Think long term: Protect them with Cervarix

ONLY Cervarix provides high and sustained antibody levels against both oncogenic HPV 16 and 18 for at least 6.4 years.1,2

ALL MATERIALS SUPPLIED BY THE VACCINES CENTRE OF EXCELLENCE MUST BE SUBJECT TO LOCAL MEDICAL AND/OR REGULATORY REVIEW AND APPROVAL PRIOR TO EXTERNAL DISTRIBUTION.

CERVARIX ABBREVIATED PRESCRIBING INFORMATION: Please refer to the full Summary of Product Characteristics before prescribing. Detailed information on this medicinal product is available on the website of the European Medicines Agency http://www.emea.europa.eu.

TRADE NAME: CERVARIX. ACTIVE INGREDIENT: 1 dose (0.5 ml) contains: Human Papillomavirus type 16 L1 protein 20 micrograms. Human Papillomavirus type 18 L1 protein 20 micrograms, (recombinant, adjuvanted, adsorbed). PHARMACEUTICAL FORM: Suspension for injection in prefilled syringe. THERAPEUTIC INDICATIONS: CERVARIX is a vaccine for the prevention of preneoplastic cervical lesions and cervical cancer causally related to Human Papillomavirus (HPV) types 16 and 18. POSOLOGY AND METHOD OF ADMINISTRATION: The recommended vaccination schedule is 0, 1, 6 months. Not recommended for use in girls below 10 years of age. Cervarix is for intramuscular injection in the deltoid region. CONTRAINDICATIONS: Hypersensitivity to the active substances or to any of the excipients; acute severe febrile illness. PRECAUTIONS: Anaphylactic reaction; Syncope (fainting) can occur following, or even before, any vaccination especially in adolescents as a psychogenic response to the needle injection. This can be accompanied by several neurological signs such as transient visual disturbance, paresthesia and tonic-clonic limb movements during recovery. It is important that procedures are in place to avoid injury from falls. Caution in individuals with thrombocytopenia or any coagulation disorder. Cervarix protects against disease caused by HPV types 16 and 18. Other oncogenic HPV types can also cause cervical cancer and therefore routine cervical screening remains critically important and should follow local recommendations. Not indicated for treatment of cervical cancer, cervical intraepithelial neoplasia (CIN) or any other established HPV-related lesions. Cervarix does not prevent HPV-related lesions in women who are infected with HPV-16 or HPV-18 at the time of vaccination. DRUG INTERACTIONS: Cervarix may be administered concurrently with a combined booster vaccine containing diphtheria (D), tetanus (T) and pertussis (acellular) (pO with or without inactivated poliovirus (IPV), dTpa, dTpa-IPV vaccine); may also be administered concomitantly with a combined hepatitis A (inactivated) and hepatitis B (DNA) vaccine (HAB vaccine). If given at the same time as another injectable vaccine, the vaccines should always be administered at different injection sites. There is no evidence that the use of hormonal contraceptives has an impact on the efficacy of Cervarix. In patients receiving immunosuppressive treatment, an adequate response may not be elicited. PREGNANCY AND LACTATION: Vaccination should be postponed until after completion of pregnancy. Cervarix should only be used during breast-feeding when the possible advantages outweigh the possible risks. ADVERSE EVENTS: Common and very common: headache; gastrointestinal symptoms including nausea, vomiting, diarrhoea and abdominal pain; itching/pruritus, rash, urticaria; myalgia and arthralgia; injection site reactions including pain, redness, swelling; fatigue; fever (≥38°C). Uncommon: dizziness, upper respiratory tract infection, other injection site reactions such as induration, local parasthesia. Rare: fever; localised pain at the injection site; headache; dizziness; upper respiratory tract infections; local parasthesia; pruritus; anaphylactic reactions; angioedema; syncope; vasovagal reactions to injection, sometimes accompanied by tonic-clonic movements. PRESENTATION: Pack of 1 pre-filled syringe with a plunger stopper containing 0.5 ml of suspension ± 1 needle (refer to full SPC for information on disposal). LEGAL CATEGORY: POM. M.A. HOLDER: GlaxoSmithKline Biologicals S.A. Belgium. M.A. NUMBER: EU/1/07/4192004. For further information and full prescribing information contact GlaxoSmithKline (Malta) Ltd. Tel: 21 238 131. Date of revision of text: March 2010.
Coping with Family Medicine put-downs
Dr Noel CARUANA

The Curriculum for Specialist Training in Family Medicine - Quo Vadis?
Dr Daniel SAMMUT
Dr Alessandra FALZON CAMILLERI

Epigenetics and its Medical Repercussions
Dr Alfred GRECH
Dr Sandra BALDACCHINO
Dr Marcel TUFIGNIO

Self Assessment Quiz

Improving Chronic Illness Care: The Chronic Care Model
Dr Mario SALIBA

Measuring and Improving Level of Diabetic Care in a Primary Care Setting - an Audit
Dr Odette PACE

Spirituality in General Practice
Dr Anton BUDEJA
Coping with Family Medicine Put-Downs

Dr Noel CARUANA

Family doctors are often devalued in our complex and specialised world. Generalism is often discounted whilst specialisation is highly valued. Even though family doctors are now listed in the specialist register we are still a long way in our endeavour to establish Family Medicine in its rightful place in the Maltese society. Family doctors have an important role to play in opposing this unhealthy competitiveness and systemic denigration of other practitioners. Family doctors are not alone in feeling disparaged, similar forces are affecting nurses, pharmacists and social workers. Family doctors can lead with an attitude that all disciplines in medicine have an important role and all health care providers should be partners with the patient at the centre of the group.

Family medicine is being challenged with providing for the needs of individual patients within an environment undergoing dynamic epidemiological and demographic transitions. Primary medical care is being more and more strained by a widening socioeconomic disadvantage aging populations and re-emerging of old diseases.

Although the situation has improved since old bygone days, the disparagement of family medicine is often endemic in teaching hospitals, medical schools and Emergency Departments and attending Family doctors and Trainees experience it regularly.

In crafting responses to put-downs we should acknowledge the issue but at the same time challenge the stereotyping and injustice and promote better dialogue. What follows are some effective statements used to rebut put-downs.

What?! You’re going to be a family doctor? What a waste of talent!

Suggested response:

a) I’m glad you think I am talented but what do see as the downside of general practice?

b) That’s an interesting comment. But tell me, what do you think would healthcare be without family doctors?

The Family Doctor messed this case up! Why did he have to refer this patient to Casualty when it turned out that the situation was not that serious!

Suggested response:

a) Did you have a chance to talk to the doctor to see his view of the story?

b) Yes errors do happen, however do you think family doctors make more mistakes than other doctors?

c) How do you handle your mistakes when you make any?

d) How do you cope with situations when you don’t know what to do?

The unique, personal and experiential knowledge that resides in every Family Doctor, tightly linked with timely access to evidence based medical knowledge provides the basis of the therapeutic relationship between the patient and his doctor. Effective resource allocation and a true national policy which believes in the value of family medicine as the core of primary care is becoming more and more urgent as we are witnessing more often the staining of secondary and tertiary care settings. Trying to shift secondary care to Primary care settings is not a viable way to solve a complex issue, yet the solution may require the establishing of a “modern model” yet cost efficient health care set up.

Dr Noel CARUANA MD MSc Cert Diab (ICGP) MMCFD
Specialist Family Doctor
Editor, Maltese Family Doctor
Email: noelcaruana@gmail.com
The Curriculum for Specialist Training in Family Medicine – Quo Vadis?

Dr Daniel SAMMUT, Dr Alessandra FALZON CAMILLERI

The Curriculum Board

In Malta, Specialist Training in Family Medicine was launched on the 9th July 2007 with the first 11 trainees. It was the first training programme to be launched locally from amongst other medical specialties. The Specialist Training Programme in Family Medicine document that was approved by the Specialist accreditation Committee (SAC) on 9th November 2006 contains many elements of a curriculum (and a sound foundation for it) but lacks details about certain aspects, e.g. content and its organization; teaching resources and strategies. Regrettably, a curriculum was not available to guide this training programme at its outset.

To redress this situation, the MCFD set up a Curriculum Board in May 2008. The Curriculum Board was requested to carry out a Needs Assessment and design a Curriculum that would provide a detailed framework for the Specialist Training Programme in Family Medicine. The Curriculum was to guide the first cohort of trainees, who would sit for their summative examination at the end of the 3 year programme in July 2010. Projected time frames for finalising the curriculum targeted May 2010 as its completion date. At the same time, the MCFD also set up an Assessment Board to develop a Summative Assessment for this cohort of trainees.

The Curriculum Board was made up of the two authors as members.

The Needs Assessment

In the process of developing this curriculum, the Curriculum Board has been guided by Harden’s Ten Questions for curricular development. In spite of the great limitations with time and human resources, the first logical step was to consult with the stakeholders in Specialist Training Programme; namely the trainees themselves, their trainers, the training coordinator/s, other GPs, and the general public.

The trainees were invited to participate in a Needs Assessment that had two components. The qualitative component consisted of a Focus Group where the Board members asked a number of questions to obtain a general feel of what was actually happening in the training programme, and identify the perceived needs of the trainees. The trainees participated enthusiastically providing a good input for analysis. The use of open questions, active participation of the audience, voice recording, and laborious transcription supplied a wealth of data that was analyzed qualitatively and used to inform the blue-printing of the curriculum.

This exercise highlighted several lacunae in the running of the programme, and the trainees made useful suggestions that were documented. The Curriculum Board drew up its conclusions from these studies and formulated its recommendations based on these. These were presented as a Needs Assessment Report to the MCFD for its consideration and to allow for necessary appropriate follow up and modifications of the training programme. The Board members attempted a similar focus group interview with the trainers, but the turnout was very poor, rendering this exercise ineligible for inclusion in this study. A similar Focus Group was organised for representatives of the general public. This was held in conjunction with the Assessment Board and enthusiastically engaged these representatives. This exercise elicited many interesting views and valid contributions about Family Medicine in Malta.

The second component of the Needs Assessment was quantitative in nature. Questionnaires were sent to both trainees and trainers with the following objectives:

- to evaluate the specialist training programme in all its components as it had proceeded up to July 2008
- to get detailed feedback about suggested content (modules and skills) to be included in this curriculum
Developing the Curriculum

Once this groundwork was completed, the Board embarked on the planning and the actual writing of the curriculum. The Curriculum for Vocational Training of the Royal College of General Practitioners was extensively used as a model in the development of this curriculum. Other curricula, such as the Irish Core Curriculum, were also consulted. Sections. New modules for which no guidance from other established curricula could be found, e.g. Personal and Professional Development, Transcultural Medicine, Complimentary and Alternative Medicine were also covered.

It is relevant to note there are several important differences from the above mentioned foreign curricula. The sources of information listed below were consulted to come up with contextually relevant Maltese Health Care Priorities:

- Local research data about health, disease and health care (including journals, TRANSHIS database, the National Health Interview Survey, Annual Mortality Report, our Needs Assessment, etc., etc.)
- Currently available Primary Care, Secondary Care and ancillary health services were considered to identify areas in need of improvement and health care inequalities
- Local health practices, protocols and policies were consulted
- New developments and trends in health care (especially in Primary Care) were considered

At this stage, the grass root experience and help of established family doctors was given due attention and incorporated to reflect its importance in the practice of Family Medicine in Malta. For each clinical module, the input from local GP’s and other experts in that particular field was solicited whenever possible. Dr P’Sciortino volunteered the chapter on 'The Consultation'. The Training Coordinators (Dr M.R.Sammut; Dr G.Abeila) and the Assessment Board members (Dr D.Cassar; Dr PDeGabriele; Dr A.P.Zammit) worked closely with the Curriculum Board and their contribution was valuable.

This prototype curriculum truly caters for Family Medicine in Malta, making reference to relevant local contexts, and is informed by and deals with the local aspects of demographics, epidemiology of disease, models of health care, treatment options and rationing, available referral agencies and social benefits, exciting local new developments in the field of Family Medicine, climate (e.g. hyperthermia), flora and fauna (e.g. jellyfish stings), socio-cultural factors (e.g. asylum seekers), etc.

The Curriculum

The Curriculum is a 417 page document consisting of three sections.

Section A introduces the Curriculum, gives a definition of the ‘curriculum’, and deals with various aspects of its implementation e.g. aims and objectives; teaching methods.

Section B explores the key features of Family Medicine. This section contains 19 chapters that together describe the desirable features of a ‘good’ GP Examples are: the Consultation, Ethics, Medicine and the Law, Teamwork, Leadership and Referral.

Section C is made up of 20 clinical modules that deal with the various systems, their pathology, and its clinical management.

Each chapter in Sections B and C contains the following subheadings:

- Introduction: including Rationale and Maltese health care priorities
- Learning outcomes: stating what is expected from the trainee at the end of his/her training
- Knowledge base: that is required from the trainee
- Psychomotor skills: to be learnt/ taught (where applicable)
- Relevant Guidelines: (national and international) to facilitate studying for the trainees
- Teaching and Learning Resources
• Formative Assessment: for the trainers and coordinators

Presenting the Curriculum

The Curriculum Board has worked very hard to complete the Needs Assessment and the Curriculum by the ambitious deadline (preset by itself) of August 2009. This work was completed by the end of July 2009, thus granting the first cohort of trainees time to refer to it for guidance in preparation for their summative examination in July 2010.

The above mentioned documents were officially presented to the Dr Mario Grixti (then President of the MCFD) and to Dr Adrian Freeman (International Development Advisor for the RCGP) in a mini-ceremony on the 13th August 2009. Referring to the prototype Curriculum Document as a guide for other colleges seeking badging for the MRCGP (Int), Dr Freeman deposited his copy at the RCGP library in London.

The Curriculum was officially presented to the trainees and their trainers on the 16th December 2010. We are pleased that it was generally very well-received, both locally and in the UK.

Quo Vadis?

By definition, a curriculum is dynamic and needs constant attention, evaluation and modification. At this point, as the outgoing Curriculum Board, we would like to make a few recommendations to help ensure making progress and keeping the curriculum alive:

A. To the MCFD Council:
   • Have the Curriculum approved by the Specialist Accreditation Committee.
   • Disseminate the Curriculum as widely as possible, including all trainers and trainees, the Medical School Library, and websites.
   • Reference to the ‘Needs Assessment’ report sheds light on many aspects of the training programme. It also offers many useful and practical suggestions on how to potentially improve the training programme in all its facets.

B. To future Curriculum Boards:
   • We believe that the Curriculum needs updating at least once every 3 years, to keep up with the fast pace of new evidence based medicine and other progress.
   • The relevant guidelines referred to in the curriculum are multiple and sometimes contradictory. We believe that these guidelines need to be reviewed regularly, opting to keep the ones that are most evidence-based and applicable to the local situation. We realize that this is an arduous and time-consuming task, but the chosen guidelines will then become THE Official Guidelines for the Specialty of Family Medicine in Malta. Moreover, future trainees will have a better guide for their studying.
   • It is important that this curriculum ties-in logically and in ascending spiral fashion with the curriculum for undergraduate training and the Foundation curriculum. Many facts and skills would already have been learnt by the newly-graduated doctor, and these provide a solid base for vocational training. Furthermore, a similar teaching approach would help young doctors make a smoother transition from the under to post graduate study period.

During their 3 year training programme, trainees in Family Medicine now have a golden opportunity to identify their individual learning needs and address them, to hone their clinical skills and question their values, attitudes, and beliefs. This will undoubtedly help them become competent, reflective and self-educating family doctors, with countless benefits to be reaped for themselves, their patients and Maltese society at large. We take this opportunity to augur the best to all the trainees who have sat for the forthcoming exams in July 2010. We also thank them and all other colleagues who have engaged with us in our studies and work.

In conclusion, we hope that by investing energy, resources, quality and pride in Family Medicine, the Specialist Training Programme will enhance the service and status of Maltese GPs, this as gauged by family doctors themselves, other colleagues and healthcare workers and most importantly by the local population to whom we strive to deliver the best possible medical service. Making a valid contribution to keep this Curriculum alive, involves a dimension in our profession that sees the partial fulfillment of the Hippocratic Oath. We hope that like us, many others will take up this challenge with a sense of commitment and pride.

Dr Daniel SAMMUT
MD MMCFD

Dr Alessandra FAIZON CAMILLERI
MD MMCFD CIDC (ICGP)
Inheritable traits are not only encoded in the sequence of DNA, but also determined by factors 'on top' of the DNA, the epigenetic information ('epi' is classical Greek for 'on top'). Epigenetics is the study of those mechanisms that control gene expression which are independent of the DNA sequence itself.

Molecularly (mechanistically), epigenetics can be defined as 'the sum of the alterations to the chromatin template that collectively establish and propagate different patterns of gene expression (transcription) and silencing from the same genome'. DNA methylation and histone modification are the main epigenetic mechanisms in mammals. Epigenetic factors are being found to play a role in disease (including cancer, atherosclerosis, autoimmunity, psychiatric diseases, diabetes mellitus and obesity), heredity, cell differentiation and cell development.

Epigenetic therapy is the use of drugs to correct epigenetic defects (epimutations). It is a new, realistic and rapidly developing area of pharmacology believed to treat several medical diseases.

**Introduction**

A eukaryotic chromosome contains a DNA molecule bound to proteins (histone type and non-histone type) in a complex called chromatin. During interphase, the DNA in chromatin is wound around cores of histones to form what are called nucleosomes. DNA folds over and over again, packing itself within the nucleus. During mitosis or meiosis, it folds even more.

The nucleosome is the basic structural unit of chromatin. Each nucleosome consists of about 146
bp (base pairs) of DNA wrapped around an octamer of core histone (including two each of histone H3, H4, H2B and H2A). Members of the linker histone H1/H5 family further stabilise the nucleosomal arrays. Initially, chromatin was thought to be an inert structure involved in packaging DNA into the confines of the nucleus, but today research is showing a more dynamic view of chromatin, particularly transcriptional activation and repression.

The DNA contains the instructions for building up all the parts of the body. But DNA is only half of the story. Both the DNA and histones are covered with chemical tags. This second layer of structure is called the epigenome. The epigenome shapes the physical structure of the genome. It tightly wraps inactive genes making them unreadable. It relaxes active genes, making them easily accessible. Different sets of genes are active in different cell types. The DNA code remains fixed for life, but the epigenome is flexible and can be modified. Epigenetic tags react to signals from the outside world, such as diet and stress. The epigenome adjusts specific genes in our ‘genomic landscape’ in response to our rapidly changing environment. Indeed, signals from the outside world can work through the epigenome to change a cell’s gene expression.

Many, but not all, of the chromatin modifications and changes are reversible and, therefore, are unlikely to be propagated through the germ line. Intrinsic and external stimuli can bring about these transitory marks that impose changes to the chromatin template. In so doing, they regulate the access and/or processivity of the transcriptional machinery, which are needed to ‘read’ the underlying DNA template. Some modifications can however be stable through several cell divisions. This may establish ‘epigenetic states’ or a means of achieving ‘cellular memory’, which remain to be poorly understood.
Thus, chromatin ‘signatures’ can be viewed as a highly organised system of information storage that can index distinct regions of the genome accommodating a response to environmental signals that dictate gene expression programs.

The importance of having a chromatin template that can potentiate the genetic information is that it provides an extra layer to the readout of DNA. This might be a necessity, when one considers the size and complexity of multicellular organisms. In such organisms, a fertilised egg progresses through development: it starts with a single genome that becomes epigenetically programmed to generate a multitude of distinct ‘epigenomes’ in more than 200 different types of cells. This programmed variation constitutes what has been called the ‘epigenetic code’ that significantly extends the information potential of the genetic code5.

Waddington described the phenotypic alterations that occur from cell to cell during the course of development in a multicellular organism as the ‘epigenetic landscape’. All cells ranging from stem cells to fully differentiated cells, share identical DNA sequences but they differ remarkably in the ‘profile of genes’ that they actually express. With this knowledge, epigenetics later came to be defined as the ‘nuclear inheritance which is not based on differences in DNA sequence’8.

Many enzyme families are being discovered that modify chromatin (see below). And epigenetics can now be defined molecularly (mechanistically) as ‘the sum of the alterations to the chromatin template that collectively establish and propagate different patterns of gene expression (transcription) and silencing from the same genome’12. While genetics is concerned with the information transmitted on the basis of gene sequence, epigenetics deals with the inheritance of information based on gene expression levels.

Thomas Jenuwein compares the eukaryotic genome to a “library containing instructions for living organisms to develop, where books represent chromosomes”. As he says, “We know the sequence of all the letters in the books. But how these letters are organised into chapters is far less clear. Epigenetics has the promise of producing an index that will order the chapters and books of the genetic library.’

**The Main Epigenetic Mechanisms**

DNA methylation and histone modification are the main epigenetic modifications in mammals9.

**DNA Methylation**

The main widely studied epigenetic modification in humans to date has been the cytosine methylation of DNA. This consists of the covalent addition of a methyl group from the methyl donor S-adenosylmethionine to the carbon-5 position of cytosine within the CpG dinucleotide. This enzymatic reaction occurs after DNA synthesis and is performed by a family of enzymes called DNA methyltransferases (DNMTs). Research is showing that DNA methylation can be a clonally inherited mechanism of gene silencing. Genes which have promoters that are heavily methylated cannot be transcribed and are thus effectively silenced10,11.

**Histone Modification**

Histone proteins have tails that stick out. Histone tails are often covered with chemical tags, affecting how they interact with DNA, modifying the chromatin structure and thus act as an epigenetic mechanism.

The histone tails can be acetylated, methyalted, phosphorylated, poly-ADP ribosylated, ubiquitinated, and glycosylated. The combination of these modifications determines the histone-DNA interaction and the interaction of nonhistone proteins with chromatin through what has been called the histone code11. It is this histone code (i.e. the combination of histone modifications at a certain region of the chromatin), that determines the structure and function of the chromatin and hence gene expression. The histone code differs depending on the region of the chromatin, the cell type, the tissue type and the external conditions of a cell.

Histone acetylation is one of the best-studied histone modifications12. Histone acetyltransferases (HATs) catalyses this acetylation and uses acetyl-coenzyme A as a donor group. MORF, MOZ, MOE, TIP60 and HBO1
are all HATs. Histone acetylation occurs primarily at lysine residues of the histone H4 and H3, which are core histones. This alters the histone-DNA binding, (since the lysine loses a positive charge in the process) and also alters the binding codes of chromatin-interacting transcription factors. The level of histone acetylation depends on the balance between the action of HATs and histone deacetylases (HDACs). There are four families of HDACs: class I (HDAC1,2,3, and 8), class II (HDAC4,5,6,7,9, and 10), class III (sirtuins 1-7), and class IV (HDAC11). Those of classes I, II, and IV have similar sequence and structure, but the sirtuins have a different structural homology and use a different catalytic mechanism that is dependent on NAD+ (nicotinamide adenine dinucleotide)19.

Another well-studied histone modification is histone methylation. It is linked to transcriptional activation and repression31,14. Histone tails can become methylated at several lysine and arginine residues. Among the lysine residues, the best studied are K4, -9, -27, -36, and -79 for H3 and K20 for H4. Lysine can be mono-, di-, and tri-methylated, whereas arginine can only be mono-methylated. Histone methylation is catalysed by a family of enzymes called histone methyltransferases (HMTs) and the methyl group can be removed by the a group of proteins called histone demethylases (HDMs).

Medical Repercussions

Epigenetic aberrations (epimutations) are being found to play a role in several medical diseases. Indeed, epigenetics may be responsible in the development of cancer, atherosclerosis, autoimmunity, psychiatric disorders, diabetes mellitus and obesity. Also, epigenetics may be responsible for several hereditary disorders like disorders of genomic imprinting.

Several examples illustrate the involvement of DNA methylation in disease. In Rett syndrome there are mutations in the methyl-binding protein MeCP. In lupus, patients have severe degrees of DNA hypomethylation. Aberrant DNA methylation features in fragile X mental retardation-1 (FMR). Here, there is DNA methylation of the fragile X mental retardation-1 (FMR) gene. Atherosclerosis is also characterised by aberrant patterns of DNA methylation; specifically protective cardiovascular genes are aberrantly hypermethylated. Patients with ICF (immunodeficiency, centromere instability, and facial anomalies) have mutations in a major DNA methyltransferase (DNMT3b). DNA methylation also features as an important player in cancer development.

Modifications in the histone code are also implicated in disease, especially in cancer. Acetylation of histone H4 is one of the best-studied alterations in the histone code in cancer. Histone H4 is found to be hypoacetylated in oesophageal squamous cell carcinoma, gastric cancer, testicular cancer, and acute promyelocytic leukemia (APL). Another histone modification that is observed is the tri-methylation of K20-H4. Tri-methylation of K20-H4 is enriched in differentiated cells, and increases with age; it is commonly reduced in cancer cells. Global aberrations of histone H3 modifications have also been observed in cancer. Low levels of acetylation at lysine 9 and 18 of histone H3 are associated with high recurrence of prostate cancer. H3 acetylation has been found to be reduced in human colon primary tumours and in several human colon cancer cell lines2.

Cancer

Cancer encompasses a group of about 100 different and distinctive diseases2. A characteristic of these diseases is an abnormal growth of cells that generally lead to an uncontrolled proliferation. Research in recent decades have concentrated on identifying a wide variety of genomic changes, such as amplifications, translocations, deletions and point mutations. These genomic changes have been shown to be involved in this uncontrolled proliferation, and thus in the development of cancer. Also, analysis of these genomic alterations has led to the identification of oncogenes and tumour-suppressor genes involved in tumour development. An oncogene is a gene in which mutation, loss of function or other reduction of expression induces neoplasia15. A tumour-suppressor gene is a gene normally restraining a cell from excessive proliferation, by involvement of its product in the transduction of an anti-mitotic signal. Currently, research is showing that the occurrence of cancer is due not only to these genetic changes, but also to epigenetic changes, specifically to alterations of the histone code and DNA methylation involving such genes.
DNA methylation was the first epigenetic alteration to be observed in cancer cells. Many cancer cells feature hypermethylation of CpG islands at tumour suppressor genes. This is responsible for the silencing of these genes. Another feature is that global hypomethylation leads to genome instability and inappropriate activation of oncogenes and transposable elements^{16}. It also appears that genomic DNA methylation levels, which are maintained by DNA methyltransferase enzymes (DNMTs) are delicately balanced within cells; over-expression of DNMTs has been linked to cancer in humans^{17,18}.

Aberrant pattern of histone modifications at gene promoters is an important epigenetic route to cancer development. One such histone modification is the acetylation of lysine residues that is controlled by HATs and HDACs. Commonly, the existence of acetylated lysines within histone tails is associated with less-condensed chromatin and so a transcriptionally active gene status. If the lysines are deacetylated, heterochromatin forms and there is transcriptional gene silencing.

Studies are showing that there is a direct link between DNA methylation and histone modification. In fact, it is suggested that DNA methylation and histone methylation are tied together in a reinforcing loop. Upsetting this relationship will almost certainly have severe consequences on the epigenome and chromatin organisation.

**Atherosclerosis**

Coherent progress has been made in recent years to understand the epigenetic bases of cardiovascular disease (CVD) and atherosclerosis, the underlying cause of CVD. Yet, the field is still in its infancy in comparison with cancer studies.

Studies are showing 'epigenetic signatures' in cell types that are involved in CVD. Specifically, protective cardiovascular genes are being found to be aberrantly hypermethylated and so silenced. The description of such 'epigenetic signatures' are crucial for two reasons. First, environmental and nutritional factors represent an important part of the multifaceted aetiology of CVD. Second, the incidence of risk factors for atherosclerosis such as obesity and diabetes is increasing worldwide and this is not likely to be genetic; rather, it must reflect nongenetic mechanisms of gene expression regulated by environmental and nutritional factors. Epigenetics is providing conceptual and experimental tools to understand how these CVD risk factors act at the molecular level to change gene expression patterns. Furthermore, epigenetic mechanisms of gene regulation are conducive to a degree of flexibility and reversibility, and this would justify 'epigenomic therapies' to be developed in the future.

**Autoimmunity**

Interactions between environmental and genetic factors are being proposed to explain why autoimmunity affects certain individuals and not others. Genes and genetic loci predisposing to autoimmunity are being identified. Regional modification of chromatin structure through epigenetic mechanisms (including DNA methylation and histone modifications) are being proposed as to how the environment contributes to autoimmunity.

Epigenetic mechanisms are being implicated in the pathogenesis of human systemic lupus erythematosus (SLE)^{20}. It is proposed that environmentally induced epigenetic changes contribute to the disease pathogenesis in those who are genetically predisposed. Such implication is based on the observation that identical changes in T cell DNA methylation and cellular function are found in patients with SLE. Also SLE-inducing drugs such as procainamide and hydralazine affect T cell DNA methylation.

Similar interactions between genetically determined susceptibility and environmental factors are also being implicated in other systemic autoimmune diseases such as rheumatoid arthritis and scleroderma, as well as in organ specific autoimmunity^{21}.

Disruption of epigenetic mechanisms that alter immune function are being proposed to explain the development of autoimmune conditions affecting the skin such as atopic dermatitis, psoriasis and some form of vitiligo. The skin is exposed to a wide variety of environmental agents (such as UV radiation) which bring about the disruption of epigenetic mechanisms.

The role of epigenetic mechanisms in autoimmune disease is only recently starting to become clear. Understanding these mechanisms, their effect on cellular function and the role of environmental factors is important in order to determine how to manage these often debilitating and fatal diseases.

**Psychiatric Disorders**

There is accumulating evidence to suggest that schizophrenia and bipolar disorders are due to epigenetic defects rather than genetic defects^{22}. Specifically,
Epimutations have been found in genes that code for neurotransmitters in certain parts of the brain. Epigenetic therapies are also being evaluated to treat such disorders. For example, valproic acid (which is a histone deacetylase (HDAC) inhibitor), increases the effectiveness of antipsychotic medications in the treatment of schizophrenia and bipolar disorder.

### Obesity

Bisphenol A (BPA) is a building block of polycarbonate plastics and epoxy resins. Such items are used to produce consumer items that range from water bottles to dental sealants. Researchers have demonstrated that exposure of pregnant mice (specifically, viable yellow agouti mice) to bisphenol A (BPA), significantly reduced DNA methylation in these mice. This resulted in the birth of more mice that were doomed to become obese and to have higher incidence of diabetes and cancer (breast and prostate) as adults. Moreover, maternal dietary supplementation, with either methyl donors like folic acid or the phytoestrogen genistein, was shown to offset the negative effects of BPA on the epigenome.

Such evidence is being taken to point to a connection between the increase in plastics in our environment and the rising incidence of obesity in humans. However, such an association will be demonstrated unequivocally when the expression and function of genes involved in human obesity are shown to be altered by BPA.

### Disorders of Genomic Imprinting

Genomic imprinting is a phenomenon by which certain genes are expressed in a parent-of-origin-specific manner. It is a non-Mendelian inheritance process. Imprinted genes are either expressed only from the allele inherited from the mother, or in other instances from the allele inherited from the father.

Genomic imprinting is an epigenetic process. It involves DNA methylation and histone modifications of the monoallelic gene. These epigenetic marks are established in the germline and are maintained throughout all somatic cells of an organism.

Prader-Willi syndrome (PWS) and Angelman syndrome (AS) were the first genomic imprinting disorders to be studied in humans. Beckwith-Wiedemann syndrome, Pseudo-hypoparathyroidism, and Silver-Russell syndrome soon expanded the list and introduced many intriguing questions about how epigenetic defects lead to the disease phenotype.

### Importance Of Epigenetics In Clinical Setting

Understanding the epimutations associated with cancer development, in particular with respect to DNA changes, will lead to the development of new strategies for assessing cancer risk status, detecting tumours as early as possible and monitoring prognosis. One of the most promising approaches towards achieving these goals is the detection of hypermethylated promoter region CpG islands. Since DNA methylation epimutations are known to occur early on in carcinogenesis, such aberrations can be potential and good indicators of existing disease and even indicators of the risk of developing the disease in the future.

Epigenetic-based treatment strategies are also realistic and the first generation of epigenetics-based drugs have been approved by FDA. Indeed, such drugs have established that epigenetic modulation is a viable treatment option, not only for cancer, but also for a

---

**Table 1. Classification of epigenetic drugs with therapeutic potential**

<table>
<thead>
<tr>
<th>DNMT inhibitors</th>
<th>HDAC inhibitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nucleoside analogue inhibitors</td>
<td>Hydroxamates</td>
</tr>
<tr>
<td>5-Azacytidine (5-aza-CR)</td>
<td>Trichostatin A</td>
</tr>
<tr>
<td>Decitabine (5-aza-CdR)</td>
<td>Suberoylanilide hydroxamic acid (SAHA)</td>
</tr>
<tr>
<td>Zebularine</td>
<td>Cyclic tetrapeptides</td>
</tr>
<tr>
<td>Non-nucleoside analogue inhibitors</td>
<td>Depsipeptide</td>
</tr>
<tr>
<td>Procainamide</td>
<td>Apicidin</td>
</tr>
<tr>
<td>Procaine</td>
<td>Aliphatic acids</td>
</tr>
<tr>
<td>Epigallocatechin-3-gallate (EGCG)</td>
<td>Valproic acid</td>
</tr>
<tr>
<td>Antisense oligonucleotides</td>
<td>Phenyl butrate</td>
</tr>
<tr>
<td>DNMTI ASO</td>
<td>Benzenamides</td>
</tr>
<tr>
<td>DNMT, DNA methyltransferase; HDAC, histone deacetylase</td>
<td>MS - 275</td>
</tr>
<tr>
<td></td>
<td>CI - 994</td>
</tr>
<tr>
<td></td>
<td>Electrophilic ketones</td>
</tr>
<tr>
<td></td>
<td>Trifluoromethyl ketones</td>
</tr>
<tr>
<td></td>
<td>α-Ketomides</td>
</tr>
</tbody>
</table>
TABLE II. CLASSIFICATION OF EPIGENETIC DRUGS ACCORDING TO POTENTIAL THERAPEUTIC USES AND DEVELOPMENT PHASE

<table>
<thead>
<tr>
<th>Drug</th>
<th>Use</th>
<th>Development Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNMT INHIBITORS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-Azacytidine</td>
<td>MDS</td>
<td>FDA APPROVED FOR CLINIC USE</td>
</tr>
<tr>
<td></td>
<td>Solid Tumours</td>
<td>Phase II</td>
</tr>
<tr>
<td></td>
<td>Leukaemia</td>
<td>Phase II</td>
</tr>
<tr>
<td>Decitabine</td>
<td>MDS</td>
<td>Phase II</td>
</tr>
<tr>
<td></td>
<td>Leukaemia</td>
<td>Preclinical</td>
</tr>
<tr>
<td>Zebularine</td>
<td>Urinary Bladder cancer</td>
<td>Preclinical</td>
</tr>
<tr>
<td>Procaainamide</td>
<td>Prostate cancer</td>
<td>Preclinical</td>
</tr>
<tr>
<td>Procaaine</td>
<td>Breast Cancer</td>
<td>Preclinical</td>
</tr>
<tr>
<td>EGCG</td>
<td>Photocarcinogenesis</td>
<td>Preclinical</td>
</tr>
<tr>
<td></td>
<td>Cancer of cervix</td>
<td>Preclinical</td>
</tr>
<tr>
<td>DNMTI ASO</td>
<td>Solid Tumours</td>
<td>Phase I</td>
</tr>
<tr>
<td>HDAC INHIBITORS:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trichostatin A</td>
<td>Breast cancer</td>
<td>Preclinical</td>
</tr>
<tr>
<td></td>
<td>Ovarian cancer</td>
<td>Preclinical</td>
</tr>
<tr>
<td>SAHA</td>
<td>Solid Tumors</td>
<td>Phase I/II</td>
</tr>
<tr>
<td></td>
<td>Leukaemias</td>
<td>Phase I/II</td>
</tr>
<tr>
<td>Depsipetide</td>
<td>Leukaemias</td>
<td>Phase I/II</td>
</tr>
<tr>
<td></td>
<td>Melanoma</td>
<td>Preclinical</td>
</tr>
<tr>
<td></td>
<td>Colon Cancer</td>
<td>Preclinical</td>
</tr>
<tr>
<td></td>
<td>Leukaemia</td>
<td>Preclinical</td>
</tr>
<tr>
<td>Apcidin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valproic Acid</td>
<td>Bipolar disorder</td>
<td>In routine use (exact mechanism unclear)</td>
</tr>
<tr>
<td></td>
<td>Breast and Ovarian cancer</td>
<td>Preclinical</td>
</tr>
<tr>
<td>Phenylbutyrate</td>
<td>MDS; Leukaemia</td>
<td>Phase I</td>
</tr>
<tr>
<td>MS - 275</td>
<td>Solid Tumours</td>
<td>Phase I</td>
</tr>
<tr>
<td>CI - 994</td>
<td>Solid Tumours</td>
<td>Phase I</td>
</tr>
<tr>
<td>Trifluoromethyl ketones</td>
<td>Cancer</td>
<td>Preclinical</td>
</tr>
<tr>
<td>A-Ketoaides</td>
<td>Cancer</td>
<td>Preclinical</td>
</tr>
</tbody>
</table>

MDS; MYELODYSPLASTIC SYNDROME; FDA, FOOD AND DRUG ADMINISTRATION; DNMT, DNA METHYLTRANSFERASE; EGCG, EPIGALLOCATEC TIN-3-GALLATE; ASO, ANTISENSE Oligonucleotide; SAHA, SUBEROYLANILIDE HYDROXAMIC ACID

growing list of diseases. Since epigenetic changes are thought to underlie a wide range of diseases, the scope of epigenetic therapy is likely to expand. The four epigenetic drugs available for clinical use in the U.S. include two DNA demethylating agents, 5-azacytidine and decitabine, and two histone deacetylase (HDAC) inhibitors, vorinostat and valproic acid. 5-Azacytidine and decitabine inhibit DNA methyltransferase (DNMTs) enzymes and reduce the overall levels of DNA methylation. Vorinostat and valproic acid block histone deacetylases (HDACs) which are enzymes that remove acetyl groups from histone tails. These epigenetic drugs have been approved mainly for the treatment of blood cancers, in particular myelodysplastic syndromes (MDS). At present, the targets for epigenetic drugs are DNMTs and HDACs, but it is worth mentioning that since many other
molecules are also involved in epigenetic mechanisms in gene expression, there are other potential targets as well.

Conclusion
New methods to characterise genome-wide epigenetic variations in humans are being developed, and it is being shown that many diseases are due to epigenetic alterations. Studies are also showing that such epimutations might even be trasgenerationally inherited, putting responsibilities on parents since their lifestyle might affect the health of their children and even their grandchildren. Indeed, epigenetics is showing that our lifestyle and environment can change the way our genes are expressed.

References
9 Esteller M., Epigenetics In Biology And Medicine, CRC Press (2008).
24 Genomic Imprinting © Wikipedia available on: http://en.wikipedia.org/wiki/Genomic_imprinting as on 05/02/2010

M F D CORRESPONDENCE email: journalmfd@yahoo.com
Continued Medical Education: Self Assessment Quiz

Type I Questions. Each question has one correct answer.

Q1. A 77 year old woman with breast cancer has bone metastasis with severe intractable pain. Which one of the following statements about radiation as treatment is correct?
A. It should not be considered because the cancer has spread.
B. Radiation is likely to cause secondary tumours and should be avoided.
C. When she receives radiation therapy she needs to limit her social contacts.
D. Bone pain from metastases may be improved with radiation therapy.

Q2. Which one of the following statements about blood pressure control in diabetic patients is correct?
A. The ideal blood pressure in diabetics is 140/90mmHg
B. Due to their renoprotective effects calcium channel blockers are good initial therapy.
C. A three month trial of lifestyle modification should be advocated in stable borderline hypertensives.
D. Patients with a blood pressure of 135/85mmHg should start treatment with an ACE inhibitor or ARB if the former is not suitable.

Q3. Which of the following statements about acute sinusitis is correct?
A. Intranasally sprayed steroids can worsen the infection.
B. Antibiotics should be prescribed for longer periods to provide better cure rates.
C. The condition resolves spontaneously in up to 30% of patients
D. Erythromycin is a highly effective medication.

Q4. Which of the following is associated with an increased risk of breast cancer?
A. Bilateral oophorectomy in a woman in her thirties
B. Delayed menarche.
C. Increased breast density.
D. A history of more than 2 spontaneous abortions.

Type II Questions. Each question may have more than one correct answer.

Q5. Which of the following can cause wheezing and can therefore be confused with asthma?
A. Congestive heart failure
B. Chronic obstructive airway disease
C. Pulmonary hypertension
D. Foreign body lodged in airway.

Q6. Which of the following is/are recommended for all patients presenting with pleuritic chest pain?
A. Chest X ray
B. Complete blood count
C. An ECG
D. A focussed history and complete physical examination.

Q7. Which of the following statements about non-HDL cholesterol is/are correct?
A. Non HDL cholesterol is calculated by subtracting HDL cholesterol from LDL cholesterol.
B. Non HDL cholesterol is calculated by subtracting HDL cholesterol from total cholesterol.
C. Lowering the level of non-HDL cholesterol is the secondary goal of hyperlipidaemia treatment.
D. The goal for non-HDL cholesterol is the same as the goal for LDL cholesterol.

Q8. Which of the following is/are preferred treatment options in the management of androgenic alopecia in women?
A. Hair transplantation
B. Class III and IV topical steroids
C. Spironolactone
D. Oral contraceptive pill
E. Finasteride
F. Topical application of 2% minoxidil solution (Regaine)

Answers on Page 20: After reviewing the answers you may claim 2 CME points by quoting MFD/Dec 2010 CME 002 on your application for accreditation.
Improving Chronic Illness Care: The Chronic Care Model

Dr Mario SALIBA

Introduction
More than 100,000 Maltese, almost 25 per cent of the population (NSO Census, 2005) live with a chronic condition and many have multiple conditions (H.I.S. Malta, 2003). Chronic illness has been defined as a long-term or permanent illness that often results in some type of disability and which may require a person to seek help with various activities Wagner (1998). Very broadly this includes any condition that requires ongoing activities in response to patients and their personal needs and in response of their health care givers as well as in response of the medical care system. So this includes the more traditional conditions such as physical chronic illness like diabetes, hypertension and heart disease but it also includes chronic mental disorders, like major depression, it includes behavioural disorders like attention deficit disorders in children, some applying this to things like addiction, or harmful behaviours like cigarette smoking.

Research abroad (Wagner et al., 2004) shows that not only a large percent of the population have a chronic condition but these people tend to have more than one chronic condition sometimes two, three, four or even more. It is these persons with multiple chronic conditions that consume that most amount of the health care budget money which includes both community care and hospital care. So this substantial group of the total population is very important both from the economical aspect and from the clinical aspect. To properly meet the health care needs of these persons we cannot speak any longer about disease management but about patient-centred care.

Patients with chronic illness are not getting what they should get. Evidence shows that only 15 to 24 per cent of hypertensives are controlled, 42 percent of diabetes have controlled lipids, 35 percentage of patients with atrial fibrillation receive anti-coagulation, only 25 per cent of people with depression are receiving adequate treatment and 44 per cent of patients with congestive heart failure are re-admitted to hospital within 120 days they are discharged from hospital (Bodenheimer, Wagner & Grumbach, 2002). So generally about 50 percent of chronically ill people are receiving modern evidence based treatment and as a result, and much fewer than 50 per cent generally are experiencing adequate levels of disease control. Basically this is a quality of care problem.

Local Scenario
According to a recent study which evaluated the care for type 2 diabetes in the primary care setting in Malta, it was found that the present local care is based on good practice and is compatible with that provided in developed countries, Cutajar (2008). The study also showed that patients showed limited knowledge on diabetes, its complications and exercise but were better informed on nutrition and smoking. Despite of these good results our current system is ill-equipped to provide the needed clinical care or support to patient and family self-management activities involved in the management of chronically ill patients based on a modern model of care.

Addressing this issue will require nothing short of a transformation of our primary health care system, moving from a reactive system that responds when a person is sick to a pro-active system that focuses on the patient as a partner to the care team. A holistic and comprehensive approach to provide continued medical care to chronically ill patients is only possible in a well-organised system of primary health care.

Malta has traditionally been served by committed family doctors, whose training was not tailored to specific needs of future family physicians. The time is long overdue to organize our primary health system by utilising the present human resources available including the experienced private GPs and the over worked health centre doctors and provide the adequate training for the new doctors. A fundamental step in this direction will be to the introduction of a patient registration system. Our present system is fragmented and the private sector is totally apposed to the public sector in the sense that their
is no synergy between the two. Sometimes there is even no communication between the family doctors and the hospital consultants. This interaction is important for the continuous care of the patient in the community.

**The Chronic Care Model**

The current primary care system favours those who abuse of it. There is no equity of care. The Chronic Care Model, Wagner et al., (2002) can be used to improve outcomes. The integrated changes are directed at influencing the doctor's behaviour, make better use of the non-doctor team members, enhancements of the information systems including a computerised patient registration system, planned encounters and modern self-management support.

In order to improve the quality of chronic illness care it requires a number of different ingredients. First of all, there has to be a clear understanding of the clinical interventions that make a difference in the condition. Usually these are represented in the evidence-based guidelines. So it begins with evidence-based clinical ideas to change the system but it doesn't end there. You need a process of a change strategy that must deal with all the inertia it is going to meet. This is a learning model enabling busy family physicians to take this intellectual model and make it real by applying it to their practice.

This algorithm is a synthesis of all the literature we find about this new approach to improve chronic illness care. It starts at the bottom as what we must care about is improving outcomes to each individual patient we see. In order to do that we need to change the whole nature of the interphase between patients and their practice team. The five main elements of the chronic care model are longitudinal care, patient-centred care, relationship-based, integrated and community oriented.

The most essential element of good chronic illness care is the productive interactions between an informed activated patient and a prepared proactive practice team. Interactions can be by a normal face to face office visit, by phone, by email, by other means of communication.
Productive here means that the work of evidence-based disease care gets done in a systematic way.

Chronic illness requires a system with very different orientations and different design, a system not designed as in an emergency room a system that is designed to provide ongoing longitudinal care.

We also need a different type of patient, so the words used are: informed and activated patient. This means that the patients have the motivation, information, skills and confidence necessary to effectively make decisions about their health and manage it. This does not mean that they should be informed as the doctor himself but they should have sufficient information to enable them to take wise decisions in order to manage their illness with the help of the doctor. Activated patient implies that the patients are activated about the importance of their role in managing the illness and activated to play that role.

By a prepared practice team it is meant that at the time of the interaction, they have the patient data, decision support (knowledge of the best evidence available to care for a particular patient), and resources necessary to deliver high quality care.

How would you know of a productive interaction if you see it? It is one that assures that a clinical evidence-based care is performed. But it is one where there is an assessment of self-management skills and confidence as well as clinical status done in a systematic way. There is a tailoring of clinical management by a stepped care protocol. There would be a collaborative setting of goals, and collaborative approaches of solving these problems.

**The six elements of the chronic care model**

**Self-management support:**
- Emphasize the patient’s central role, passive patients generally don’t make good self-managers so they need to be motivated to be autonomous as much as possible in managing their own disease/illness. In other words, studies show, without any doubt that in order to improve chronic care we need to improve the patient’s ability and willingness to self-manage.
- Use effective self-management support strategies that include assessment, goal-setting, action planning, problem-solving and follow-up.
- Organize resources to provide support.

**Delivery system design (changing the practice system): Teamwork**
- Define roles and distribute tasks among team members.
- Use planned interactions to support evidence-based care.
- Provide clinical case management services for patients with particular needs and problems ideally using a case manager usually a nurse, sometimes a pharmacist or any other person with clinical training.
- Ensure regular follow-up with proactive phone calls, the use of outreach methods, the use of the internet, mobiles, etc.
- Give care that patients understand and that fits their culture.

Note: There is no successful clinical intervention that do not involve non-doctors members of the team e.g. nurses, dietitians, pharmacists, social workers any other health professionals, as these may have more time and even better training for that particular task or intervention. Chronic care must be in the form of teamwork. The second point is a shift from an acute visit to a planned visit. A planned visit is simply one that is designed to have a productive interaction, it tends to be a little longer, it tends to involve other professionals rather than the physician alone, and it tends to have an agenda. It can be done on an individual level or in groups as a means of motivation e.g. weight loss or smoking cessation clinics.

**Features of case management:**
- Regular assessment, disease control, adherence, and self-management status.
- Either adjust treatment or communicate need to primary care immediately.
- Provide self-management support.
- Provide more intense follow-up.
- Provide navigation through the health care process, by referrals, etc.

Note: These features are the same as in the productive interactions but provided with more intensity.

**Decision support:**
- Embed evidence-based guidelines into daily clinical practice by integrating the guidelines into the flow of practice decision making e.g. point of service reminders which pop up on the screens of doctors’ computers instead of the doctor looking up himself for them.
• Integrate specialist expertise and primary care in a way that it is cost-effective and practical.
• Use proven provider education methods, more problem oriented, more patient-oriented. Skilled-based small group learning, has been shown to be more effective.
• Sharing of guidelines and information with patients, a concept which is new and which is just beginning to be researched. In this way the patients are more proactive and motivated to know about their illness/disease.

Clinical Information System:
the key here is an electronic data base (electronic medical record) that has the key clinical information that ones needs to have productive interaction.
• Provide reminder for providers and patients.
• Identify relevant patient sub-populations for proactive care eg, patients at risk.
• Facilitate individual patient care planning.
• Share information with providers and patients.
• Monitor performance of team and system.

Community Resources and Policies:
are critical to patients and we are beginning to understand that they critical to practices as well. Many important services and resources for patients with chronic illnesses are not part of medical systems e.g. peer support groups, exercise support groups. Small practices do not have access generally to resources like nurse educators or dietitians and so GPs need to reach out to the community to find and forge those links to meet the full needs of their patients. This is what we mean here by community resources and policies. This is a grossly under researched area but it is an increasingly important area because medical practice no matter how sophisticated it is, it does not have the full array of resources and supports for patients with chronic illnesses.
• Encourage patients to participate in effective programmes.
• Form partnerships with community organisations to support and develop programmes.
• Advocate for policies to improve care.

Health Care Organisation:
can be facilitative through leadership, provision of supports, provision of incentives to get better, or it can be a barrier by promoting the wrong things, by putting the incentives in other directions.
• Visibly support improvement at all levels, starting with senior leaders.
• Promote effective improvement strategies aimed at comprehensive system change.
• Encourage open and systematic handling of problems.
• Provide incentives based on quality of care.
• Develop agreement for care co-ordination.

A meta-analysis of interventions to improve chronic illness in four disease: diabetes, chronic heart failure, asthma and depression by Tsai et al., (2004) showed that interventions that contain one or more Chronic Care Model (CCM) elements improve clinical outcomes by 10 to 15 per cent and processes of care by 30 to 60 per cent. Thus the implications of the CCM do have a measurable effect on chronic care.

Dr Mario SALIBA MD MSc (Family Medicine) MMCFD
Gozo Health Centre
Email: mariosaliba@gmail.com

References:

Answers to Self-Assessment Quiz
Measuring and Improving Level of Diabetic Care in a Primary Care Setting - an Audit

Dr Odette PACE

Background: Type 2 diabetes mellitus requires an efficient management strategy aimed at preventing long-term complications and decreasing mortality. Detection and proper care early on is especially important due to the 'legacy effect', i.e. further reduction of morbidity and mortality due to effective initial management.

Objectives: To assess the level of diabetes care provided at Rabat Health Centre, comparing it with international standards to identify any shortcomings and implement changes required.

Methods: An audit of diabetes management during 2008 was carried out retrospectively on 60 randomly selected type 2 diabetics who attend the diabetes clinic at Rabat Health Centre. A reaudit was carried out the following year.

Results: Reaudit showed a disappointing lack of improvement in glycaemic and lipid control despite implementation of changes. However, there was better control of hypertension and weight management, together with more prophylactic use of aspirin.

Conclusion: Improved care was achieved in many areas but more must be done to ensure optimal management and outcome in all patients according to international guidelines. A protocol should be in place to ensure standardised care.

Introduction

Type 2 diabetes mellitus is an increasingly common, chronic condition characterized by decreased insulin output by the pancreatic beta cells, and peripheral insulin resistance. Genetic factors, in addition to the increasing incidence of obesity in developed countries secondary to poor dietary habits and lack of exertion, contribute to this epidemic. Complications of diabetes pose a high financial, social and personal burden, which can be decreased by primary prevention, early detection and optimal management according to set standards (Table 1).

Lack of proper care in diabetes would result in a very high risk of micro and macrovascular complications. The importance of effective early management to prevent

Key Words
Diabetes; Recommendations; Complications.

Table 1 - Set Standards for Optimal Diabetes Care according to American Diabetes Association (ADA) Guidelines

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HbA1c</td>
<td>&lt;7%, repeated at least twice yearly¹</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>&lt;130/80mmHg²</td>
</tr>
<tr>
<td>Total Cholesterol</td>
<td>&lt;5.0mmol/L³</td>
</tr>
<tr>
<td>Prophylactic Aspirin</td>
<td>&gt;40yrs unless complications present⁴,⁵</td>
</tr>
<tr>
<td>At least twice yearly reviews¹</td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td>18.5-24.9Kg/m²²</td>
</tr>
<tr>
<td>Exercise</td>
<td>150mins moderate intensity, weekly¹</td>
</tr>
<tr>
<td>Smoking status</td>
<td>Record status + cessation advice</td>
</tr>
<tr>
<td>Yearly blood investigations, ophthalmic reviews and foot exams¹</td>
<td></td>
</tr>
</tbody>
</table>

*Recommendations changed in 2010
later complications has been effectively demonstrated and is called the legacy effect. Microvascular disease includes retinopathy, nephropathy and neuropathy, while macrovascular disease involves the coronary, cerebral and peripheral arteries. Efficient glycaemic and blood pressure control, management of dyslipidaemia, institution of lifestyle measures, prophylactic use of aspirin and smoking cessation advice all contribute to optimal diabetes care aimed at reducing morbidity and mortality.

Primary care plays a large role in educating the public, early detection of diabetes and pre-diabetes through screening, while minimising the onset of complications through intervention, thus reducing the burden on secondary care.

This audit was performed to measure the level of care provided at Rabat Health Centre and institute changes in practice where required.

Methods

Sixty patients were randomly chosen from the computerized diabetic register at Rabat Health Centre, equivalent to 13% of a total of 459 type 2 diabetics. Type 1 diabetics are under secondary care. The patients’ ages ranged between 47 and 84 years. A specified dataset containing both process components e.g. frequency of blood pressure measurement, and outcome data measures e.g. cholesterol levels, was set up and this data was collected retrospectively from the patients’ files over the period 1st January to 31st December 2008.

After identifying shortcomings and instituting changes in practice, data was again obtained retrospectively from the same cohort, the following year. There were no deaths in this sample during this time period but 4 patients were lost to either dropout or continued care at Mater Dei Hospital.

Results

The first audit showed that the basic structures for optimal diabetic care were in place, with regular review, and weighing and blood pressure monitoring at every visit. In fact, nearly 90% of patients were being reviewed twice or more yearly and had yearly blood investigations. However, it also revealed some areas where a change in practice was indicated, where less clinician inertia and more aggressive measures were needed in order to achieve optimal goals. For example, only 20% of patients had twice-yearly HbA1c measurement as recommended, while 44% of patients not on antihypertensives had uncontrolled blood pressure (>130/80 mmHg).

The following were the recommendations after the first audit:

- HbA1c to be taken twice yearly in all patients and quarterly in uncontrolled patients (HbA1c > 7%).
- a) Starting treatment with OHA's in diabetics with HbA1c > 7% who are not already on treatment.
- b) An increase in dose or number of OHA’s when HbA1c > 7% in patients on treatment.
- c) Starting insulin when HbA1c > 7% and patient is on maximum doses of OHA’s.
• To initiate antihypertensive therapy or increase dose or number of drugs when blood pressure is persistently >130/80mmHg.
• Encouraging lifestyle changes.
• Starting statins as early as possible in dyslipidaemia.
• Measuring BMI in all patients.
• Starting low dose aspirin where indicated.
• Recording smoking status and providing smoking cessation advice.
• Yearly referral to a dietician.
• Yearly referral for ophthalmic and podology review.
• Recording complications of diabetes.

The results obtained on reaudit, a year after these recommendations were made, are discussed below.

Discussion

Glycaemic control

Good glycaemic control is central to the management of diabetes. When this is achieved, there is decreased incidence of microvascular and neuropathic complications, improving outcome

In this audit, glycaemic control was defined by an HbA1c level of <7% as proposed by the American Diabetes Association. There is still much controversy over the optimal level of glycaemic control, HbA1c <6.5% being preferred by International Diabetes Federation (IDF). The latter more stringent level poses a higher risk of hypoglycaemia in older patients, while the Accord study, with increased cardiovascular deaths in the intensive therapy arm, has further muddied the waters.

On reaudit, glycaemic control during 2009 was only achieved in 33% of patients, a decrease of 7% from the previous year (diagram 1). This result was unexpected but compares with a similar level of 36% in the U.S. back in 2000. More patients were on oral hypoglycaemic agents (OHA’s), while 60% of patients were tested for HbA1c twice or more during 2009, as per recommendations, up from only 20% during 2008. Actually, 13% of patients were tested every 3 to 4 months, as recommended in poorly controlled diabetics, compared to only 3% during 2008.

The results obtained, with no improvement in glycaemic control during 2009 despite instituting changes in management, are rather disappointing. There could be different reasons for this including the fact that a protocol was not in place and that initiating treatment with insulin or increasing the dose was only carried out in 6.7% of patients during 2009.

Blood pressure control

Hypertension in diabetes doubles mortality and increases cardiovascular disease (CVD) by 75%, besides leading to renal, cerebrovascular and retinal angiopathy. There is a close association between good control of blood pressure in diabetes and a reduction in incidence of complications. The Steno-2 Study showed a decrease in CVD by 53% and of microvascular complications by 58-63%. An emphasis should be made on regular monitoring and adequate control by both life-style measures and adequate drug therapy. Various studies have shown that multidrug regimens are more effective in controlling hypertension.

All patients attending primary care diabetes clinics have their blood pressure measured at each visit. On reaudit, 53% of patients were adequately controlled (<130/80mmHg) as compared with 43% during 2008 (diagram 2). This compares favourably with a level of only 28% of controlled patients in a study carried out in Australia during 2008. Additionally, 75% of patients reviewed were now on antihypertensives (1 to 4 different agents), up by 5% from 2008. This data shows a satisfactory improvement in blood pressure control coupled with increased use of drug therapy.

Lipid control

Dyslipidaemia is closely associated with diabetes mellitus. Hypercholesterolaemia, hypertriglyceridaemia, high LDL and low HDL are all contributory factors towards an increased risk of CVD. Lipid levels were measured yearly in nearly all the patients in this audit. For the sake of simplicity only cholesterol levels are being considered here, the target being a level of <5 mmol/l. The ADA guidelines based on various studies recommend that all diabetics with CVD, and those over 40, with CVD risk factors but regardless of lipid levels, would benefit from taking statins.

Unfortunately, there was no improvement in lipid control on reaudit (diagram 3). The use of statins had not increased, remaining at 52%, while 45% of the total number of patients remained uncontrolled. On reaudit, 60% of diabetics not on statins were uncontrolled, as compared to 45% in 2008, while 43% of patients on statins were also uncontrolled (34% in 2008). The latter result could be due to dietary excess or inadequate doses.

These alarming statistics should be a cause for concern, considering the high risk of CVD in diabetic
patients\textsuperscript{14}. Despite international recommendations for the use of statins as outlined above, we are as yet not doing enough in our clinics, largely due to local policies which do not concur with these recommendations.

**Life-style measures**

**Weight control**

Weight loss decreases insulin resistance\textsuperscript{1}. This in turn decreases hyperglycaemia and the consequent risk of CVD\textsuperscript{14}. Body Mass Index (BMI) is a reliable way of measuring whether patients are of normal weight for their height\textsuperscript{1}, preferably maintaining it at a level between 18.5 and 24.99 kg/m\textsuperscript{2}.

As in 2008, all patients attending for diabetic review during 2009 had their weight recorded. Overall more patients lost weight than gained, 43% vs. 33%. In 17% of patients no change in weight was recorded. A similar trend had been seen during the initial audit.

BMI was only calculated in 7% of patients during both years. (This has now become routine since Jan 2010.) Five patients were referred to a dietician during 2009 as compared to only one during 2008.

The persistent higher rate of weight loss rather than weight gain was encouraging. Continuous emphasis on the benefits of weight reduction together with referral for dietary advice is an important part of diabetes management. However, many patients declined referral to a dietician at Mater Dei Hospital, preferring to attempt dieting on their own.

**Exercise**

An exercise regimen of moderate intensity physical activity of 150 minutes weekly\textsuperscript{1} should be recommended to all patients as it decreases CVD risk factors and promotes weight loss. Lack of data has precluded this factor from being included in this audit.

**Number of diabetic reviews**

Over 90% of patients were reviewed twice or more during 2009, slightly more than during 2008. This correlates well with international recommendations of at least twice yearly visits in controlled patients, less controlled patients being seen more often depending on response to treatment changes\textsuperscript{1}. During 2009 there was an increase in frequency of reviews, 58% having 3 reviews (35% in 2008), 23% being seen 4 times (5% in 2008) and nearly 7% having 5 reviews (none in 2008).

As expected, the level of glycaemic control falls with the frequency of visits. The only patient with one review was well controlled, as were half the patients with 2 and 3 reviews. On the other hand, almost all patients with 4 or 5 reviews were uncontrolled. These findings were very similar to 2008 figures, but the increase in frequency of reviews during 2009 means that recommendations for more frequent reviews in uncontrolled patients were being followed.

**Use of aspirin**

Aspirin is a useful drug in the primary and secondary prevention of CVD in diabetes\textsuperscript{2}. It is associated with a 30% decrease in myocardial infarctions and a 20% decrease in strokes\textsuperscript{1}. At the time of audit, aspirin was recommended in all diabetics over 40 years of age or when another risk factor was present\textsuperscript{1}, unless contraindicated. The ADA has modified these recommendations this year to use of aspirin in males over 50 years, and over 60 years in females, unless another risk factor is present\textsuperscript{16}.

At reaudit, 73% of patients were on aspirin compared to 62% during 2008, indicating an improvement in adherence to guidelines.

**Smoking**

Smoking is associated with a much higher risk of CVD, microvascular disease and premature death in diabetes\textsuperscript{1}; therefore it is of utmost importance to record smoking status so that the opportunity can be taken to provide smoking cessation advice when necessary. This status was recorded in 73% of cases on reaudit, an improvement of 30%. (Smoking status routinely recorded since Jan 2010).

**Preventive measures**

Although yearly ophthalmic reviews are recommended\textsuperscript{1}, this was only carried out on just over half the patients on both audit and reaudit, probably due to excessively long waiting lists. Fundoscopy can be performed during routine diabetic review if time allows, but should not replace examination by an ophthalmologist/optometrist\textsuperscript{16}.

Yearly blood investigations were carried out in 95% of patients.

Only 3% of patients had a foot examination during reaudit, a further decrease of 7% from 2008, perhaps due to time constraints. (Routine yearly podologist review since Jan 2010).
Conclusion

Reaudit showed improvement in diabetic care on many levels but much remains to be done in particular areas. Unfortunately, the increase in frequency of reviews, HbA1c testing and increased use of OHA's were not effective in improving overall glycaemic control. Besides lack of an official protocol, clinician inertia in starting insulin (only 6.7% during 2009) may have played a part.

The management of hypertension in the selected diabetic patients was more successful. An increase in the appropriate use of antihypertensives has been translated into a well-controlled blood pressure in over half the patients. More frequent use of aspirin and increased recording of smoking habits were other positive changes.

On the other hand, there was no increase in the use of statins, while deterioration in lipid control was registered. Statins should be more easily available to diabetics as recommended by international standards.

All these findings will influence future care of the diabetics registered at Rabat Health Centre. A good protocol should be instituted to help us reach our goals and ultimately provide optimal standardised care.

References


Dr Odette PACE MD MMCFD Cert Diab (ICGP)
In a pluralist and secular society, as well as in a medical world which is becoming increasingly evidence-based, making a case for consideration of spirituality in general practice may seem futile and irrelevant. Notwithstanding such an apparent paradoxical proposal, developments occurring in other specialties as well as in general practice abroad reveal that it is high time that this theme is addressed academically and implications applied in local practice.

For decades and in recent years, nurses and psychologists have discussed the role of spirituality in their professions, and psychiatrists have proposed therapies such as logotherapy which addresses problems related to themes of a spiritual nature. General Practice as a specialty has not lacked behind, with the relationship with spirituality explored since at least the 1980s, studies on the subject appearing in relevant journals in the United States and Australia, and a paper dealing with spirituality in medicine winning the RCGP registrar award as recent as 2008.

Definitions

With the meaning of spirituality considered to depend on individual interpretation, socio-cultural background and life experiences as well as the rapidly evolving nature of the subject, coming to a universal definition of the spirituality is problematic. Yet most of the available literature can be considered to relate spirituality to a person’s search for meaning, values and purpose in life. A recent review acknowledges wholeness as another important aspect, whether it is wholeness within one’s own life, interconnectedness with others or wholeness with the transcendent. In definitions and research papers dealing with spirituality numerous themes often feature and these include hope, strength, comfort, meaning, peace, love, connection, happiness, trust, coping in illness, positive outlook to life, and fulfillment. Anandarajah conveniently categorised these themes into three categories, reflecting the cognitive (such as beliefs and values), the experiential (love, energy and connection) and the behavioural (prayer and meditation) aspects of spirituality, alternatively known as the 3H model as these categories respectively describe what can be considered as the head, heart and hands aspects of spirituality.

Consequently, spiritual distress can be described to occur when a person’s values, purpose or meaning in life are threatened, whether by disease process, familial circumstances, social problems or otherwise. As these situations often surface during consultation with the general practitioner, the importance of addressing such spiritual distress emerges, together with the need for appropriate approaches that parallel and compliment other modalities of care. One way to address these issues is to include spirituality in the biopsychosocial model of care transforming it into biopsychosocial-spiritual model. The BMSEST model expands further these four dimensions within a person’s life to include further his/her environment and any relationship with the transcendent. In her well written paper, Anandarajah, continues by exploring the relationship between these different dimensions within a person, illustrating the complexity and mapping the therapeutic channels available during the doctor-patient relationship. She also formulates two variations of the BMSEST model that takes into account the different western and eastern religious traditions. By acknowledging that ‘spirituality is a dynamic creative force that keeps a person growing and changing’ Baldacchino provides a different model whereby spirituality integrates the biological, psychological and social dimensions in a person, as well as the religious dimension in believers. These dimensions must be addressed for holistic care to be delivered. This is in line with the definition of healing provided by Dossey et al. whereby healing is defined as ‘the process of bringing together aspects of one’s self,
body-mind-spirit, at deeper levels of inner knowing, leading toward integration and balance with each aspect having equal importance and value.²⁰

Even though related, spirituality is distinct from religiosity and religion. While spirituality, according to Wulf, often connotes and expresses a sense of meaning, purpose, or power either from within or from a transcendent source, religiosity can be viewed as the various organized, individual, and attitudinal manifestations of different faith traditions.²¹ Meaning, values and purpose in life may be specifically religious, but even non-believers or those not members of an organised religion may have their own belief systems by finding meaning and purpose through connection to nature, music, the arts or a quest for scientific truth.²² In a sense, spirituality addresses universal human questions and needs, in contrast to religion which often attempts to provide specific and differing answers to those questions, and ways of meeting those needs.²³ This differentiation is essential and needs to be distinguished. Indeed in one study, physicians who were highly spiritual were more likely to report practice among the underserved, as opposed to those who were more religious in general (as measured by intrinsic religiosity or frequency of attendance at religious services).²⁴ The present article will focus mainly on spirituality, and the reader is referred elsewhere to the implications of religion in modern medical practice.²⁵

**Evidence Based Practice**

Addressing issues of spirituality in General Practice should follow the same academic rigour adopted in studying other aspects of practice, particularly by being grounded on a reliable evidence base. In other words research on spirituality will need to engage in the apparent paradox of treating what traditionally has been associated with the transcendent through the tools of modern evidence based methods.

There is growing evidence that spirituality is associated with positive health outcomes. In HIV-patients, positive meaning was associated with a higher level of psychological well-being and a lower level of depressed mood.²⁰ In other studies, spiritual well-being was found to be associated with a reduced incidence and a significantly quicker recovery from depression²⁷ and is inversely related to suicide risk.²⁸ Indeed, a comprehensive literature review supported spirituality as a coping method among individuals experiencing a variety of illnesses ranging from hypertension, pulmonary disease, diabetes, chronic renal failure, rheumatoid arthritis, multiple sclerosis, AIDS, polio to surgery and addictive illnesses.²⁹ The enhancement of mental health, together with the propensity to adopt a healthier lifestyle and cope with adversity, may also explain why people reporting positive spiritual coping behaviour are associated with reduced risk for physical illnesses such as hypertension, heart disease and cancer.³⁰ Secondary analysis of cross-sectional data from a large cohort study revealed that the geriatric population which reported greater spirituality (but not greater religiosity) were more likely to appraise their health as good, revealing how spirituality is an important explanatory factor of subjective health status in older adults.³¹

The relationship between spirituality and health has also been studied on a biochemical level. Indeed, high-quality social relationships have been shown to modulate brain function in specific, predictable, and beneficial ways to alleviate or prevent anxiety,³² while meditation has been shown to modulate lung inflammatory processes in asthmatics.³³

One, however, must be cautious in generalising such studies and the need remains to investigate the role of spiritual coping mechanisms in individual diseases, as benefit is not extendible to all aspects of illness. Indeed, in a study by Rosenkranz et al. spiritual beliefs were not linked with a favourable recovery from spinal surgery.³⁴

Rigourously tested research tools are also essential for results to be evidence based. Although spiritual well-being (SWB) is essentially a subjective concept, reliable tools have been developed for research purposes. Baldacchino and Buhagiar³⁵ discuss issues in three American tools namely the Moberg’s Social Indicators of SWB, the Ellison and Paloutizian SWB scale and the Jarel SWB scale. Concluding that the Jarel SWB scale was the most useful as it amalgamates existential and religious aspects they proceeded to study a Maltese translation of this scale and found it to be a reliable tool to measure the level of SWB on nursing students making it convenient to adopt locally in future studies. Another index, namely the Spirituality Index of Well-Being, was studied by Daaleman and Frey, the index having the additional benefit of having been found to be a valid and reliable instrument in a primary care setting.³⁶

**Practical applications**

In view of the evidence provided above, the need to include spiritual issues in primary care consultations emerges as an important challenge. This need is even more pressing as patients desire such discussions, as
revealed in a study by McCord et al. where the majority of respondents wanted physicians to ask about spiritual beliefs, particularly in life threatening illnesses, serious medical conditions and bereavement. Our reaction as physicians does not always encourage such engagement. Some doctors argue that spirituality should not be routinely included in the consultation. This has been shown in a study by Ellis et al., with these authors also outlining that upbringing and culture, resistance to exposing personal beliefs, and belief that spiritual discussions will not have an impact on patients’ illnesses or lives as some of the reasons behind this situation. Lack of time, inadequate training for taking spiritual histories, and difficulty in identifying patients who want to discuss spiritual issues emerged as other problematic factors. The result is that often spiritual issues are only rarely discussed between patients and their primary care physician.

With a commitment to develop appropriate approaches that allows the identification and addressing of spiritual issues, much of these problems can at least be addressed. Ellis et al. suggest patient centered reflection, an approach to spiritual discussion with 'gentleness and reverence' and avoidance of imposing one’s beliefs as some of the basic principles for addressing spiritual issues. Being physically present and open towards the patient’s life and individuality is considered by physicians to go a long way to help in this dimension, with the doctor in this relationship effectively serving as a supportive resource for the patients when listening, validating spiritual beliefs, and remaining with them during times of need.

Spiritual self understanding and assessment, as well as a good patient-doctor relationship are identified by Anandarajah and Hight as other prerequisites for spiritual care. Appropriate detection and response to verbal and non-verbal cues as well as a basic knowledge of the Maslow’s theory of hierarchy of needs may identify the moment to intervene. Murray et al. suggest that simple questions such as ‘What are the things that keep you going?’ or ‘What is important to you’ are helpful in opening up a discussion on spiritual needs, while Anandarajah and Hight describe a more formal approach through the use of the HOPE questions. Here a tool is provided to formally identify the sources of hope, meaning, and connection, reveal the role of organized religion, personal spirituality and practices on the illness, as well as determine how these effect medical care and end-of-life decisions.

Once these are determined, various modalities and degrees of intervention are available. Together with the patient one may opt for no intervention, incorporate spiritual care as an adjuvant to care or modify the health care plan. At each moment the doctor has to judiciously exercise the need to involve other members of the interdisciplinary team, and the response may vary from encouragement of the patient’s spiritual self-care or general spiritual care to referral to specialised spiritual care.

**Medical Education**

Medical education is increasingly being recognised in helping doctors discuss patients’ beliefs and spiritual concerns in a respectful and caring manner. According to Roger Neighbour’s model in *The Inner apprentice*, the trainee’s autonomy may be considered as the last and final goal of a successful training programme, a phase whereby the trainee ‘discovers, chooses and pursues his/her own interests’ and gains a ‘sense of overall purpose, worth and direction’. This highlights the importance (and possibly also proposes the timing) of preparing for an effective teaching programme that also addresses purpose and values, two concepts inherent in the above noted definition of spirituality. The BMSEST model provides one theoretical framework which can prove useful to communicate the role of spirituality in personal professional development and patient care, offering an opportunity to include the spiritual dimension in seeking complexity during a general practice consultation.

Davidson suggests that primary care physicians should undergo contemplative training to cultivate qualities, such as sensitive attention, compassion, and positive intention. While not questioning the validity of such training, one has to seriously consider practical ways of teaching them. To this regard, Anandarajah claims that educators have successfully used a small group exercise whereby learners are sequentially asked to define spirituality and organize answers according to the 3 H model (see above). According to this author this can serve trainees to learn from each other about the variety of world views present in their own learning community, provided a safe environment and appropriate small group facilitation skills are provided. This according to Anandarajah may than be used to explore trainee’s encounters with patients’ spiritual issues in the hope of addressing challenges and propose appropriate approaches in care. One way of facilitating such work is outlined by Neighbour who identifies stories (particularly
of a greek mythological nature) as a suitable way of raising moral and spiritual agenda in a non-threatening way, such techniques that increase non-judgmental awareness of values considered by this author as effective teaching tools.

With a more general approach, the Curriculum for Specialist Training in Family Medicine for Malta provides guidelines on how to address spirituality in the training of the Maltese specialist general practitioner. In line with achievements abroad, the curriculum promotes an educational philosophy that acknowledges the complexity of human beings and places the spiritual alongside the physical and psychological dimensions of care. The curriculum recognises that this can only be achieved by a professional attitude during the consultation that respects the appropriate socio-cultural and spiritual context according to the patient’s perspective.

Indeed Falzon Camilleri singles out spirituality as an essential component to provide a ‘humanely effective and compassionate dialogue in consultations’. This is not attained automatically or serendipitously but only through committing oneself to cultivate a healthy personal and professional development that promotes the cognitive, emotional and spiritual dimensions. The teaching of values, attitudes and ethics is essential in the journey of personal development and is thus given high priority in this curriculum.

In contrast to the general principles provided above and probably congruent with research abroad, the curriculum highlights issues of spirituality in specific areas of training, namely complementary and alternative medicine, palliative care as well as paediatric and adolescent health. Complementary and alternative medicine provides an opportunity to include the spiritual dimension in holistic care, not only by complimenting mainstream medicine but also by giving scope to explore diverse and alternative frameworks to the subject. By definition patients in palliative care cannot be cured of their physical illness, but still may experience healing in psychological, social and spiritual matters. Thus according to the curriculum spirituality should form part of the definition and client assessment in palliative care as well inspire the acquisition of the necessary skills to co-ordinate care with other relevant members of the interdisciplinary team. In paediatric and adolescent health the curriculum acknowledges the United Nations Declaration of the Rights of the Child by considering the spiritual dimension essential as part of normal development.

Implementing these principles into practice will certainly be a challenge in the future. The work involved is justified by the reality that addressing spiritual issues in medical care helps transform the physician from “curer of disease” to “healer of the sick.”

References


12. Anandarajah & Hight, ibid., p. 81.


17 On occasions, consideration of spiritual symptoms were more important than biopsychosocial symptoms in understanding health outcomes. See Katerndahl, D. A. (2008). Impact of Spiritual Symptoms and Their Interactions on Health Services and Life Satisfaction. Annals of Family Medicine, 6(5), 412-420.

18 Namely the biological, psychological, social and spiritual.


22 Anandarajah & Hight, ibid, p. 83.


39 G. Anandarajah and E. Hight, ibid, p. 81.

40 Ellis, et al., 2002, ibid., Table 2, p. 251.


42 Ellis et al., 2002, ibid., p. 251.

43 Anandarajah & Hight, ibid, p. 85.


45 Anandarajah & Hight, ibid, pp. 81-88, 89.

46 Ibid.

47 These include compassion and presence of the physician as outlined in the text above.


51 Such as provided for the case of domestic violence in Anandarajah, ibid., p. 455.


53 Anandarajah, ibid., p. 455.

54 Neighbour, ibid., p. 44.

55 Neighbour, ibid., p. 64.


Dr Anton BUGJEA MD MMOCFD
Evista reduces osteoporotic fractures and produces bone of normal quality.  2.1

Prescribe Evista 1 tablet daily any time of the day with no intake constraints –

- With or without food
- Standing, sitting or lying
- At the same time as calcium supplements

And now at a new reduced price of €35.90