglycemia is a patient safety factor. Target range glucose is 90-130 mg/dL before meals (if eating) and under 180 mg/dL (if receiving continuous intravenous dextrose or nutritional support).Good care involves discovery and ongoing revision of daily insulin dose, replacing “correction” therapy with “scheduled” insulin. Fear of hypoglycemia is the principal barrier to normoglycemia.Hypoglycemia in the hospital is mostly preventable (by means other than undertreatment of diabetes).Patients conscious, eating, and experienced in self-management should continue self-management in the hospital. There should be standardization of diabetes order sets and correction dose algorithms, protocols for prevention of hypoglycemia, patient education and discharge planning, and hospital policies on patient self-management.

The Role Of A National Diabetes Association In The Organisation Of Diabetes Care

- Sir Michael Hirst

Michael Hirst was elected Vice President of IDF, the International Diabetes Federation, in 2006.

Michael's interest in diabetes started over 20 years ago when his younger daughter was diagnosed with type 1 diabetes at the age of 4. He was then a Member of the British Parliament and campaigned vigorously for improved care for people with diabetes. He was thereafter co-opted to the board of trustees of the British Diabetic Association, now Diabetes UK, where he served in a number of capacities before becoming the first non-medical Chair in 2001. He served as Chair until February 2006, and is now a Vice President of Diabetes UK.

He was Deputy Chair of the international steering group of Unite for Diabetes, the campaign for a UN Resolution on Diabetes, which was secured in December 2006. Currently he co-chairs the TIDES project which aims to improve diabetes services in emergency and disaster situations, and is co-chair with Professor Martin Silink, President of IDF, at the upcoming meeting in London of the IDF project to secure essential diabetes medicines for children in the developing world.

Michael is a graduate in law, a qualified chartered accountant, and was a partner in KPMG until his election to Parliament. He was knighted in 1992 for political and public service in the UK, and has been chairman of the Scottish Knights since 2002. He also holds a number of voluntary appointments in charities and public bodies.

The role of a National Diabetes Association (NDA) in the organisation of diabetes care varies considerably around the world. In some countries, like Bangladesh, the NDA is actively involved in the provision of care, either directly or as an agent of the national government. In many other countries however, the NDA is not directly involved in the provision of care, and instead acts as a focus for the interests of people with diabetes and the clinicians and health care professionals who provide their care.

Campaigning and advocacy on standards of care and care policy is a vital part of the work of a NDA. There are many examples of highly effective campaigning, both for improvements in care and for the raising of public awareness about diabetes and the risks of complications. One such example is the “Measure Up” awareness campaign by Diabetes UK to highlight the risks of overweight; so successful was it that parts of the UK National Health Service have asked Diabetes UK to run local public awareness campaigns for them.

NDAs have a role too in commissioning and facilitating research into the causes of diabetes and, increasingly, transitional research. Such research holds the potential for significant improvements in treatment and care. NDAs in addition have a role in representing the patient and professional interest in the product research and development of the major pharmaceutical companies and the manufacturers of diagnostic equipment.

Some NDAs have developed successful education and information programmes which have the capacity to transform the lives of those with diabetes. Those, for example, who have undergone the DAFNE education course, have reported a dramatic beneficial change in their daily lives and their glycaemic control. Much of the educational material is now published on websites which enables people to access useful information about diabetes, possible prevention strategies, the risks of complications and general advice on living with diabetes.

Historically, NDAs have also provided important group social support for those with diabetes, particularly the newly or more recently diagnosed, helping them to come to terms with the practical issues of living with their diabetes. While such support is no substitute for proper psychosocial care, it is often better than that the inadequate offering by most national health services.

Prevention Of Diabetes Mellitus In Asian Migrants.

- Prof. Akhtar Hussain

Akhtar Hussain, MD, Ph.D, D.Sc is a Professor at the Faculty of Medicine, Institute of General Practice and Community Medicine, Section for International Health, University of Oslo, Norway. Originally from Bangladesh domiciled to Norway in 1984. Earned Medical graduation from Bangladesh, Post graduation from Norway and Ph.D from the USA and Norway. Responsible for Non Communicable Disease with a prime focus to International Diabetes Research and Metabolic Syndrome at the Master/Ph.D. program in International Community Health, University of Oslo.

His group is extensively involved in the contribution of the epidemiology of type 2 diabetes in South Asia and the ethnic minorities in Europe. His group's work includes differential risk factors in different population including mental health, "lean diabetes" and diagnosis of diabetes. Strategies for the prevention of diabetes (diet-exercise, ß-cell function (ex.sulfonylureas) sensitizer (ex:metformin) and in combination in different population is therefore paramount his interest. Genetic susceptibility for type 2 diabetes and obesity. Pancreatic ß-cell function (genetics) and insulin-resistance (glucose toxicity, obesity).

He was also the vice-coordinatior for an international consortium for the prevention of type 2 diabetes financed by the EU FP 6.

Diabetes mellitus is one of the major public health challenges of the twenty-first century. To reduce the impact of T2DM in the 21st century, we need an approach that not only optimally treats the person with established diabetes but also prevents diabetes from occurring in the first place. Changes in genetic susceptibility alone cannot account for this increase and there are undoubtedly major environmental influences. In order for lifestyle interventions to be successful, they need to develop strategies based on data from the concerned population be culturally sensitive, individualized and sustained.

Following the Second World War, countries such as the Netherlands, France and the UK actively recruited labour from their ex-colonies to fuel their post-war economic recovery. The result is that all the major European countries now have significant ethnic minority populations. Ethnic minority populations are diverse, and particular groups may have

greater health needs than others. Various social anomalies play an ever-increasing role in the health status of many, and it is important that we do not assume that all ethnic groups are the same or have the same needs.

While population migration from the Indian subcontinent countries of India, Pakistan and Bangladesh (South Asia) has occurred to many parts of the world, over 2 million south Asian people have settled in the UK, representing 4% of the total population. Irrespective of the countries immigrant south Asian populations have settled in and of regional, cultural and religious differences, however, there is strong evidence, gathered over the past half-century, that the prevalence of type 2 diabetes is increased among these individuals compared with indigenous populations. Furthermore, all indicators suggest that the problem will increase, as second-generation immigrants display many of the same risk characteristics as their parents and grandparents.

While conventional risk factors influence the high CHD rates in south Asians just as they do in indigenous Caucasian populations, the characteristic risk factor profile of south Asians is very different. South Asian Indians, are extremely heterogeneous in terms of their risk factor profiles, so findings are likely to vary in different geographical regions and communities. Dietary habits are also relatively diverse and are again influenced by religious belief, as well as area of origin. Total cholesterol for example, is not significantly greater among south Asians (it may, in fact, be less) compared with the white Caucasian population, but in UK levels was found to be significantly higher than those seen in the Indian subcontinent. Triglycerides are almost always higher in studies on south Asians compared with those on white Caucasians. The majority of studies examining HDL cholesterol concentrations have reported lower levels in south Asian immigrants compared with white Caucasians This pattern of dyslipidaemia, involving raised triglycerides and reduced HDL cholesterol, is typical of the dyslipidaemia associated with diabetes and an important characteristic of the metabolic syndrome.

Meeting the health needs of the population requires sensitivity to the many traditions, cultures and religious practices to deal with the established vulnerability for diabetes and cardio-vascular risk factors. The epidemic in south Asians abroad is likely to forewarn of what may happen on the Indian subcontinent as standards of living rise and the adoption of Western lifestyles escalates. Approaches to the strategies for prevention should be based on the concerned population data, namely South Asians. Guidelines that was developed in the West is based on white Caucasians, are undoubtedly of value but cannot rule out the possibility of underestimating the risk profile for other populations.

Finnish experience in implementing the prevention of type 2 diabetes

- Dr. Timo Saaristo

Timo Edvard Saaristo, MD finished his academic qualifications from Finland and currently is the National Coordinator in the Implementation Project (FIN-D2D) of the Programme for the Prevention of Type 2 Diabetes 2003-2008, the Finnish Diabetes Association. He is also the Physician-in-chief and Head of the Diabetes Clinic since 1986, City of Tampere. His current research interests include the assessment of screening tools for Type 2 diabetes and the evaluation of the Finnish national diabetes prevention programme. His publications on the prevention of type 2 diabetes and the national diabetes prevention programme in Finland. He has been a guest speaker at numerous domestic and international meetings. He is a member of the International Faculty in WCPD 2005, Chennai, India and member of Programme Committee in WCPD 2008 Helsinki, Finland.

Current evidence from major lifestyle studies shows that prevention of type 2 diabetes is possible through simple lifestyle changes. To implement this scientific evidence in the daily clinical practice of health care, Finland has prepared and launched a special prevention programme for type 2 diabetes as part of the comprehensive national diabetes programme, DEHKO (Development Programme for the Prevention and Care of Diabetes in Finland 2000-2010).

DEHKO has many aims and areas focusing on all types of diabetes but today the most important aim of DEHKO is the prevention of type 2 diabetes using three concurrent strategies: the population strategy, the high-risk strategy and the strategy of early diagnosis and management. These strategies are being implemented by a unique implementation project called FIN-D2D which has been conducted in five hospital districts covering a population of 1.5 million Finns.

In the Finnish public health centres and occupational health care nurses and physicians screen high risk individuals for type 2 diabetes using a risk questionnaire called FINDRISC, carry out diagnostic measures such as an oral glucose tolerance test aiming to detect undiagnosed type 2 diabetes and measure lipids for the assessment of global risk, and which is absolutely crucial, initiate lifestyle counselling aiming at risk reduction.

The project will be evaluated according to the specific evaluation plan using data collected in primary health care.

According to the preliminary results public awareness of diabetes is high in Finland. In the project many individuals at risk for type 2 diabetes have been identified. FINDRISC is a feasible tool and large-scale screening of high-risk individuals is possible. In the high risk group of women it was possible to achieve a significant weight loss associated with a decrease in the incidence of diabetes in real life. This association was not shown in men. Type 2 diabetes and undiagnosed diabetes are still common and more common in men. In spite of an enormous effort in health care there is currently no evidence of a halt in the diabetes epidemic. However, some encouraging findings can still be presented.

Diabetes Epidemiology And Broader Perspective For Prevention

- Prof. Madhur Dev Bhattarai

Prof Madhur Dev Bhattarai MBBS (1978), MD (Ind), MRCP (UK), FRCP Edin, DTCE (Japan); PG Cert Med Ed (Dundee) is managing General Medicine Unit with Diabetes and Endocrinology in the tertiary care central government hospital in Nepal for around twenty years. He is Professor for the training of postgraduate residents in the National Academy of Medical Sciences and Supervisor and Examiner of final FCPS (Pakistan). He has published around hundred different types of national and international publications.

THE EPIDEMIOLOGY OF DIABETES

The epidemiology of diabetes in the world shows the four patterns (Fig 1). In rural parts of many developing countries, diabetes is prevalent as a background prevalence of around less than 1% to 3%. With gradual decreasing physical activity and increasing body weight of the population due to the socio-economic affluence, the prevalence of diabetes shows concurrent gradual rise (urbanization rise), as expected, from the background level. The example of gradual rise (urbanization rise) in prevalence to the present level of around 4% to 8% is seen in many European countries and US. But contrary to the expectation of gradual rise from the background level, the prevalence of diabetes is around 15%, e.g. in urban areas of many developing countries, and around 30%, e.g. in Nauru and urban sectors of some high prevalent countries. Such first and second surges of epidemic of diabetes can not be explained by the decreasing physical activity and increasing body weight of the population alone, which is expected to cause gradual rise in prevalence.

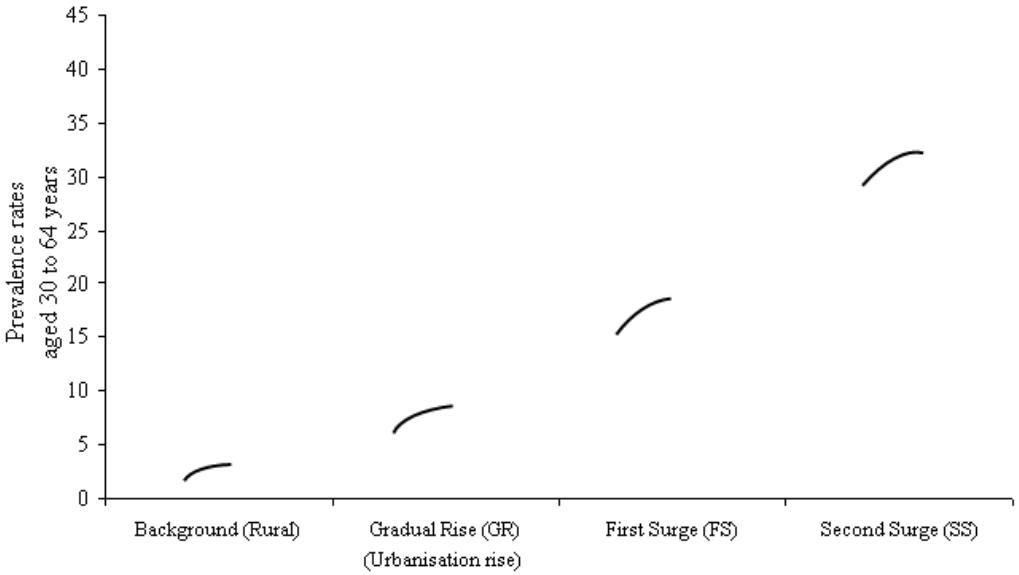

Fig 1: Diagrammatic representation of the four patterns of the diabetes epidemiology seen in the world

In the context of the first and second surge of diabetes epidemiology, there are two major contrasting aetiological factors associated with glucose intolerance; they are effects of maternal malnutrition and the exposure of the foetus to maternal hyperglycaemia.

Association of maternal malnutrition with the body mass index in adulthood.

The reported association between foetal malnutrition and increased risk of insensitivity to insulin, glucose intolerance, and type 2 diabetes in people who are underweight at birth but become overweight or obese in later life[1,2] has two practical significance in relation to diabetes epidemiology and prevention. The first is to prevent diabetes in future offspring of the rural mothers. Given the poor nutritional status of mothers in rural areas in developing countries and the likelihood of their offspring leading a relatively affluent life later, a key aim in primary prevention of type 2 diabetes must be to improve the nutritional status of women, particularly those of childbearing age in rural areas and poorer sectors of society.

The second implication of the association of malnutrition and glucose intolerance is regarding prevention of diabetes among the current adult populations in urban areas. Maternal malnutrition may hinder pancreatic beta-cell development in the foetus and may, thus, help to explain the greatly increased frequency of diabetes in the populations which move rapidly from nutritional want to adequacy or surfeit.[3] If the mothers, and thus the foetuses, were relatively undernourished, the normal body mass index (BMI) of the offspring for the adult life would be set at lower values. But in adult life, if the offspring's body weights cross the upper limit of the set normal BMI, in contrast to that set in the

foetal life, it could lead to the development of diabetes and other metabolic consequences, especially cardiovascular diseases (Fig 2).

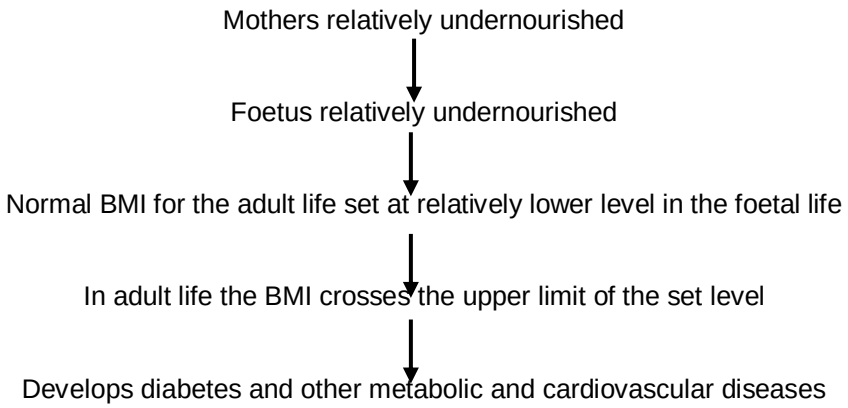

Fig 2: The association of foetal malnutrition with the BMI and diabetes in future

The adults in the developing countries have moved rapidly from nutritional want in their early life to adequacy or surfeit in the last one or two decades with the relative increase in their BMIs as compared to those set in their foetal life. Thus, the first surge of epidemic of diabetes among the adults in many developing countries appears linked to the malnutrition of their mothers. The association between foetal malnutrition and glucose intolerance is consistent with the observation that Asians generally have a higher percentage of body fat than similar people of Europid (Caucasian) origin with the same BMI.[4] The adult mean BMI levels of 20-23 kg/m^2 are found among the general population in Africa and Asia, while levels are 25-27 kg/m^2 across North America and Europe and the risk of diabetes increases progressively upwards of a BMI of 20.0.[5] The WHO Western Pacific Region Office (WPRO) of the BMI has also recommended 23.0 as overweight in people of Asian origin, and 25.0 or above as obese[6]. Thus, for the prevention, as well as the management, of diabetes, the body weight as per height based on the recommended body mass index (BMI), e.g. of 18.5 to 23, for the related populations, e.g. Asian, needs to be highlighted enough among the health care workers and the general population.

Association of foetal exposure to maternal hyperglycemia with diabetes later in life

The other aetiological factor in the epidemiology of diabetes is the relation of the exposure of the foetus to maternal hyperglycaemia and the increased risk of offspring developing diabetes in later life – independently of genetic influences.[7,8] Offspring of mothers with glucose intolerance during pregnancy have increased risk of obesity and diabetes than offspring of mothers, with normal glucose during pregnancy, who even though subsequently develop type 2 diabetes later. Intrauterine exposure to hyperglycaemia and hyperinsulinemia may affect the development of adipose tissue and pancreatic beta cells leading to future obesity and altered glucose metabolism.[9-11] It has

also been found that adult offspring of mothers with type 1 diabetes are at increased risk of IGT and type 2 diabetes independent of genetic predisposition to type 2 diabetes.[12] Studies on Pima Indians indeed even reported that the babies of mothers who have diabetes during pregnancy have up to 45% risk of developing diabetes, compared with 8.6% in babies of mothers who develop diabetes after pregnancy, or 1.4% in babies of mothers without diabetes.[7] Thus a vicious cycle of increased risk of type 2 diabetes may occur in the population as a greater likelihood of diabetes in the mothers increases the likelihood of diabetes in the offspring.[8]

This association of the exposure of the foetus to maternal hyperglycaemia and the increased risk of offspring developing diabetes in later life has at least two practical significances in relation to diabetes epidemiology and prevention. Number one is that the diagnosing gestational diabetes and achieving optimal control of blood glucose in pregnant women with diabetes is clearly of the utmost importance. There is increasing evidence that optimal control of blood glucose, as required by insulin treatment, in pregnancy may have a role in prevention of type 2 diabetes in the next generation.[13] Compared to the optimal control of blood glucose for life long in any person with diabetes, controlling optimally during the limited duration of pregnancy is of shorter duration. The mothers, if made aware of the various risks, are likely to be motivated for the optimal control of blood glucose for the limited duration of pregnancy. But it requires the understanding and involvement of obstetricians, who provide most of the antenatal care, and training for a range of other healthcare providers especially in developing countries. Thus there is a significant need for a comprehensive multidisciplinary programme, underpinned by expert guidelines, in order to improve the diagnosis and management of gestational diabetes.

Intrauterine exposures to maternal diabetes and obesity are strongly associated with type 2 diabetes in the offspring.[14] Glucose intolerance during pregnancy begets glucose intolerance in the offspring. By the time GDM is diagnosed and managed optimally it may already be late. Thus prevention of GDM itself is obviously important. After the occurrence of GDM, the risk of type 2 diabetes and GDM in the subsequent pregnancy is significantly affected by body weight, being 50-75% in obese women versus less than 25% in women who achieve ideal body weight after delivery.[15-17] Thus, the women with the history of GDM should be encouraged to decrease their excess weight to achieve ideal body weight after delivery. The ideal body weight should be as per the appropriate BMI for the population, e.g. 18.5 to 22.9. If the couples are contemplating to have another baby, this is clearly important for the prevention of glucose intolerance in the subsequent offspring. However it is also obvious that maintaining the ideal body weight as per the appropriate BMI for the population applies to all women of the child-bearing age. Otherwise there could be the second surge of diabetes epidemic in the vulnerable population (Fig 3). The development of second surge of diabetes epidemic in this way appears to explain the higher prevalence of diabetes in Nauru and urban sectors of some high prevalent countries. And if this is not dealt with adequately, the other populations having the first surge of diabetes epidemic in the world will rapidly move towards the second surge.

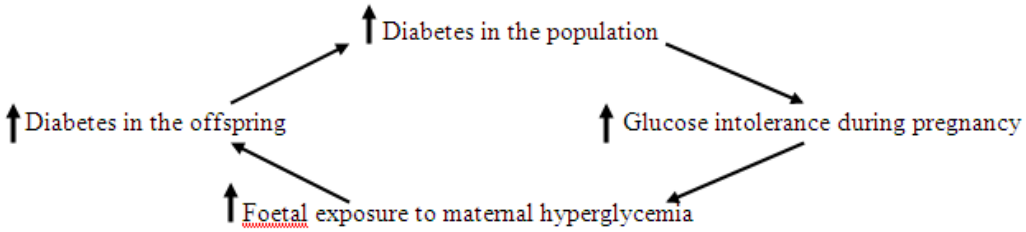

Fig 3: A vicious cycle of diabetes in the population and glucose intolerance during pregnancy

The women are particularly liable to gain excess weight after they start having babies.[18, 19] Due to the liability of women to gain weight after they start having children, it has to be particularly given attention, e.g. starting from the antenatal visits. The second and the subsequent children are obviously vulnerable to exposure of maternal hyperglycaemia. The vulnerable population with one child, even though already started having first surge, may escape such risk of the second surge of diabetes epidemic.

PREVENTION PROGRAMMES

As per the discussion of the epidemiology of diabetes with its related factors, the following four preventive programmes particularly need to be considered:

1. Educational campaign among the health care workers as well as the general population about the importance of maintaining body weight as per height based on the recommended body mass index (BMI) of 18.5 to 23.

2. Educational campaign and planning to improve the nutritional status of women of the childbearing age in rural areas of society

3. Educational campaign to health care workers and the general population and planning for the prevention of excessive weight gain of women of childbearing age, for example after delivery, more than the recommended BMI

4. Planning to achieve diagnosis and optimal management of gestational diabetes mellitus with comprehensive multidisciplinary programme, underpinned by expert guidelines.

For planning and implementation of these preventive measures, appropriate liaison is required with the other concerned national and international agencies like WHO, UN, particularly those related with nutritional and mother and child health programmes.

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Interim Results "Intervention For The Prevention Of Type 2 Diabetes (A Randomised High Risk Population Based Study In Pakistan)"

- Dr. Muhammad Zafar Iqbal Hydrie

Muhammad Zafar Iqbal Hydrie (MBBS, DMC '93) has been affiliated with Baqai Institute of Diabetology and Endocrinology as Research Fellow for the last seven years. He completed DIP. DIAB from Baqai Medical University (1999).He went on to complete M Phil in Biochemistry from Baqai Medical University(2005) and M Phil in International Health from University of Oslo (2007). Currently Dr. Hydrie is pursuing his PhD from University of Oslo in International Health (2007-2010). Dr Hydrie is senior author of eight publications, and co-author of twenty others, which brings the number to 28 by the year 2007. On International platform, Dr. Hydrie has given oral and poster presentations in Bangaldesh (BIRDEM), India (Chennai) and 18th IDF France (Paris) meetings. He is also associated with many professional health organizations.

Introduction

Type 2 diabetes mellitus (T2DM) is a heterogeneous disorder with hyperglycaemia, impaired insulin secretion and decreased insulin sensitivity as a common denominators. Studies of South Asians shows that 27.5% women and 14.3% men, compared to 2.9% western women and 5.9% western men have diabetes.

Data from the Indian subcontinent show that south Asians differ in the anthropometric and biochemical features compared to Europeans and North-Americans. South Asians are relatively non-obese but highly insulin resistant, and are significantly younger. Looking at primary prevention studies such as DPP we observe that the subjects were mostly obese, and weight reduction was one of the main goals of the treatment, whereas South Asian subjects are largely non-obese. Thus we need more experience with prevention among South Asians.

Preventive trial in Karachi

A high risk group was invited from the outpatient clinics of Diabetic Association of Pakistan, Baqai Institute of Diabetology and Endocrinology and its peripheral clinics in

2006 - 2007. They were then screened by Oral Glucose Tolerance Test. Those identified as IGT were invited to participate in the intervention program for 18 months. Those willing to participate were then stratified randomly into four different arms.

1. One group (control group) will be assigned normal diet and standard activity advice (n~100)
2. Second group (lifestyle group) to have monitoring for intensive diet and life style changes (n~100).
3. Third group (medication group) to have regular visits and drug monitoring (n~100).
4. Fourth group (combination group) to undergo intensive diet & life style changes and drug treatment (n~100).

Objectives for the preventive trials

1. To observe the rate of conversion of IGT to diabetes
2. To note the usefulness of an insulin sensitizer (Metformin 500 mg) in this population
3. To register the benefits of combining lifestyle modification and Metformin
4. To evaluate the impact of intervention with lifestyle modification.
5 To develop methods of intervention when it comes to diet and physical activity tailored for the local culture.

Highlights of the Project:

A high risk group of 1823 subjects more than 30 years of either gender identified on the basis of a structured questionnaire for identifying T2DM cases or those known to have IGT by previous screening were included. Around 403 subjects were identified as IGT on the basis of OGTT. These were invited to participate in the intervention program for 18 months. The IGT subjects selected will have all following blood tests (Fasting Lipid profile, Fasting Insulin levels and HbA1c) done at 0, 9 and 18 months.

Number of sessions: Each subject will have at least 10 sessions during the 18 months. The study will close in middle of 2009.

Intervention Data:

Baseline data of the intervention is been analyzed and some mid term results are shown here. Since this is an ongoing study the updated results will be presented as more data is analyzed.

- So far we have completed the 9 months (mid term) assessment of 223 out of 403 subjects.
  Of these 50 subjects are still IGT, 147 have reverted back to normal while 26 have progressed to diabetes.
- Around 46 subjects have completed 18 months and of these 19 are still IGT, while 22 have reverted to normal and 5 have progressed to diabetes.

Genetics Of Diabetes In Indians

- DR.V. MOHAN

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Dr. V. Mohan M.D., FRCP (UK), FRCP (Glasg), Ph.D., D.Sc. FABMS, FIMSA, FICP, FNASc is the Chairman and Chief of Diabetology of Dr. Mohan's Diabetes Specialities Centre which is a WHO Collaborating Centre for Noncommunicable Diseases Prevention and Control and President and Director of the Madras Diabetes Research Foundation. Deeply interested in research even from his undergraduate days, Dr. Mohan has published over 500 papers in prestigious peer reviewed journals. He has also contributed over 80 chapters to text-books on diabetes. His main research interests are in epidemiology of diabetes and its complications, Genomics of Diabetes and Fibro-calculous Pancreatic Diabetes. For his original research contributions, Dr. Mohan has received numerous awards from various international and national organizations including the prestigious Dr. B.C. Roy Award by the Medical Council of India.

Type 2 diabetes results from the interaction of environmental factors with genetic variants which confers susceptibility to the disease. Recently, a systematic search for these variants using genome wide approach was made possible by the development of high-density arrays that permit the genotyping of thousands of polymorphisms. This resulted in identification of new risk alleles for type 2 diabetes. Some of these have been already replicated in multiple populations and provide novel insights into the etiology of type 2 diabetes.

Evidence for increasing prevalence of diabetes in India arises from the recent population based studies conducted by us, the Chennai Urban Rural Epidemiology Study (CURES), which revealed the present prevalence of diabetes in urban India to be 72% higher than that reported in 1989 [2004 vs 1989: 14.3% vs 8.3%]. Indians with diabetes also have peculiar characteristics known as the Asian Indian phenotype. This includes a low body mass index threshold for diabetes, occurrence of the disease 2-3 decades earlier compared to Europeans and heritability factors being stronger in Indians compared to Europeans. All these point to the role of possible ethnic variation in genetic susceptibility.

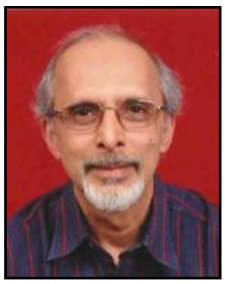
Large population based genetic studies carried out by us on some of these and other candidate genes or risk alleles, indicated interesting results. The Pro12Ala polymorphism of the PPARγ gene, which is known to be protective against diabetes in Europeans, does

not appear to offer protection to Indians. We also observed that the Thr394Thr (G→A) polymorphism of PPARGC-1 α gene to be strongly associated with type 2 diabetes as well as body fat in Indians which has not been reported in other ethnic group. Further the Gly1057Asp polymorphism of IRS-2 gene predisposes Indians to diabetes particularly in the presence of obesity. Subjects with TCF7L2 gene G->T polymorphism at rs12255372 showed1.5 fold higher risk of having diabetes confirming similar association in other populations. Our studies on the MODY 3 gene, HNF1A gene yielded some interesting results. A single nucleotide polymorphism, the Ala98Val of HNF 1 A gene showed an association with earlier age at onset of type 2 diabetes. We showed that age at onset of diabetes was lowest among subjects with *Val/Val* polymorphism and highest among the subjects with *Ala/Ala*, with *Ala /Val* subjects showing an intermediate age at onset. This was clearly demonstrated with the frequency of the *Val* allele increasing with decreasing age at onset of type 2 diabetes.

More large-scale and in-depth genetic studies are required to determine subjects with high risk for diabetes.This could help plan prevention strategies by lifestyle modification to prevent or delay onset of type 2 diabetes in Indians.

Maternal nutrition and adiposity and insulin resistance in the offspring

- Dr C S Yajnik



Yajnik Chittaranjan Sakerlal MBBS,MD,FRCP is currently a Honorary Associate Consultant Physician, King Edwards Memorial Hospital, Pune, India. He is also an Associate Professor of Medicine, B.J.Medical College, Pune. He is also a distinguished Fellow for many health institutions in the UK as well as Australia. Apart from being associated with different national and international organisations, he is also a reviewer for many scientific journals. Regular faculty member on major events in diabetes education in India including Novo Nordisk Diabetes Updates, Post gradual courses on diabetes of the Res. Soc for Study of Diab in India (RSSDI). He has given many presentations and lectures worldwide and has penned many scientific articles. He has received many awards and his field of interest ranges across a wild spectrum of aspects related to diabetes mellitus in India.

The 'fetal origins' (or 'thrifty phenotype') hypothesis is based on the findings of an inverse relation between birth weight and risk of type 2 diabetes and cardiovascular disease (CVD). The corollary was that improved maternal nutrition leading to larger offspring size will reduce the risk of these conditions. None of the studies which led to the hypothesis had maternal nutritional measurements. Nutritional hypothesis was based on small size at birth.

Pune Maternal Nutrition Study (PMNS) is one of the first purpose-driven 'preconceptional cohort' to test and elaborate this hypothesis. We followed over 2500 women in 6 villages near Pune and measured detailed body size, haemoglobin concentrations and menstrual dates. Over 800 women became pregnant during the study and we measured nutrition, physical activity, circulating levels of nutrients and metabolites twice in the pregnancy. Fetal growth was assessed by ultrasound. The babies were measured in detail at birth and every 6 months later. At 6y the children and the parents were measured for size, body composition and risk of type 2 diabetes and cardiovascular disease.

The mothers weighed 42 kg before pregnancy and had a BMI of 18.1 kg/m^2. None of the mothers smoked or drank alcohol and only a few had gestational diabetes. Most of the

women worked hard at home and in the farms. They ate 1800 kcal, 45g proteins and 35g fats; half were vegetarian, and non-vegetarian food consumption was relatively small. All women received 100 tablets of iron (60mg) and folic acid (500 mcg) as per the national program. A third of these mothers were anemic, two thirds had low vitamin B12 status and few had folate deficiency. The babies weighed 2.7 kg, and were quite 'thin' (ponderal index 24.1 kg/m^3) but 'fat' (preserved skinfolds) compared to white Caucasian babies born in the UK. Maternal macronutrient intake was not predictive of neonatal size but higher frequency of eating micronutrient rich food items (green leafy vegetables, fruits and milk) predicted larger neonatal size. Maternal circulating levels of nutrients (vit C, folate etc) and metabolites (glucose, triglycerides and cholesterol) predicted larger neonatal size. Higher maternal circulating homocysteine concentration predicted intra-uterine growth retardation, as did higher maternal physical activity.

At 6y these children were short and thin by international standards (1.22m, 16kg, BMI 13.5 kg/m^2) but were more adipose compared with age and gender matched British children. Higher maternal folate status in pregnancy predicted an earlier adiposity rebound and higher adiposity (DXA) in the children. Child's adiposity was also predicted by higher frequency of green leafty vegetable consumption by the mother. Child's insulin resistance (HOMA-R) was predicted by higher maternal folate and vitamin C concentrations, and by higher frequency of intake of dairy products. In other words 'better' maternal nutrition in pregnancy predicted adiposity and insulin resistance in the offspring. These counterintuitive findings could be due to low vitamin B12 status in these mothers. Offspring of mothers with low vitamin B12 and high folate status during pregnancy were the most insulin resistant at 6y of age. Our results highlight the importance of 'one carbon' metabolism in nutrient partition during fetal life, possibly acting through metabolic as well as epigenetic mechanisms (methylation). Demonstration of nutritional programming in Agouti mice supports this contention.

Thus, PMNS results have provided a testable hypothesis of 'fetal programming' of adiposity and insulin resistance in Indians. Improving the low vitamin B12 status in mothers and avoiding excess folic acid treatment may help curtail the epidemic of type 2 diabetes and CV disease. Intervention trial is being planned.

Post Natal Stress

- Prof. Constantine Tsigos

Professor Constantine Tsigos, an endocrinologist and diabetologist who is the current chairman of the obesity management task force of the European Association for the Study of Obesity and Association for the Study of Obesity and a member of the Specialist Certification for Obesity Professionals in Europe (SCOPE) committee.

Prof. Tsigos is involved with Endocrinology, Metabolism and Diabetes Unit, Evgenidion Hospital, University of Athens Medical School, Athens, Greece

"Interaction Of Aetiology - A Mind Body Interact?"

- Dr Mahen Wijesuriya

Dr. Mahen Wijesuriya is a Consultant Physician and Diabetologist in Colombo, Sri Lanka. He obtained his MBBS and his MD from the University of Ceylon, Colombo and is a fellow of the Royal College of Physician London and the Ceylon College of Physicians in Sri Lanka. He has pioneered the establishment of the Diabetes Association of Sri Lanka (DASL) and the National Diabetes Centre. In addition he is currently the Chairman of the South-East Asian Region of IDF. He has spearheaded many projects in his quest to serve the diabetic fraternity of Sri Lanka i.e. the Single Visit Screening programme for the detection of complications, the Insulin Bank of Sri Lanka which provides free insulin for needy type 1 diabetes children in the country. He has received many prestigious award for his work in diabetes and has made contributions to research support, peer review articles and chapters.

The scientific world watches in bewilderment as the number of persons with Diabetes increase daily engulfing all ages especially the young. This is inspite of the theoretical knowledge and identification of the Aetiology of T2DM - Genetics, Foetal Origins, Life Style and Stress.

- Why have we been unable to stem the tide of the epidemic in spite of all our efforts in the past decade?
- What are we doing wrong? Are we missing the principal player and its interactions with the rest of the factors?

Diabetes is the most important illness of the modern world. In this life style illness, there is an interaction of the mind and body with the principal player being the former. We feel it is necessary that all concerned with combating the pandemic, open their minds to the realities of the situation and understand that all ethnic groups are human in the first instance and not subjects in a statistical analysis expected to behave in a structured manner. It is very unlikely that the wide spread nature of this condition and the pandemic increase is due to a problem of the body preset by Genetics though the later plays an integral part. It is more likely to be related to human behavourial change, striving to adapt to the vagaries of modern excesses.

If we can view it in this light, the Primary Prevention, which is the only way to combat the pandemic, becomes an individual / family issue. The success depends on a change of a mindset rather than following instructions blindly, which will fail after a while. This should be the basis of education, awareness and empowerment with current knowledge at hand.

Lets work together to arrive at “The Kathmandu Declaration” which could be a basis for the UNR implementation of prevention globally.

The United Kingdom Asian Diabetes Study (UKADS) : A Culturally Sensitive Intervention In South Asian Population With Diabetes

- Dr. Srikantha Bellary

Dr. Srikanth Bellary MBBS, MD, MRCP (UK), CCT-Diabetes and Endocrinology is the Consultant Physician-Acute and Metabolic Medicine, Heart of England Foundation NHS Trust, Birmingham, UK. He is currently pursuing a MD programme in Medicine with the University of Birmingham, UK. His research is primarily based on the United Kingdom Asian Diabetes Study (UKADS).The United Kingdom Asian Diabetes Study (UKADS) is a large culturally sensitive, protocol driven, practice nurse led and link worker assisted study in South Asians with type 2 diabetes. Main research interest includes diabetes and cardiovascular disease, insulin resistance and genetics of type 2 diabetes. He has published numerous articles and given many oral presentations. He is a member of many learned societies as well.

The rising prevalence of diabetes is a growing concern across the world. While there appears to be a global rise, people of certain ethnicities have an increased predisposition to diabetes. An example is the migrant south Asian community in the United Kingdom. Diabetes in this group is 4 times more common than the local white Caucasian population and is also associated with increased burden of cardiovascular disease. This increased predisposition to diabetes and cardiovascular disease has been attributed to a collusion of genetic, environmental and socio cultural factors. Tackling these issues requires a better understanding of the clinical needs and development of new treatment strategies. Unfortunately, despite the high risk of diabetes and its related complications there have been few randomised controlled trials in the south Asian population.

The migrant south Asian population have different cultural needs that often influence lifestyle. Communication difficulties and religious practices may interfere with adherence to treatment and seeking medical help sooner. Addressing the specific needs of this population may help improve known risk factors and lead to better clinical outcomes. The United Kingdom Asian Diabetes Study (UKADS) was designed specifically to address this issue. It is the single largest randomised control trial in patients of south Asian origin with diabetes. By using a culturally sensitive care package, the intervention was designed to improve cardiovascular outcomes in this high risk group. The study also

compared the risk factors in south Asians with diabetes with the local white Caucasian population and identifies specific differences and areas for improvement.

In my talk, I will be discussing the results of the UKADS study and its wider implications for the care of south Asians with diabetes.

Evaluation of Risk Factors in the development of Type 2 Diabetes and Cardiovascular disease in a Young Urban Population in Sri Lanka.

- Dr. Thilinie I. Jayasekara

(This project is supported by a BRIDGES Grant from the International Diabetes Federation. BRIDGES, a International Diabetes Federation project, is supported by an educational grant from Eli Lilly and Company.")
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Dr. Thilinie I. Jayasekara obtained the MBBS in 2002 from the University of Colombo Sri Lanka. She is currently working as the Senior Medical Officer in Charge of Research at the National Diabetes Centre.In the last four years, she has been actively involved in all aspects of service conducted at the National Diabetes Centre involving prevention of diabetes and the Insulin Bank which provides free services to needy T1DM children from all over the country. At present her main interest is primary prevention of diabetes and is involved in a major translation research study to identify high risk in young persons in an urban population with a view to preventing T2DM and CVD developing in this group by non pharmacological life style intervention over a period of 3 years. She had made poster presentation at many international conferences.

A clinic based pilot study to assess risk factors in the development of T2DM and CVD in young persons revealed a high incidence of 4 risk factors namely positive first degree family history, physical inactivity, increased waist and BMI which were statistically significant. This lead to the initiation of a 3 year prospective randomized, population based, controlled study in a group of 21,128 young urban persons in Sri Lanka between the ages of 5-40 years.

In the first stage the study group was screened using a simple questionnaire to assess the presence of risk factors. Anthropometric estimations were performed in all of them. This group comprised of 63% school children, 8.5% university students and 28.5 % from office / industrial workers. The mean age was 19.06 (SD 8.06) with female male sub division of 53.7% to 46.3%.

The presence of risk factors was detected from the youngest to the oldest sub group. 28% of the 5-10 year group had 2 or more risk factors. This increased steadily with age to 31% in the 11-20 years to 33% in the 21-30 years with high of 62% in 31-40 year age group.

In the entire group, the risk factor with the highest prevalence was reduced physical activity at 38.5% and the least significant was the presence of first degree family history at 25.2%.

Increase waist circumference correlated better with reduced physical activity than BMI especially in the under 20 age group with prevalence of increased waist and physical inactivity being more in females in all age groups.

A total number of 7303 persons (35%) with 2 or more risk factors were selected for the second stage where a biochemical analysis and lifestyle assessment will be made. This group will be sub divided into a control and study group on a randomized basis electronically. The study group will be subjected to intensive lifestyle modification with 3 monthly reassessment where as the control group will receive basic lifestyle instruction and reviewed annually.

The aim is to assess the development of disease endpoints in the two groups with a view to establishing whether their differences are statistically significant following this process of life style modification.

If successful, it will prove that life style modification without pharmacological intervention starting early in life is a vital low cost Primary Prevention tool and can be used in any country or region to minimise the pandemic of T2DM.

Lipids And Diabetic Neuropathy

- Dr. S M Rajbhandari

Dr. Satyan Man Rajbhandari MBBS, MRCP, FRCP, MD is Consultant Physician and Diabetologist at the Lancashire Teaching Hospital, UK. He is also a Honorary Senior Lecturer (Univ of Central Lancashire). He is an advisor as well as editorial board member for different diabetes related journals. He is also General Secretary of Health Exchange Nepal (UK) Charity. His research experiences include include involvement in 'Sheffield Diabetes Prospective Study' and many others. His another special area of interest is the diabetic foot.

Diabetic neuropathy (DN) is a common complication of diabetes but its exact pathogenetic mechanism is not fully understood. Various epidemiological studies have shown that increasing age, duration of diabetes and poor glycaemic control are associated with DN. There is increasing evidence that DN is also associated with various cardiovascular risk factors such as adverse lipid profile, hypertension and smoking. Once it is fully established there is no effective treatment for DN apart from its symptomatic control and prevention or treatment of foot ulcer which is its sequel. Good glycaemic control can prevent the development of DN and recent studies have shown that treatment with fibrates or statin for lipids reduces development of DN. Therefore multi-factorial intervention of cardiovascular risk factors not only reduces cardiovascular morbidity and mortality but also possibly reduce morbidity from DN.

Preventing End Stage Renal Disease due to diabetes in developing world.

- Dr. Vijay Viswanathan

Dr. Vijay Viswanathan., M.D., Ph.D, MNAMS is the Managing Director of Diabetes Research Centre & M.V Hospital for Diabetes, Chennai [WHO Collaborating Centre for Research, Education and Training centre in diabetes].Dr Viswanathan has done a lot of research work on diabetic nephropathy and diabetic foot. He has over 100 articles in related fields and presented several papers in national and international meetings.He is the joint secretary of the Diabetic Foot Society of India which he helped to establish. He penned the kidney section of the Global Diabetes Guidelines of International Diabetes Federation.He is the secretary of association of physicians of India –Tamil Nadu State Chapter.He has received many awards.

End stage renal failure (ESRD) in type 2diabetes is a medical catastrophe of world wide dimensions [1]. Diabetic nephropathy is the leading cause of ESRD. In a study by Vijay et al [2], the incidence of renal failure among south Indian type 2 diabetic subjects was found to be 0.69% per annum.

A study by Vijay et al showed that 6.7% of newly diagnosed type 2 diabetic patients who were normoalbuminuric at diagnosis developed nephropathy within 6 years [3]. Even though a patient is normoalbuminuric at diagnosis, the risk of developing diabetic nephropathy is very high. Hence regular monitoring for microalbuminuria is very essential.

Several studies by Vijay et al have shown that various markers of vascular diseases associated with diabetes are abnormal even before the stage of microalbuminuria. Carotid intimal media thickness (IMT), a noninvasive marker of atherosclerosis was increased in type 2 diabetes prior to the presence of albuminuria [4].

In a study of type 2 diabetic subjects, it was noted by Vijay et al., that the endothelial dysfunction measured as elevated endothelin-1 (ET1) levels [5] and impaired flow mediated dilatation (FMD) [6] also preceded microalbuminuria stage. Abnormal

ambulatory blood pressures [7] were also noted in patients with normoalbuminuria. Thus, the stage is set for vascular complications even before the onset of albuminuria and screening at an earlier stage becomes mandatory.

Familial factors may play a role in the development of diabetic nephropathy. A study conducted by Vijay et al. [8] to determine familial aggregation of diabetic nephropathy in South Indian type 2 diabetic subjects showed that proteinuria was present in 50% and microalbuminuria in 26.7% of the siblings of probands with diabetic nephropathy. In contrast, the prevalence of proteinuria and microalbuminuria among siblings of probands with normoalbuminuria was 0% and 3.3% respectively.

Prevention Of Diabetic Nephropathy:

Glycaemic control:

In both type 1 and type 2 diabetes, hyperglycaemia has been shown to be a major determinant of progression of diabetic nephropathy. Several studies, including the Diabetes Control and Complications Trial [9], have indicated that intensified glycaemic control slows the rate of development of both MAU and overt proteinuria in patients with type 1 diabetes without albuminuria.

Antihypertensive treatment:

Hypertension is a modifiable risk factor in the development and progression of renal diseases. Effective anti-hypertensive treatment not only reduces the development and progression to nephropathy but also lowers cardiovascular mortality and morbidity. Current event suggest that for the prevention of cardiovascular events, ACEI‘s/ARB’s and low dose diuretics are the preferred first line agents as hypertensive patients in diabetes.

Once identified, intensive treatment to control the blood pressure should be the primary objective. A target blood pressure of <130/80 as recommended by the Joint National Committee VII should be achieved in all diabetic patients. This can be attained using novel drugs like ACEI and ARBs.

Dietary Protein and Salt intake:

Recommended dietary allowance of protein intake by American Diabetic Association (ADA) [10] is 0.6 – 0.8 gm/kg body weight in patients with diabetic nephropathy. It is generally believed that an average Indian diet does not exceed this limit. However in a cross sectional study by Vijay et.al [11] it was shown that the prevalence of microalbuminuria and macro proteinuria did not differ among vegetarians and non vegetarians. Even though the non vegetarians had significantly higher mean protein intake when compared to vegetarians, both the groups did not exceed the recommended protein intake for patients with diabetic nephropathy. Therefore in South Indians, protein intake does not seem to be an important factor in progression of diabetic nephropathy. But it is important to maintain low sodium diet in diabetic nephropathy. Because many diabetics with renal disease are salt sensitive, minimizing salt intake can help in reaching

blood pressure goals, with secondary benefit of decreased stroke risk, regression of left ventricular hypertrophy and reduction in proteinuria.

The rising prevalence of this condition calls for intense efforts to improve diabetes care. Prevention must include measures (a)to stem the tide of type 2 diabetes in the population, (b)to screen type 2 diabetic patients for microalbuminuria in order to detect high risk patients; (c)to educate patients in self-control of glycaemic and blood pressure(d)to spread in the medical community information about the possibility of prevention of diabetic nephropathy (including the benefits of angiotensin converting enzyme Inhibitors and angiotensin receptor blockers); and (e)to integrate nephrologists early into the medical care of these patients in order to implement effective renal failure prevention.

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The Role Of Pharmaceutical Industry In Pakistan

- Abdul Baqy Khan

Abdul Baqy Khan (45) joined Merck in 2002. He started his professional career from an accountancy firm Price Waterhouse Coopers 24 years ago and is a Fellow Member of the Institute of Chartered Accountant of Pakistan.

During his career he has worked for several pharmaceuticals companies i.e. Boots, Knoll (BASF Pharma), and Abbott in various capacities mainly heading the functions of Finance, Strategic Planning, Logistics, Material Procurement, Human Resources, Security, Information Technology, Internal Audit, Exports, Marketing and Sales.

Metabolic Syndrome And Endo- Cannabinoid System

- Dr. Rashid A. Khairi

Rashid A. Khairi MD is a Clinical Associate Professor, Indiana University school of medicine and is also a teaching faculty at St. Vincent hospital Indianapolis, Community Hospitals in Indianapolis. He is a fellow of different professional organisations and is the President of Indiana Center for Health and Nutrition and the President and Medical Director Physicians Research Group. His area of special interest are obesity, osteoporosis, Paget's Disease, thyroid disease, hypertension, diabetes, cholesterol problems (lipid disorders) and other endocrine diseases. He has been a local, national, international speaker on subjects of diabetes, osteoporosis and Paget's disease and has numerous publications in peer reviewed journals. He has also been the recipient of many distinguished awards.

Objectives:

1. Definition of metabolic syndrome.
2. Cardiovascular risk factors associated with metabolic syndrome.
3. Endo- cannabinoid system and its effects on metabolic syndrome.
4. Rimonobant and its effect on metabolic syndrome.

Association Between Vegetable Rich Healthy Food Pattern And Metabolic Syndrome In China

- Dr. Zumin Shi

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Zumin Shi, MD, Ph.D, is an Associate Professor at the Department of Nutrition and Food Borne Disease Prevention, Jiangsu Provincial Center for Disease Control and Prevention, China. He is currently a Research Fellow at Institute of General Practice and Community Medicine, Faculty of Medicine, University of Oslo, Norway. He got his medical degree in Beijing Medical University, M.Phil and PhD in the University of Oslo. He has one year post doc experience in the University of Newcastle, Australia. During the past twenty years, he has been working in the field of nutrition, adolescent health, and food safety. His current research interests include adolescent nutrition, anemia, and diabetes. He has special interest in iron, magnesium and dietary patterns in relation to anemia and diabetes.

Objective: To investigate the association between vegetable rich healthy food pattern and the association to the metabolic syndrome among Chinese adults.

Methods: A cross-sectional household survey of 2849 men and women aged 20 years and over was undertaken in 2002 in Jiangsu Province (response rate 89.0%). Food intake was assessed by food frequency questionnaire. Factor analysis was used to identify food patterns. Nutrient intake was measured by food weighing plus consecutive individual 3 day food records. Height, weight and any individual components of the metabolic syndrome were measured.

Results: The prevalence of metabolic syndrome by modified ATP III definition was 12.9% in men and 19.6% in women. A four-factor solution explained 30.5% of the total variance in food frequency intake. The 'healthy' food pattern (whole grains, fruits and vegetables) was positively associated with vegetable oil and energy intake in both genders. Prevalence of metabolic syndrome increased across the quartiles of 'healthy' food pattern. After adjusting for socio-demographic factors and four distinct food patterns, the 'healthy' pattern was independently associated with metabolic syndrome. Compared with the lowest quartile (Q1) of 'healthy' pattern, the highest quartile (Q4) had a higher risk of metabolic syndrome (men: odds ratio [OR]: 1.68, 95% confidence interval [CI] 1.02-2.79; women: OR: 1.75, 95%CI 1.17-2.62). A trend of negative association between 'traditional' pattern and metabolic syndrome was found.

Conclusion: The 'healthy' food pattern was associated with a higher risk of metabolic syndrome in Chinese adults in both genders.

Insulin Secretion and Insulin Sensitivity in Asian Type 2 Diabetes

- Prof. Chaicharn Deerochanawong

Prof. Chaicharn Deerochanawong holds a position as a Professor of Medicine in Diabetes and Endocrinology Unit at Rajavithi Hospital, College of Medicine, Rangsit University, Bangkok, Thailand. Currently, he is scientific chairman of the Endocrine Society of Thailand, secretariat and committee of Thai Obesity Association, committee of Thai Atherosclerosis Association and committee of the Royal College of Physician of Thailand. Recently, he was the scientific chairman of the 6th IDF WPR congress in Bangkok 2005 and also the scientific chairman of the 15th ASEAN Federation of Endocrine Societies in 2009

Prof. Chaicharn Deerochanawong undertook his clinical and research training in Diabetes and Endocrinology at the University of Newcastle Upon Tyne, United Kingdom. He graduated his Medicine from Chulalongkorn University. His scientific interests lie in both clinical and research particularly in the field of diabetes, obesity and dyslipidaemia. During his career, Dr. Chaicharn Deerochanawong has presented at numerous meetings both local and international and contributed to many publications, including over 70 scientific articles.

Type 2 diabetes results from a combination of abnormal insulin secretion and reduced sensitivity of the tissues to insulin. There is evidence that in Caucasian population, insulin resistance occur early in the course of the disease and impaired beta cell function appear more variable. Obesity, especially abdominal obesity, is an important determinant of insulin resistance. Most of type 2 diabetes in Caucasian population are obese but average BMI in Asian type 2 diabetic patients is around 25.0 kg/m^2. So non-obese type 2 diabetes that more common in Asian population may have less insulin resistance, Nevertheless there are some studies reported that in Asian non-obese type 2 diabetic patients and their non-diabetic first degree relatives have insulin insensitivity that may be caused by a higher fat percentage with a lower BMI than Caucasian population.
Several studies have reported the importance of early-phase insulin secretory defects in relation to insulin resistance in the development of glucose intolerance in Asian people. Slight impairment in insulin secretion that begins in subjects with normal glucose tolerance also has been reported in Thai and Japanese population. Impaired insulin

secretion might be induced by insufficient beta cell mass, by functional defects within the beta cells themselves, or both. There is a good linear correlation between beta cell mass and BMI both in normal and type 2 diabetic patients. Measurement of beta cell mass in non-obese diabetes patients were lower than those in other patients and were not related to duration of diabetes or to the glycemic control of the patients. These suggest that maximal beta cell mass and the regenerative capacity of beta cells of an individual patient's response to insulin resistance could be established by the intrauterine environment or by genetically determined factors or both. In conclusion, Asian type 2 diabetic patients are characterized by a larger decrease in insulin secretion and show less attribution of insulin resistance especially in non-obese subjects.

Insulin Resistance And Reproductive Disorders In Bangladeshi Population

- Prof. Liaquat Ali

Prof Liaquat Ali is currently serving as the Professor of Biochemistry & Cell Biology, and the Director of the Bangladesh Institute of Health Sciences, a recent initiative of the Bangladesh Diabetic Society (BADAS) in Dhaka. He is also the Coordinator of Biomedical Research in BIRDEM (Dhaka, Bangladesh), a WHO Collaborating Centre in Research on the Control and Prevention of Diabetes. His major research areas include physiology of insulin secretion, pharmacology of antidiabetic plant materials, pathophysiology of diabetes mellitus and other disorders of metabolic syndrome in regional population, and nutritional values of regional food materials. He has published over 80 papers in peer reviewed international journals related to these areas. Prof. Ali is presently, he is the Joint Secretary of the Bangladesh Endocrine Society. He has received many national and international and awards and fellowships.

Some of the commonest reproductive disorders like preeclampsia (PE), pregnanacy induced hypertension (PIH), gestational diabetes mellitus (GDM), and polycystic ovary syndrome (PCOS) have now been claimed to be insulin resistant conditions, but their causal association with abnormalities of insulin sensitivity and the precise implications in the management are still debated. Genetic heterogeneity and lifestyle diversities among subjects with different ethnic background, particularly mediated through the extent and nature of adiposity, partly explain the variation of results in different studies. We have conducted a series of studies on Bangladeshi population with special focus on the causal role of insulin resistance in the development of these conditions.

In a study on PE and PIH subjects, with their diabetic counterparts as control, we found that PE is an insulin resistant condition in which a hypersecretory response from the pancreatic B-cells occurs as a compensatory measure. In contrast, co-existence of both □-cell secretory failure and insulin resistance leads to diabetes. In another series we found that PIH is an insulin resistant condition which is modulated by serum leptin levels at higher ranges of body weight due to the inhibitory effect of the hormone on insulin secretion. In a prospective study under a nested case-control design we have used Sex Hormone Binding Globulin (SHBG) as a marker of insulin sensitivity to explore the

association of PIH with insulin resistance in early pregnancy and subsequent development of PIH. The data suggest that insulin resistance may be causally associated with PIH and early pregnancy SHBG can be clinically useful in predicting future development of PIH in late stages of gestation.

SHBG, as a reliable marker of insulin sensitivity, was also used to explore the possible causal relationship between insulin resistance and GDM. The data indicate that insulin resistance has a causal relation with GDM and the condition may be detected at the early stages of pregnancy using SHBG as a marker. The association of leptin and adiponectin (two important cytokines) with fetal growth in GDM mothers was explored. It was found that leptin, in association with insulin, seems to play a crucial role in fetal growth. Adiponectin, however, does not seem to have any association with fetal development. We have explored chronic subclinical inflammation (an important covariate of insulin resistance) in GDM cases. The rise of hsCRP was foundly to have a strong association with the degree of hyperglycemia in GDM mothers. The possibility of the causal association of GDM with the inflammatory condition was further strengthened in another study by the finding that hsCRP in early pregnancy seems to predict the development of GDM at the later stages of pregnancy.

Regarding PCOS we have conducted one study to explore the interrelationship of anovulation, obesity, hyperinsulinemia, insulin resistance and dyslipidemia. Bangladeshi PCOS women, like their counterparts in other populations, are obese and have a tendency for glucose intolerance. PCOS is, by itself, an insulin resistant condition, but obesity increases the insulin resistance in PCOS by independent mechanisms. Compensatory hypersecretion of pancreatic □-cell secretion is present in PCOS. Dyslipidemia seems to be a primary abnormality in PCOS and it is independent of obesity. Free testosterone increases in PCOS irrespective of body weight. Anovulation in PCOS may have causal relation with dyslipidemia and raised testerone levels. Insulin resistance may be a contributing factor in this situation, but it seems to be secondary rather than a primary abnormality. In another study the glucose intolerance and abnormalities of insulin secretory capacity and sensitivity were further characterized. It was concluded from the data that IGT and type 2 DM can develop independent to obesity in PCOS women. The interrelationship of BMI, serum leptin and insulin resistance has also been investigated in PCOS women. In addition to reduction of insulin sensitivity PCOS was found to be associated with hyperleptinemia independent of obesity.

From the series of studies on reproductive disorders in Bangladeshi women a general conclusion can be made that insulin resistance play a significant role in the pathophysiology of these conditions and exploration of its precise mechanism as well as determinants is necessary to design more rational management of these patients.

Metabolic Syndrome: An Asian Perspective

- Prof Najmul Islam

Prof. Najmul Islam MBBS, MRCP (UK), FRCP (London). He is professor of Medicine & Consultant Endocrinologist, Aga Khan University and Director, Diabetes Endocrinology & Metabolism Fellowship Program of the university. He is member / expert to various academic societies and grant disposing organizations. He is also examiner for Medicine and Endocrinology. He is reviewer for Pakistan Medical Research Council, Higher Education Commission of Pakistan and Journal of Pakistan Medical Association. He established Pakistan Endocrine Society and Child Growth Society of Pakistan. He has 83 invited Lectures / Presentations in National and International Conferences and Symposiums. He has been invited in 30 Public Awareness program as an expert. He has 32 Publications in peer reviewed indexed journal locally and internationally.

Metabolic Syndrome is a cluster of medical disorders or risk factors that greatly increases the risk of developing Cardiovascular Disease and Diabetes. The concept of Metabolic Syndrome is not new. It was Kylin in 1923 who first described the clustering of metabolic condition but the concept was again brought into focus by Reaven in 1988. Precise figures of prevalence of Metabolic Syndrome are not available, particularly due to lack of internationally agreed consensus definition of the syndrome. Multiple definition of Metabolic Syndrome exists including WHO, NCEP & IDF etc. Modified NCEP and IDF criteria include different cut offs for abdominal obesity particularly for South Asians. Global burden of Metabolic syndrome is estimated to be around 20-25% in adults but prevalence is very much variable in different Asian Countries from as low as around 5% in rural China to as high as 40% and more in Pakistan, Iran, Turkey and some other countries. Metabolic Syndrome is generally more common in woman but in certain Asian countries like Iran & Turkey there is large excess of Metabolic Syndrome in females. In general Metabolic Syndrome is more common in urban populations in Asia but there are a few exceptions to it as well. The magnitude of cardiovascular risk associated with Metabolic Syndrome is similar to Caucasians with the odds ratio of around 2. The path physiology of Metabolic Syndrome is not well understood but Insulin Resistance is the possible culprit. Cortisol concentrations in South Asian men are lower than European men with Metabolic Syndrome, but positively correlated with rising prevalence of Metabolic Syndrome in each population.

Metabolic Syndrome has caught the attention of health professionals in Asia as well, but the challenge is to adopt strategies to prevent it at population and individual level. Though there are large number proponents of Metabolic Syndrome but skeptics feel that the label of Metabolic Syndrome should be avoided. They feel that Cardiovascular Risk Factors should be evaluated and all CVD risk factors should be individually and aggressively treated.

Preventing Kidney Disease In Diabetes

- Dr Chulani A. Herath

Dr. Chulani Aravinda Herath did his MBBS in 1981 from University of Colombo and MD from the same university in 1987. He received further training from UK and Sri Lanka. He is currently the Consultant Nephrologist at Sri Jayawardenepura General Hospital. He is also the President of Sri Lanka Association of Nephrology and Transplantation (SLANT). He is an active member of different professional organizations and is also involved in postgraduate training programs._His main research interests are Tropical Acute renal Failure, Epidemiology and progression of Diabetic Nephropathy, Post-transplant infections. He has published many papers, done many presentations and delivered many lectures in both national and international meetings. He has received many awards for his contribution.

Chronic kidney disease caused by Diabetes Mellitus is increasing worldwide- the rise being more pronounced in the developing world. However, recent data from renal registries from several developed countries including U.S. suggest that End Stage Renal Disease attributed to Diabetes may be on the decline or has stabilized. It is too early to declare this a triumph for successful reno-protection therapy yet, but no other evidence-based explanation can yet be given as cause for this important epidemiological change. Developing countries should divert a substantial portion of their meager health care resources to reno-protection in Diabetes as end result of diabetic kidney disease is a massive financial burden which none of these countries can realistically endure.

Primary prevention of diabetic kidney disease should include strict glycaemic and blood pressure control, exercise and weight reduction, aggressive lipid lowering, avoiding cigarette smoking and most of all creating awareness of diabetes and kidney disease among the general public and the government policy makers. There is evidence that ACE inhibition(ACEI) and Angiotensin receptor blockade (ARB) not only slows down progression of diabetic nephropathy (DN) but also delays onset of microalbuminuria- the earliest clinically evident stage of DN. Since the increased cardiovascular risk associated with increased albumin excretion is seen even at lower levels than the conventional “microalbumin range”, ACE inhibition should be considered even before urinary albumin excretion increases to this range. Studies with simulated health economic modeling have

shown that treating all patients with diabetes with ACEI is more cost effective than treating a selected few after expensive screening programs. Most developing countries have cheaper generic forms of ACE inhibitors and Angiotensin receptor blockers which would alleviate the “dual risk burden” of diabetes and renal disease on the cardiovascular system.

There is evidence to suggest that patients with Type II Diabetes can progress to chronic kidney disease while remaining normo-albuminuric. This non-albuminuric renal insufficiency could be due to macrovascular atherosclerosis. Focusing solely on urine albumin excretion to screen for diabetic kidney disease may therefore miss a substantial number of these cases in Type II diabetes. Thus screening for kidney disease should include an estimation of glomerular filtration rate in addition to measuring urinary albumin excretion.

Prevention Of Cardiovascular Disease

- Dr Janaka Karalliedde

Dr Karalliedde graduated with a distinction in medicine from St George's Hospital Medical School University of London in 1998. He obtained his Membership of the Royal College of Physicians of London in 2001. He is currently the Clinical Lecturer in Diabetes, Endocrinology and Internal Medicine in the Cardiovascular Division, Guy's Hospital Campus, King's College London School of Medicine, King's College, London. His research interests include the clinical application of early markers of cardiovascular and renal disease risk in diabetes, management of PPAR gamma agonist induced fluid retention and the pathophysiology of cardio-renal complications in diabetes.

Diabetes is associated with great risk of morbidity and mortality, with cardiovascular disease (CVD) accounting for up to two-thirds of all deaths in the diabetic population. Individuals with type 2 diabetes mellitus have increased CVD risk compared with those without diabetes and patients with type 2 diabetes, even after correction for known CVD risk factors, have a two- to threefold higher incidence of myocardial infarction or stroke and the risk of death is increased twofold.

According to the World Health Organization, the prevalence of CVD in diabetic patients ranges from 26 to 36%. As many as 80% of patients with type 2 diabetes will develop and possibly die of macrovascular disease. Of note South Asians are prone to developing CVD at a younger age and once CVD is diagnosed also have higher morbidity and mortality as compared to Caucasian populations. These factors represent a great socio-economic cost, with major loss of life expectancy and quality of life.

The accelerated atherosclerosis and CVD in diabetes is likely to be multifactorial and therefore several therapeutic approaches need to be considered. This presentation will review the current clinical evidence that suggests the need for a multifactorial approach to address known CVD risk factors such as dyslipidaemia, hypertension, albuminuria and hypercoaguability in those patients with type 2 diabetes and CVD and will also summarise the more limited clinical data that is available on primary prevention of CVD in diabetes. The Steno II approach to prevention of CVD in type 2 diabetes will be

reviewed along with the more recent controversies on the effects of strict glycaemic control (ACCORD and ADVANCE trials) on mortality and CVD risk in type 2 diabetes.

Effective care to prevent CVD in diabetes involves a multi-professional approach working across all healthcare boundaries. The close involvement of the person with diabetes is essential in planning individualised care and CVD prevention has to be integrated with the management of other diabetic complications.

Screening, Preventing And Managing Diabetic Foot Problems In A Developing Country

- Prof. Abdul Basit

After graduating from University of Karachi in the year 1988, Prof. Abdul Basit completed his MRCP (1993) and FRCP (2005) from the Royal College of Physicians, London, UK. He is currently the Professor of Medicine at Baqai Medical University, and the Director at Baqai Institute of Diabetology & Endocrinology, Karachi- Pakistan. Prof. Basit has given many lectures and abstract and poster presentations and has many publications to his name. He is currently involved in studies on primary prevention of diabetes in collaboration with University of Oslo and studies on inhaled insulin. Other research interests are studies on Type 1 diabetes mellitus and diabetic foot studies. He is also involved in post graduate training programs including one year diploma courses in diabetology. He was the Chairman Organizing Committee, International Diabetes Conference held with the theme "Decade of Diabetes Care: In Low-resource and Underserved Communities" in Karachi – Pakistan, February 2006. He is also the Chairman of Pakistan Working group on the Diabetic Foot (PWGDF)" and representative of "International Working Group on the Diabetic Foot" (IWGDF).

Pakistan is a developing country with scarce resources. We have a population of 151.5 millions with around 2/3rd living in rural areas. WHO estimates suggest 6.9 millions people have diabetes in Pakistan. Our population per doctor is 1,310 and per nurse is 4,636. And there is no trained podiatrist for this huge population.

The first diabetic foot clinic was established in 1996 and we gave the concept of 24 hrs phone service and emergency OPDs for foot ulcers. Our own foot care assistant was trained. A patellar hammer, a tuning fork and a monofilament is usually more than enough for a foot clinic in a developing country. Published data suggest that we have diabetic foot ulcers from 4 to 10 percent which means we in Pakistan expect to have 0.27-0.42 million people with foot ulcers.

The management strategy includes metabolic control, antibiotics, podiatry, off-loading devices and surgical management. Metabolic control includes good glycemic control, tight blood pressure control; improve lipid profile, cessation of smoking and anti-platelet

therapy. For good infection control, we suggest early introduction of broad spectrum antibiotics, usually combination therapy and for longer durations.

Foot care assistant has got a major role in the management of foot ulcers. Debridement to bleed shall be the policy. Very rare use of specialized dressings should be made; otherwise topical available antiseptics should be enough in majority of cases. No topical antibiotic has any role. Custom made off-loading devices are prepared at low cost including modified rocker bottom, bohler iron and now scotch cast. A surgeon with special interest in diabetic foot ulcer disease is part of the diabetes foot care team and we have coined a concept of a physician being trained in simple surgical management of diabetic foot ulcers. This has up till now proved to be very time effective and cost effective.

By these simple measures, mentioned above, the amputation rate has fallen from 15.4% to 8.6%. The healing rate has gone high 40.4% to 54.6%. In low resource countries, foot ulcer economics has also to be considered. Our data suggest that average direct cost of treating UT grade one ulcer is USD 45.00, more than ten times average health expenditure of a person. Therefore, prevention plans have to be the mainstay of the policy for nationwide campaign for diabetic foot ulcers. Family physicians are being trained to look at these problems at an early stage to maximize to ensure that majority of these ulcers do not proceed up to amputation. Up till now around 200 doctors have been trained in the community. A diabetic foot care assistant training course has been started which is first of its kind in Pakistan. World Diabetes Foundation has supported a project for National Diabetes and Diabetic Foot Programme. The main outcome of this programme is establishment of 100 diabetic foot clinics all over Pakistan in the next three years. For foot ulcer prevention, diabetes educators also play a major role. Diploma in diabetes education has been recently started in our University and these educators are expected to play a major role in prevention foot ulcers and also be time and cost effective. Ideally prevention strategies for the community should be introduced. In conclusion, we suggest the screening methods should be simple, management strategies should be aggressive and prevention plans definitive.

Lean Young Diabetes Mellitus (Lydm)

- Dr. Tofail Ahmed

Tofail Ahmed finished his MBBS in 1982 from Dhaka Medical College, D EM in 1988 from Bangladesh Institute for Research and Rehabilitation in Diabetes, Endocrine and Metabolic disorders (BIRDEM), PhD in 2007 from Dhaka University. He is currently the Associate Professor of Endocrinology at BIRDEM and Ibrahim Medical College. He has published numerous books and has more than 40 scientific publications. He is also the principal investigator in Diabetic Care and Complication study (DCCS) Project, Preventive foot care Project, Nephropathy Research Group (NRG) Study. He is also a life member of different professional bodies.

Approximately 7% of all registered diabetics in BIRDEM are below the age of 30 years. Significant portions of these young subjects are neither classical type 1 diabetes (T1DM) nor classical type 2 diabetes (T2DM). A study was design to look into clinical and biochemical features of diabetes with a view to find out whether there exists any subset of diabetes with homogeneous features.

The study looked into a total of 19 variables of 989 cases from 4 series of patients. All were diabetic before 30^{th} birthday and without ketonuria prior to initiation of treatment. The variables were blood glucose during OGTT (at 5 time points), HbA1c, C-peptide, cholesterol, triglyceride, age, sex, BMI, pancreatic calcification, family history of diabetes, stigmata of nutritional deficiency, diabetic complications (retinopathy, nephropathy and neuropathy), typical symptoms of diabetes and 2 derived variable GAB score (Mean blood glucose in mmol/L x age in year ÷ BMI) and C-peptide index (C-peptide in pmol/L ÷ Glucose in mmol/L).

Fourteen of 19 variables were heterogeneous at least in 1 of the 4 series. Therefore, the population was a mixed population of diabetes.

In the series I there were 341 cases of MRDM i.e; they are either having pancreatic calcification or a BMI <18. This population was homogeneous in BMI but not in pancreatic calcification. So we approached with a simplified definition for a homogeneous population. A new sub-set was defined by BMI <18. It was named Lean

Young Diabetes Mellitus (LYDM). LYDM thus defined had 321, 78, 70 and 49 cases in the 4 series respectively. Each of the 4 LYDM populations was homogeneous in BMI as well as pancreatic calcification. Among the rest 17 study variables 13 were homogeneous in all series where they were included as study variable. Thus, LYDM was a group with almost homogeneous clinical and biochemical behaviors.

Group analysis showed, all the 4 LYDM groups them as a different group within their series. The variables those influenced such a BMI based grouping were their age, fasting blood glucose, pancreatic calcification, family history of diabetes and C-peptide.

Comparison of the study variables between LYDM with the rest cases documented, LYDM as younger and leaner. Presents with typical symptoms of diabetes mellitus, stigmata of nutritional deficiency and chronic complication of diabetes were more than the rest but family incidence of diabetes was less. Blood glucose, HbA_1c and GAB score higher than the rest but C-peptide and C-peptide index were lower.
Thus, LYDM is a distinct group of diabetes mellitus. It is defined by BMI <18 in untreated diabetes without ketonuria and age below 30 years.

Clinical and biochemical features of LYDM at diagnosis as documented in the study are summarized as follows:

a) Onset of the diabetes is early; (age at diagnosis 20.02 to 20.86 years as 95% CI),
b) Very lean; (BMI 14.65 to 14.98 as 95% CI),
c) Mostly presents with typical symptoms of diabetes (96.38%) due to very high blood glucose;(fasting blood glucose 19.97 to 21.18 mmol/L as 95% CI) but no ketoacidosis,
d) High HbA_1c level and GAB score (HbA_1c% 10.38 to 12.25 as 95% CI; GAB score 35.53 to 42.74 as 95% CI).
e) Low C-peptide and C-peptide index (C-peptide. 078 to. 119 pmol/ml and CPI 4.37 to 7.37 as 95% CI),
f) Other features includes
    i) Frequencies of stigmata of specific nutritional deficiency (59.19%) and diabetic specific complications (37.38%) are relatively higher.
    ii) Family history of diabetes (18.76%) and dyslipidemias are relatively less
    iii) Frequent pancreatic calcification (39.87%) and
    iv) Male predominance (M:F=3:2).

Although there is a need of further study on aetio-pathology and genetics of LYDM prior to advocating a separate class for this group within the aetiology based classification system of diabetes mellitus, the features of them such as low BMI, very high HbA_1c, low CPI, severe symptoms and a high rate of chronic complication of diabetes in such a tender age individually merits special attention not only for immediate recognition of LYDM as a separate clinical group but also for an appropriate management guideline for them.

Insulin Resistance, Body Composition And Energy Expenditure And The Impact Of Exercise Intervention In Young South Indian Male Subjects With Normal And Low Birth Weight

- Prof. Nihal Thomas

Nihal Thomas is Professor in Endocrinology at Christian Medical College, Vellore and Deputy Medical Superintendent. He has done his MBBS, MD, DNB (Endo), and MNAMS at Christian Medical College and his FRACP (Endo) at the Prince of Wales Hospital, Sydney in Australia. His publications include 70 articles in international and national journals, covering large series in medullary thyroid carcinoma, insulinomas, periodic paralysis and various aspects of pituitary disease. He has published two books. His current interest is on the pathogenesis of low birth as a cause for diabetes, diabetes outreach and educational techniques. He has won awards of the International Clinical Epidemiology network, 2003. He is actively involved with the World Diabetes Foundation Project. He is joint Secretary of the Indian Thyroid Society and a member of the Executive committee of the Endocrine Society of India.

To assess baseline characteristics of body composition and metabolism and the impact of exercise intervention in young South Indian males with low and normal birth weight on:-
1) Insulin resistance as assessed by the hyperinsulinemic euglycemic clamp technique, HOMA and other indices 2) Body composition as assessed by DEXA scanning and bioelectric impedance 3) Skeletal muscle and hepatic fat content as assessed by ^{1}H Nuclear Magnetic Resonance Spectroscopy 4) Energy expenditure as assessed by indirect caloriemetry and Actiheart 5) Exercise intervention on a bicycle for 1 hour daily for 6 weeks, followed by reassessment of insulin resistance indices (excluding the clamp study) and energy expenditure. *

Introduction

It is well established that South Asians, who comprise more than one-fifth of the world's population, are more likely to develop insulin resistance and type 2 diabetes mellitus. This is at times probably due to low birth weight which is present in 26% of Indians at birth.

Methodology

Part 1: The aim of this study is to characterize metabolic differences between young Indian men born with low and normal birth weight with focus on insulin secretion, insulin resistance and body fat distribution tissue fat content together with a diabetogenic adipokinin profile. The methodology is outlined as in the aims*.

Primary end point:

Whole body insulin action (insulin-stimulated glucose uptake - M-value) and insulin secretion

Secondary end points:

Body composition, Physical activity level, Intramyocellular and intrahepatic fat content Energy Expenditure

Participants

A population based cohort of 60 low birth (LBW) weight subjects and 60 normal birth weight (NBW) subjects born at term was taken from a rural part in the South Indian state of Tamil Nadu, North Arcot district where Vellore town is located. The subjects will be recruited from the registry at the Community Health And Development (CHAD) hospital in Vellore. The parents to these subjects, if available, will also be included in the study for the purpose of oral glucose tolerance tests.

Inclusion criteria: Both parents alive. Able to refrain from smoking for 7 hours
Healthy Male. Age: 18 to 22 years. Fully attained Puberty
Exclusion Criteria
Type 1 diabetes. Strenuous Exercise. Subjects on medication known to interfere with glucose homeostasis:
Body mass index >30 kg/m2. Any chronic infectious or metabolic disorder or a mentally challenged state
Smoker > 10 Cigarettes/day. Alcohol > 6 pegs /week. Major Organ disease.
The participants will be instructed to abstain from alcohol and to consume a diet rich in carbohydrate for a least 48 hours before the experiment.

Methods**:**

Day 1

1) Physical examinations and height, weight, waist- circumference and blood pressure to include only healthy subjects. Questionnaires on diet and physical activity will be done. Fasting blood samples for lipids (HDL, LDL, cholesterol, triglycerides, free fatty acids), adipokines
2) A Hyperinsulinemic euglycemic clamp combined with an intravenous glucose tolerance test (IVGTT) and indirect calorimetry to measure whole-body insulin sensitivity, insulin secretion and lipid and glucose oxidation rates will be performed. The insulin secretion will be measured using first phase insulin response (0-10 min) during the IVGTT, insulinogenic index ($AUC_{ins0\text{-}30}/AUC_{glucose0\text{-}30}$) and disposition index (insulin secretion x M value) in which the level of glycaemia and insulin resistance is taken into account, respectively. Insulin sensitivity will be determined as the glucose infusion rate during insulin stimulation (M value).

3) Measurement of physical activity and energy consumption by indirect caloriemetry using a Cardiopulmonary exercise testing system for resting energy expenditure and Actiheart for total energy expenditure.
4) NMR spectroscopy is a non-invasive test with a ^{1}H-spectroscopy to measure Intramyocellular fat content (which has been shown to correlate with insulin resistance) and intrahepatic fat content.

Day 2:
5) Glucose tolerance will be determined with standard oral glucose tolerance test (OGTT) - 75 grammes with measurements of glucose, insulin and incretin hormones at time points 0, 30, 60, 90 and 120 min.
6) Dual Energy X-ray Absorptiometry (DEXA) for measuring total and regional body composition using a Hologic Densitometer.
7) Actiheart and exercise test using Ergo Medic Bicycle- 839E- MONARK (GHH, Sweden). The Actiheart device is worn for 3 days. The Actiheart correlates heart rate and activity level (activity counts) data and converts it to energy units (calories). The bicycle exercise test provides a graded increase in resistance over specified time period. A heart rate sensor worn around the chest gives information about the subject's ability to reach maximal heart rate over the period of exercise. It is coupled with a breath by breath ergo-spirometry to determine energy expenditure by indirect calorimetry. Blood lactate levels are measured.

Part 2

The aim of the second part of this study is to investigate the effect of a standardised exercise intervention and to study whether Indians born with low birth weight respond similarly to the exercise intervention as Indians born with normal birth weight. The standardised exercise intervention will include bicycling for 1 hour a day for 6 weeks. After the intervention, the examinations mentioned in part 1 (except the euglycaemic, hyperinsulinaemic clamp) will be repeated.

Power calculation and statistical considerations

Among several endpoints, the primary endpoint of this study is the difference of insulin action (M-value) in LBW and NBW subjects. Based on this primary end point, and the known day-to-day variation of the M-value, we have performed a power calculation as described in the following. Given a study population of 2 x 45 subjects, and a previously documented standard deviation of the M-value of 2.6 in a similar group of subjects (mean value 9.7). The sample size was considered to be 60 per group.

Results:
Preliminary analysis on a subset of 50 subjects revealed the following reports. Anthropometric and clinical characterizations were as follows; BMI: 19.1 (± 2.97) kg/m2, waist circumference: 69.8 (± 7.92) cm, serum triglycerides: 0.91(± 0.58) mmol/l and HDL: 0.82(± 0.22) mmol/l. Mean total body fat percentage was 14.7 (±0.05) % and FFM was 42.65 ± 6.1. Insulin resistance indices were HOMA: 1.1(±1.52), 1/HOMA: 1.79 (±1.5), QUICKI: 0.41 (±0.06), McAuley's index: 11.3 (±2.89). The glucose infusion rate during insulin stimulation (M value) was 11.3(± 3.88) mg/min/kg FFM. BMI correlated

significantly with FFM (r=0.84, p<0.0001). Waist circumference was significantly associated to truncal fat percentage (r=0.81, p<0.0001). Indirect measures of insulin sensitivity correlated with M-value in this manner: fasting insulin (r=minus0.43, p=0.002), HOMA (r=minus0.416, p=0.003), QUICKI (r=0.344, p= 0.016) and McAuley's index (r= 0.390, p=0.007).Preliminary analysis of the data on energy expenditure obtained from the Actiheart indicates that there is probably an inverse correlation between birth weight and the energy spent by the body.
The fat peaks obtained on the MRI spectroscopy of the liver in this group of subjects with a low BMI were low.

SUMMARY

This is the first study where indirect and direct determinations of body composition and insulin resistance were performed simultaneously in young healthy adult Asian Indians. In these lean rural South Indian males, insulin resistance indices were significant related to glucose uptake: fasting insulin levels and the m-value being most tightly associated. In addition, measures of body composition were tightly associated to anthropometry. Together these indices may be utilized as surrogate measures of body composition and insulin resistance, providing a reference for future studies in Asian Indian males to assess glucose metabolism. At a relatively low BMI there was a significant correlations with progressive increase in insulin resistance, with a suggestion that BMIs of this level in a healthy young male population could be pathological on a long term basis. The data obtained from the Actiheart suggests that total energy expenditure may be reduced with those with a lower birth weight when they attain adulthood.

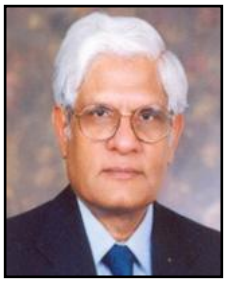
Diabetes Mellitus And Hepatitis C Virus: Update.

- Prof Adel Abdel Aziz El-Sayed

Adel Abdel Aziz El-Sayed MD is the Professor and Chairman of Department of Internal Medicine, Sohag Faculty of Medicine, Sohag University, Egypt. He is an active member in the diabetes caring community in Egypt and in the Arab countries. He is a member of the Board of the Egyptian Diabetes Association (EDA),Member of the Diabetes Committee of the Egyptian Academy of Science and Technology He is Chairman of the EDA Branch in the Quena & Sohag Governorates, Chairman of several national, regional and international diabetes conferences. His IDF activities are Member of the Egyptian Delegation to Regional EMME Council and IDF General Assembly. Member of the Program Committee and Abstract Reviewer for the IDF Cape-Town Conference December 2006.

Both HCV liver disease and type 2 DM are two highly prevalent diseases that will probably continue to increase in the next decade. Higher prevalence of HCV antibodies has been consistently observed in type 2 DM patients than expected in general population. The etiological relationship between the two conditions and the possible pathogenetic mechanisms together with the clinical implications of this association will be discussed.

- Prof. A. Samad Shera



Prof A. Samad Shera MBBS DTM&H MRCP FRCP is the Honorary President, International Diabetes Federation (IDF). He is also Director, WHO Collaborating Center for "Treatment, Education and Research in Diabetes and Diabetic Pregnancies". He is Federal Ministry of Health and WHO National Coordinator for the Prevention and Control of Diabetes in Pakistan and Secretary General, Diabetic Association of Pakistan. He is also a member of different health organizations. For his contributions, he has received Sitara-i-Imtiaz (Star of Excellence), Tamgha-i-Imtiaz (Medal of Excellence). He has a key role in formulating national and international diabetes policy and is a Visiting and travelling faculty for diabetes, with contribution as invited speaker and Chairperson in scientific meetings in over 70 countries.

- Prof. Mahtab Hajera

Professor Hajera Mahtab is Regional Chair of the South-East Asian region of the International Diabetes Federation and is Director of Clinical Services, Research and Academy at BIRDEM. She has been working with the Diabetic Association of Bangladesh for more than 25 years

- Dr. Dhurba Lall Singh

Dr. Dhruba Lall Singh MBBS ,DCH, MRCP,FRCP, FNAMS is the chairman elect of SEA region, IDF. He is also President of Nepal Diabetes Association and Visiting Professor of Medicine in National Academy of Medical Sciences ,Kathmandu. He conducts meetings and seminars promoting public awareness about diabetes and also runs a free diabetes clinic in Nepal Diabetes Association's building in Kopundle, Kathmandu. He has published numerous articles in national and international journals.

- Prof. Jean-Claude Mbanya

Jean Claude Mbanya is a native of Cameroon where he is Professor of Medicine and Endocrinology and Vice-Dean of Academic and Student Affairs at the Faculty of Medicine and Biomedical Sciences, University of Yaoundé I, Cameroon and Consultant Physician, Director of the Health in Transition Research Group and Director of the National Obesity Centre. He initially studied in Cameroon where he obtained his MD and trained at the University of Newcastle upon Tyne, England where he obtained a PhD. He is a Fellow of the Royal College of Physicians, London and is currently President-Elect of the International Diabetes Federation. Prof. Mbanya also currently serves on several international scientific and WHO advisory groups, including the Expert Advisory Panel on Chronic Degenerative Diseases and Diabetes and the WHO African Advisory Committee on Health Research and Development. He is a recipient of many international research grants and awards including the American Diabetes Association's 2004 Harold Rifkin award for Distinguished International Service in the Cause of Diabetes of. His major interests include diabetes and other non-communicable diseases epidemiology and prevention, integration of diabetes care in the health care system of developing countries, diabetes complications, obesity and physical activity as risk factors of chronic diseases. He has published widely in these fields.

- Prof. Masood Hameed Khan

Prof. Masood Hameed Khan (TI) M.B.B.S (Dow), M.C.P.S (Pak), F.C.P.S (Pak), F.R.C.P. (Edin.), F.R.C.P. (Eng) PhD (Hon), FCPS (Bangladesh) is the Professor of Medicine &Vice-Chancellor of Dow University of Health Sciences(DUHS). He is involved in the training programs of MBBS, MCPS, FCPS and an examiner as well in these programs. He is a prominent member of various educational, professional, administrative and regulatory bodies. He has performed editorial duties in different journals and has taken active participation and played key roles in many national and international scientific meetings.He has also written books related to cardiology as well as diabetes. Prof. Khan has published many articles in journals, both national and international.He is also involved in post graduate training programs mainly FCPS programs. Under his leadership as Vice Chancellor of Dow University of Health Sciences(DUHS), the university has made a striking accomplishment in fields of academic excellence, research, human resources development and community care. Numerous projects planned by Prof. Khan are under progress and more projects are being planned for the future.

- Dr. Iswor Lal Acharya

Dr. Iswor Lal Acharya is the Chief of Gastroenterology division of Kathmandu Hospital Pvt. Ltd. After completing his MBBS in 1962, he finished MRCP (UK) in 1973 and FRCP (Edin.) in 1999. He was awarded the International Membership of American Society of Gastrointestinal Endoscopy in 2001. He is the immediate past president of Society of Internal Medicine of Nepal (SIMON) and the past president of Society of Gastroenterologists of Nepal (SIGON).He is past preceptor of PG program, Institute of Medicine, Tribhuvan University. He is actively involved as a visiting professor in the training program of MD students in National Academy of Medical Sciences in Bir Hospital.

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- Prof A.K Azad Khan

Prof. A.K. Azad Khan is the President of Diabetic Association of Bangladesh. He completed his MBBS, from University of Dhaka (1965), FCPS in Medicine, College of Physician & Surgeons of Pakistan (1970) and D. Phil, Oxford University (1977). He has published more than 150 original papers. As the President of Diabetic Association of Bangladesh, he is involved with diabetic health care delivery and primary prevention in Bangladesh. He has received honorary degrees from University of Basel, Switzerland, FRCP (Lon.) and Fellow of Bangladesh Academy of Sciences. He is the Founder President (Currently Honorary President for Life) of Bangladesh Gastroenterology Society, Founder General Secretary (Currently Vice President) of Bangladesh Endocrine Society and the Founder General Secretary of Asian Network for Research in antidiabetic plant materials. He has published more than 150 original research papers.

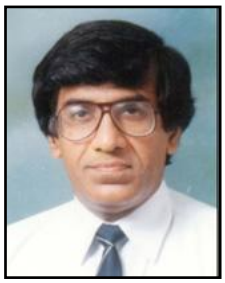
- Dr. Amir-Kamran Nikousokhan-Tayar

Amir-Kamran Nikousokhan-Tayar is the Managing Director of Iranian Diabetes Society (IDS) and the Chairman elect of IDF/MENA Region. He is also a Member of the Scientific Board and Executive Delegation of the IDS Seasonal Magazine, Payam-E-Diabet. He is well known Family Physician and Consultant Diabetologist.

Prevalence Of Sensory Neuropathy Among Patients With Newly-Diagnosed Type 2 Diabetes Mellitus

- Prof. M. Zaman Shaikh

Prof. M. Zaman Shaikh, Waqar H. Kazmi; Shahid Wahab



Professor (Capt.) M. Zaman Shaikh (MBBS,FCPS,MRCP,MSc,FRCP)) is Professor of Medicine at Dow University of Health Sciences and the Director at the National Institute of Diabetes and Endocrinology, (N.I.D.E), Karachi, Pakistan. He is also involved with the following professional associations as President, in Health Times Academy, Vice President of Pakistan Society of Endocrinology, Vice President of Pakistan Society of Physicians and a member of Editorial Board "Asian Journal of Andrology" published form China.

Introduction:
Type 2 Diabetes Mellitus (T2 DM) is highly prevalent in the South-East Asian population. Approximately, 10% of adult population is diabetic in Pakistan and about 95% of overall diabetics have Type 2 diabetes. Sensory Neuropathy is a common complication among patients with T2 DM and usually develops after 8 to 10 years of onset of the disease. To see whether this complication is present in newly-diagnosed patients with T2 DM, we performed this study, to find prevalence of this micro vascular complication among above mentioned patients.

Methods:
130 subjects for this cross-sectional study were selected from patients who received out-patients care at the Diabetic Clinics at Dow University of Health Sciences, Karachi, and two other Diabetic Centers located at Karachi. Patients were selected if they were 25 years or older in age, and were recently diagnosed to have Type 2 DM (within 6 months of the diagnosis). Those with Type I DM or ketonuria at presentation or already on diabetes medications were excluded. All selected patients were asked to complete a comprehensive questionnaire. The presence of Sensory Neuropathy was determined by various clinical tests for example: 10 gram wire test, vibration testing with 128 Hz tunning-fork, multi-star instrument testing to grade the neuropathy, two point discrimination tests and nerve conduction studies. Analytic method: A descriptive

statistical analysis of continuous and categorical variables was performed. Comparision was made with t-test or chi-square test as appropriate.

Results:
Prevalence of poly-neuropathy in newly diagnosed type 2 diabetic patients was 29%. Sensory neuropathy was present in 51%, motor neuropathy in 28%, and mixed type of neuropathy in 21%. Correlation was made with other type of micro-angiopathies, like retinopathy and nephropathy.

Conclusion:
The prevalence of poly-neuropathy in newly diagnosed type 2 diabetic patients is very high In the univariant analysis, there was a statistically significant association of neuropathy with hypertension (as a comorbidity), alcohol use, F.B Sugar, HbA1c, LDL, waist circumference, BMI and serum creatinine. Optimal control of these risk factors may help in the prevention of complications of T2DM.

Randomised Double-Blind Clinical Trial Comparing Efficacy And Safety Of Pregabalin Vs. Amitriptyline In Painful Diabetic Neuropathy

- Prof. Amitava Chakrabarti

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Objective: Comparison of efficacy and safety of pregabalin and amitriptyline in the control of pain of diabetic neuropathy

Method: A randomized, double-blind, crossover, active control clinical trial with variable dose titration was conducted in 37 diabetic patients at PGIMER, Chanduigarh from August 2007 onwards. A 3 week placebo administered run-in period was given to each patient prior to randomization. Amitriptyline 10, 25, and 50 mg orally once daily and pregabalin 75, 150 and 300 mg twice daily orally were used. Each dose for each drug was given for 2 weeks and dose escalation was made if improvement to previous dose was not satisfactory. A placebo washout of 3 weeks was given between the two drugs. Assessment for pain relief, overall improvement and adverse events were made at base

line, 2, 4 and 6 weeks of each drug therapy. The protocol was duly approved by the IRB and fully written informed consent was obtained from each patient.

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Results. Pain relief was found to be good in 18 (49%), moderate in 10 (27%) and mild in 8 (22%) patients in the pregabalin group and good in 13 (35%), moderate in 9 (24%) and mild in 11 (22%) patients with amitriptyline as measured by patient's and physician's global assessment of overall efficacy. Assessments made by McGill pain questionnaire and Likert pain scale did not show any significant difference between the two drugs. Overall 33 events were reported at the end of 6 weeks, 26 (79%) were with amitriptyline (sedation and anticholinergic side effects were being the commonest) and 11 (33%) were with pregabalin (constipation, sodium retention and elevation of creatinine kinase were commonest). The preferred effective dose of pregabalin was 150 mg b.i.d.

Conclusion: Both the approved drugs for the management of painful diabetic neuropathy showed comparable efficacy. However pregabalin has fewer and milder adverse events as compared to amitriptyline. The study outcome suggests pregabalin 150 mg b.i.d may be an effective and safer alternative to amitiptyline in painful diabetic neuropathy.

High Prevalence Of Ischaemic Ecg Changes In South Asian Type 2 Diabetic Patients

- Dr. Milan K. Piya

Milan K Piya, Vikram Anumakonda, Abd Tahrani, Neil Raymond, Shanaz Mughal, Anthony Dixon, Srikanth Bellary, Waqar Malik, Sudhesh Kumar, Paul O'Hare, Anthony Barnett and Jayadave Shakher.

Milan Kumar Piya finished his MBBS in 2001 from B P Koirala Institute of Health Sciences, Dharan, Nepal and did completed MRCP in 2005 from the Royal College of Physician, UK. At present he is a Clinical Lecturer in Diabetes, Endocrinology and General Medicine, University of Birmingham and Heart of England NHS Foundation Trust, Birmingham, UK. There are many publications in which he has authored and co-authored. He is currently planning for research work regarding Biomarkers, Physical Activity and Sleep in Gestational Diabetes with a special focus on women of South Asian origin.

Background

The age-standardised mortality from coronary heart disease (CHD) in South Asians (SA) is 50% higher than the general population in England and Wales. This is thought to be due to the higher prevalence of ischaemic heart disease (IHD) and type 2 diabetes (T2D). The age of presentation of CHD is also earlier as is the extent of atherosclerosis in this population, and this risk remains in second generation immigrants. Often the first presentation of CHD will be a myocardial infarction which if not fatal, could lead to impaired disability and poor quality of life.

Objectives

To determine the prevalence of electrocardiographic evidence of ischaemia in SA patients with T2D.

Methods

As part of the pilot study for the United Kingdom Asian Diabetes Study (UKADS), ECGs were collected on recruitment in 2000/2001. 200 of the total 201 patients from Birmingham had their ECGs analysed by 5 physicians (each ECG at least twice) to assess for presence of ischaemia and left ventricular hypertrophy. Past history of CHD was noted and various data was collected as part of the main study.

Results

26.1% of patients had ischaemic changes on their ECG of whom 86.5% did not have a past medical history of IHD. 12.4% had Left Ventricular Hypertrophy by Cornell voltage criteria or strain pattern on their ECG. There was a high prevalence of ischaemic changes on the ECGs analysed. Given the low numbers known to have CHD this represents a high number of patients with silent ischaemia.

Discussion

The high prevalence of silent ischaemia detected in this study shows that routine ECGs which are easy to perform, cheap and non invasive could lead to the diagnosis of CHD before symptoms develop or before the occurrence of an MI. This practice could help reduce excess CHD mortality in the SA population.

Oxidative stress and cardio myocyte apoptosis: possibility of development of myocardial disarray in diabetes

- Prof. Shamima Parvin Lasker

Shamima Parvin Lasker [1], Craig McLachlan [2], Lexin Wang [3], Shah Mohammad Karamot Ali [4], Herbert F Jelinek [5]

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2. *Department Physiology, University Technology Sydney, NSW, Australia.*
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4. *Professor of Nutrition and Food Science, Institute of Nutrition and Food science, University of Dhaka, Bangladesh.*
5. *Senior Lecturer, Neuroscience and pharmacology, School of Community Health, Australia.*

Shamima Parvin Lasker is the Professor of Anatomy at the City Dental College, Dhaka Bangladesh. She did her B.Sc., M.Sc. and MPhil from Bangabandhu Medical University, Dhaka. She has received further training as a Ph.D. student from Australia. She also completed a certificate course on research bioethics in 2003.Prof Lasker has numerous publications to her name and has also received many awards and grants. Her current research is about morphological changes in cardiac muscle associated with progression of Diabetes Mellitus. She is also an active member of different national and international professional societies. She is also the Founder Member and President of BR Lasker scholarship

Heart failure is the major cause of death in patients with diabetes (1). Risk of death is increased many fold if diabetes is associated with coronary artery disease (CAD) (2). A number of experimental studies have been carried out to determine what structural alteration deteriorates the cardiac function in drug induced diabetic animals but the results from these studies varied (3). Most have concentrated mainly on the ultrastructure of the cardiac myocyte, accumulation of fat, myofibril and collagen fibre (3, 4). No study has yet been undertaken to correlate between diabetes and myocyte disarray (Myocyte disarray, is defined as an area of myocardium where adjacent myocardial cells are aligned perpendicularly or obliquely to each other rather than its normal parallel alignment (5). Literature shows that myocytes apoptosis may cause architectural rearrangement of the myocardium involving side to side slippage of myocytes. Single myocyte cell death has been postulated to occur to allow side by side

translocation of cells within the wall. Sliding of the myocyte bundle however would need multiple cell deaths (6). In diabetes myocyte apoptosis is pronounce that may lead to myocardial disarray. The possible role of oxidative stress on development of myocyte disarray in diabetes is discussed.

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New IDF Definition To Diagnose Mets In Children. Is It Satisfactory….

- Dr. VP Wickramasinghe

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[1] Department of Paediatrics, University of Colombo, Sri Lanka.

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Introduction
Childhood obesity is increasing in Sri Lanka. Metabolic syndrome (MetS) is a directly related with obesity.

Objectives
To document the presence of MetS in obese Sri Lankan children.

Methodology
Obese children over 2 years of age referred to Lady Ridgeway Hospital for children were recruited. Height, weight, and waist (WC) circumferences were measured. BMI (kg/m^2) was calculated. Blood for relevant investigations were taken after a 12 hour overnight fast. MetS was defined based on new IDF criteria (Zimmet *et al* 2007). Cut off value for WC above 91st centile (McCarthy *et al* 2001) were used. Impaired glucose homeosasis was defined as either having a fasting glucose >100mg/dl or 2 hour OGTT >140mg/dl or overt diabetes. ALT levels were assessed to describe hepatic involvements.

Results

One hundred and twelve obese children were studied (64 boys). There were 48 children (28 boys) between 5-10 years and 56 (29 boys) were between 10-16 year age group. All children had a WC above 91st centile. In the 10 -16 year age group, based on the new definition, 5 (9%) children (M/F=3/2) had metabolic syndrome. When individual metabolic derangements were assessed, there were 9 children with impaired glucose homeostasis (M/F=2/7) and three females and one male had diabetes mellitus. Eighteen had elevated triglyceride levels (M/F=12/6) and only one had low HDL level. One boy had elevated systolic blood pressure and one girl had elevated diastolic blood pressure. If centile based criteria were used, 8 (14%) children of the 10-16 year age group had MetS.

Based on IDF cut off values, in the 5-10 year age group, there were 2 girls and 7 boys with elevated triglyceride levels and two boys had high systolic blood pressure. All had a WC above 91st centile. Based on centile cut off values there were 2 boys with metabolic syndrome.

There were 9 (M/F=6/3) children in the 5-10 year age group and 18 (M/F=13/5) children in the 10-16 year age group with elevated serum ALT levels denoting hepatic damage.

Conclusions

Serious metabolic derangements are seen in obese Sri Lankan children. However based on the new IDF definition for children the diagnosis of MetS had low sensitivity. This casts doubts whether this new definition would do justice to Sri Lankan children and perhaps to all Asian children, or a centile based definition would be better a better alternative.

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Obesity And Dyslipidemia Among Pakistanis In Norway Compared To Pakistanis Living In Pakistan

- Dr. Nazeem Zahid

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Nazeem Zahid MD is currently a PhD student. His publications involve a wide range of endocrine subject mainly related with diabetes and metabolic syndrome. He has also done many poster and presentations in similar areas in national as well as international gatherings.

Objectives: Studies have demonstrated that Norwegian-Pakistanis have a considerably higher prevalence for diabetes and obesity compared to Norwegians (1;2). We wanted to investigate the additional risk of obesity and dyslipidemia among Pakistanis in Norway compared to Pakistanis living in Pakistan.

Method: 870 Norwegian-Pakistanis participants born in Pakistan from two surveys conducted in Norway between 2000 and 2002 were compared with a sample of 1430 individuals that participated in a survey in Pakistan in 2006.

Results: Both populations had similar height, but Norwegian-Pakistanis had considerably higher mean weight. Pakistani males in Norway had a mean BMI of 27.5 kg/m2, while males in Pakistan had a mean BMI of 23.0 kg/m2. Norwegian-Pakistani females had a mean BMI of 29.4 kg/m2, the females in Pakistan had a mean BMI of 26.1 kg/m2. Among the Norwegian-Pakistani, 78 % of the men and 80 % of the females had a BMI above 25 kg/m2 as opposed to 30 % and 56 % in Pakistan. Norwegian-Pakistanis had a mean total cholesterol of 5.4 mmol/l and 5.1 mmol/l for males and females respectively. While for the Pakistanis in Pakistan, the values were 4.5 mmol/l and 4.7 mmol/l for males and females respectively. However, Pakistani women residing in Norway had higher HDL than their counterparts in Pakistan.

Conclusion: Obesity and an unfavourable lipid profile were widely prevalent in both populations; those living in Norway having in general the least favourable profiles. The increased risk for obesity and dyslipidemia may be ascribed to change of lifestyle after migration. Unless immediate measures are takes to reduce these risk factors for

cardiovascular disease and diabetes, we will witness an immense rise in morbidity and mortality among the migrant populations from Pakistan in western societies.

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Randomised Double-Blind Clinical Trial Comparing Efficacy And Safety Of Lamotrigine Vs. Amitriptyline In Painful Diabetic Neuropathy

- Dr. Debasish Hota

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Aim: To compare the efficacy and safety of lamotrigine and amitriptyline in the control of painful diabetic neuropathy.

Method: A randomized, double-blind, crossover, active control clinical trial with variable dose titration was conducted in 68 patients. Amitriptyline 10, 25, and 50 mg orally once at night and lamotrigine 25, 50 and 100 mg twice daily orally were used. Each dose was given for 2 weeks and dose escalation was made if improvement to previous dose was not satisfactory. A placebo washout of 2 weeks was given between the two drugs. Assessment for pain relief, overall improvement and adverse events were made at base line, 2, 4 and 6 weeks of drug treatment.

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Results. Pain relief was found to be good in 24 (35%), moderate in 11 (16%) and mild in 7 (15%) patients on lamotrigine and good in 22 (32%), moderate in 13 (19%) and mild in 10 (15%) patients with amitriptyline by patient's and physician's global assessment of overall efficacy and safety. McGill pain questionnaire and Likert pain scale did not show reveal significant difference between the two agents. Of the total 53 events reported at the end of treatment, 37 (70%) were with amitriptyline (sedation being the commonest) and 17 (32%) were with lamotrigine (rash being the commonest). The optimal effective dose of lamotrigine was 25 mg twice a day.

Conclusion: Both the agents showed comparable efficacy, while lamotrigine showed has fewer and milder adverse events, as compared to amitriptyline. Results of the present study suggest that lamotrigine 25 mg twice a day orallymay be substituted for amitiptyline in the management painful diabetic neuropathy.

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