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Academy bestows its highest honour on Professor Sir Magdi Yacoub



Sir Magdi Yacoub

Professor Sir Magdi Yacoub FRS, FRCS, FRCP(Hon), DSc(Hon), MCh(Hon), FACC was born and educated in Cairo where he qualified as a doctor in 1957. After qualification, he did a spell as a houseman and then as registrar. In 1962, he came over to England to take up the post of surgical officer, and then surgical registrar at the London Chest Hospital. The following year he became Senior Surgical Registrar at the National Heart Hospital and Brompton Hospital where he worked for the next five years under Lord Brock and Donald Ross. After a year in America as Assistant Professor at the University of Chicago Medical School, he returned to this country to take up the position of Consultant Cardiac Surgeon at Harefield Hospital, a position which he still holds in addition to being Director of Medical Research and Education. Under his leadership, Harefield Hospital has become Britain's leading transplant centre, performing over 200 heart transplants a year. He was also Consultant Cardiac Surgeon to the National Heart Hospital from 1973 to 1989 and in 1986 was appointed to be the first British Heart Foundation Professor of Cardiothoracic Surgery at the National Heart & Lung Institute in association with the Royal Brompton Hospital. In 1995, the Institute became a Department of Imperial College School of Medicine.

Following retirement from the NHS in September 2001, Sir Magdi continues to head his research programme as Founder and Director of Research of the Magdi Yacoub Institute (formerly known as Harefield Research Foundation) and British Heart Foundation Professor of Cardiothoracic Surgery, in an academic capacity. In addition, at the beginning of 2002, Mr. Alan Milburn, MP appointed Sir Magdi as

Special Envoy to the NHS in a National drive to recruit overseas qualified specialists in a new and innovative International Fellowship scheme.

As the Founder Patron of the global charity Chain of Hope, Prof. Yacoub devotes his boundless energy in pursuit of the mission he stated: "It is a little known fact that around 1 child in every 100 is born with a heart defect. Most of these defects can be corrected by operations which are performed as a matter of routine in the developed world. In contrast, if uncorrected these defects can cause considerable suffering and premature death. This afflicts a massive number of children around the world. Chain of Hope is dedicated to helping as many of these children as we can. This is accomplished by bringing children to the UK and also by sending volunteer teams to their countries in the longer to help develop local facilities. I feel privileged to be a link in the chain that helps these children". In October, 2004, the Chain of Hope also established a new partnership with the Variety Children's Lifeline for which Prof. Yacoub will lead pediatric cardiac missions to Mauritius, Kenya, Mozambique, Jamaica and Morocco.

Professor Yacoub is a pioneer in the field of heart and lung transplantation and one of the world's leading cardiac surgeons. He carried out his first heart transplant operation at Harefield Hospital in 1980. Since then he has carried out hundreds of these operations; the 1,000th transplant at Harefield was undertaken by him in July 1989. Magdi Yacoub has specialised in working with children with congenital heart malformations and has done pioneering work on the "switch" operation. Sir Magdi's other surgical interests include the homograft and pulmonary autograft aortic valve replacement, and the aortic root repair.

Sir Magdi Yacoub has made a remarkable contribution to heart and heart-lung transplantation not only as the surgeon who has performed more transplants than anybody else in the world, but as a scientist interested in the fundamental aspects of organ transplantation. In ten years, he has attracted approximately 80-90 colleagues who are closely involved with the clinical work of his department and are investigating physiological and disease processes at molecular and cellular levels. The Department is rapidly becoming one of the leading academic departments of cardiothoracic surgery in the world.

Professor Yacoub is a Fellow of the Royal College of Surgeons, Licentiate of the Royal College of Physicians and Fellow of the Royal Society of Medicine. He holds honorary degrees from Brunel University, Cardiff University, The University of Loughborough, University of Middlesex and also from the University of Lund in Sweden. He holds honorary posts in Lahore, Pakistan and University of Siena, Italy. He has received many awards and distinctions including the Clement Prize Thomas Award of the Royal College of Surgeons of England in 1989. In 1999, he was elected a Fellow of The Royal Society and presented with the Lifetime Outstanding Achievement Award in recognition of his contribution to Medicine by the Right Hon. Frank Dobson, MP, Secretary of State for Health. In April 2004, he was presented with a Lifetime Achievement Award by the International Society for Heart & Lung Transplantation.

The International Academy of Cardiovascular Sciences is pleased to recognize Sir Magdi Yacoub for his extraordinary lifetime of achievements with the Academy's Medal of Merit. ❤

REMEMBERING SOMEONE SPECIAL

Academy loses revered Vice President



Dr. Norman Alpert

It is with great sadness that I report the passing of Academy Vice President Norman Alpert. He was an American icon in the field of experimental cardiology and made major contributions in identifying defects in contractile machinery in the failing heart. Unquestionably, he was one of the strongest pillars for the Academy and his passion for promoting cardiovascular education and training young people will be remembered for a long time to come. On a personal note, Dr. Alpert was one of the greatest individuals I have known in 40 years. He was a true friend and advisor whose memory I will cherish.

Naranjan S. Dhalla
IACS Executive Director

A Tribute to Norman Alpert _____ by David M. Warshaw, Burlington, Vermont

I am certain that I am just one of many who were lucky to have experienced Norm Alpert as a mentor, a scientist, a friend, and simply one of the most enjoyable individuals one could know. Norman passed away on November 28, 2004 at his home in Shelburne, Vermont. Although the loss is immeasurable, so is the impact that he had on his friends and colleagues not only at the University of Vermont, where he was Chair of the Department of Molecular Physiology & Biophysics for 29 years but throughout the international scientific and business communities.

Born in Stamford, Connecticut, in 1922, Norman received his Ph.D. degree in Biophysics from Columbia University in 1951 and then joined the Department of Physiology at the University of Illinois as a junior faculty. It was in 1966 that he moved to the University of Vermont to become Chair of the Department of Physiology and Biophysics. During his tenure as Chair, Norman created one of the pre-eminent departments of cardiovascular and muscle physiology. This is not surprising given Norman's ability to predict where the field of heart failure research was headed and to recruit the best and brightest, even if it meant convincing a scientist outside of the field that they could make significant contributions in this area. His personality was a combination of sheer energy, kindness, humor, and a touch of theater. Thus, one could have predicted he was going to succeed in any endeavor, whether it be running a state-of-the-art medical school department, his own research program in cardiac hypertrophy, or as CEO of Lionheart Technologies, a multinational biotech firm with over 200 employees. It was his magnetic personality and power of persuasion that convinced me on a trip to Montreal in search of a biomedical engineering job in industry to abandon this search and join his department as a graduate student of Physiology and Biophysics. This is one of those chance encounters that shape the rest of your life. Never would I have imagined that meeting Norman would lead eventually to my being Chair of a Physiology Department. I am certain that this was probably the case for Gerd Hasenfuss, Rick Moss, Rod Parsons, Muthu Periasamy, John Solaro, Ryozi Nagai, and John Evans all past members of Norm's department or lab and now Chairs of Medical School departments, President of a research hospital, or Dean of a Medical School.

Norman loved science and the enjoyment that he derived from his research program never diminished. He published 140 articles ranging from respiratory metabolism to the step size of a single cardiac myosin molecule. He had boundless energy as evidenced by his being first author on an article about familial hypertrophic cardiomyopathy that is currently in press and his being principal investigator of an NIH R01 grant on the day he died.

Scientifically, Norman's contribution to understanding the molecular compensatory mechanisms associated with cardiac hypertrophy were significant. In collaboration with Lou Mulieri, he developed an elegant thermopile system to investigate the relationship between energy utilization and contractility of cardiac muscle. This ingenious system utilized sensors coated with antimony and bismuth to accurately measure energy utilization as heat production when a cardiac muscle strip was electrically stimulated. This device proved an important tool in differentiating and quantifying the rates of energy utilization during crossbridge cycling (actomyosin ATPase activity) and Ca^{2+} cycling by the sarcoplasmic reticulum (Ca^{2+} ATPase activity). These pioneering studies were the basis for our present understanding of the physiology of crossbridge and Ca^{2+} cycling kinetics in normal and failing hearts.

Norman always felt it important that a scientist give back to the scientific community by being an involved citizen. This accounts for his playing an important role in the growth and success of several organizations such as the International Society for Heart Research (ISHR), for which he served as President of the American Section (1993-1994), as Vice President of the International Academy of Cardiovascular Sciences (1996-2004), and founding member of the Vermont Academy of Science and Engineering. He was a co-organizer of the first International Conference of Muscle Energetics, first held in Burlington, Vermont in 1977, where it returned in 1984 and 1991. He also organized one of the most successful ISHR meetings that was held in Burlington, Vermont (1992). He served as the Editor of the Journal of Molecular and Cellular Cardiology (1992-1998) and as an Associate Editor of American Journal of Physiology- Heart and Circulation (1981-1987).

I could continue to describe a career that was honored with multiple awards and that had a profound impact on science itself, as well the many individuals that Norm mentored and interacted with, but it is Norm's diverse interests and joys in life that combined with his academic life to make him one of the most enjoyable people to be around. Norm loved the theater and was part owner of a theater in New York City while studying for his doctorate. He loved sailing and was an avid racer on Lake Champlain and assembled a fun loving crew that sailed his boat "Flying Colors" to a Class A and Division 1 sailing championship. He always looked for an excuse to go sailing and invited laboratory groups and visiting scientists out for a day sail. I enjoyed these outings but most of all I enjoyed sitting in the cockpit with Norm solving all the problems of the world. It didn't matter to me whether we solved any of these issues but what did matter was having the opportunity to spend time with Norm. In addition to sailing, Norm was a superb tennis player and swimmer.

Norm always felt that as a departmental family we were all "hydraulically linked" so that the success and failures are felt by all. Therefore, he committed much of his effort in creating an environment within the department that guaranteed success. For me personally, I enjoyed hanging onto Norm's coat tails at a meeting. He always made sure to introduce me and to bolster my science before his own, but that was Norm.

It is ironic that Norm died from the very disease that he was an expert in. While having conversations during the later stages of his heart

failure, Norm took pride in describing his symptoms, the underlying physiology, and its treatment. But he always described it with a smile as he attempted to ease my concerns. Even towards the very end, Norm never changed. While visiting Norm at his home just days before his death, he was concerned with the success of a grant that we were collaborating on. Science was still first and foremost. Before leaving, Norm reminded me as he always did when ending a conversation that there is "lots to do, lots to do." I speak for all that knew Norm, we miss him immensely but take comfort in knowing that just thinking about him will bring a smile to our faces and for this I am both lucky and grateful. Our thoughts and best wishes are very much with his wife Laurel and their two sons, Adam and Briar, and daughter Jamie, as well as his many grandchildren. 

PEOPLE AND PLACES

Academy elects Seven New Fellows

President Howard Morgan is delighted to announce the election of 7 new Fellows who are among 241 of the finest heart health professionals from 39 countries to be elected by the International Academy of Cardiovascular Sciences. All Fellows have outstanding achievements in cardiovascular education and research and have made significant contributions to the health of people around the world.



Fause Attie

Dr. Fause Attie MD was born in Brazil and earned his MD from the University of Brazil. He became a Cardiologist at the National Institute of Cardiology "Ignacio Chavez" in Mexico City and has had numerous positions leading to his appointment as General Director in 1999. He studied abroad as a Fellow at the University of Alabama in 1971 and a Clinical Researcher at Cambridge University in 1981.

He continues to serve as an Advisory Board Member of the National Institute of Medical and Nutrition Sciences "Salvador Zubiran" in Mexico City. Dr. Attie is an author of seven books and numerous articles. He has received awards from Academia Nacional Medicina in Mexico, the Brazilian Government and Fundacion Zerbini-INCOR in Sao Paulo.



István Édes

Dr. István Édes is Professor of Cardiology at the Faculty of Medicine, University of Debrecen, Hungary. He obtained his M.D. (1977) and his Ph.D. (1987) at the University Szeged, Hungary. Since 1994 he has been Full Professor and Head of the Institute of Cardiology at the University of Debrecen, where he is also currently the Vice President for Clinical Affairs. Dr. Édes was the President of the Hungarian Society of Cardiology and the Head of the Hungarian National Board of Cardiology (2001-2004). Dr. Édes has been organizing scientific meetings for cardiologists annually since 1996. He is a Council Member (Basic Science Section) of the American Heart Association and holds membership at the European Society of Cardiology, European Society of Biochemistry and American Heart Failure Society. Between 1987 and 1989 Dr. Édes was a visiting professor at the Department of Pharmacology & Cell Biophysics, University of Cincinnati, College of Medicine, Ohio, USA. His main scientific interest is related to the phosphorylation processes of the heart. He was successful with correlating the dynamics of cardiac function with the changes of in vivo phosphorylation (protein and lipids). In particular, he studied the role of phospholamban in the regulation of myocardial contractility. Additionally, he conducts preclinical studies with different Ca²⁺-sensitizer positive inotropic drugs. Moreover, Dr. Édes acts as principal investigator, national coordinator or member of the steering committee in several phase II, III and IV clinical studies with different pharmaceutical agents in cardiology. Dr. Édes has published more than 50 peer reviewed papers and 30 invited reviews, joint phase III trial publications, and book chapters. He is a member of the editorial boards of the Journal of Molecular Cellular Cardiology and the European Heart Journal.

Garrett Gross

Dr. Garrett Gross has recently been awarded an NHLBI Merit Award. He was one of only 5 investigators to be honored with such an award by the NHBLI in 2003. This award is only given to individuals who have had a long and distinguished career in basic research and have made numerous important contributions in his/her field. Dr. Gross has been an active and continuously NIH-funded investigator at



the Medical College of Wisconsin for the past 31 years. His major area of research concerns mechanisms by which endogenous substances released by the heart can either injure or protect the heart during ischemia and/or reperfusion and he has been a leader in understanding mechanisms by which the heart adapts itself to an ischemic insult, a phenomenon termed ischemic preconditioning (IPC). In this regard, Dr. Gross's laboratory was the first to demonstrate that an ATP-sensitive potassium channel (KATP channel) was a critical trigger and effector of IPC. This breakthrough has been repeated by a number of investigators and has stood the test of time as one of the key components of this remarkable cardioprotective phenomenon. This continues to be an active area of investigation and it is hoped that a pharmacological activator of this channel will be developed that is safe and efficacious and will be able to mimic the potent cardioprotective properties of IPC. In support of this concept, a potent opener of this channel, nicorandil,

has been on the market in Japan and Europe for the treatment of stable angina since the 1990s and Dr. Gross's laboratory did much of the pioneering work on the development of this compound in the early 1980's. More recently, this was the first drug (IONA Trial) to demonstrate a long-lasting cardioprotective effect in patients with angina over a several year period of time in a well-controlled clinical trial. Along these same lines, Dr. Gross was also the first laboratory to identify a role for endogenous opioids in mediating the cardioprotective effects of IPC in several animal models and that exogenous opioids such as morphine also possessed potent cardioprotective properties and that these effects were mediated via the action of opioids on both sarcolemmal and mitochondrial KATP channels. This finding has also led investigators in many other laboratories to study the role and mechanisms responsible for these potent cardioprotective properties of opioids.

These data suggest that it may be possible to use novel opioid compounds which lack CNS effects as cardioprotective agents in the near future. Dr. Gross's laboratory also was the first to demonstrate that the cardioprotective effect of chronic morphine treatment persisted for 24-120 hours which suggests that this type of drug might be used prophylactically prior to cardiac surgery to put the heart in a protected state a day or two prior to and even after open heart surgery.

In his most recent work in which he was awarded the MERIT Award, Dr. Gross has uncovered a new endogenous cardioprotective pathway which appears to be mediated by CYP 450 isoforms in the heart and that a product produced by CYP w-hydroxylases, 20-HETE, produces myocardial injury and that blocking the synthesis of the receptor for this compound produces a marked reduction in infarct size in dog hearts. These data may lead to a new therapeutic target for drug development. Over the past 31 years Dr. Gross's work has resulted in approximately 330 full-length peer reviewed journal articles and reviews and 26 book chapters and 300 abstracts. Dr. Gross has been an invited speaker at more than 70 universities and pharmaceutical and biotechnology companies. He has been a consultant at over 20 pharmaceutical companies and has mentored 15 Ph.D. students and 10 postdoctoral fellows all of whom were funded by fellowships from the American Heart Association and the Pharmaceutical Manufacturers Association Foundation of America. Dr. Gross is a very active reviewer for all the top-notch cardiovascular journals including *Circulation Research* and *Cardiovascular Research* and currently serves on the editorial board of 8 journals and is an Associate Editor of the *American Journal of Physiology (Heart and Circulatory)*. Dr. Gross is a member of the Basic Science Council of the American Heart Association, a Fellow of the International Society of Heart Research and is a member of the American Society of Pharmacology and Experimental Therapeutics and the American Physiological Society. He served a councilor for ASPET for 3 years several years ago and remains active in the society. He served as a reviewer for the Wisconsin Heart Association for 6 years and was a member of the NIH Pharmacology Study Section for 4 years.

Hideharu Hayashi



Dr. Hideharu Hayashi, MD, PhD. is Professor and Chairman, The Third Department of Internal Medicine, Hamamatsu University School of Medicine, Hamamatsu, Japan. He graduated in 1976 with his M.D. from Nagoya University and his Ph.D. from Hamamatsu University School of Medicine in 1987. His career included Resident, Ogaki Municipal Hospital, Gifu, Japan; Research Fellow, Department of Physiology and Biophysics, Dalhousie University, Canada; and Professor, Research Institute of Environmental Medicine, Nagoya University

Keyur H. Parikh

Dr. Keyur Parikh, M.D., F.A.C.C., F.S.C.A.I. is Visiting Cardiologist in India at Sterling Hospital, Gurukul Road, Ahmedabad (Director Sterling Hospital and Director, Cardiac Catheterization Laboratory, Sterling Hospital, Ahmedabad) and at Breach Candy Hospital, Mumbai. He has been Visiting Cardiologist in the USA at Washington Township Hospital, Fremont (1987-1995); St. Rose Hospital, Hayward (1987-1995); San Jose Medical Center, San Jose (1987-1995); and Stanford University Medical Center, Palo Alto (1988-1996). He was Chief of Cardiology / Cardiac Catheterisation Laboratory (1990- 1991) at St. Rose Hospital, California; and Chief of Medicine (1991-1993) at St. Rose Hospital, California. His professional memberships include: AMA-American Medical



Association; FACC-Fellow of American College of Cardiology (1987 until present); FSCAI- Fellow of Society for Cardiac Angiography and Interventions; and Life member of the Cardiac Society of India. The American College of Cardiology honoured Dr. Parikh as Member of the "Order of William Harvey" (bestowed in November 1991 for outstanding contribution to international activities of ACC). He received the most outstanding "International Service Award" from the American College of Cardiology, for USA, for 2003-2004.

His clinical experience includes over 17,000 cardiac catheterizations including complex coronary angiograms, ventriculograms and aortograms; over 4,500 PTCA/Angioplasties including multivessel grafts using more than 1,500 stents; coronary directional atherectomies; coronary high speed rotational atherectomy/ablation; over 50 coronary intravascular ultrasound; over 200 cases of electrophysiological studies (arrhythmia mapping and ablations); over 30 endomyocardial biopsies; over 200 cases of permanent pacemakers (including dual chamber rate responsive pacing) and defibrillators; M-mode, 2-doppler, stress echo & transesophageal echocardiography. His peripheral vascular experience includes over 500 cases of balloon high speed rotator atherectomy and laser-assisted peripheral interventions; over 100 percutaneous intra-vascular stenting; over 500 cases of peripheral diagnostic angiography; thrombolysis of occluded synthetic bypass grafts; popliteal approach to recanalization of occluded proximal vessels; and interventional techniques of dialysis fistulas.

Dr. Parikh attended St Xavier High School Ahmedabad up to Class 12th; pre-science: St. Xavier's College, Ahmedabad; pre-medical: Gujarat College of Ahmedabad; medical: Smt. N.H.L. Municipal Medical College, Ahmedabad.

Burton E. Sobel



Dr. Burton E. Sobel, M.D. is the E.L. Amidon Professor and Chair of Medicine and Professor of Biochemistry at the University of Vermont and Physician-in-Chief at Fletcher Allen Health Care. He is a graduate of Cornell University and Harvard Medical School, magna cum laude. He completed his clinical training at the Peter Bent Brigham Hospital and his fellowship in cardiology at the National Heart, Lung, and Blood Institute and has held leadership positions at the University of California, San Diego, Washington University and Barnes Hospital, and the University of Vermont. His honors include: the Heart Research Foundation's International Recognition Award (1981); the AHA Scientific Council's Distinguished Achievement Award (1984); the ACC's Distinguished Scientist Award (1987); the Pasarow Foundation Award (1988); the AHA James B. Herrick Award (1992) and Special Recognition Award in Thrombosis, Atherosclerosis, and Vascular Biology (1999); and recognition as Master, ACP (2000). His research has

been supported by the NIH, the ADA, and the AHA as a Program Director, Specialized Center of Research (SCOR) in Ischemic Heart Disease; Program Director, Collaborative Clinical Trial of Therapy to Protect Ischemic Myocardium; Program Director, Principles in Cardiovascular Research, National Institutes of Health Training Grant; Co-Investigator, Hemostasis & Thrombosis Program for Trainees, National Institutes of Health; Co-Investigator, Postdoctoral Cardiovascular Research Training Program, National Institutes of Health; Principal Investigator, BARI 2D Fibrinolysis and Coagulation Core R01HL63804, National Institutes of Health, 2000-2007; and Principal Investigator, Inflammation, Procoagulation, and Plaque Vulnerability R01HL71305, National Institutes of Health, 2000-2007. He has published more than 800 manuscripts and served major cardiovascular and medical scientific journals including: *Circulation*, editor; *Journal of Clinical Investigation*, associate editor; *American Journal of Physiology*, associate editor; *Coronary Artery Disease*, editor; *Current Opinion in Cardiology*, editor; *Fibrinolysis*, associate editor; and *Circulation Research*; *Annals of Internal Medicine*; *American Journal of Cardiology*; *American Journal of Medicine*; *Diabetes Care*, editorial board member.

His major research accomplishments include: quantification of infarct size with the use of biomarkers and positron emission tomography; favorable modification of infarct size with clot selective fibrinolytic agents; and elucidation of molecular mechanisms underlying evolution of vulnerable atherosclerotic plaques associated with insulin resistance and type 2 diabetes mellitus.

Naresh Trehan



Dr. Naresh Trehan has been the Executive Director and the Chief Cardiovascular Surgeon of the Escorts Heart Institute and Research Center (EHIRC) since 1988.

Dr. Trehan studied at the Modern School, Delhi and was an active member of the school cricket and hockey teams. He joined King George Medical College in 1963, where after completing his Graduation and Internship, he left for the United States in 1969. Dr. Trehan holds a Diploma from the American Board of Surgery, U.S.A (1977) and the American Board of Cardiothoracic Surgery, U.S.A (1979). He completed his training in cardiovascular surgery at the New York University Medical Center under the guidance of the world-renowned heart surgeon Dr. Frank Spencer. Thereafter, he was appointed as a faculty member at NYU, where he specialized in teaching and research until 1988. During 1979-1988 Dr. Trehan held various teaching and staff appointments at the New York Medical Center and other hospitals.

After returning to India in 1988, he opened the Escorts Heart Institute and Research Center, where he has until today successfully per-

formed over 36,000 open-heart surgeries. These include surgeries of coronary artery, valve, aortic aneurysm, cardiomyoplasty, cardiac arrhythmias, transmyocardial laser revascularization, least invasive coronary artery surgery on the beating heart, reduction ventriculoplasty (Batista Operation), heart port access surgery and robotically assisted cardiac surgery with excellent results. Some of his operations have been performed for the first time in India.

Dr. Trehan has also presented scientific papers and chaired scientific sessions and conferences in the USA, UK, Australia, Japan, China, Israel and the Far East. He has written for 340 scientific publications and was the Editor of a book titled "New Developments in Cardiology and Cardiac Surgery".

Today, EHIRC is widely respected and recognized as one of the largest heart institutes in the world. Dr. Trehan, who has been associated with Escorts for the last 16 years, has now set upon achieving a goal of training at least 100 cardiac surgeons through EHIRC. He has been conferred with various distinguished and prestigious honours and awards. ❤️

PEOPLE AND PLACES

Bench to Bedside in Gandhi's Gujarat

by Ramesh K. Goyal, Ahmedabad, India



Minister of the Gujarat Assembly, Mr. Saurabh Patel (l) and Dr. N. K. Ganguly (r) perform ceremonial opening

The Second Joint International Conference of the International Academy of Cardiovascular Science (India Section) and International Society for Heart Research (Indian Section) was held at a multiplex, City Pulse, Gandhinagar, India, December 31, 2004 – January 2, 2005. The Scientific Program was laid out by Dr. Ramesh K. Goyal, Professor of Pharmacology, L. M. College of Pharmacy and Conference Director and Dr. Keyur Parikh, the organizing secretary of the Conference with the help of Prof. Pawan Singal, Education Director, IACS and Dr. Milan Chug, Chairman, Scientific Committee. The conference was well attended with over 1,200 registered delegates and over 90 faculties. Guests were welcomed in Hotel Landmark Fortune, Ahmedabad, at a reception on December 30th which gave them an



Dr. Talwar (r) presented Award to Dr. Goyal (l)

(Ahmedabad, India) Dr. Radhakrishnan (India), Prof. P. C. Manoria (Bhopal, India), Dr. Arun Chockalingam (Canada) and Dr. Ganesh Mathan (Ahmedabad, India). Dr. Pravin Shah (U.S.A.), one of the renowned teachers of cardiologists, gave an exciting plenary lecture on Anterior Motion of Anterior Mitral Leaflet which now stands as a very important diagnostic tool for HOCM. The clinical session of Day One ended with a workshop on "Echo with Masters" in the evening. In parallel to practice of clinical cardiology, there were three symposia with 4 lectures each on Genomics and Genetics in Cardiology, Recent Advances in Molecular Mechanisms of heart failure and Subcellular mechanisms in cardiovascular diseases. The eminent scientists who presented their newer visions in cardiology with their original research work included Prof. Naranjan S. Dhalla (Canada), Prof. V. Gopalkrishnan (Canada), Prof. Attila Ziegelhoffer (Slovak Republic), Dr. Mahesh Gupta (U.S.A.), Dr. Martin Lewinter (U.S.A.), Dr. Hari Sharma (Netherlands). Dr. Jayesh Sheth (Ahmedabad, India), Dr. Madhu Khullar (Chandigarh, India), Dr. C. C. Kartha (Trivendrum, India), Dr. Madhu Gupta (U.S.A.) and Dr. Ashok Srivastava (Canada). Two sessions were held for free paper presentations by young scientists in the field of "Oxidative stress", "New drug development in cardiology" and "Diabetes Mellitus and Cardiovascular Complications." From these two sessions two young scientists were given a cash prize and a certificate.

The conference was formally inaugurated in the evening by the Minister of the Provincial Assembly, Mr. Saurabh Patel who expressed the need and significance of bond between industrialists to provide infrastructure needed for technocrats and developing countries. Prof. N. K. Ganguly, Director General of Indian Council of Medical Research and President of IACS and ISHR presided over the function and gave a key note address giving epidemiological data and steps being taken by Government of India to promote research and advanced clinical care with respect to heart diseases.

Dr. K. K. Talwar introduced the ISHR and the IACS and highlighted the aims and objectives of these institutions. Prof. Naranjan Dhalla, CEO of IACS complimented the organizers Dr. Keyur Parikh and Prof. Ramesh K. Goyal for attracting over 1,000 physicians and scientists from all over the world and made announcements of International Awards of the Academy, that were presented during this function. Dr. K. K. Talwar was honored with the Norman Alpert award for outstanding contributions in cardiovascular medicine. Dr. Ramesh K. Goyal was awarded the Distinguished Service Award in cardiovascular sciences medicine and surgery.

Dr. Keyur Parikh was inducted as the Fellow of International Academy of Cardiovascular Sciences. Dr. Goyal gave the valedictory speech and ended the function with homage to the unfortunate Tsunami victims through his own poem written in Hindi.

The inaugural function was followed by a Grand Gala Dinner with a variety entertainment program depicting cultural heritage of India with Gandhi's Gujarat in particular. This was a program to celebrate New Year Eve for 2005.

Day Two, started with a symposium on New Year Projections in Cardiovascular Sciences. Prof. N. K. Singh (Varanasi, India) discussed JNC – 7 guidelines and recent advances in the treatment of hypertension and Dr. Manjeet Singh (India) projected various cytokines as potential targets for newer therapeutic drugs. Significance of herbal drugs and nutraceuticals was also discussed especially in the light of developing countries by Prof. S. K. Gupta, (New Delhi, India) Dr. S. Vajpayee and Dr. N. Arbatti (Surat, India). Role of Oxidative stress in cardiovascular diseases was discussed through guest lectures by Dr. Madhu Srivastava (Canada), Prof. R. Balaraman (Vadodara, India), Dr. Lindsay Brown (Australia) and Dr. Dipak Das (U.S.A.).

Parallel symposia were held projecting newer vistas in Coronary Artery Diseases, Cardiomyopathy and Cardiac Arrhythmias with guest lectures by Prof. C. Thomas Peter (U.S.A.), Dr. Manish Parikh (U.S.A.), Dr. William Wijns (Belgium), Dr. Balaram Bhargava (Ahmedabad, India), Prof. K. K. Talwar (Chandigarh, India), Dr. S. C. Manchanda (New Delhi, India) and a team from the Heart Care Clinic (Dr. Ajay Naik, Dr. Anil Jain, Dr. Srinivas Mallays, Dr. Hemary Baxi, Dr. Anish Chandarana and Dr. Milan Chug). This team also moderated a workshop on "ECG with Masters." Dr. Peters stressed the importance of individualizing treatment to patients rather than applying the generalized guidelines. He stressed that patient selection was of the utmost importance prior to implanting a bi-ventricular pacing. Dr. Naik said that Wide Complex Tachycardia is always a conundrum. VT is more common than SVT with aberrancy. Dr. Milan Chug, Chairman

opportunity to relax and network. The program was a three day affair with 86 invited lectures running in three parallel halls, 6 workshops, three free paper sessions, two poster sessions, and award session for young scientists, there were 59 free papers presented during the conference

The entire scientific program was divided into two parts – one dealing with clinical aspects of cardiology and second the basic cellular and molecular cardiovascular sciences. In both these sections there was an amalgamation of basic research and clinical practice (theme "Bench to Bedside") in scientific deliberations.

The clinical section started in two parallel halls with the philosophical, humorous and entertaining welcome lecture "Happiness and Sadness: role of stress reduction in vascular biology" by Dr. Keyur Parikh. The basic science session was inaugurated by a lecture "Into the world of exciting cardiology through molecular biology" by Conference Director Prof. Ramesh K. Goyal. Both these lectures were "Warm-up sessions".

This was followed upon by sessions on advances in the path physiology, diagnosis and management of acute coronary syndrome, cardiac failure, valvular heart diseases and vulnerable plaque. Eminent cardiologists who presented their views and deliberated on the topics included Prof. Martin Rothman, (U.K.), Prof. R. Kornowski (Israel), Dr. Pravin Shah (U.S.A.), Prof. Martin Lewinter (U.S.A.), Dr. Anil Jain (Ahmedabad, India), Dr. Saw Huat Seons (Singapore), Dr. William Wijns (Belgium), Dr. Milan Chug



Dr. Dhalla (l) was presented with award by Governor of Province of Gujarat Mr. Nawalkishore Sharma, India (centre) with H.H. Sri Swami Adhyatmanandaji Maharaj, India (r) showing his approval

Scientific Committee expressed concern over increasing cases of coronary artery diseases and presented original data of Indian patients related to risk factors and simple modalities for prevention of these diseases. He also highlighted about ignorance regarding congenital heart diseases in India. There was a panel discussion, chaired by the senior intervention lists like Dr. William Wijns from Belgium, Dr. Manish Parikh from U.S.A., Dr. Keyur Parikh, Dr. Urmil Shah and the surgeons Dr. Anil Jain and Dr. Srinivas Mallya. Interesting clinical cases were displayed on the screen and practicing cardiologists interacted with them. Dr. Urmil Shah discussed with his own data on prevalence of rheumatic fever and valvular diseases in India.

Presentation of posters on original research work by students and young scientists and a free communication session on clinical cardiology including genetics was another important part of scientific program on Day Two.

New Year's Day was celebrated in the evening with a grand reception hosted to honor Prof. Naranjan S. Dhalla with "Bharat Seva Ratna", an award for outstanding services given with a long term goal to save people from disastrous heart diseases. This was conferred by the Governor Sharma. A grand gala dinner was also hosted in honor of Prof. Dhalla by Swami Maharaj not only to the scientists but also to general public interested in learning the science of meditation and yoga. Prof. Dhalla gave an interesting talk on the likely benefits of these practices in the prevention of heart diseases. Besides this program, five satellite dinner symposia were organized at Heart Care Clinic for the benefit of specialists on the topics 'Wide Complex Tachycardia & More ECG's Rhythms', 'Heart Failure', 'Acute Coronary Syndrome', 'Chronic Stable Angina', 'Role of Echo & Doppler Methods', The Annual Prof. Wahi Oration, of ISHR (Indian Section) was delivered by past President of ISHR, Prof. K. G. Nair (Mumbai, India) on "Newer strategies in the management of hyperlipidemia. Prof. Marcel Borgers (Netherland) gave a talk on hibernating myocardium. Dr. Arun Chockalingam (Canada) deliberated on ethical bases for carrying out clinical trials. Various lectures on insulin resistance and diabetes mellitus were given by Dr. S. M. Sadikot (Mumbai, India), Dr. Anant Nigam (Mumbai, India), Dr. Shashank Joshi (India), Dr. O. P. Gupta (Ahmedabad, India), and Dr. S. S. Rastogi (New Delhi, India).

Media interest in the Conference was tremendous with daily reports in all newspapers. The crush of reporters at the Inauguration was overwhelming. The meeting at Ahmedabad was well appreciated, well attended, and well organized as was concluded by the chiefs of the society. They hoped the next conference in 2006 would be able to maintain the momentum which had been generated at the 1st Joint Conference in 2004 in Lucknow. ❤️

PEOPLE AND PLACES

K. K. Talwar wins Norman Alpert Award

by Ramesh K. Goyal, Ahmedabad, India

At the second Joint International Conference in Ahmedabad, India, the 2005 Norman Alpert Award for Established Investigators in Cardiovascular Sciences was presented to Dr. K. K. Talwar.

Dr. Talwar recently assumed his new position as Director, Postgraduate Institute of Medical Education and Research & Professor, Department of Cardiology, Chandigarh, India. He was earlier Professor and Head, Department of Cardiology at All India Institute of Medical Sciences, New Delhi.

Prof. Talwar has significantly contributed in the field of cardiovascular sciences. He has introduced number of newer techniques and pro-



Dr. Nirmal K. Ganguly (r) presented Award to Dr. Talwar (l)]

cedures in the country including endomyocardial biopsy, implantation of Automatic Implantable Cardioverter Defibrillator (recorded in the LIMCA Book of Records 1997) and implantation of biventricular pacemaker in heart failure patients. He also established the technique of radiofrequency ablation of arrhythmia in the country and has done more than 2000 RF procedures and subsequently also introduced technique of electromagnetic mapping for complex arrhythmia. He was associated with the first heart transplant in the country and associated with the development of this program in his previous institute; AIIMS – New Delhi. His original contribution to medical research included documentation of inflammatory myocarditis in Takayasu's arteritis using endomyocardial biopsy. In addition, he has extensively studied the utility of EMB in other tropical heart diseases viz rheumatic heart disease, dilated cardiomyopathy and restrictive cardiomyopathies. He has contributed 350 research publications in various national and international journals.

Prof. Talwar is a Fellow of National Academy of Medical Sciences and Fellow of Indian National Academy of Sciences. He is recipient of various prestigious national and international awards and recognitions including:

- (i) Goyal prize for applied sciences by Kurukshetra University, Haryana (2002).
- (ii) Dr. B.C. Roy National Award Eminent Medical Teacher – Medical Council of India (2000).
- (iii) Ranbaxy Research Award for Clinical Research (1997).
- (iv) Amrut Mody Unichem Award of Indian Council of Medical Research (ICMR).
- (v) Prof. Sujoy B. Roy Memorial Investigator Award – Cardiological Society of India (Delhi) (1986).
- (vi) Searle Award – Cardiological Society of India (1987).
- (vii) Dr. K.L. Wig Oration by National Academy of Medical Sciences (2000-2001).
- (viii) Glaxo Oration – National Academy of Medical Sciences (1996).

He is a Member of Scientific Council of Cardiomyopathies (World Heart Federation), Fellow of International Academy of Cardiovascular Sciences, Vice-President of International Academy of Cardiovascular Sciences (Indian Section) and on the Editorial Board of European Journal of Heart Failure and American Journal of Cardiovascular Drugs & Devices. ❤

Scientific Forum XV



Othon Palace Hotel Convention Center, in Copacabana, Rio de Janeiro
Dec. 8 - 10, 2005;
with two Public Heart Forums : In Belo Horizonte,
December 6 and in Rio de Janeiro December 9th.

Co-sponsored by: International Academy of Cardiovascular Sciences - South American Section, International Society for Heart Research - Latin American Section, Brazilian Academy of Cardiology for Family, Brazilian Society of Cardiology/DFCVR-CEX, Brazilian Society of Cardiovascular Surgery/DEPEX, American Society of Angiology.

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INTERHEART: A Global Case-Control Study of Risk Factors for Acute Myocardial Infarction

Medscape coverage of: European Society of Cardiology Congress 2004 by Linda Brookes, MSc

Presenter: Salim Yusuf, MB BS, DPhil, McMaster University and Hamilton Civic Hospitals Research Centre (Hamilton, Ontario, Canada)

A major Canadian-led global study has identified 9 easily measured risk factors (smoking, lipids, hypertension, diabetes, obesity, diet, physical activity, alcohol consumption, and psychosocial factors) that account for over 90% of the risk of acute myocardial infarction (AMI). The INTERHEART investigators, led by Dr. Yusuf, found that these risk factors are the same in almost every geographic region and every racial/ethnic group worldwide and are consistent in men and women. The main results of the INTERHEART study were reported at the European Society of Cardiology (ESC) Congress and published shortly afterward in *The Lancet*.^[1,2]

Study Rationale

Whereas cardiovascular disease-related mortality has declined in most developed countries, its known prevalence is increasing worldwide, although few data on the causes of heart disease in the developing world are available. Information about risk factors for AMI has been largely derived from studies in the developed countries, and applicability of these results to other populations was unknown. The aim of INTERHEART, a case-control study conducted in > 50 countries, was to determine the associations between a wide array of risk factors and AMI within populations defined by ethnicity and/or geographic region, and to assess the relative importance of these risk factors across these populations.

Going into the study, the investigators hypothesized (in agreement with the general consensus) that the relative impact of conventional risk factors (smoking, hypertension, elevated cholesterol, and diabetes) and emerging risk factors (glucose abnormalities, abdominal obesity, homocysteine, and other nutritional and psychosocial factors) for cardiovascular disease differ between people of varying ethnic and geographic origin. Moreover, conventional wisdom has been that, taken together, these known risk factors would explain only about 50% of cases of heart disease.

Participants

INTERHEART was a standardized case-control study that screened all patients admitted to the coronary care unit or equivalent cardiology ward for a first MI at 262 participating centers in 52 countries throughout Africa, Asia, Australia, Europe, the Middle East, and North and South America. Cases were identified using standardized definitions and enrolled within 24 hours of symptom onset. Matching controls were recruited, resulting in a total of 15,152 incident cases of AMI and 14,820 controls matched by age (± 5 years) and sex but with no history of heart disease.

Data Collection and Analysis

A study questionnaire, translated into 11 languages, was used to collect data on demographic factors (country of origin, first language), socioeconomic status (education, occupation, income), lifestyle (tobacco use, physical activity, dietary patterns), and personal and family history of cardiovascular disease and risk factors (self-reported diabetes and hypertension). These components of the questionnaire were compiled with previously validated questions included in studies of risk factors for cardiovascular disease. Questionnaires were administered by trained staff before the patients left the hospital.

Data on medications (prehospital, in-hospital, and discharge) and interventions were abstracted from charts. Standard physical measurements were done in duplicate by the same examiner on each participant: height, weight, waist and hip circumference, and heart rate. A 20-mL sample of nonfasting blood was drawn from each individual and was frozen and stored for biochemical analyses, including total cholesterol, high-density lipoprotein-cholesterol, apolipoproteins B (apoB), and A1 (apoA1).

The strength of the association between various risk factors and AMI was estimated by odds ratio (OR), and the investigators calculated the variation in the association according to geographic region, ethnic origin, sex, or age in order to quantify the impact of each risk factor alone and in combination on the population risk, as calculated by the population attributable risk (PAR).

Risk Factors

Final analysis was carried out for 12,461 cases and 9,459 controls. The mean age for the first presentation of AMI was 8-10 years lower in men than women worldwide and 10 years younger in Africa, the Middle East, and South Asia compared with other regions of the world. Globally, all 9 risk factors were significantly associated with AMI (all $P < .0001$ except alcohol, $P = .03$) (Table 1). These risks were consistent in all regions, ethnic groups, and in men and women worldwide. The strongest risk predictor globally was the apoB/apoA1 ratio (a more

Table 1. Risk of AMI Associated With Risk Factors in the Overall Population

Risk Factor	Controls (%)	Cases (%)	OR (95% CI) Adjusted for Age, Sex, and Smoking	OR (95% CI) Adjusted for All Other Risk Factors
apoB/apoA1 (3 vs 1) ^a	20.0	13.3	3.87 (2.29-4.42)	3.25 (1.82-5.76)
Current smoking	36.0	43.2	2.91 (2.21-3.71)	2.87 (2.36-3.49)
Diabetes	7.5	18.3	3.98 (2.71-5.42)	2.77 (1.97-3.71)
Hypertension	21.8	39.8	2.88 (2.30-3.64)	1.91 (1.78-2.04)
Abdominal obesity (3 vs 1) ^b	15.3	46.3	3.27 (2.43-4.42)	1.62 (1.45-1.80)
Psychosocial	-	-	1.51 (1.23-1.93)	2.67 (2.21-3.22)
Daily consumption of vegetables and fruit	42.2	33.8	0.79 (0.64-0.77)	0.90 (0.62-0.79)
Exercise	19.2	14.3	0.72 (0.63-0.79)	0.86 (0.76-0.93)
Alcohol intake	24.5	24.0	0.79 (0.73-0.86)	0.91 (0.82-1.02)
All combined	-	-	129.2 (113.7)	129.2 (113.7)

^aHigh quartile vs lowest quartile
^bTop two quartiles vs lowest quartile

reliable marker of cholesterol risk), followed by current smoking (associated with a 4- and 3-fold increased risk of MI, respectively). The risk associated with lipids and smoking was particularly marked in the young (< 55 in men, < 65 in women) vs the old. For all risk factors combined, the OR was 2.5-fold greater in the young vs the old. Abdominal obesity was demonstrated to be a stronger risk factor than body mass index (BMI), suggesting that this measurement should replace BMI as an indicator of obesity, Dr. Yusuf stressed. Psychosocial stress was also found to be an important factor (see below).

Daily consumption of fruits and vegetables, moderate or strenuous exercise, and consumption of alcohol (>= 3 times per week) were protective.

A strong, graded relation was seen between number of cigarettes smoked and risk of AMI, with the risk increasing at every increment. Consumption of 1-5 cigarettes daily increased AMI risk by 38%, and this increased linearly up to consumption of 40 cigarettes, which increased the risk by 900%. Reducing any cigarette consumption by half was found to reduce the risk by half. The apoB/apoA1 ratio demonstrated a similar, though less drastic, relation.

Cumulative Risks

Calculation of PAR, which takes into consideration both the OR and prevalence of a risk factor, showed that globally 50% of an AMI is predicted by apoB/apoA1 and 36% by current smoking (Table 2). These 2 risk factors together predict 66.4% of all AMIs, worldwide.

Table 2. Risk of AMI Associated With Risk Factors in the Overall Population

Risk Factor	Controls (%)	Cases (%)	PAR 1 (99% CI)	PAR 2 (99% CI)
apoB/apoA1 (3 vs 1)	20.0	13.3	34.1 (29.6-38.6)	48.2 (43.5-52.9)
Current smoking	26.8	43.2	36.4 (31.9-39.8)	25.7 (22.5-30.1)
Diabetes	7.5	18.3	23.3 (11.2-31.2)	9.9 (8.5-11.3)
Hypertension	21.8	39.8	23.4 (21.7-25.1)	13.9 (13.7-20.4)
Abdominal obesity (3 vs 1)	15.3	46.3	31.7 (28.2-37.9)	28.1 (15.3-26.8)
Psychosocial	-	-	28.8 (22.6-31.8)	12.3 (7.1-48.8)
Daily consumption of vegetables and fruit	42.2	33.8	13.9 (11.0-16.6)	13.3 (9.8-16.6)
Exercise	19.2	14.3	28.9 (28.1-31.4)	12.2 (9.3-25.1)
Alcohol intake	24.5	24.0	13.9 (9.3-20.2)	6.7 (2.0-26.3)
Combined	-	-	90.4 (88.3-92.4)	90.4 (90.1-92.4)

PAR = population-attributable risk

Five factors (smoking, lipids, hypertension, diabetes, and obesity) accounted for about 80% of the PAR. For all 9 risk factors combined, the PAR was significantly greater (P < .001) in younger than in older individuals, but consistent in men and women (90% and 94%, respectively).

According to Dr. Yusuf, the PAR of 90.4% for all 9 risk factors suggests that, statistically, the 9 risk factors combined accounted for basically all of the risk of AMI in this study population -- a truly startling and unanticipated result.

Psychosocial Factors

Questions about psychosocial risk factors in the INTERHEART questionnaire covered stress at work or home, financial stress, stressful life events, depression, and locus of control (the perceived ability to control life circumstances). The results indicated that psychosocial factors may contribute to a substantial proportion of the risk for AMI. The global effect was less than that for smoking, but comparable with hypertension and abdominal obesity. The PAR for each of the measures ranged from 8% to 18%, and collectively totaled 33% for all variables. The effects of stress on AMI were similar in men and women, in people of all ages, and in all geographic regions of the world studied.

Implications

- With the documentation that these 9 risk factors account for > 90% of the risk for AMI, it is probable that all of the significant risk factors for heart disease in the world today have been identified.
- Although INTERHEART found that 90.4% of AMIs can be predicted by the 9 global risk factors, the impact of diabetes and hypertension may have been underestimated, since these 2 factors were self reported.
- Abdominal obesity is a greater risk factor than BMI, indicating that measurement of waist-to-hip ratio should replace BMI as an indicator of obesity.
- The 10-year younger mean age for the first presentation of AMI in Africa, the Middle East, and South Asia compared with other regions of the world implies the onset of an oncoming epidemic and predicts a large increase in cardiovascular disease in these regions in the coming years.
- Globally, practically no one in an urban population has a level of dyslipidemia that avoids an increased risk of heart disease.
- A protective effect was seen for moderate alcohol consumption (PAR 7%). Advice about this should take into account possible social, cultural, or religious constraints, as well as the potential health risks of excessive alcohol consumption.
- Implementing preventive strategies based on current knowledge would avert the majority of premature coronary heart disease worldwide.

Role of Smoking

INTERHEART showed that smoking 1-5 cigarettes daily increases the risk of an AMI by 40%. This could cancel the beneficial effects of secondary prevention, such as aspirin, which reduces risk by 20%; it could also eliminate as much as 75% of the benefit of taking a statin. The risk increased with the amount of tobacco smoked per day (OR 9.2 in those who smoke > 40 cigarettes per day). All forms of tobacco

co, including filtered and nonfiltered cigarettes, pipes and cigars, and chewing tobacco, are harmful. Dr. Yusuf strongly advocates, in congruence with the official position of the ESC, that global policies for tobacco control should be implemented.

"Landmark Study"

Referring to the INTERHEART study as a "landmark study" and a "monumental achievement," ESC Congress-designated discussant Jean-Pierre Després, PhD (Quebec Heart Institute, Laval Hospital Research Center, Sainte-Foy, Quebec, Canada), re-emphasized that the results of INTERHEART carry an important public health message, i.e. that the majority of AMI cases can be explained by the presence of simple risk or cardioprotective factors that can easily be assessed in clinical practice, and importantly, can be modified.

Dr. Després also supported the call for assessing the waist-to-hip ratio, rather than BMI, as the simplest index of diabetogenic and atherogenic abdominal fat. He also noted the "consistent and independent" relation between elevated ApoB/apoA and risk, as opposed to serum lipid levels such as triglycerides and HDL cholesterol, which are affected by food intake, noting that ApoB/apoA1 can be measured in nonfasting plasma, a clear advantage in clinical practice.

It is disheartening to realize that there is such a pandemic of cardiovascular disease worldwide when most MIs are preventable, Dr. Després lamented. "We have to reshape our working and living environments and address cultural and social factors favoring destructive behaviors," he said, warning that "mankind is doing a good job of killing itself."

Focus for Future Research

In a comment accompanying the INTERHEART reports in *The Lancet*, Majid Ezzati, MD (Harvard School of Public Health, Boston, Massachusetts), says that INTERHEART "takes an important step towards identifying current intervention options and subsequent research for some of the most important global health risks." [3] The INTERHEART results "should motivate future research to focus on unexplored areas, especially how exposure to each risk is distributed across and within populations in relation to other risk factors and to socioeconomic factors such as income, education, and rural-urban life." Dr. Ezzati predicts that such studies "would provide invaluable evidence for assessing the role of multiple risks in health inequalities and for delivering interventions for multiple risks."

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WORLD HEALTH ORGANIZATION (WHO) SHOULD FOLLOW THE ROTARY MODEL FOR DISSEMINATING KNOWLEDGE, DISTRIBUTING FUNDS AND PROVIDING SERVICE

by Gundu H. R. Rao, Minneapolis, USA



Gundu H. R. Rao

Summary:

Partnership between the World Health Organization (WHO) and Rotary International (RI) has resulted in effectively combating a dangerous communicable disease, polio. The Polio Plus project of RI is a success story. On a modest scale, RI is involved in development of pathogen free blood and blood products in developing countries. Contaminated blood is a sure source of blood borne pathogens like bacteria and viruses including, much dreaded HIV. In this essay, I would like to emphasize another community health problem which needs immediate attention and action. There is almost an epidemic of non-communicable diseases such as obesity, hypertension, diabetes (type 2), heart disease, and stroke. The major burden (>85%) of these metabolic disorders is in the developing countries. The World Health Organization in partnership with health care providers and non-governmental organizations (NGOs), can effectively reduce this health burden in developing countries.

Introduction:

Recently, an ex-congressman (Arlen Erdahl) gave a lecture at our Rotary meeting. As a Peace Corp worker, he spent several years in developing nations such as Uganda, Jamaica and Equador. He participated in Rotary activities in several countries and had high praise for the Rotary efforts. As the President of United Nations Association of Minnesota, he expressed his views about the inequalities and the outdated ways of some of these organizations. He was of the opinion that these world organizations should represent the nations in a just manner and provide equitable service to the entire member Nations. After hearing him, I decided that I should express my views

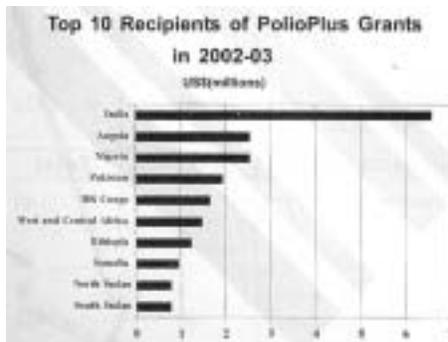
about how world health care organizations are working, compare their modus operandi to that of Rotary International, and make some comments and suggestions.

Prevention of Communicable Diseases:

In the area of non-communicable diseases, the Rotary International has two very successful stories that serve as a unique model for disseminating knowledge, distribution of funds and providing service, where needed.

Polio Plus, a partnership with WHO that aims to eliminate polio worldwide, is a great success. I have seen hundreds of Rotarians raising funds and actively participating in the distribution of vaccine as well as spreading knowledge. Of the millions of dollars that have gone into this project, the major shares of funds have been provided to India. There are two reasons why India is the major recipient. First, India had a large number of polio cases. Second, the Rotary clubs in India actively competed for grants and raised enough money to organize an effective drive for polio eradication.

The second successful program is less known, the continuing financial support of the Rotary Foundation (RF) for developing blood banks in India. Although there are over 1000 blood banks in India, the quality of blood and blood products are of great concern, as contaminated blood can introduce serious illness. One such example of blood borne transmittance of a disease is the development of HIV/AIDS in hemophiliacs after transfusion of contaminated blood. In addition, it was reported recently that Britain has exported blood products (albumin) that could be contaminated with the human form of mad cow disease to at least 11 countries. Besides India, potentially contaminated blood products have been sent to: Ireland (polio vaccine), Brazil (albumin), Dubai (albumin), Brunei (albumin), Egypt (albumin), Morocco (albumin), Oman (immunoglobulin), Russia (Factor VII), and Singapore (immunoglobulin). This shows how important it is to have a good training programs to assure the quality needed for the procurement and preparation of blood and blood products for transfusion therapy. Therefore, we have initiated a project funded by RF, for the development of training programs for blood bank and transfusion medicine staff, so that they can meet or exceed the quality needed for the safety of these products. With



this as our primary goal we have been working on a project to help develop a training facility in Bangalore, India. As a prelude to this effort we wanted to explore the transfusion medicine programs in several industrialized nations.

A few years ago, Rotarian Deborah Watts and I from the Minneapolis/University Rotary Club obtained a grant for exploring transfusion medicine practice in South Africa. We visited Cape Town, Port Elizabeth, East London and King William's Town. South Africa has one of the best transfusion medicine programs in the world. Their meticulous screening program for the volunteer blood donors has resulted in substantial reduction in pathogen contamination. These procedures have also been successful in the USA and have helped blood donor centers to get better quality blood from volunteer donors. Using our experience in South Africa we have been planning an international training program for the blood bank staff in India. We have obtained a matching grant from RF to develop a training platform at the TTK/Rotary Blood Bank, in Bangalore, India. We will be publishing a book as a part of our centenary celebration of Rotary. The book will be dedicated to RF. We also will develop a web-based distance-learning program to train the staff of blood banks in India.

Prevention of Non-Communicable Diseases:

In the area of non-communicable diseases, there is almost an epidemic of metabolic disorders like obesity, hypertension, atherosclerosis, thrombosis and stroke. Heart attacks and strokes are the major killers and, as such, pose a great health burden. South Asians (Indians, Pakistanis, Bangladeshis and Sri Lankans) have the highest incidence (4 to 5 fold higher) of coronary artery disease compared to any other ethnic group in the world. To create awareness, develop educational and preventive programs we started a society (South Asian Society on Atherosclerosis and Thrombosis, SASAT) in Minnesota in 1993. Since then we have organized international symposia on Atherosclerosis and Thrombosis in various cities in India, every other year. To present our work and exchange information, I recently participated in the 6th International Heart Health conference in Milan, Italy. Faculty that participated in this conference included staff from WHO, Centers for Disease Control (CDC) and Prevention, National Institutes of Health (NIH) and experts from different countries. According to these experts 85% of the disease burden was from the developing countries. They also predicted an epidemic in the incidence of diabetes type 2 in South Asia. In the next two decades, according to the WHO estimates, India will rank number one in the prevalence of type 2 diabetes. In spite of the fact that South Asian Nations face such a high disease burden, there is no definite action plan to combat this epidemic. Furthermore, there were few representatives from these countries at the conference. The World Heart Federation has hardly anyone from these countries on its regional advisory board. WHO, which should be working hand in hand with health care workers in these countries has contributed very little to the prevention efforts. When approached by non-profit organizations like SASAT they have a standard reply that they only work at the Government level. I for one feel strongly, that they owe a greater responsibility to the member countries.

Comments:

If the global health burden in the coming years is in the developing countries, serious efforts should be made by organizations like WHO, to develop appropriate guidelines and action plans for early detection, better management of risk factors and primary prevention of these diseases. They do not have to wait for an invitation from these countries. I also feel that they can do a cost effective job if they move their headquarters to a location that is aligned with the need for health programs namely, in a developing country. International conferences discussing global health issues should be conducted in the developing countries so that health professionals from these countries can actively participate.

The Rotary model of developing public health projects is an excellent example to follow by other health care providers. Members of the local rotary clubs are approached by community service organizations with identified public health projects for funding. The proposals are submitted to the club foundation for approval. Once the grant is approved, requests for additional funds can be sought from other clubs, the home Rotary Club, the project district and RF. Rotarians supervise the implementation of the project and submit a final report. There is considerable peer review and accountability throughout the whole process. In this model, public health problems of the communities are prioritized, working action plans are developed, adequate funds are obtained, and funded projects are effectively supervised. This model is worth considering by global funding agencies for disseminating knowledge, distribution of funds, and providing service.

Considering the fact that the major health burden is in developing countries, various organizations concerned with global health issues should work in concert and develop guidelines, action plans and preventive programs. The success of Rotary in eradicating polio shows that both communicable and non-communicable diseases can be managed effectively by working with a large network of health care providers. Based on available scientific information, it is reasonable to suggest that reliable methods exist to prevent most vascular diseases and manage the major risk factors associated with these diseases. Therefore, as a Rotarian I urge all care providers, media, social service professionals, scientific researchers and health agencies to join forces in eliminating these chronic complex diseases by developing appropriate policies and regulatory guidelines. Furthermore, concerted efforts should be made for facilitating greater awareness of risk factors for these diseases and for encouraging the development of educational, diagnostic, preventive and therapeutic guidelines and implementing prevention programs. WHO and WHF should follow the Rotary Model for dissemination of knowledge, funds and service to the needy people in the developing world. There are many dedicated staff in these organizations with the best intentions to deliver better health care to developing countries. If the old bureaucracy is holding them back, it is high time we made changes in the structure of these organizations to suit the needs of a changing world.

Suggestions:

1. Establish similar partnerships like WHO/RI, to fight non-communicable diseases such as obesity, hypertension, heart disease and stroke.

2. If needed, change the policy of WHO, so that knowledge, funds and service can be provided to health care workers and NGOs in developing countries.
3. WHO/WHF should develop guidelines, action plans and preventive programs for combating metabolic disorders in developing countries.
4. WHO/WHF should play a greater role in facilitating the development of national and international guidelines; action plans and preventive programs to meet the specific need of individual developing countries.

For further exchanges of ideas, please contact:

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ADVANCES IN HEART HEALTH

Cardiac Insufficiency: From Basic Science to Clinical Picture and Treatment

by Sergio Dalla-Volta, Padova, Italy



*From left: Dr. Pietro Greco (EM), Cardiologist
 Mr. Luigi Barachino (EM), Technician
 Dr. Silvia Romano (UP), Cardiologist
 Prof. Sergio Dalla Volta (UP), Cardiologist
 Mrs. Rosanna Bernazzi (UP), Secretary
 Dr. Dinko Anzulovich (UP), Cardiologist
 in the spiral multislice TC LAB*

The progress in the knowledge of the basic (genetic, molecular, biophysic) mechanisms governing the development and the progression of the heart failure, has deeply influenced the understanding of the evolution, prognosis and treatment.

Today, the syndrome of heart failure can be viewed as the effect of changes of phenotype of the myocytes (controlled by new genetic program), either substituting the normal cells, acutely and regionally destroyed, or added to the pre-existing, but not sufficient cardiac cells, in presence of a hemodynamic overload, able to induce myocyte stretching and changes of developed mechanical forces (1). The overload can be generated during systole, pressure overload) with increase of wall thickness, replication in parallel of the sarcomeres, concentric hypertrophy, or during diastole (volume overload) with longitudinal, in series, replication of the sarcomeres and eccentric hypertrophy.

The production of new contracting (myosin, actin), modulating (troponin, tropomyosin, tropomerosin) and anchoring (titin, desmin) proteins and of the cardiac collagen (types II and IV), is made possible by the stimulation of specific genes, through the activity of extracellular and intracellular signals (2). Today, imaging techniques are able to display and quantify molecular and cellular targets in vivo, sensing molecular images of agent synthesis, gene expression, cell trafficking at molecular level. In this way, cellular new generation, apoptosis and matrix metallo-protease activity can be detected.

Factors promoting new growth are well known today (3): a/calcineurin nuclear factor of activated T cells, phosphoinositide 3-kinase/AKT/glycogen syntase, kinase 3: they act on G protein coupled and peroxime proliferator-activated receptors multiplied by the myocyte enhancer factor (MEF).

The new myocytes, rich in fetal isoform of myosin, reduce the maximal velocity of shortening of the cardiac myocytes, causing a slow rate of cross bridge actin-myosin kinetic. This depends partly upon the changes of the available sarcolemmal Ca, partly upon the reduced cAMP dependant dephosphorylation of myosyn light chain. In the same time the modulating and anchoring protein present similar changes, as well as the collagen material forming the skeleton of the cardiac cells (4). The re-expression of the cardiac proteins results in low cardiac output and high intraventricular end-diastolic pressures, which, in turn, reducing the arterial blood volume, stimulate the baroreceptors of the carotid sinus nerves.

The initial signals are extracellular, due to the intervention of the sympatho-adrenergic system. Increased adrenergic drive, activation of the RAAS, augmented release of vasopressin and endothelin represent the response to the signals (5). They are able initially to maintain adequate perfusion of the vital organs and tissues, through the partial correction of the reduced contractility, at expense, however of continuous stimulation of the myocardial beta-1 receptors, coupled to selective arteriolar constriction and increased oxygen con-

sumption, even at rest. These new interventions, produced by intracellular signals as cAMP and cGMP, in contrast with the previous ones, induce increase of the phosphorylative activities of the cardiac cells through MAP kinase and protein kinase C (6). As a third step, a series of changes follows, mostly due to new conformation of the ionic K and Na/Ca channels, that modify the release of calcium from the sarcolemma into the myoplasm, reduces the metabolic activities of the cells and produce increase of excitation of the cardiac cells, therefore becoming arrhythmogenic (7). The abnormalities of excitation – contraction coupling, Ca handling and the neuro-hormonal interventions provide a rational explanation of the reduction of the active tension and developed force of the cardiac pump.

Two important clinical consequences of the neuro-hormonal intervention follow. The first is the reduced perfusion of some splanchnic organs, predominantly the kidney, and of skin and muscles. In the renal long nephrons, the constriction of the efferent artery, prominent over that of the afferent artery, maintains the normal filtration rate, but increases the reabsorption of salt and water in the proximal tubule, in the Henle loop and in the collector duct. This mechanism helps to enhance the total body content of sodium, both inside the vascular walls which become more rigid, augmenting the vasoconstriction, and in the subcutaneous tissues, contributing to the depending peripheral oedemas. The cutaneous vasoconstriction is the cause of the cold and pale skin, while the muscular vasoconstriction impairs the muscular strength. The selective vasoconstriction further aggravates the already reduced vascular volume of blood, stimulating new neuro-humoral interventions.

The second consequence is that the raised atrial and venous pressures reduce the venous return to the heart, increasing the blood volume in the liver and lungs. In the former, the metabolic activities and the portal vein blood control are altered. In the latter at first interstitial and then alveolar oedema impairs the circulation and the gases exchange.

Therefore, it is understandable how these mechanisms will affect simultaneously, even if not at the same extent, the injection (systolic dysfunction) and the filling abilities (diastolic dysfunction) of the heart, impairing both the ventricular-arterial and the venous-atrial couplings.

In summary, a variety of mediators are involved in the control of cardiovascular system in heart failure, but they act chiefly through a positive unidirectional feedback, aggravating the initial changes. These mediators are: circulating hormones for the endocrine control; several substances acting on neighbour cells for the paracrine control, like nitrous oxide, growth factors, inflammatory cytokines; substances acting locally for the autocrine activity, as NO, tumor necrotizing factor, endothelin production. They are only partially counter-balanced by augmented production of vasoactive substances, as natriuretic peptides (ANP, BNP) and bradykinins. However, the net result is negative (8) on the cardiac and vascular functions, accelerating the progressive remodelling of the heart and vessels.

Several important consequences of the incessant adrenergic overdrive are:

- continued stimulation of the beta-1 cardiac receptors which partly becomes insensitive to the stimulation (disaccoupling) and partly are destroyed (9) resulting in a further diminution of the inotropic power both at rest and during any type of conditions requiring increase of contractility.
- more rapid turn-over of the new fragile cardiac cells, with increased cellular death, of apoptotic and necrotic origin, replaced by fetal type of myocytes.
- heart failure becomes irreversible and accelerates its progression toward the exit: the clinical picture is the unavoidable consequence of the genetic, molecular, biophysical transformation of the myocytes induced by the initial lesions.

The knowledge of the mechanisms of the disease creates a solid foundation for the treatment, which, at first empirical, has contributed to its understanding.

- The early increase of afterload, due to adrenergic and aldosterone activities and to endothelial dysfunction, endorses the precocious use of ACEI or of angiotensin blockers drugs: the results, with a 20-25% reduction of mortality in the first five-seven years, show the favorable role of the decrease of the systolic stress and of the neuro-hormonal, RAAS and endothelial interventions;
- the depression of inotropism has been treated with cardiac glycosides, employed for more than two centuries, even without demonstration of prolongation of life span: the knowledge of the negative role of the incessant stimulation of beta 1 receptors helps to understand the partially satisfactory results;
- these observations and the positive outcomes obtained in dilated cardiomyopathies have prompted the use of selective beta 1-blockers, which possess a lusitropic activity, reducing the beta-1 receptors stimulation and enhancing the performance of the cardiac pump. The results after twelve years of therapy show a 25% reduction of mortality in the treated cohort of patients;
- no controlled trial, for ethical reasons, are possible on the use of diuretics (mainly loop diuretics), whose powerful activity is mainly symptomatic, the correction of congestive states;
- other therapies can be employed in selected cases: anticoagulants, statins, antiplatelets among the drugs; electrical treatment, in particular the correction of dysynchrony in patients with left bundle block, through the biventricular pacing; the surgery of the mitral valve or of anatomical reduction of the dilated left ventricle. Their role is not generalized and their relationship with the basic mechanisms of heart failure not yet well assessed.

In conclusion, the basic sciences have shown that a better understanding of the sophisticated mechanisms governing the normal heart as well as the heart in heart failure, have resulted in better understanding of the physiology of heart failure, better use of the available medication, hope to improve further the therapy, prolonging the duration of life and improving the quality of life of cardiac patients.

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ADVANCES IN HEART HEALTH

The African Heart: A Heart In Transition

by Basil N. Okeahialam, Jos, Nigeria



Dr Okeahialam(l) with his colleague Damaris Osunkwo (r) in Winnipeg during 2001 World Congress

Talking of an African heart gives the impression that there is a peculiar heart found in Africans. That would be wrong. The African has a human heart which is like any other. However his heart is exposed at different times to different disease burdens. What burden of disease a heart bears derives from its environment – internal and external. Time trend affects the heart positively and negatively and will impact on cardiovascular health.

INFECTIONS:

It is believed that communicable diseases will remain the predominant health problem in sub-Saharan Africa in the next 10 to 20 years. Many of these communicable diseases affect the heart. The most important is rheumatic fever – an immunological consequence of group A, beta haemolytic streptococcal infection. It remains the major acquired cardiopathy affecting children. Rheumatic fever is thought to be on the decline. We are seeing fewer incident cases, but are still burdened by a large number of existing ones who are holding on with treatment. Whether this decline is real or apparent will require a well designed study to determine. It may however be real. A recent study in Benin-City Nigeria looking at throat flora of primary school children found a relative rarity of group A beta haemolytic streptococci. Some workers also feel that the ease of getting antibiotics for various febrile ailments in children may be preventing streptococcal throat carriage and consequent rheumatic fever. The gain of

this "abuse" and improvement in socioeconomic status may be lost with deterioration in economy of many African countries. Wide spread strife which condemns many to over-crowding in unhealthy refugee camps may be breeding children with rheumatic fever; who will be the rheumatic disease patients of the future. With a few active cardio-thoracic surgical centres developing in the region, some patients with damaged valves are getting surgery. That will generate a pool of patients with prosthetic valves, with the management challenges that they present.

Endomyocardial fibrosis is another infection- initiated heart disease. Extensive work by Andy has put speculations as to its aetio-pathogenesis to rest. The parasitic infections that trigger the process are still rife. Identification and treatment are better, and cases are being reported outside the traditional warm humid forest zone. It is my view that these cases had always been there, but poor necropsy rates prevented early workers in the savannah region from making such diagnosis. However, end stage cases still fare badly because surgery for this is not readily and widely available.

H.I.V. infection with its recent high prevalence has compounded the picture. Sub-saharan Africa is said to be the home to about 2/3 of the world's afflicted. This means new cases of pericarditis (viral, opportunistic and malignant), infective endocarditis and myocarditis. When we first assessed these patients echocardiographically, in our centre, pericardial and myocardial diseases were more common. Along the line we started to encounter cases of endocarditis. With treatment becoming more available, cardiotoxicity including myocardial infarction are expected to become common place.

HYPERTENSION:

In the beginning of last century, the prevailing opinion was that Africans did not suffer from hypertension. This arose from reports arising largely from East Africa; despite dissenting views from other parts of the continent, and a large body of evidence showing that the African American was at greater risk of hypertension than his white counterpart. Later on however, workers like Abraham in Nigeria showed that hypertension existed. Ikeme reported in the 70s that the prevalence of hypertension was high in the middle aged and elderly East Africans. Even though with different prevalence (because of different tribes with different socio-cultural milieu), there is now no disagreement that hypertension is common place, and is on the rise. It is said that 10-20% of the population of sub-saharan Africa have hypertension. In Nigeria, about 20 – 25% adults are hypertensive if the 140/90 mm Hg cut off is applied to the 1991 non-communicable disease survey data. This figure rises with age, inactivity, body mass index and both ends of the socio economic strata. Therein lies the problem. Many of the adults of today are programmed for cardiovascular diseases having spent stressful periods in utero (poor ante natal care, anaemia, malnutrition and maternal infection). They are also living longer. The stress of modern day living, urbanization, strife and poor economy put their sympathetic nervous system under constant pressure. With depression and anxiety, there are changes in behaviour unhealthy diet, lack of exercise, increased smoking, alcohol and recreational drug use. There are also changes in the biochemical milieu. These result in hypertension. Rural areas are not spared in this trend, going by the experiences in Sierra Leone and an unpublished personal experience. We are therefore transiting rapidly from low to high prevalence in hypertension and its sequel. Recently we found that 89% of known hypertensives attending our clinic were in the high/very high risk group for cardiovascular disease. Surprisingly and with grave import is the fact that 97% of newly diagnosed hypertensives were already in the high/very high risk group. Heart failure as a consequence is likely to be more common as a result of these. Arrhythmias, more common with old age and hypertension will also produce more heart failure.

CORONARY HEART DISEASE:

This results from atherosclerosis of the coronaries, ultimately leading to occlusion. The major risk factors are hypertension, diabetes mellitus, dyslipidaemia, inactivity, increased body mass index and hyperuricaemia. Hospital based evidence gives the impression that occurrence is low. That may well have been true judging by levels of major risk factors. Again the possibility that only few cases get to hospital alive, have necropsy or routine ECG may have blunted the figures. This per chance is my opinion about the low rates of CHD banded in sub-saharan Africa. One researcher in Nigeria had to ask why we record such low rates of CHD, when the predisposing factor rates are not as low. The picture is different in North Africa. There is however a consensus on a rising trend. Most of the risk factors of CHD form part of the metabolic syndrome or insulin resistance syndrome. Its prevalence used to be low and understandably so. With time, this is changing. Recently in our centre, we recorded a metabolic syndrome prevalence of 31% in newly diagnosed hypertensives. Stress plays a role in metabolic syndrome. Stress hormones that adversely affect carbohydrate and fat metabolism contribute to the development of diabetes and hypertension. Perceived stress produces endocrine abnormalities that lead to increased waist/hip ratio, insulin resistance, sleep disturbance and dyslipidaemia. Depression causes excess cortisol liberation. This causes central obesity as well as inducing diabetes. It also causes a rise in blood pressure through sodium retention. Eating abnormalities could result in obesity. Defeat reaction which is also part of depression can give rise to insulin resistance. A cluster of these risk factors give rise to atherosclerosis and CHD. Africa is going through strife which health import is yet to sink in. There are wars, AIDS, poverty, religious and political tension to mention but a few. The effect is a rise in the multiple predictors of CHD. It has been said that CHD is a function of westernization, development and social sophistication. For us it is not just these. The picture is gloomy and the transition is on a high momentum. In Jos we are confirming more cases since acquiring cardiac enzyme and 24 hour cardiac monitoring facilities. Autopsy in the centre has also shown that myocardial infarction is the most common cause of sudden death. Of all components of the metabolic syndrome, hypertension and dyslipidaemia produce the most synergistic effect on atherosclerosis. In a recent study in our centre, we found that uric acid, triglycerides and blood pressure correlated significantly with target organ damage. In that work, 52% of hypertensives had raised serum uric acid. Earlier work in Nigeria revealed a percentage of 40%. For Caucasians, it is 26-33%. Hyperuricaemia was higher in hypertensive treated with thiazides, which are commonly used antihypertensives in the environment Using 6.2mmol/l as the cut off for hypercholesterolaemia (albeit more than 2SD greater than our population mean), 26% of newly diagnosed hypertensives and 36% of treated hypertensives were hypercholesterolaemic. The atherogenic index was 6.0 and 6.3 respectively. All these go to show the direction we are moving regarding CHD and its sequelae. With these, wars and rumours of war as well as reduced economic status occasioned by economic downturn; will then trigger myocardial infarction in primed hearts awaiting "detonation".

DILATED CARDIOMYOPATHY:

Five to twenty percent of cardiovascular disease are accounted for by DCM. The dilated hypocontractile heart has been recorded in Africa since the early part of last century. It was initially perceived variously - hypertensive heart at end stage or sub clinically diseased heart that could not stand up to hypertension. Later it became evident that many factors were operating, what Attah calls "Additive Cardiopathy". Thus factors like hypertension, anaemia, alcohol, puerperium, viral infections, protozoal infections or immune-based damage all have roles. Reported rates depend on centre and operative definition. All said, the entity is common place. As incidence of hypertension rises, it implies that there would be more cases of DCM; if it is seen from the perspective of sub-clinically diseased hearts that could not stand up to hypertension. Anaemia is still common in rural and even in urban Africa due to parasites and malnutrition. Viral infections are still prevalent as well as toxoplasmosis. Recent work in our centre by Ikeh et al. shows that significant titres of toxoplasma antibodies abound in apparently healthy adults. The HIV epidemic has also joined the scene with viral myocarditis, anaemia, hypoalbuminaemia, myocarditis from opportunistic infections and drugs, alcohol and substance abuse as well as trace element deficiency; and I dare say cachexia. The potential role of rheumatic fever in weakening the myocardium is also there. All of these would point to a gradual rise in trend.

COR PULMONALE:

Chronic obstructive airway disease produces pulmonary hypertension. This in turn strains the right side of the heart leading to heart failure; what is known as cor pulmonale. In most African series, it used to be one of the lowly placed categories of heart disease. Even though it may still be low down, the prevalence is slowly on the rise. More people are getting older. The lung of the elderly is less elastic making them emphysematous. With accumulation of secretions and infections, COPD becomes more probable. This is more evident if the individual smokes. Cigarette smoking is more rife as the tobacco companies are targeting the developing countries. This habit is more with urbanization where environmental pollution (industrial and automobile) exists. With these producing more COPD, we are likely to see more cor pulmonale. Urban poverty also causes use of biomass fuel for cooking and warming in poorly ventilated apartments. The smoke from these sources are injurious to the airway as much as cigarette smoking.

CONGENITAL HEART DISEASE:

In the past children with congenital heart diseases used to die off in infancy. Improved detection and management have led to their living longer. A few cases actually live to old age. More adults are now coming down with heart failure due to congenital heart disease. This situation is likely to become more prevalent because of this, and not necessarily that more children are being born with such conditions.

IN CONCLUSION:

the African heart is on its way to more disease. More people are getting old with more cardiovascular morbidity. New infections that affect the heart are becoming rife. Old ones are still prevalent if not on an upward surge. Stress levels with urbanization and economic downturn are on the rise with attendant increase in cardiovascular disease risks. Above all, treatment modalities are not keeping pace with these. The result can at best be imagined and will stretch the abilities of us all. We should therefore work hard to combat these and add a word of prayer thus:

From the impending epidemic of cardiovascular disease in Africa, good Lord deliver us. ♥

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