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- Global Forum on Human Resources for Health
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Editorial

A woman who uses cosmetics may cover her face with some 80 kilograms of various protective and nourishing creams during her lifetime. At least 200 different compounds used in cosmetics may have harmful effects on one's health. Most perfume ingredients are based on oil products. As a rule, these are secret combinations that are not patented. So, a woman can never be sure about what she spreads over her face.

Household cleaning chemicals turn out to be much more dangerous than we have thought in the past. 70.000 new components have been introduced in the past 60 years. 15.000 of them have never been tested for harmful side-effects. Furthermore, for 99% of these agents there is no information about possible side effects on children's health.

Laundry detergents contain surfactants that end up in our water supply. This is just another insult to our precarious water supply.

This year more attention is being paid to antimicrobial resistance by the World Health Organization and the World Medical Association than in the past. There is because of an obvious reason: more and more antibiotic-resistant bacteria are being encountered. Although the main concern has been *Mycobacterium tuberculosis*, a greater problem exists.

Our focus has been on antibacterial therapy for human use. However, more than 95% of world's antibiotics are used for veteri-

nary purposes and zootechnics. Enormous fish farms ponds and confined sea bays are routinely scattered with fish food that also contains antibiotics and various substances that improve the flavour and colour of fish products. The antibiotics affect not only the bacteria in the water into which they have been placed, but they spread widely by flowing water. As a result, the qualities of bacteria all over the world are affected. Antibacterial medicine that has been fed to domestic birds and animals present an even greater problem in the development of antibiotic-resistant strains of bacteria.

The problem of antimicrobial resistance in animals is spreading to becoming a problem in human medicine. This means we have to do everything possible to reduce uncontrolled use of antimicrobial substances in the processes of producing fish, poultry and meat.

Although we cannot anticipate chemical or nuclear catastrophes, the Hungarian aluminum refinery toxic sludge spill and the recent nuclear plant disaster in Japan should heighten our concern. The World Medical Association should raise its voice and continue to speak firmly to our governments about these risks. This time it should also be about the uncontrolled use of antibiotics and the widespread use of chemicals in cleaning and washing and in cosmetics.

*Dr. Pēteris Apinis,
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Reviewing Progress and Renewing Commitment to Health Workforce Development: the 2nd Global Forum on Human Resources for Health



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Summary

An adequately available and equitably distributed health workforce is critical in ensuring the delivery of healthcare services that meet local populations' healthcare needs. Yet, the reality is that many countries are suffering from a shortage and mal-distribution of their health workforce. In 2008 in an effort to address these issues, the *Kampala Declaration and Agenda for Global Action (KD-AGA)* was adopted at the 1st Global Forum on Human Resources for Health held in Kampala, Uganda. The KD-AGA is a set of interconnected strategies and policy actions that are required at global, regional and national levels to address these issues. On January 25th, 2011 in Bangkok, Thailand the 2nd Global Forum on Human Resources for Health convened to review the progress made in the implementation of the KD-AGA and renew the commitment to addressing human resources for health. This paper presents the background and achievements of the 2nd Global Forum on Human Resources for Health in addressing health workforce challenges.

Introduction: global health workforce challenges

It is a well-recognized fact that health-care workers are an essential component of health systems, without which health development objectives, such as the health Millennium Development Goals (see box 1) cannot be achieved[1]. In 2006, however, the World Health Organization (WHO) warned that 57 countries were affected by severe shortages of health workers (i.e., fewer than 2.3 physicians, nurses, and midwives per 1000 population), estimating the global shortfall of health workers at 4.3 million[2]. Regional disparities in the availability of healthcare workers are staggering: for example, Africa alone carries 25% of the world's disease burden yet has only 3% of the world's health workers and 1% of the world's financial resources to meet that challenge[3]. Healthcare workforce gaps are even greater in absolute numbers in south-east Asia, as a result of the large population of countries such as India, Pakistan, Bangladesh, and Indonesia.

The global health workforce crisis is not characterized exclusively by the shortage of healthcare workers, but also by in-country mal-distribution and poor motivation, performance and quality of services rendered by healthcare personnel. These system-wide deficiencies that are prevalent in many countries are caused by structural gaps due to limited resources, and weak education and management systems. The health workers' challenges are compounded by and result in the international migration of health workers. Shortages in high-income countries exercise a "pull" over poorly paid or poorly motivated health workers in low- and middle-income countries. Spanning across sectors and constituencies, the complex nature of these challenges and the international dimension of the topic illustrate how all relevant stakeholders should collectively contribute to resolving these issues within their respective roles in the health workforce. For instance, while ministries of health are typically the primary "users" and employers of health workers, the ministries of education should take the lead on pre-service education and production of health workers.

The ministries of labour and ministries of public services should be involved in designing a possible package of additional financial and non-financial incentives for those working in remote and hardship areas. Ministries of foreign affairs and ministries of international trade may need to broker agreements with other countries in order to address the issue of international migration of healthcare workers. In addition, most of these measures may require the allocation of additional financial resources by ministries of finance. Furthermore, it is essential to engage health professional associations and the private sector (both for-profit and not-for-profit), in light of the rapidly growth of private health service delivery and health workforce production in the developing world [5].

To address the multi-faceted and complex nature of health workforce issues through internationally partnering stakeholders, the Global Health Workforce Alliance (the Alliance) was launched in 2006, with the vision that “*All people, everywhere, shall have access to a skilled, motivated and supported health worker*”[6]. The Alliance has been consistently advocating for the importance and value of addressing health

workforce issues in a multi-sectoral manner at both global and country levels. One of the key functions of the Alliance is to bring together various types of stakeholders in human resources for health development, in order to facilitate a shared understanding of problems and a joint ownership of solutions to health workforce challenges. To this end the Alliance has been given a mandate to periodically convene a Global Forum on Human Resources for Health.

The Kampala Declaration and Agenda for Global Action

In March 2008, the Alliance convened the first-ever Global Forum on Human Resources for Health at Kampala, Uganda, which resulted in the adoption of the *Kampala Declaration and Agenda for Global Action* (KD-AGA)[7]. The AGA (see box 2) is composed of six interconnected strategies, ranging from investment strategies to policy, planning, organization, education, management and information issues, which provide an overarching framework for health workforce initiatives and development efforts at all levels [8].

Box 1: *The health-related Millennium Development Goals*[4].

The United Nations Millennium Development Goals (MDGs) are eight goals that the 191 UN member states have agreed to achieve by 2015. The MDGs are part of the United Nations Millennium Declaration, and have specific targets and indicators. While all MDGs directly or indirectly influence health, 3 goals were formulated in health-specific terms. The 3 health-related MDGs and their targets are highlighted in bold in the list below:

The Eight Millennium Development Goals are:

1. to eradicate extreme poverty and hunger;
2. to achieve universal primary education;
3. to promote gender equality and empower women;
4. to reduce child mortality (target: reduce by two thirds the mortality rate among children under five);
5. to improve maternal health (targets: reduce by three quarters the maternal mortality ratio; achieve, by 2015, universal access to reproductive health);
6. to combat HIV/AIDS, malaria, and other diseases (targets; halt and begin to reverse the spread of HIV/AIDS; achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it; halt and begin to reverse the incidence of malaria and other major diseases);
7. to ensure environmental sustainability; and
8. to develop a global partnership for development.

Box 2: *The Agenda for Global Action* (adopted in Kampala, Uganda, in March 2008)

1. Building coherent national and global leadership for health workforce solutions.
2. Ensuring capacity for an informed response based on evidence and joint learning.
3. Scaling up health worker education and training.
4. Retaining an effective, responsive and equitably distributed health workforce.
5. Managing the pressures of the international health workforce market and its impact on migration.
6. Securing additional and more productive investment in the health workforce.

The Agenda for Global Action offers an ambitious vision of concerted action by all stakeholders, at all levels, to comprehensively address health workforce challenges. Its key provisions contain relevant policy guidance, which has been taken up through a number of other policy initiatives, including, most recently, the United Nations Global Strategy for Women's and Children's Health [9].

Leadership. A coherent leadership strategy for addressing the health workforce issues needs to be underpinned by national health workforce plans, which are comprehensive, costed, and evidence-based. The plans should project an appropriate scale and skills mix of the health workforce, including, where relevant, health workers and mid-level health providers, cadres that are effective in scaling up access to essential services, often with limited costs, and with a higher likelihood of being retained in rural areas [10, 11].

Evidence and joint learning. There is a need to strengthen health workforce information systems to monitor the availability, distribution and performance of health workers, as a basic requirement to ensure that the development of national health workforce plans is conducted on the basis of documented needs and according to an evidence-based approach.

Education and training. The absolute number of available healthcare workers remains insufficient in all countries affected by the health workforce crisis. While other factors such as mal-distribution and quality of care issues are equally important, education and training should be scaled up to compensate for the workforce short-fall, which was estimated at 3.5 million additional health workers for 49 low-income countries alone [12].

Retaining the health workforce. It is essential to ensure adequate incentives, supportive supervision, opportunities for professional development, and an enabling working environment, in order to improve retention rates, equitable workforce distribution, and motivation and performance of health workers. Each country has its unique direct and underlying causes of domestic migration and mal-distribution of health workers. Therefore, a package of health workforce retention strategies should be carefully customized to suit each nation's individual needs.

International migration. While admitting the freedom of international movement of health workers as an essential human right, there is a critical need to balance this with the populations' right to quality healthcare. Therefore, international labour markets should be shaped in favour of retention of health workers in countries affected by the health workforce crisis. The 63rd World Health Assembly adopted the *WHO global Code of practice on the international recruitment of health personnel*. The Code provides a framework for member states and international recruiters to collaborate in the ethical management of health professionals' migratory flows.

Investment. It has been estimated that a total of US \$62 billion (inclusive of both training and employment) needs to be invested in the healthcare workforce until 2015, in order to achieve the health-related MDGs in 49 low-income countries. External assistance is

needed on a long-term basis to supplement the shortfall in domestic resources, especially in low-income countries. Such support should be provided in a well coordinated manner among donors for greater efficiency and effectiveness. In parallel, governments of low-income countries should maximize efforts to mobilize and invest adequate domestic resources, and ensure their accountable and efficient utilization.

The 2nd Global Forum on Human Resources for Health: coming together to review progress

The Kampala Declaration called upon the Alliance to periodically review and report progress. In compliance, almost three years after the adoption of the KD – AGA, a 2nd Global Forum on Human Resources for Health was convened in Bangkok, Thailand on January 27th, 2011. The 2nd Global Forum was co-hosted by the Alliance, WHO, the Prince Mahidol Award Conference (PMAC), and the Japan International Cooperation Agency (JICA).

With approximately 1,000 participants from over 100 countries in attendance, the Forum enabled all types of stakeholders from different constituencies and sectors to come together, review progress and renew their commitment to health workforce development. Government participants came not only from the ministries of health of the affected countries, but also ministries of education, labor, and finance. Beyond the public sector, there was also a high level of participation from the private not-for-profit sector, professional associations, academic and research institutes, development partners, UN agencies, civil society organizations, and media. The three-day Forum was composed of four types of activities: plenary, parallel, side sessions and field trips around Bangkok to places illustrating interesting aspects of healthcare service organization

and innovative approaches to health workforce development and management. The event also featured a marketplace for booths and posters, awards for outstanding health workers, and innovative case stories on health workforce topics.



Exchanging experiences at the Forum

The Forum provided a platform for policy dialogue, sharing of research findings, and exchange of best practices or promising approaches: a total of 67 sessions (4 plenary sessions, 20 parallel sessions, and 43 side sessions) were held during the 5 day programme, covering all health workforce issues of relevance to the KD – AGA. The Forum structure provided an opportunity for all constituencies and key players to organize sessions and have a voice in the conference, while ensuring the internal coherence of the programme. Box 3 contains more information on the focus of the plenary sessions.

One of the highlights of the 2nd Global Forum was the discussion on the progress made in implementing the KD – AGA. At the global level, the last few years saw healthcare system strengthening rise to greater prominence in the international health policy discourse, with a greater recognition of the indispensable role played by the health workforce. Every major international health event and process since 2008, from G8 and Africa Union summits to the adoption of a WHO Global Code of Practice on the International Recruitment of Health Personnel and the launch of the United Nations Secretary-General Global Strategy

Box 3. Plenary sessions at 2nd Global Forum on Human Resources for Health.

1. Plenary session 1 “*From Kampala to Bangkok: Making progress, Forging solution*” discussed the progress made for the AGA and served as the essential foundation for all the subsequent sessions.
2. Plenary Session 2 “*Have leaders made a difference?: How leadership can show the way towards MDGs*”, examined leadership-related issues confronted when managing complex and delicate environments, such as: competing priorities, contradictory purposes and the involvement of various stakeholders.
3. Plenary Session 3 “*Professional Leadership and Education for 21st Century*” addressed the key challenges of professional education, shared countries experiences on providing education to meet the challenges and propose recommendations of health worker training in the 21st Century.
4. Plenary Session 4 “*Making HRH Innovation Work for Strengthening Health Systems*”, reviewed successful lessons learned in HRH innovations for scaling up training and related country-level experiences.

for Women’s and Children’s Health, have called upon countries and the international community to strengthen health systems and accelerate progress on the path to the Millennium Development Goals, universal access to HIV prevention, treatment and care, and universal health coverage. However, the extent to which this attention was translating into action by governments, development partners and other relevant stakeholders at country level was unclear. The Alliance therefore undertook a survey on the key policy and governance elements that characterize a country’s response to its health workforce challenges. This survey was then used to analyse how well countries are planning and coordinating their health workforce development including their efforts to develop evidence and information systems, education and retention strategies, and investment decisions. This semi-quantitative analysis was complemented by case stories submitted by countries and organizations that illustrated through a more qualitative approach specific aspects in the implementation of the Agenda for Global Action in the priority countries.

This analysis, despite some limitations related to the nature of a rapid survey and constraints relative to data availability, represents the first attempt to track progress in implementing the KD-AGA and provides a useful snapshot of the human resources for

health policy and the governance situation in priority countries. The analysis revealed areas of progress co-existing with others that require increased attention. Presented in the first plenary of the Forum, this report served as an instrument for countries, partners and other relevant stakeholders to review progress together, to hold one another accountable, and, by informing the discussions throughout the rest of the conference, to renew and strengthen their commitment to work in partnership to develop and implement sustainable solutions to the global health workforce crisis. While the full details of the study are available in a separate report [13], the general picture that emerged is that the level of progress in implementing the KD – AGA is still uneven, both in relation to different areas of health workforce development and across countries. While actions on the ground in a number of countries may be starting to make a difference, considerable work remains to be done to fully maximize the value of the KD & AGA [14].

Another key highlight of the Forum was the awards for outstanding health workers and innovative case stories. These two types of awards honored individuals and organizations delivering healthcare services, i.e., *Special Recognition Awards for Individuals* and *Awards for Excellence for case stories*. The *Special Recognition Awards* brought a

human element throughout the forum: the personal and emotional anecdotes from the community-level health workers won the audience’s hearts. Through the *Awards for Excellence*, the real experiences of innovative and sustainable projects were showcased through ‘case stories’ – real life narratives on what has worked, where and why, and sharing best practices. At the closing ceremony, 2 individual health workers and 6 case stories were awarded as the final winners.

The Forum was also designed to carry its messages out to the wider world through press coverage, op-eds, and a dedicated website hosted by the UK Newspaper “*The Guardian*” [15]. Moreover, a dedicated initiative was supported to ensure that health workforce issues generate even greater interest in the countries where it matters the most. To this end, ten young journalists from HRH crisis countries were given the opportunity to report on the Second Global Forum on Human Resources for Health. Exclusively selected from countries facing severe health worker shortages, the scheme inspired the journalists to report on health worker shortages in their national media. Through exposing the scale and seriousness of the crisis, this group can stimulate discussion of country-level progress and challenges [16].

The way forward: taking the momentum of the Second Global Forum out to the wider world

The conference participants were engaged through a participatory, consultative process in the development of an outcome statement of the Second Global Forum, whose main contents are summarized in this section. Reiterating the validity of the KD-AGA as an overarching framework for health workforce development, and recognizing the WHO Global Code of Practice on International Recruitment of Health

Personnel as a key instrument to foster HRH collaboration across countries, the outcome statement was developed on the basis of the discussions in different sessions and other major inputs into the Forum, condensing into a few simple words the key messages emerging from the Forum.

The outcome statement [17] recognized that, despite some areas of progress, major gaps persist:

- The **supply of health workers** is still insufficient in many countries, particularly in Africa and complex emergency settings. Shortages should be addressed by scaling up education and training capacity in order to meet the growing demand for health personnel.
- Reliable and updated **information** on the health workforce is not always present, hindering the monitoring of progress, and planning and decision making processes. Strong national capacity is required in all countries to regularly collect, analyse and use data on health workforce availability, distribution, employment status, and migration, to inform policymaking and management.

While the health workforce challenges were initially highlighted by making reference primarily to shortages in terms of absolute numbers, new benchmarks beyond the density of physicians, nurses and midwives, will be required to set appropriate targets toward which that policy makers can strive. This will, in turn, help give greater relevance to other parameters such as geographic distribution, retention, gender balance, minimum standards, competency frameworks, which will better reflect the diverse composition of the health workforce.

Recognizing these gaps, the Forum participants agreed that realizing the ambitious vision of the KD-AGA will require greater efforts across a number of areas.

Leadership by all state and non-state actors is required to strengthen commitment and

focus action on the health workforce. Policy coherence across sectors is essential, as is the capability to plan and manage health workforce development. National health workforce coordination mechanisms should be established, or existing ones strengthened, to foster synergies among stakeholders and inclusive communities of purpose where best practices are shared. HRH development strategies and budgets should be linked with national healthcare strategies, policies and plans.

At the local level, suitable policies and strategies should be adopted to **attract and retain** health workers with an appropriate skills mix in rural and other under-served areas, including the deployment of community-based and mid-level health providers. Approaches may include tailoring education curricula and practices to work in rural areas, financial and non-financial incentives, regulation, management support and improved career development opportunities.

The **quality** of care rendered by service providers should improve through accreditation of health workers and training institutions and compliance with relevant national standards and regulation systems. Performance should be enhanced through effective supervision, competency-based curricula, enabling practice environments and supportive management practices.

The international **migration** challenges should be addressed by putting in place the necessary regulatory, governance and information mechanisms envisaged in the WHO Global Code of Practice on International Recruitment of Health Personnel.

An adequate level of financial **investment** for health workforce development should be attained through both domestic and international resources. Where allocation of domestic resources is not sufficient, governments should increase it, if necessary by relaxing macro-economic restrictions, with the help of International Financial Institutions.

Where the shortfall in resources cannot be addressed through domestic means alone, development partners, global health initiatives and international agencies share the collective responsibility to provide predictable, long-term and flexible support, aligned to country priorities, and national health plans that allow for investment in pre-service education, remuneration and other recurrent costs for health personnel. Better financial management mechanisms can foster accountability and improve equity and efficiency of investments made from all sources.

The Forum was an opportunity to review progress and share experiences. It re-ignited momentum for health workforce development, calling for joint action and renewed efforts towards the vision that “every person, whoever they are and wherever they live, has access to a health worker”[17].

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Violence in the Health Care Sector – A Global Issue



Yoram Blachar

For physicians and allied health care workers across the globe, the experience of job-related violence is all too common. This is true to such an extent that many health care professionals reportedly consider a certain degree of workplace violence to be an inevitable part of the job.

This hazardous dynamic not only endangers health workers, but can have a devastating impact on entire health care systems. Physical and emotional stress and strain as the result of workplace violence leads to an increased shortage of health workers due to sickness, temporary leave of absence and permanent loss of staff.

With physician shortage already a growing problem throughout the world, additional loss of staff due to workplace violence exacerbates the crisis of the public's restricted access to health care, itself the inevitable result of medical manpower shortages.

Workplace Violence Defined

To cite a widely accepted definition of workplace violence used by the World Health Organization (WHO), workplace violence can be described as “the intentional use of power, threatened or actual, against another person or against a group, in work-related

circumstances, that either results in or has a high degree of likelihood of resulting in injury, death, psychological harm, mal-development, or deprivation”[3].

It is important to acknowledge that workplace violence includes both physical and non-physical (psychological) violence. Non-physical violence, including harassment, threats and verbal abuse, can have severe psychological consequences and must be recognized as having a potential detrimental impact comparable to that of physical violence.

In fact, non-physical violence can have more severe consequences than physical violence and can result in numerous health effects on its victims, including gastrointestinal disorders and psychosomatic symptoms. Psychological violence is more prevalent than physical violence and is widespread throughout health services.

According to country surveys conducted by the International Labor Organization (ILO), patients are the main perpetrators of physical violence, while staff members seem to be the main perpetrators of psychological violence against other professionals.

It is important to highlight, however, the difficulty of establishing a profile of people committing acts of workplace violence, and to acknowledge the risks associated with generalization and stereotyping in this area.

In the United Kingdom, reports show that between one quarter and one half of the National Health Service (NHS) staff report significant work-related personal distress. According to country surveys, a majority of health care workers experienced at least one incident of physical or psychological violence in the previous year: 75.8% in Bulgaria; 67.2% in Australia; 61% in South Africa; an average of 48% in Portugal (60% in health centers and 37% in hospitals); 54% in Thailand; 46.7% in Brazil [4]. Workplace violence is a recognized generator of post-traumatic stress disorder (PTSD) and according to surveys, between 40% and 70% of its victims report significant levels of PTSD symptoms [3].

Reasons for Escalation of Violence

In recent years violence in the health sector has become an increasing problem for a variety of reasons. From a general perspective, causes of workplace violence have been identified in three main areas: the organizational level, the societal level and the individual level.

Causative factors are intricately intertwined and complex in the way they contribute to emerging violence, but can broadly be attributed to the accumulation of stress and tension in health occupations under the strain of societal problems and the pressure of health system reform.

Causes of Violence at an Organizational Level

According to the ILO, healthcare workers are at high risk for experiencing violence at work, with almost one quarter of all violent incidents in the workplace occurring in the health sector [4]. The ILO reports a strong

correlation between workplace violence and occupations associated with high levels of stress. The ongoing restructuring of health care systems, staff shortages, low pay and shift work are all factors causing health care workers' vulnerability to stress. Work strain has led to high costs in terms of sickness rates and loss of staff, increasing the burden on those who remain.

This correlation between violence and stress is significant not only in its effect on the individual worker, but also in determining the global impact of stress and resulting violence on health systems and organizations. The relationship between violence and stress highlights the importance of addressing factors on the organizational level that may contribute to workplace stress in health occupations. The implementation of changes to reduce stress will in turn minimize the elevated costs and compromised efficiency caused by workplace violence.

Causes of Violence at a Societal Level

It is significant to recognize that the public's conception of the doctor's role has been blurred in recent years by the many problems associated with modern medicine and health care. Rather than viewing doctors as public servants dedicated to saving lives and providing treatment, the physician has become a scapegoat for issues such as rising health care costs and overcrowding in hospitals and medical institutions. Resulting misguided anger directed toward doctors often leads to incidents of violence.

Physicians have been forced to take on the role of messengers of an inadequate health system. They must often explain to patients that the medication they need is not covered or authorized by their insurance. In addition, doctors have their hands tied when it comes to patient complaints of long waiting times due to inadequate staffing, resources and treatment areas. As health care costs continue to rise and medical technology becomes progressively more expensive,

doctors are becoming increasingly overburdened and at greater risk for workplace violence due to patient dissatisfaction.

Causes of Violence at an Individual Level

According to the ILO, healthcare workers tend to rank the personality of patients as the lead generating factor of violence. Studies have identified the most common triggers for acts of violence in the health sector as long waiting times and dissatisfaction with the treatment provided [1]. Studies have suggested that the impatience that accompanies waiting times may have a cultural element.

When a population experiences a compromised sense of safety and security for an extended period of time, cultural norms and patterns of behavior can develop that trigger a person's tendency toward violent conduct. The deterioration of a country's economic and/or security situation creates a circumstance in which physicians are caring for patients who are affected by the physical and mental distress of their surrounding environment. This increased agitation in the patient population can potentially expose hospital and community-based physicians to violent acts in the workplace.

Formulating a Strategy

When establishing a strategy to deal with workplace violence, it is important to analyze the origins and risk factors of workplace stress and violent acts in individual communities in order to identify resource allocation priorities and to develop appropriate and effective policies.

Based on a variety of studies, it has been recommended by the ILO and other international organizations to take a multi-faceted approach which integrates interventions at organizational, societal and individual levels, with a clear focus on preventative action. Reform in the areas of legislation, security, data collection, training, environmental fac-

tors, public awareness and financial incentives is required in order to successfully address this issue [1,2].

In addition, collaboration amongst various stakeholders is essential, including governments, National Medical Associations (NMAs), hospital and general health services, management, insurance companies, trainers and preceptors, researchers and the police. As the representatives of physicians, NMAs should not only take an active role in combating violence, but should encourage other key factions to act. The commitment and cooperation of each entity is imperative to effectively tackle the widespread issue of workplace violence in the health sector.

Interventions Addressing Violence in the Health Sector

Based on the analysis of country reports, the ILO recommends that interventions against workplace violence in the health sector should focus on (a) general conditions in society and the legal framework; (b) normative interventions, such as guidelines and management competencies; and (c) interventions at the environmental and individual levels [4].

In addition, it is recommended that countries start by raising awareness of the problem and building a greater understanding among health care professionals of the causes and associated risks of workplace violence.

World Medical Association Recommendations

A statement on violence in the health sector, currently being proposed for adoption by the World Medical Association (WMA), makes detailed strategic recommendations. The statement urges National Medical Associations to encourage healthcare institutions to implement prevention strategies against violence. Prevention strategies should include, among other things, the prompt reporting of violence and a designated plan of action for incidents of violence.

The statement further recommends that national priorities and limitations on medical care be clearly addressed by government institutions in order to reduce patient dissatisfaction. Furthermore, health care administrators should adopt a zero-tolerance attitude to threats and acts of violence.

Various forms of counseling and support should be provided to staff members who have been victims of threats of violence and/or violent assault while at work. When appropriate, the public should be informed of violent occurrences in order to increase awareness.

NMAs should lobby for the establishment of reporting systems that enable health care workers to report, anonymously and without reprisal, any threats or incidents of violence. Such systems should be used to analyze the effectiveness of prevention strategies and data should be collected and recorded.

Law enforcement should give high priority to acts of violence in the health care sector and appropriate security measures should be enforced. A routine violence risk audit should be implemented to identify high risk jobs and locations. Hospital staff should be well-trained in the recognition and anticipation of high risk situations and should be encouraged by management to remain vigilant. The cultivation of sound physician-patient relationships and effective communication skills should be promoted.

Patient waiting areas should be comfortable and should provide unrestricted patient access to restrooms and necessary facilities. A system allowing displeased patients to file complaints and receive appropriate and timely responses may also serve to reduce patient anxiety and facilitate a calm and neutral environment.

The statement also encourages governments to allocate appropriate funds in order to implement health care system reforms.

Conclusion

As a global issue, violence in the healthcare sector continues to be addressed throughout the world in various ways, and by a variety of stakeholders. There is no escape from the recognition that although each party hopes their efforts will diminish violence against health professionals; a large-scale and comprehensive plan is more likely to lead to a significant reduction of this phenomenon.

Such a plan demands widespread cooperation and the active involvement of all concerned. Parties must work together to establish prevention plans, which should be routinely evaluated to assess efficiency and to identify areas needing improvement. Sufficient collaboration and the building of sound policies and frameworks will assist with the significant reduction of violence in the health sector.

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Physician Suicide and Resilience: Diagnostic, Therapeutic and Moral Imperatives

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Suicide is not spoken about openly or easily, particularly in the medical community. There is a wall of silence surrounding this mysterious topic, probably because the pain is so private and the act so public. But make no mistake, the suicide death of a physician is very humbling – whether we are the treating person, a loved one left behind, a colleague or friend. John Donne's wise words are so apt. "...any man's *death* diminishes *me*, because I am involved in Mankind..." [1]

According to the Centers for Disease Control and Prevention (CDC), there is one death by suicide every 15 minutes in the United States or 94 suicides per day [2] and according to the physician depression and suicide project of the American Foundation for Suicide Prevention, every year 300-400 physicians kill themselves in America [3]. In an attempt to address the shock and disbelief when a physician kills himself or kills herself, Jamison [4] has written: "No

one who has not been there can comprehend the suffering leading up to suicide, nor can they really understand the suffering of those left behind in the wake of suicide". And Nuland [5] waxes eloquent (literally and metaphorically) when he explains the seeming indifference to physician suicide by other physicians "...for the uninvolved medical personnel who first view the corpse, there is another factor to consider, which hinders compassion. Something about acute self-destruction is so puzzling to the vibrant mind of a man or woman whose life is devoted to fighting disease that it tends to diminish or even obliterate empathy".

Epidemiology

Suicide is a disproportionately high cause of mortality in physicians, with depression as a major risk factor [6]. Schernhammer

and Colditz's [7] review and meta-analysis of 25 studies on physician suicide concluded that the aggregate suicide rate ratio for male physicians, compared with the general population, is 1.41:1. For female physicians, the ratio is 2.27:1. Unlike almost all other population groups, in which men die by suicide about four times more frequently than women, physicians have a suicide rate that is very similar for both men and women.

What do we know about physician suicide?

There is no one factor that makes someone suicidal. The act of suicide is a complex phenomenon involving some convergence of genes, psychology and psychosocial stressors [8]. It is generally felt that 85-90% of individuals who die by suicide have been living with some type of psychiatric illness, whether recognized and treated or not. Although all physicians have some basic knowledge about depression and its treatment, an unknown number die by suicide each year, who seem to 'fall through the cracks'. They have never consulted a mental health professional or received any treatment by others. Some have treated

Table 1. *Profile of a Physician at High Risk for Suicide*

Gender	Male or female
Age	45+ years old (female); 50+ years old (male)
Race	White
Marital Status	Divorced, separated, single or currently with marital disruption
Habits	Alcohol or other drug abuse "Workaholic" Excessive risk taker (especially high-stakes gambler; thrill seeker)
Medical Status	Psychiatric symptoms (especially depression; anxiety) Physical symptoms (chronic pain; chronic debilitating illness)
Professional	Change in status – threat to status, autonomy, security, financial stability, recent losses, increased work demands
Access to means	Access to lethal medications Access to firearms

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themselves. Silverman [9] has concluded that there are additional factors that make physicians an at-risk group for suicide (Table 1).

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The psychiatric disorders most commonly implicated in physician suicide are: Major depressive disorder, bipolar affective disorder, alcohol and other drug abuse, anxiety disorders, and borderline personality disorder [9].

In addition to demographic and diagnostic factors that put physicians at risk for suicide, there are other specifics that play a role. Table 2 lists some considerations to keep in mind when trying to understand suicide in physicians or when conducting a comprehensive suicide risk assessment in an ill physician [8].

A few points to remember. There are many physicians living with a mood disorder and/or substance dependence who escape attention. Many are untreated or self-treated and many who are in treatment are under-treated by their clinicians. The clinician may have little experience in treating a population of sick individuals who are terrified to

be totally honest and who can be cleverly deceptive. They have not been fully forthcoming with their treating clinician about suicidal ideation and a dangerous plan for self-destruction. In suicidology, one of the key risk factors in people who die by suicide is a previous suicide attempt. This does not always apply to physicians. Doctors who kill themselves are distinguished by the (relative) absence of an earlier suicide attempt. Or if they have attempted suicide before, when asked, they may lie – because they don't have a trusting relationship yet with their therapist or they are terrified of being forced into hospital against their wishes.

Table 2. *Suicide Risk Considerations in Physicians*

- *Previous history of a depressive episode.* This may have occurred in adolescence or young adulthood, in college or medical school and whether recognized and treated or not, this is significant information
- *Previous suicide attempt.* Physician deaths by suicide are distinct from the general public because of the relative paucity of previous suicide attempts. However, some physicians have attempted suicide before and survived. Most feel deeply embarrassed and will not disclose this matter easily to their treating physician
- *Family history of mood disorders, including suicide.* Many physicians have genetic loading for mood disorders. Suicide can be familial but it is much more complicated than genetic predisposition
- *Professional isolation.* This may be long-standing in someone who tends to be a loner, very private and/or self-contained. But more commonly, professional isolation is the result of a geographic move or loss of some type (health, family, financial stability). These individuals lack the supports and the protective factors that militate against self-destruction [10]
- *Lawsuits and medical license investigations.* Being sued for malpractice or having complaints made to one's licensing board about professional competence, safety or ethics can be one of the most traumatic assaults to a physician's health and sense of well-being. Such individuals, especially if alone without actual or perceived supports, are at risk of self-harm
- *Poor treatment adherence.* For whatever reason – denial, shame, simple ignorance – some physicians are not very good patients. They cannot accept the gravity of their illness(es) and the pressing need for professional help [11]. Their symptoms worsen and they lose hope. If they have an associated unchecked substance abuse problem, they are especially at risk of killing themselves
- *Treatment refractory psychiatric illness.* Like patients in general, some physicians suffer from 'malignant' psychiatric disorders that do not respond easily to state-of-the-art psychiatric treatment. When one is symptomatic for long periods of time or achieves very short (or increasingly short) periods of remission, demoralization sets in and suicide risk builds

How common are suicide thoughts in physicians?

There is very little research but there are questionnaire studies that have found clinical depression in residents, including suicidal ideation [12,13]. In a study of burnout in medical students, Dyrbye et al. [14] found suicidal ideation in 10% of students. In a study of female university MDs in Sweden and Italy, 13.7% and 14.3% reported suicidal ideation [15]. It is generally believed that whatever research we do have is probably an underestimation of the actual frequency of suicidal thinking in doctors. There is a lot of shame in reporting thoughts of self-harm and when a doctor is in treatment, he or she may fear the consequences of disclosing thoughts of suicide. Some physicians are comforted by thoughts of suicide which means that they have a way out, a way of escaping the pain and that they retain some measure of control. Being in control and having control over one's self is characteristic of many doctors.

Personality traits are significant

Perfectionism is not uncommon in physicians. It is almost impossible to gain entrance to medical school without some measure of thoroughness and attention to

detail. In fact, our work dictates a certain degree of fastidiousness in order to be accurate, competent and safe. But this tendency can work against self-acceptance in physicians. When it is hypertrophied, it can be life threatening. The ill physician is so self-loathing and unforgiving that he/she can become dangerously suicidal.

Many physicians have a very high need for autonomy. They want to set their own agenda, they eschew intrusion of others and they argue that they know what is best for themselves. This stubbornness may preclude their seeking help from others should they fall ill or if they do consult someone they have trouble trusting and fully respecting the individual as being able to assist them. Sometimes this is coupled with a rugged individualism that goes back to their childhood. It is their way of going through life. They hate to bother others or to need others to help them.

An unknown number of physicians have personality disorders or traits of one. Physicians who have a borderline personality disorder or traits are at risk for suicidal behavior because of impulsivity, unstable interpersonal relationships and rejection sensitivity. Physicians with narcissistic personality are at risk for suicide (along with other factors) in the face of overwhelming loss of prestige, medical license investigation or public humiliation (for example, being featured in the media after charges of medical negligence, medicare fraud, sexual abuse of patients).

The suicide plans of doctors

There is no systematized research in this area. However, my experience as a clinician and specialist in physician health has yielded an important and very concerning finding. Dangerously suicidal physicians have often given self-destruction considerable thought and invested many hours into researching suicidal means. They may have

even rehearsed how they would do it. The intent is serious, the method is highly lethal and foolproof. This is captured in the statement: "I'm a doctor – I know how to kill myself – I'm not going to botch it. As a neurosurgeon (or anesthesiologist or intensivist or emergency physician or thoracic surgeon or psychiatrist) I have looked after too many suicidal patients who didn't die but ended up permanently disabled after they tried to kill themselves – not me, I'm going to do it right".

What about rational suicide in physicians?

Physicians who are living with chronically debilitating medical illnesses are those most interested in rational suicide. In other words, they are not suffering from a mental illness that is affecting their judgment. They are very clear that their medical state is unbearable and perhaps worsening and that their decision to die is carefully considered and best for them. Being physicians they either know or have investigated what continuing to live will look like for them and they know their prognosis. Their family members, irrespective of their empathy and compassion and acceptance of their physician loved one's clarity about suicide, may struggle though. All suicides have an aftermath for the family and others left behind, whether they are rational or not.

What about stigma?

Stigma kills! This scourge is yet to be eradicated in the house of medicine and this poses one of the greatest challenges for medicine in the 21st century. Judgmental, ignorant, and discriminatory attitudes toward physicians living with mental illness compound their suffering, increase their sense of isolation, delay help-seeking, drive denial of illness and self-treatment, and heighten the risk for suicide. The stigma in physicians may be one of two types or

a mixture. Enacted stigma is the stigma that is embedded in institutional attitudes toward illness in doctors (noted in applications for hospital privileges that ask questions that are not necessary to gauge competence and safety) and in some medical licensing bodies (noted in the questions asked on applications, questions that are over inclusive and generalized, not about impairing conditions, psychiatric or otherwise). Felt or perceived stigma exists in the suffering physician and is irrational, often due to his/her mental illness that is affecting cognition and perception. The individual fears the judgment and scorn of family and colleagues who actually understand, they do care and want to help.

Resilience

There are many definitions of resilience but the following is one of my favorites and very applicable to the physician population: "a life force that promotes regeneration and renewal" and "the ability to confront adversity and still find hope and meaning in life" [16]. Individuals with good or healthy resilience face their fears and actively cope with them; have positive emotions and an optimistic attitude toward life; possess a skill set of cognitive reappraisal, positive reframing and acceptance; are socially competent and have social supports in place; and have a purpose in life, a moral compass, a sense of meaning and spirituality [17].

How do we reconcile suicide with resilience?

Most physicians have good-to-excellent resilience. Indeed without this, and given the competition worldwide, they would never have been accepted into medical school. Given the seeming paradoxical forces of embracing life on the one hand and extinguishing life on the other, how do we explain suicide in doctors? Do physicians who kill themselves lack resilience? Do re-



silent physicians never kill themselves? Is resilience a protective factor against suicide? Is resilience an absolute and fixed phenomenon? Are physicians who seem to be lacking resilience over the long term at risk of suicide? How does illness affect resilience? The answers to some of these questions are obvious, to others more elusive. It is though probably safe to conclude that virtually all physicians (with the arguable exception of rational suicide) who kill themselves are devoid of resilience when they make that final and irreversible decision to die.

And yet when I ponder the notions of resilience and suicide in physicians, I feel torn and anxious. I fear that the notion of physician resilience will be abused or misappropriated, that ailing physicians, who are sick with any medical or psychiatric disorder, may flagellate themselves for **not** being more resilient. They do not need this extra layer of worry on top of their psychological adjustment to their blighted health. I also am concerned that physicians who die by suicide will be judged as they once were – and still are, in some circles today – that they have given up, that they ‘can’t cut the mustard’, that they lack the ‘muscle’ (or the ‘balls’) to cope with the rigors of a medical career, that suicide is ‘selfish’ and a ‘cop-out’.

As a clinician who has treated scores of physicians over the years (I treated my first physician patient during my residency in 1969) and who has lost physician patients to suicide, I believe that most doctors who kill themselves are exhausted and demoralized, that they hurt terribly inside with ‘psychache’ [18], that their thinking has become constricted, that they (and often their loved ones) have suffered enough already and do not deserve the ignominy, hostility and rejection that sometimes sullies their demise. Like the attitudes toward doctors who suffer a mental illness, including substance abuse, the stigma attached to physician suicide can be shocking and chilling. Too many spouses, children and parents of doctors who died by suicide describe being

Table 3.

Biological Factors	Predisposing Factors	Proximal Factors	Immediate Triggers
Familial Risk	Major Psychiatric Syndromes	Hopelessness	Public Humiliation/Shame
Serotonergic Function	Substance Use/Abuse	Intoxication	Access to Weapons
Neurochemical Regulators	Personality Profile	Impulsiveness Aggressiveness	Severe Defeat
Demographics	Abuse Syndromes	Negative Expectancy	Major Loss
Pathophysiology	Severe Medical/Neurological Illness	Severe Chronic Pain	Worsening Prognosis

unsupported, shunned or judged by their loved one’s physician colleagues.

Joiner’s [19] conceptualizations of what drives individuals to kill themselves are helpful in understanding suicide in physicians. He has described three inner feeling states:

1. “Perceived burdensomeness” – a sense that one is a burden on others.
2. “Failed belongingness” – a sense that one does not belong to a valued social group.
3. “Learned fearlessness” – the acquired capability to enact lethal self-injury.

Joiner goes on to explain learned fearlessness: “.....the kind of exposure to pain and fear that people also might learn through such experiences as mountain climbing, performing surgery, fighting in wars or being afflicted with anorexia”. This sense of fearlessness about death applies to a segment of physicians who not only fit into this category but are also very philosophical and accepting of death. Regarding Joiner’s notion of failed belongingness, it is certainly true that physicians who become ill and cannot practice medicine any longer can feel a sense of loss and estrangement from their profession. For some doctors, especially those whose principal identity has been their work, this can be serious.

A model of suicide risk assessment

Suicide is an outcome that requires several things to go wrong all at once. There is no one cause of suicide and no single type of suicidal person [20]. Table 3 is a schematic representation from the above reference. This is a dynamic flow chart with a bidirectional interaction between any or all listings under the four headings.

Although this is a universal model that applies to all suicidal people, it is very helpful in assessing the degree of suicidality and dangerousness risk for ill physicians. Hence, a physician with the following features would be deemed very high risk: a family history of suicide; a major mood disorder coupled with alcohol abuse, both of which have been refractory to conventional treatment; recent charges of unwanted sexual advances by patients and medical students; media exposure of the latter; a stash of tricyclic antidepressants at home.

The impact of physician suicide on their families and colleagues

One of first and most common reactions when a doctor kills himself or kills herself is



shock. Why? Is there a collective or cultural denial in the world of medicine, that doctors don't die by suicide? Are some physicians masterful at covering up their illness and desperation? Are we blind to or neglectful of our colleagues' personal interior lives? Are some deaths of doctors in the 10-15% who do not have an underlying psychiatric illness that has made them suicidal? There are no easy answers to these questions and yet even when we embrace the idea that the individual must have been ill – and desperate – disbelief is still ascendant. Those left behind struggle with confusion and a flood of unanswerable questions. Here are some reactions:

The words of Dr. David Satcher (Surgeon General of the United States 1998-2002): "Your video is an important effort in getting out a message to destigmatize and describe this serious problem whose aftermath is characterized by personal pain, social and family disruption, and loss of such productivity and promise" [21].

The words of a doctor's widow: "We have this belief that physicians have chosen that profession to continue and sustain and protect life.....and when a physician kills himself or kills herself, it is very, very confusing.....because it's almost as if....if they're giving up...what's that mean for the rest of us?" [22]

The words of a doctor's daughter [23]: "My father always said: 'If you're going to do something, do it right'. I remember he saw a movie where a guy killed himself in the shower. He was very impressed with that. He kept repeating: 'He did it there so it'd be easy to clean up'. But where my father killed himself, the blood stains are still in the floor boards. It's been over 20 years. When I was 17 and he was 54, my father went up into the attic and shot himself in the heart. I didn't cry".

The words of a doctor's physician colleague [24]: "Today I learned that you died and nothing will ever be the same again. I refused to believe the words I heard, that you

committed suicide. Only terribly depressed people kill themselves. You weren't terribly depressed....but then I learned that, yes, secretly you had been. How could I not know, not realize?"

The words of a doctor's patient [25] spoken at the doctor's funeral: "I'm a patient of Dr _____. I'm sorry I cannot say: 'I was a patient'. I cannot use the past tense. My doctor saved my life...." As he choked and struggled for words, he stopped and began to sob uncontrollably ...two attendants helped him back to his seat.

Some diagnostic, therapeutic and moral imperatives

How can we lower the incidence of physician suicide?

Primary prevention

We need to continue to study and delineate risk factors in medical education and practice. Do we need to change the criteria used to select medical students? Is there too much emphasis placed on MCAT scores and other markers of scholastic achievement? How standardized or incisive are medical student applicant personal interviews? How sensitive are we to the genetic and developmental vulnerabilities of our applicants to medical school and residency? How much do we accept the elusive 'woundedness' of some, in addition to their intellectual achievements on paper and how they perform in interviews? How much should we accommodate pre-existing conditions? We have no acceptable answers to these questions and what is more, we may not be asking the right questions anyway in our attempts to understand suicide in medical students and physicians.

What about teaching methods in medical school and residency? We can say with some evidence that professors and attend-

ing physicians whose teaching style is coercive, shaming or abusive cause psychological damage to our trainees. At best they become disillusioned and cynical; at worst, they get depressed, develop symptoms of post traumatic stress disorder, abuse alcohol and other drugs, and coupled with other issues, may become despondent and suicidal. Can we – or should we – change the culture of medicine? I am referring to the 'macho' mystique, the normalcy and rewarding of overwork or workaholicism, the ascendancy of intellectualization and rationalism over feeling, compassion and humanism, the competition, the materialism in some sectors, and male and female sexism in our medical centers and institutions.

How do we protect 'good doctors' who are used to hard work and self-sacrifice in the service of their patients, education and research? Some of these physicians have amazing resilience, including personal and family lives that are fulfilling and rich. But if they are not shielded from taking on more and more work, especially with diminished resources, and a needy underserved patient population, they may burnout and get sick. How do we use the findings from innumerable burnout studies implicating overwork, loss of locus of control and breakthrough symptoms of exhaustion, depression and suicidal ideation? Are the public's perceptions and expectations of their doctors unrealistic? Many surveys of physicians in practice have noted their high levels of demoralization and an attitude of entitlement and hostility in many of their patients.

What about medical licensing boards or hospital credentialing standards that are outdated, unenlightened and punitive? This is serious because physicians are terrified of self-disclosures and discriminatory investigations. A study of SMB (State Medical Board) license applications noted that 13 of the 35 SMBs responding indicated that the diagnosis of a mental illness by itself was sufficient for sanctioning physicians [26]. This was without any evidence of specifics,



onset, treatment or duration. These same SMBs also acknowledged that they treat MDs receiving psychiatric care differently than those receiving medical care. The authors argue that physicians' perceptions of this apparent discrimination likely plays a role in delayed or absent help seeking for symptoms of a mental illness. These same physicians end up with no treatment or treat themselves, both of which put them at risk of worsening morbidity and, in some, possible mortality.

Finally, is there anything that can be done about a litigious climate of lawsuits and soaring costs? This drives an ethos of defensive medical practice, anxiety about being sued and in many doctors, a risk of developing a clinical illness as a result of this assault [27].

Secondary prevention

Physicians continue to kill themselves – world wide – despite research on morbidity and mortality in doctors that has been available in the scientific literature for decades. In fact, the amount of evidence-based research is increasing. So given the burgeoning studies on burnout, substance use and abuse and depression in medical students and residents – in many countries – we must redouble our efforts toward promoting self-care and making sure that these findings are known to clerkship and training directors, deans and associate deans, department chairs, chiefs of staff and so forth. We cannot be complacent; we cannot turn the other cheek and say that doctors don't take their lives in this medical center or this community.

We need to find ways of identifying trainees and licensed physicians at risk by education and inculcating an accepting attitude in their peers, employers and caregivers. Outreach needs to be early, timely, invitational, welcoming, comprehensive and kind. We must ensure that diagnostic and treatment services for trainees are available and advertised – free or sliding scale, confidential and geo-

graphically accessible. We all must continue to fight stigma both in our words and deeds, by speaking openly and discretely about our own personal struggles if so inclined and by supporting our colleagues when ill.

Loved ones of medical students and physicians are key players in physician health who have a vested interest and should be a 'protective' factor. Not only are they the best ones to provide collaborative information but they need to be our allies in a comprehensive treatment plan and caretakers must make themselves available to them. Too many ill physicians are receiving treatment for serious mental illnesses and their family members are totally excluded from their care. Therapists need to understand that many physicians are masters at deception and what they choose to disclose in their treatment sessions may be devoid of the dysfunction and symptomatic behavior at home. Grieving spouses, parents and children of doctors who have killed themselves have an enormous amount to teach us about bearing witness to the anguish and pain of their loved one prior to his or her death.

Self-treatment must stop by ensuring that all physicians have primary care physicians who are interested and skilled at treating ailing doctors. This is no easy task. Countless physicians have trouble turning over their health care to someone else, even when those individuals are available. They do not trust easily. And too many physicians who treat other physicians do not give them the same kind of diagnostic and therapeutic excellence that they give to their non-physician patients. They make too many assumptions and avoid embarrassing questions and physical examination steps that compromise the care. Unfortunately, the doctor patient is put at risk of worsening illness because of missed diagnoses or inadequate treatment.

All medical communities – world wide – need diagnostic and treatment resources (similar to state and physician health programs in the USA and Canada). They have

been established to meet the needs of colleagues at risk from the stress of practicing medicine. The science is first rate and there is always a continuing education component to keep the knowledge base up-to-date and to make sure that compassion and treatment eclipse punitive and discriminatory attitudes toward ill physicians.

Tertiary prevention

In addition to primary care doctors who treat physician patients with respect and thoroughness, we need specialists in addiction medicine, psychiatrists and other mental health professionals with expertise in physician health, specialists in occupational health and rehabilitation, psychopharmacologists, and good (and affordable) treatment resources. Physicians, like patients in general, may suffer from difficult-to-treat mood disorders, often comorbid with substance abuse, that require expertise that may be beyond the generalist. Indeed, it may be dangerous for a solo mental health professional to try to be all things to his/her patient. It is best to share the responsibility with others to ensure that your patient is getting the best care.

We need to continue research on (and educate about) recurrent and chronic illnesses in physicians that need treatment and monitoring. This is not common knowledge. Given how doctors abhor illness in themselves and each other, there is a naïve attitude in some dimensions of the medical community that all that the ill doctor needs to do is go away for awhile, get treated and come back with 100% functioning. This is often not the case and there are many doctors who report feeling chided by employers and colleagues if they are not able to take on the same case load or medical responsibilities that they assumed before they fell ill. We need return-to-work plans and programs that accommodate partially disabled doctors. And most important, disability insurance needs modernizing and fairness.

Some doctors make need to remain on partial disability indefinitely.

Colleagues of physicians who are away on extended medical leave need to keep in touch with them via email, cards, phone calls and visits (if the person is up for being visited). Ill physicians often feel bereft of the day-to-day medical world and can feel out of the loop quickly. Worse is that they feel rejected as no longer 'part of the club' if they do not hear from their work mates. Gestures of missing them will aid healing and lift spirits. Families need support for their central role in keeping their physician loved one well – or in some cases of refractory illness – alive.

Some moral imperatives

Advocacy is part of being a physician and this has never been more applicable than in physician health and wellness. I urge you to fight the stigma associated with suicide – whether it is for the deceased physician or his/her family. Speak out, write letters and papers, volunteer, invite experts to give in-service training, lectures, seminars and so forth. Educate staff and faculty about this unique type of loss. Present cases at M & M rounds, critical incident debriefing after a suicide. The American Foundation for Suicide Prevention has a Suicide Data Bank Project and a Physician Depression and Suicide Prevention project.

When a medical colleague dies by suicide there is a lot that you can do, both for yourself and for others who knew the physician. There are diverse reactions in the colleagues of deceased physicians [8, page 201]. Mourning is to be expected and this includes the full range of emotions and thoughts that people experience when they lose a colleague or friend to death. But it may be more intense and confusing because your colleague died by suicide. Some bereaved physicians feel anxious after a death like this. They may feel personally vulner-

able, that they themselves have felt stressed with their work or have been depressed. An inner question may haunt them: "Am I prone to suicide?" or they may fear the suicide of another colleague of the deceased doctor. This is called 'contagion fear'.

Some doctors feel guilty and may blame themselves. They are upset that they didn't do more to prevent the doctor's suicide. Or they castigate themselves for missing clues that the person may have been giving. If they didn't reach out to the doctor and ask how they were feeling or try to steer him/her for care, they may be wracked with feelings of regret. Some grieving doctors will blame other physicians in their group or medical setting for not doing more, for failing the deceased physician.

Anger and rage at the deceased physician are not uncommon. Very primitive and seemingly irrational emotions and statements accompany deaths by suicide. Some doctors will blame the suicide victim for 'giving up' or being 'selfish', that they didn't accept treatment or give it enough time or that they were thinking only of themselves and not the many people they have left behind. These same individuals will accuse the deceased of abandoning his/her family, friends, medical mates and patients. In some communities where there is a shortage of physicians, the doctors may feel 'dumped on', that they now have to look after the dead doctor's patients. "And what do I tell them?" may be a question that they don't know how to answer. Other physicians feel judged by a colleague's suicide, that our public perception of being invincible is tainted by the doctor's death. This is rooted in the history of suicide through the ages, that it is a blight, a shameful death.

And finally some doctors carry on as if the physician simply died of natural causes. Their manner and stance is business as usual. Inwardly such physicians may be angry, hurt or devastated but they keep their feelings to themselves.

Organizational initiatives

The American Medical Association is in the process of forming an expert panel to address risk factors for suicide in medical students and physicians with representation from medical educators, mental health professionals and suicidologists. The National Action Alliance for Suicide Prevention was launched on September 10, 2010 (World Suicide Prevention Day). Its focus is three-fold: 1) Updating and advancing the National Strategy for Suicide Prevention from 2001; 2) Development of effective public awareness and social marketing campaigns, including targeted messages for specific segments of the population that can change attitudes and norms and reduce suicidal behaviors; and 3) Advancing suicide prevention among high-risk groups. Physicians are considered a high-risk group.

Research imperatives and the future

We need evidence-based research on mood disorders and other Axis I illnesses in physicians, especially substance use disorders. This must include treatment outcome research and not just psychopharmacological studies. Another area that needs updating is research into the suicide risk factors in physicians. We know a lot but much of our data are old. Given the mosaic of physicians practicing medicine currently, there must be factors that have not been studied. Early outreach by the treatment team or a suicide social agency to the families of doctors who have killed themselves must happen routinely. Currently it is hit and miss. There is a compelling need for postvention studies on families and colleagues of doctors who have died by suicide. This will include psychological autopsies on doctors who have killed themselves, information that is sorely lacking. Our greatest challenge will be grieving families and medical colleagues of the deceased physician. Accurate studies are impeded by the privacy rights of families, their protective denial and



shame, and the collusive secrecy of the medical community and the family.

Finally, qualitative research on medical students and physicians who have made suicide attempts (especially near lethal and aborted attempts) and who did not die is overdue. The narrative recording of their memories, thoughts, thought process and feelings with the goal of understanding the 'why' and the 'how' of their decision to die will yield critical information, information that can assist in prevention, especially early intervention. This research will be helpful not just for the person him/herself in treatment planning but by extension, very helpful in identifying which physicians might be at risk of suicide.

Conclusion

I can think of no more fitting way to conclude this paper than the way I ended my lecture, that is, with quotes from the eulogies of the son and daughter of a physician who ended his life in 2010.

From his son:

In the last few months, he entered his deepest and darkest struggle. I called him every day, offering advice, a different perspective, another way to look at things, suggestions of how to feel better. And he was so thankful – he loved my advice and suggestions. I felt like we were making progress.

But in the end, I didn't realize how deep his pain was. And despite all he told me, he was in a worse place than I or anyone else realized. He's gone now, and his pain has subsided. Yet his loss will live with me every day for the rest of my life. I had nearly 40 amazing, wonderful years with him. Right now, the hole in my heart is big – it will heal, but a large and permanent scar will remain.

From his daughter, a physician herself:

As many of you know already, my father took his own life. As I told the children, he had a sickness in his brain, and because of the sickness

he made a bad decision. And unfortunately, it's not one that can be undone. All of these things we see in him, he couldn't see in himself. We tried so hard to tell him, to reassure him. But he couldn't hear it. His brain just wasn't functioning properly.

.....As doctors, we feel as though we are supposed to be perfect in some way, and my father embodied that sentiment. He wanted to be perfect, and when he saw that he wasn't, he couldn't tolerate it.

Depression is a real disease. I don't know why or how it happens, but it does. And to honor my father we can bring it out from the shadows and remove the shame. There is NO shame in depression. I want everyone in this room to hear that, and I want my father to hear that, wherever he is. You will always remain a smart, hardworking, lovable mensch, regardless of what you were suffering. Your family loves you so much.

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Whole Genome Sequencing – a New Paradigm for Clinical Care?

Based in part on a presentation to the World Medical Association – Australian Medical Association meeting Medical Leadership: The View from Down Under on 5 April 2011 in Sydney.



Ron Trent

Introduction

Human genetic disorders fall into three categories: (1) Somatic cell defects, (2) Mendelian genetic disorders and (3) Complex genetic disorders (Table 1). The latter two involve the germline and so are heritable. Our understanding of pathogenesis in the somatic cell defects is still mostly research-in-progress. These usually involve sporadic cancers. The Mendelian genetic disorders are well characterised at the molecular level although for many the underlying causative genes remain to be found. In contrast, we know very little of the complex genetic disorders apart from the assumption that they are caused by gene-gene, gene-environment or gene-environmental-epigenetic interactions [1]. Our understanding of genetic disorders took a major step forward when these were better understood at the DNA level.

The molecular (DNA) era for medical genetics started in 1953 with the description of DNA's double helix structure by J. Watson, F. Crick, M. Wilkins and R. Franklin. For this discovery the first three were awarded the 1962 Nobel Prize in Physiology or Medicine (Rosalind Franklin had died by then). Subsequently, there were many more discoveries involving DNA and RNA which provided a new molecular understanding of genetic diseases and how they arose through mutations in genes. From this came better ways to investigate and then detect these disorders by DNA testing. A number of important developments then occurred leading to the potential for sequencing the whole human genome as a component of patient care. These developments included:

- In the 1970s, DNA genetic testing started with a method called Southern blotting. This was cumbersome, dangerous (radioactivity and carcinogenic chemicals were used) and took a few weeks to get a result. The method would predominantly detect *deletions* in genes which represent the less common disease-causing mutations.
- DNA mutation testing took a major step forward when methods were devised to sequence segments of DNA. This meant the four nucleotide bases – adenine (A), thymine (T), guanine (G) and cytosine (C) making up a segment of DNA could be identified. *Point mutations* (single base changes) which comprise the usual cause for a genetic disease were now identifiable. For work on developing DNA sequencing W. Gilbert and F. Sanger were awarded a Nobel Prize in 1980.

- The next significant advance in genetic DNA testing was the discovery of a technique called PCR (Polymerase Chain Reaction) in 1985. For this, K. Mullis was awarded the 1993 Nobel Prize in Chemistry. PCR had a significant impact on DNA genetic testing in medicine as well as forensic science, industry and many different research applications because it is a technique that allows a segment of DNA to be amplified hundreds to millions of times. In effect, PCR allows a portion of DNA to be cloned so it can be more easily manipulated or characterised. The latter has direct applications for DNA genetic testing.
- The last important development occurred during 1991 to 2000. This was the Human Genome Project the primary goal of which was to DNA sequence the first human genome. At the time, it was proposed that the Human Genome Project once completed would provide a new paradigm for medical care through a thorough understanding of human genetic disorders. Unfortunately, this has not turned out to be the case because, if anything, the Human Genome Project has produced more questions than answers. For example, at the beginning of the Human Genome Project it was generally believed that humans had about 150,000 genes coding for proteins. Today, the estimated number of these genes is closer to 20,000 [1]. This is a puzzle because the mouse also has 20,000 protein-coding genes (as has the pinot noir grape!). So, what is the difference between humans and the mouse? The Human Genome Project has opened up some new areas of understanding about the human genome, particularly the role of non-coding (nc) RNA species [2].
- An important by-product of the Human Genome Project was technology development and this enabled better and faster ways to sequence the human genome.

Table 1. Classification of genetic disorders

Somatic cell defects	Mendelian genetic defects	Complex genetic disorders
Acquired	Inherited as autosomal dominant, recessive or X linked disorders	G x G, G x E, G x G x E, G x EPI, G x E x EPI and other combinations possible ¹
No implications for family members	Quantifiable risks for family members	Familial risk can be apparent but not quantifiable in the individual case
Cancer tissue testing current model demonstrating recurring mutations in key pathways	Strong high penetrance genes involved. Can draw family tree tracing disease	Twin studies confirm heritability
DNA genetic testing helps in guiding therapies. Whole genetic sequencing is a promising approach for new classification based on molecular signatures	DNA genetic testing useful for multiple applications from planning pregnancies, screening populations to predicting development of disease well into the future Whole genome sequencing being used to find new causative genes	DNA genetic testing not useful in clinical care. Whole genome sequencing now being explored to identify the G and EPI components in pathogenesis

¹G = genetic; E = environmental; EPI = epigenetic effects.

DNA sequencing

DNA sequencing is considered the “gold standard” for mutation detection because it will allow single base changes to be identified and characterised. DNA sequencing is of little use for detecting unknown deletions. During the early days of the Human Genome Project, DNA sequencing became increasingly more automated so that larger read lengths were possible, for example, 800 base pairs (bp) became a standard length for a sequence trace (Figure 1). Genes would be larger than this but by incorporating PCR and new approaches to sequencing, it was possible to break the gene into segments and each was sequenced separately. For example, all exons and the exon-intron boundaries of a gene could be sequenced individually rather than the whole gene because it was in these regions that the more serious disease-causing mutations were likely to be found.

As the Human Genome Project progressed so did the technologies for DNA sequencing until the unthinkable was proposed – a whole genome sequence that would cost around \$1,000. This needs to be put into the context that the first human genome reported in 2003 was estimated to have cost around \$3 billion to complete. From 2003 to 2011, the costs for a whole human genome have plummeted, and today commercial companies can complete a whole genome sequence for about \$4,000. The \$1,000 target is not far away [3]. By comparison, DNA sequencing for *two* common breast cancer genes (*BRCA1*, *BRCA2*) costs around \$2,000–\$3,000, yet all 20,000 human genes including these two cancer genes can be sequenced for \$4,000 and likely to be \$1,000 in the next 12 months. There is also talk that the technology will continue to improve and \$100 for a whole genome sequence is achievable!

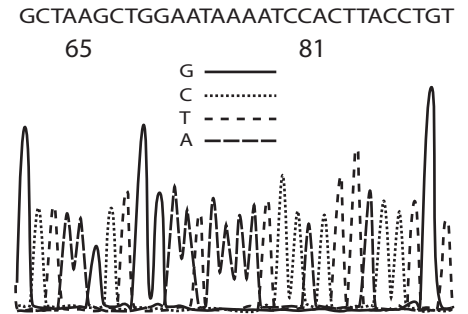


Figure 1. DNA sequencing. Automated sequencing is now possible and it uses sophisticated analytic platforms as well as bioinformatics tools to identify changes in the DNA sequence. The four bases are distinguished by lines. Changes in the DNA sequence compared to normal would signify a mutation or a neutral change which is called a DNA polymorphism. The significance of DNA changes (collectively called DNA variants) requires analysis by software and reference to DNA databases and the literature. In a number of cases (up to 15% when the breast cancer genes are sequenced), the significance of variants cannot be established and these are known as VUS (variants of unknown significance). Not surprisingly, the likelihood of VUS changes in a whole genome sequence will be significantly greater.

Whole genome sequencing in humans only became realistic when new analytic platforms and alternative strategies were developed. These are called *NG DNA sequencing* (NG – next generation) or *massively parallel DNA sequencing*. Basically, the NG DNA sequencing strategies rely on smaller DNA fragment being sequenced (100 bp) rather than the 800 bp described above with conventional DNA sequencing which is also called Sanger sequencing. But to get around the smaller fragments sequenced, the technology allows a larger number of overlapping fragments to be generated – up to x30 coverage can be achieved. The smaller but overlapping fragments represent a giant jigsaw puzzle made up of two copies of 3.3 billion combinations of A, T, G and C. These are put together in the cor-

rect order through bioinformatics i.e. software tools.

Applications: NG DNA sequencing and somatic cell genetic testing of solid tumours

Researchers quickly saw the potential benefits of NG DNA sequencing and many whole genome sequencing projects developed. These followed the Human Genome Project format which involved ambitious research questions being asked, and the answers sought by sophisticated DNA sequencing and bioinformatics strategies. An example would be the International Cancer Genome Consortium (ICGC) [4]. This started in 2009 and its aim is to sequence 50 of the most important human cancers using DNA taken from the tumours. This is called somatic cell DNA genetic testing because the mutations are only present in the somatic cells and so not passed on through the germline to other family members.

The ICGC is a multinational endeavour and is only in its early stages but already interesting molecular signatures for different tumours are being identified. These molecular signatures have shown that a limited number of DNA mutations are necessary for tumour formation and the changes are not tumour specific [5]. Hence, the traditional histological or immunophenotypic classifications can be complemented with changes in DNA. Perhaps the molecular changes (signatures) will eventually prove more useful than the traditional ways for establishing diagnosis and prognosis.

Already the molecular signatures associated with tumours are being used to guide treatment with examples including: (1) *Breast cancer and amplification of the HER2 gene*. Chemotherapy with the humanised monoclonal antibody Herceptin in this tumour is more effective when it has multiple copies of the *HER2* gene. This type of approach is

called *personalised medicine* because it provides additional DNA based information allowing better selection of drugs for any particular individual [6]. Ultimately, selecting the best drug for a tumour will save health dollars and, in the case of Herceptin, will avoid exposing patients to potential serious side effects if this drug is unlikely to be effective. (2) *Treatment of metastatic colon with another humanised monoclonal antibody cetuximab*. In this particular example, the *KRAS* gene needs to be in its normal (wild type) configuration for the drug to be effective. (3) *Treatment of metastatic melanoma with an experimental drug PLX4032*. This is showing very promising results in what is otherwise a difficult malignancy to treat. For optimal response to PLX4032 the *BRAF* gene must have the V600E mutation.

The successes seen with somatic cell DNA testing in tumours would suggest that whole genome sequences of all tumours will soon be part of the routine clinical and pathological workup of a tumour so that treatment decisions can be based on molecular signatures. In other words, there will no longer be a drug for treating lung or colon cancer. This will be replaced by a drug(s) that target(s) a genetic cancer-causing mutation(s) which might be found in either or both of the mentioned cancers. Combination chemotherapy regimens would follow the same rationale but target multiple mutations.

Germline whole genome sequencing

DNA changes in the germline have been inherited from our parents and can be passed on to our children. Hence, germline DNA genetic testing is different to the somatic cell testing described above because it involves other members of the family who share our genes (and so will share our risks). Germline DNA testing also can be used for predictive genetic testing since we are born with these mutations. Therefore, looking for an inherited mutation in an asymptomatic

individual will allow a prediction that sometime into the future a disease might arise. An example is Huntington disease (HD) predictive DNA testing. HD is an autosomal dominant disorder so children of an affected parent have a 1 in 2 (50%) risk of inheriting a mutated *HTT* gene that causes HD. Onset of this invariably fatal neurodegenerative disorder is in the fourth or fifth decade and penetrance of the HD DNA mutation is 100%. This means that anyone with the right mutation in the HD gene will invariably develop this disorder unless they die from some other cause before they reach the age for HD development. The HD mutation can be looked for at any time in life (or *in utero* or preimplantation genetic diagnosis) to predict an individual's risk, i.e., no risk or 100% risk for developing HD. A similar test is available for breast cancer when there is a strong family history or other clinical features to suggest a significant genetic component [7]. However, in this case the penetrance for mutations in the *BRCA1* or *BRCA2* genes is not 100% but between 60% and 80% depending on a number of factors.

Another area of interest in DNA genetic testing is pharmacogenetics which allows individual's genetic predisposition to drug therapies to be predicted based on their genetic makeup [8]. It is proposed that the "right drug for the right person" might be achievable by taking into consideration the metabolising status of the patient and in this way select a more appropriate drug dosage to optimise efficacy or alternatively reduce the dose to avoid side effects that occur because the individual's genes involved in metabolising a drug into the inactive forms are less effective.

The delivery of personalised medicine will require more genetic DNA testing to assist in clinical decision making. This is now being undertaken using single gene tests that look at one or two genes. Apart from the costs (illustrated above with the *BRCA1* and *BRCA2* example), it is time consuming

and potentially inefficient because the same test might be repeated a number of times if results are not readily available. Since changes are in the germline, they will always remain the same and so repeat tests are unnecessary. In contrast, a once-in-a-lifetime whole genome sequence can be interrogated on a regular basis depending on the clinical context. Provided it can be safely stored and protected to avoid any potential ethical legal social issues (ELSI) see below, it needs only be tested once. Since the actual test cost is likely to be cheap, it becomes a cost effective and efficient way to move forward the personalised medicine agenda.

Some future clinical research directions for whole genome sequencing

A global health problem is obesity and there are many traditional public health based strategies to prevent this growing epidemic. To date the results are disappointing and so other strategies are being considered. Can genetics help? So far the answer is no because only very rare forms of obesity are of the Mendelian type and so caused by mutations in single genes. The great majority of cases are considered to represent a complex genetic disorder with genes, environment and epigenetic effects all potentially playing a role. Nevertheless, twin studies which compare obesity in monozygotic twins (who share essentially the same DNA) versus dizygotic twins (who share 50% of their DNA) suggest that the heritability factor in obesity is considerable at around 81% [9]. A lot of work is now being undertaken to find the genes implicated in obesity (including knowledge from whole genome sequences) and from this use DNA testing approaches to identify those particularly at risk, and new targets for drug therapies.

Another interesting development in obesity is the potential that our gut flora might be involved in pathogenesis. This has come

from metagenomics studies of the human gut flora (metagenomics refers to the characterisation by DNA sequencing of all microorganisms in an uncultured environment). Humans have two types of DNA (nuclear DNA and mitochondrial DNA) but so far we have ignored the DNA content in our gut flora which is estimated to be x100 our nuclear DNA and comprises over 500 species of bacteria [10]. Some early research studies are also suggesting that the metagenome is different in the obese and non-obese individual, and perhaps more intriguingly that germ free mice given a gut metagenome from an obese or non-obese mouse will revert to the phenotype of the donor mouse [11]. It will be interesting to see how this story progresses particularly the implication that diet may influence obesity via the metagenome and not calorie intake alone.

Challenges ahead for whole genome sequencing in clinical care

There is little doubt that whole genome sequencing has made important contributions to research proposals and will continue to do so in this area. However, there are many challenges ahead before the whole genome sequence can be effectively integrated into clinical care. These include:

Translation of research findings: As a 2008 news feature in Nature suggested, crossing over from basic medical research into its clinical applications is like “crossing the valley of death” [12]. There is planning needed to ensure that the beneficial research applications from whole genome sequencing can be rapidly moved into clinical care. Some jurisdictions are now asking the right questions about the clinical implications for whole genome sequencing and clinical service delivery. A few clinical studies are being described where whole genome sequencing is used to inform clinical decision making

[13]. However, more research is needed, as are new clinical decision-making tools to link genome data with appropriate interventions.

Bioinformatics: Few would dispute that whole genome sequencing will become faster, cheaper and easier to deliver. The road block today and for sometime into the future will remain our superficial understanding of the genome. The Introduction implied that knowledge of the 20,000 human protein-coding genes will not be enough, and as these only occupy about 1–2% of the genome there remain vast regions that will be sequenced but their significance will remain uncertain. However, just as we found with the development of the computer, the software programs available for *in silico* analysis of whole genome sequences will only get faster and more sophisticated. As our understanding of the human genome improves, it will be possible to go back to an individual’s whole genome sequence and reinterrogate it to update the information.

Engaging health professionals and the community: Health professionals, particularly the general (family) practitioner, are already under considerable pressure maintaining continuing education requirements for areas of practice with which they have some familiarity and meet regularly. While whole genome sequencing can be predicted to play a key role in our understanding of disease risks and new therapies, it will take some time for familiarisation with this technology, particularly what it can or cannot do. In contrast, members of the community are constantly being exposed to media reports of gene X or Y being able to predict disease or human traits such as sporting prowess. Curiosity is followed by Internet searches. As such, the community seems to be more engaged in the genetics developments than the health professionals and this may become problematic if the doctor-patient relationship does not develop to take on board the influence that the Internet can play in patient care.



Addressing ELSI (ethical, legal, social issues): Inappropriate use of genetic information can cause problems related to privacy, discrimination, stigmatisation or loss of self-esteem. These are issues that are under active consideration for the more straightforward DNA genetic testing but will be more complex with whole genome sequencing. On the other hand, the modern generation seems to be fairly relaxed about privacy or confidentiality issues as evidenced by social media that are increasingly popular. So the implications for ELSI and whole genome sequencing may differ depending on how comfortable is the individual with the electronic media as whole genome sequencing and interpretations of the results will rely entirely on eHealth capability. While personalised medicine has many attributes, it is the antithesis of public health medicine since the individual is the focus. This will mean that new therapies developed through personalised medicine will not be available (or subsidised depending on the health system involved) for all in the community. Other broader considerations include the potential for unnecessary hype to be counterproductive because promises will not be delivered, and the influence of the growing direct-to-consumer DNA testing market discussed next.

Direct-to-consumer (DTC) DNA testing: The provision of DNA testing direct to the public and bypassing the health professional has grown rapidly since the mid 2000s when there were only a handful of these services. The DTC marketplace has moved ahead with little oversight by the regulators but this has recently changed following two adverse reports from the US Government Accountability Office and a paper in Nature suggesting that the actual DNA test was reliability undertaken by two of the leading US DTC DNA testing companies but the interpretation of the risks for some serious medical disorders could differ [14]. While the DTC model is attractive to consumers who are increasingly turning to the Internet for services, it advertises and sells DNA

genetic tests as a commodity. Promises made about the implications of DNA genetic testing for health, well-being and even longevity are qualified by caveats. Services based offshore cannot for practical purposes be regulated or held accountable. Today, companies are moving to DTC whole genome sequencing.

Rural, remote and the disadvantaged: As personalised medicine starts to impact on health care, it is expected that those living in rare or remote regions or are disadvantaged will have access to the same genetic developments including whole genome sequencing. The DTC DNA testing market has already shown that DNA is portable and can be flown from one country to another so distances and transportation are not an issue. Costs as indicated above are coming down and hopefully will not become a limitation. Interpretation of the whole genome sequence will continue to be a barrier but this should not relate to distance or isolation with expected developments in eHealth.

Conclusions

Whole genome DNA sequencing represents rapidly evolving technology that will impact on clinical care particularly in relation to personalised medicine. There is still a long way to go for the development of bioinformatics programs to enable a better understanding of what the DNA sequence is saying in terms of an individual's health or risk for disease development. Nevertheless, software development will progress and the whole genome sequence will become a component of routine care or public health medicine in terms of disease prevention or identification of risks. New therapeutics based on underlying molecular signature of disease will be developed. For this technology to be effectively integrated into clinical care will require engaged and educated health professionals and members of the public. The challenges are considerable but the potential benefits are enormous.

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Overview of the Vaccines in Preventing Infectious Diseases



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The statistics show that too many children and youth become injured, maimed and die in variety of accidents, too many get ill with infectious diseases, preventable by a healthier lifestyle, hygiene and vaccinations, and lack the available, reachable health care. It is important to emphasize the improved health effects of vaccines not only on the health of children but also on the population of the country. Vaccinations not only have prevented the spread but have led to the eradication of some diseases. Discussions about vaccination have surfaced since the population have forgotten and not seen the death, the crippling effects of poliomyelitis, the physical and emotional effects, even death resulting from measles, rubella, mumps and varicella, not to mention the multitude of other side effects. The primary care physicians are fully aware and trained in the preventive medical approaches, including vaccination.

The beginning of vaccination practices in the middle of the last century was the most important historical progress in the field of

child health. It is unfortunate that currently this medical achievement has evoked major discussions and created complex problems. The vaccine-preventable diseases are not as prevalent, yet common in the countries where the vaccination practices are poor and inadequate and most of the population fails to receive the recommended doses of vaccines. We must always be aware that the infectious diseases are only one airline flight away. Repeatedly there are cases of a traveler-transmitted disease, as most recently happened in California, USA where a traveler with measles was in contact with 839 and infected 11 persons. Anyone, who has not been vaccinated or partially so, is at risk. In 1999 measles outbreak 3000 became ill and 3 died. In 2006, in USA mid states there were 4000 cases of mumps and across the USA repeatedly off and on, there are reported cases of pertussis and other vaccine-preventable infections. Each person should be aware, parents and doctors included, of the pain, fear, and sadness, the financial expenses, lost time of work that the infectious disease can create. Scientifically, it has been proven that the crowd immunity of the vaccinated does not necessarily protect the unvaccinated unless the surrounding immunity is greater than 95%. The hope on crowd immunity does give false security. In addition, one must be aware that the tetanus vaccine only protects the one who is vaccinated. Tetanus is not a person-to-person transmissible infection as the bacillus is present in soil and the animal excreta.

There are 2.5 million children under the age of 5, who die of vaccine-preventable diseases. The goal of vaccines is to prevent the disease, yet the ultimate goal is to exhaust the disease. In order to reach these goals, it is imperative that the physicians and health care workers prioritize to vaccinate infants, children, adolescents and adults. It is im-

perative that all receive preventive vaccines. In 1977, the global eradication of smallpox was achieved. Since 1991, poliomyelitis has vanished in the USA. Since 2000, the ongoing measles transmission has disappeared. 2004 signaled the end of the appearance of rubella cases and associated congenital rubella syndrome in the USA. Since the mumps vaccine was instituted in 1968, the 2007 statistics show the decrease of mumps by 99%. In the USA, the extensive vaccination program has accomplished the case disappearance of diphtheria in 2007.

The pertussis vaccine was developed in the 1920s. In the 2007 statistics, it is evident that pertussis illness has decreased by 93%, unfortunately, still yearly 20 to 40 infants under 3 months of age, who have not been vaccinated, die. The research has proven that the immunity against pertussis wanes gradually and therefore a booster TDAP is required at 11 years of age and recommended to expectant mothers to decrease the potential transmissibility of pertussis to their newborns. Every year in the USA approximately 30 become ill with tetanus and one of ten die. The statistics of 2009 confirm the great success of vaccines in the decrease of illness and death. Since 1985 when HIB (*Haemophilus influenzae* bacterial vaccine) was licensed, the USA 2007 statistics confirmed the 99% decrease of *H. influenzae* illness. The health benefits are evident with the pneumococcal vaccine. Every year >40,000 become ill with severe pneumococcal-induced infections and >4,400 die. This vaccine is designed to protect against severe infections, not for ear infection. To protect against a greater spectrum of pneumococcal-induced infections, the original PCV (pneumococcal conjugate vaccine) of 7 serotypes has been modified to consist of 13 serotypes.

The pneumococcal 23 vaccine is recommended for those ill with chronic ailments. The USA statistics confirm yearly occurrence of 78,000 new hepatitis B cases, of whom 5000 die. The annual occurrence of

hepatitis A is 20,000 cases, of whom more than 100 die. Varicella occurrence is 67,400, of whom 54 die of the complications. Meningococcal infection occurrence is reported as 1000 to 3000, of whom 125 die. In contrast, every year there are 31 million ill with influenza and 30,000 cases of death are reported. Keeping statistics is essential to report the cases of disease occurrence, the deaths and the benefits derived from preventive vaccinations in the surveillance of infectious diseases and health care of the country. BCG vaccine is not used in the USA since, based on the statistical evidence, tuberculosis is not widespread, yet cases of occurrence must and are reported to Public Health Departments and the contacts are identified and tested.

Reviewing the above disease statistics and the benefits reached from vaccinations, it is difficult to understand why the parents would refuse to vaccinate their children. The infectious diseases mentioned above are widespread in countries where there is lack of governmental support for health, lack of understanding, presence of fear, existing misinformation and lack of science-based information. Unfortunately, many of the health workers, including physicians and nurses, are themselves misinformed and lacking the knowledge and the belief in the benefits of the immunizations that would also reduce the nation's health care expenses. The effects are far reaching, affecting not only the nation's health but leading to increased health expenses.

It is important how the vaccination practices have developed in countries where health is considered a priority. In the USA, as an example dependent on the laws and the health care in each of the 50 states, the number of the vaccinated vary to some degree, yet on average 9 out of every 10 children and adolescents are fully vaccinated. It is of extreme importance to document the cost and compare the nation's vaccination expenses with the expenses incurred from the care of the ill with infectious, vaccine-preventable dis-

eases, the crippled and mentally affected by the disease, the public measures to curb the spread of disease and loss of the work force of the ill. The cost of infectious diseases is major not only to the government, but also to the country's health and well-being.

Ongoing research and discoveries in immunology, molecular biology and genetics have enhanced the development of new vaccines and improved the safety of familiar vaccines. The science requests the expert and common scientific balance between the risks, side effects and the effectiveness of vaccines. It takes years of extensive testing to carefully evaluate the new, improved or combined vaccine and only then when there is a guarantee in safety and effectiveness, the newly licensed vaccine is to find its place in the pharmaceutical marketplace. The newly licensed vaccine continues to be closely monitored. Its use, the reactions, if any, are well documented. The specific field trial analysis is continuous. On the rare occasions, when the vaccine has been received by many, the rare side effects may be observed. Increased cases of intersection were noted to be associated with the initial – licensed in August 1998 – tetravalent rotavirus oral vaccine (RotoShield). This product was voluntarily withdrawn from market in October 1999 and the production was stopped. In February 2006, a live oral human-bovine heptavalent rotavirus vaccine (RotaTeq) was licensed and in April 2008, a live oral human attenuated rotavirus vaccine (Rotarix) was licensed. It is imperative that the physicians and health care workers have the newest vaccine/vaccination information and are updated with information regarding changes and safety.

In a cooperative relationship with FDA (Food and Drug Administration) and the Centers for Disease Control and Prevention in the USA, vaccine safety is monitored by VAERS (Vaccine Adverse Event Reporting System). VAERS is tasked to collect and systemically review adverse effects and reactions that may be associated with vacci-

nations, assess the risks and pinpoint which vaccine, constituent or substrate has produced the unexpected symptoms. With set specific guidelines in place, the physicians are obligated to provide VAERS with the information regarding the vaccine side effects or post vaccine symptoms. The vaccine administered is tracked by the production and date numbers, the date administered, the person administering and parental/guardian consent. All of the above must be carefully recorded. The National Vaccine Injury Compensation Program is involved in evaluation and may as needed set up compensation for vaccine-related injuries.

vPhysicians and health workers should be expecting questions from the parents and be able to provide the answers and the explanations regarding vaccination, safety, efficacy and risks involved. Some parents have strong personal and religious beliefs regarding vaccination. The following questions need to be understood: do patients lack timely and up-to-date information; are there organizations and persons that oppose immunization by personal, religious and alternative medicine principles that are not scientifically based; is there a lack of trust in modern medicine, health care and physicians; and is there a lack of understanding the disease, the complications from infections, the risks and the inability to value the protection from disease or diseases that combined vaccines provide? When one sees parental opposition to vaccinations, it is imperative to clarify whether the fears and reasons for concern are regarding one or all vaccines. A recent nationwide USA questionnaire involving 1552 parents revealed the following: 90% of parents feel that the vaccines are a great way to protect from certain infectious diseases, 54% are concerned about post vaccination reactions, 25% believe that there is a vaccination and autism association and 11.5% have refused one to several vaccines for variety of reasons. It is a known fact that the current vaccines since 1930 are the most researched and scientifically evaluated medication that



is introduced into the human body, yet it is acknowledged that vaccines are not 100% safe. Fever and vaccine site reactions remain the most common side effects. Severe complications occur in approximately 1 out of 1,000,000 vaccinations.

As progress continues with the development of new vaccines, such as those against rotavirus and HPV (human papillomavirus), it is imperative to accept the fact that certain vaccine recipients do not develop the expected full immunity, yet vaccines are effective in 90% of cases. The parents frequently express the following concerns and questions whether there are too many vaccines given at one time, together or at too young an age. Is the immune system of an infant able to handle so many vaccines? What about the development of autism, allergy, diabetes and other autoimmune diseases in future? Is it scientifically proven that the immune system of an infant is well developed and can process multiple antigens and respond well with immunity? Current vaccines in the United States protect against 16 infectious diseases, and provide the effect of 177 individual antigens. To compare, the vaccinations in 1980 were protective against 8 diseases, yet there were 3041 varied antigens. Here we see the progress in the refinement of the vaccine biological ingredients. Combination vaccines have lead to more efficient and complete vaccination practice, less stress to the patient and time loss to parents. Psychiatrists have noted that children who have received their vaccinations in combined forms and at the commended time intervals perform better on psychological testing.

During the past 10 years, attention has been directed towards the debunked association between vaccines and autism. It started with Andrew Wakefield's 1998 publication in "Lancet". The extensive research that followed failed to prove any association of vaccines and the minute amount of mercury that is used as preservative in vaccines. The Wakefield study has now been discredited

and proven to be fraudulent. Fortunately, the diagnostic studies and the identification of autism have progressed and currently approximately 1 of every 100 children in the USA has been diagnosed to have an autism spectrum disorder. Genetic and environmental association is implied.

The antivaccination campaigns are very active. The news and the internet information that parents access provide scary unrealistic stories of vaccine-associated complications. It is very important to achieve a greater trust in medical area and in the individual physician. It is important to have an open discussion about vaccines, the side effects and the benefits of infectious disease prevention. The physician must be well informed, believe in immunizations, be a good listener and understand the parental needs and concerns. It is imperative that we protect ourselves, the population of Latvia, and the future of Latvia against preventable diseases. The infants, children and the adolescents will travel and are traveling anywhere in world and the health worker responsibilities are to keep the nation healthy.

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Why Cancer Prevention isn't Working Well Enough



Genon Jensen

There is a growing global consensus regarding a missing key element of cancer prevention. Increasing numbers of experts are convinced that the current focus on lifestyle changes related to alcohol and tobacco use, as well as maintaining healthy diet and exercise habits, needs to shift to emphasize government action to reduce harmful environmental exposures. A particular concern is the involuntary and unwitting exposures of individuals to harmful chemicals in everyday life.

The World Medical Association has added its weight to the argument in its "Statement on Environmental Degradation and Sound Management of Chemicals" agreed in 2010. It highlights the growing use of industrial chemicals and pesticides and calls for a more comprehensive approach to the safe regulation of harmful domestic and industrial substances [1].

The European Union is a recognised global leader on addressing this issue. It responded to the scientific evidence on human exposure to carcinogens with the introduction of



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legislation pertaining to chemical management known as REACH in 2007 [1], and later with legislation that supported a range of changes on pesticide use [2].

The US scientific community is echoing the EU's concerns. In May of 2010, recommendations by the US President's Cancer Panel Report called for stronger government regulations for better cancer prevention [3]. An article in the *New England Journal of Medicine* in March, 2011 has gone a step further by identifying environmental carcinogens as the number one threat to cancer prevention.. The article states: "The most valuable approaches to reducing cancer morbidity and mortality lie in avoiding the introduction of carcinogenic agents into the environment and eliminating exposure to carcinogenic agents that are already there" [5].

The World Health Organization's specialist agency on cancer, IARC, noted the contribution of exposure to synthetic chemicals as a contributor to cancer in a report in 2008. It recognised as important "the potential

cancer burden from exposure to hundreds of probable and possible human carcinogens that have been identified and from thousands of new chemicals that have not been tested for their cancer potential" [6]. A recent WHO review of evidence on the burden of disease from chemicals has concluded that, "the known burden of chemicals is considerable" and supports further action. "Effective public health interventions are known to manage chemicals and limit their public health impacts and should be implemented at national and international levels" [7]. Discussions on the required response were set to be addressed at a WHO meeting in Spain in March 2011 on "Environmental and occupational determinations of cancer, Interventions for primary prevention". A collective "call to action" for the primary prevention of cancer was planned [8].

What is primary prevention?

Primary "environmental and occupational" prevention could be defined as reducing involuntary exposure to harmful chemicals by removing carcinogens and other chemicals linked to cancer, such as endocrine disruptors, from the environment and the workplace. It is separate from early detection (such as breast cancer screening) and would benefit from being distinctly separated into systemic versus individual lifestyle measures.

Are chemicals to blame?

As noted in the WMA Statement [1], In recent decades there has been a rapid increase in the use of pesticides and fertilisers in agriculture and synthetic chemicals in consumer and industrial goods. During the same 50 years, the incidence of cancer has increased, despite some reductions in mortality rates due to improved treatments. Currently, in Europe, one in two men and one in three women is or will be affected by cancer. The increase in cancer incidence can only be partly attributed to an aging

European population. The rest – around 52% for men and 55% for women – must be attributed to environmental causes, which include the natural environment, work and indoor environments, food and so on.

Tobacco and alcohol cannot be blamed for the rising rates because their use is stagnating or declining in many European countries. This is confirmed in some European countries by the decrease in cancers that are mostly related to these substances, such as lung and oesophageal cancer. On the other hand, breast cancer rates have reached epidemic proportions in Europe. In France, the number of cases of breast cancer increased by an astronomical 97% between 1980 and 2000, according to a French national agency report [9]. New figures in the UK show that one in eight British women can expect a breast cancer diagnosis during her lifetime. Cancer amongst children is also rising. The average childhood cancer incidence has increased by 1% per year in Europe over the past 30 years. [10]. This worrying trend underlines again that risk factors associated with life style, such as alcohol, tobacco, diet and exercise, cannot be relied upon too heavily in cancer prevention.

Unsafe exposure

In the European Union, approximately 100,000 different synthetic chemicals are on the market, around 30,000 of which are produced at volumes of more than one ton per year.

In the last 25 years, less than 3% of these chemicals (1% in terms of volume) has been thoroughly analysed for their hazardous properties and given a formal and quantified assessment of their toxicological and eco-toxicological risks. The recent EU REACH and pesticides legislation are important steps in the right direction but implementation is very slow and many carcinogens and endocrine disrupting chemicals remain in everyday use.

If breast cancer rates are to be brought down, prohibitions and phase-outs of carcinogenic and endocrine-disrupting chemicals, such as Bisphenol A, need to be expedited to reduce everyday exposure. Professor Andreas Kortenkamp, a leading scientist on several EU research projects on endocrine disrupting chemicals and a signatory of the Prague Declaration on endocrine disrupting chemicals, says that the risk of breast cancer will not be reduced until preventable causes, particularly exposure to chemicals, are addressed [11]. Childhood cancer incidence may best be addressed by reducing exposure to pesticides. A comprehensive review of the human health effects of pesticides by the Ontario College of Family Physicians highlights several studies implicating pesticides as a cause of non-Hodgkin's lymphoma and leukaemia in children [12].

For all cancers, the potential impact of primary prevention is probably underestimated rather than overestimated. Although evidence of some direct correlation exists, little is known at the present time about the risks from combinations of exposures at levels found in the environment. Equally, too little is known about exposures during critical time windows of development or in susceptible populations. As a report from the IARC pointed out: «Cancers may have multiple causes, so that environmental factors may contribute to cancers that are attributed to occupational or lifestyle factors» [4].

What needs to happen?

Countries around the world can draw on the findings of the US President's Panel on Cancer, which include the call for a removal of carcinogens, mutagens, chemicals toxic to reproduction and endocrine disruptors from the market. HEAL and others at the World Health Organization meeting in Asturias, Spain in March, 2011 intended to present the President's Panel recommendations for inclusion in a planned call

to action for the primary prevention of cancer, which is also likely to address the more traditional exposures, such as passive smoking and radon. The recommendations of the US President's Panel will also be useful to WMA members who are taking the Statement on Environmental Degradation to the national level.

If major inroads into cancer prevention are to be made, national and EU cancer prevention plans should take into account these recommendations on primary environmental prevention, including carcinogen and EDC exposure. The EU's "Action against Cancer: European Partnership" does not currently address environmental and occupational dimension in preventing cancer. In an effort to correct this omission, HEAL has brought together 21 groups, including the European Respiratory Society and the International Society of Doctors for the Environment, to support the need to address primary environmental and occupational carcinogen exposure in cancer prevention [13]. Spain has already incorporated environmental prevention into its national plan. It needs to be ensured that the national cancer action plans that all EU member states are preparing or implementing also highlight the environmental dimension.

WMA national leaders can also help make information materials available for fellow doctors. US doctors have already produced a fact sheet on "Cancer and the Environment: What health care providers should know" [14]. A training programme for doctors themselves is planned in Paris immediately after the Paris Appeal 2011 meeting on children's health and the environment in April [15]. The role of WMA, doctors and scientists in supporting this shift in cancer prevention cannot be underestimated. Governments need the support of public health arguments from medical professionals to make the necessary policy changes that will bring major reductions in cancer incidence worldwide.

The Health and Environment Alliance aims to raise awareness of how environmental protection improves health. It achieves this by creating opportunities for better representation of citizens' and health experts' perspectives in the environment and health-related European policy-making. Our membership includes a diverse network of more than 65 citizens', patients', women's, health professionals' and environmental organisations across Europe and has a strong track record in increasing public and expert engagement in both EU debates and the decision-making process.

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Leadership and the Medical Profession

The World Medical Association Council recently held its 188th session in Sydney. The previous occasion was its 138th session which I attended as vice president of the Australian Medical Association.

On that occasion, the Finnish representative asked of the Council, "Should the WMA have a policy on nuclear weapons?" The representative of a large European country replied, "We should involve ourselves only in matters of a strictly medical nature". Really? Can the responsibilities of physicians to the health and integrity of hu-

man life, and the causes embraced by their representative bodies, be restricted to those of a 'strictly medical nature'?

In answering this fundamental question lies the relevance or otherwise of the profession in a world so desperately in need of leadership. The qualities of leadership cannot be taught, but they can be understood. The power is in the story.

Hanging on the wall of my Brussels office is a large black and white photograph. I have always hung it opposite my desk. It reminds



Brendan Nelson

me every day of what is really important. It is of the late Neville Bonner, the first Aboriginal Australian elected to the Australian parliament (Senate) in 1971. But that alone is not why it is there.

Neville was born in 1922 on Ukerabagh Island in the mouth of the Tweed River in northern New South Wales. A Jagera man, he was born there because Aboriginal people were not allowed to be in town after the sun had gone down. Raised first by his mother in a hollow carved by his grandfather under Lantana bushes, he was born into a world of great adversity.

At the age of nine, the year before his mother's death, Neville was sent to the school in Lismore. He lasted only two days before the non Aboriginal parents forced him out.

It was to Ida Bonner, his grandmother, that Neville attributed his final success. At the age of fourteen, she insisted he go to school. He did, attending Beaudesert School in Queensland for one year. Ida had said, "Neville, if you learn to read and write, express yourself well and treat people with decency and courtesy, it will take you a long way".

And it did. It took him through a life of being a stockman, labourer and scrub clearer. He spent eleven years on the infamous Palm Island and then worked as a bridge carpenter. Finally in 1971, the Liberal Party of Australia selected him to represent the people of Queensland in the Australian Senate.

He had said to those who chose him, "In my experience of this world, there are two human qualities of which we are always in greater need – human compassion and understanding". He served for eleven years, embracing many causes with conviction and principle. Even as a Senator he endured discrimination, but always argued that in dealing with injustice, his people should seek to change laws, not break them.

In 1992, asked to nominate his greatest achievement, he replied, "It is that I was there. They no longer spoke of boongs or blacks, they spoke instead of Aboriginal people". His life is testimony to the transformative, liberating power of education and above all human virtues stands the power of character. The Jesuits laid a foundation for me, teaching me four things essential for a 'successful' life. Commitment. Nothing would be achieved without consistent application to that in which you believe. Conscience. Beneath every decision lies the question, "what is the right thing to do?"

Compassion. In a literal sense it means to share another person's pain. In leadership, it is to be imbued with the imaginative capacity to see the world through the eyes of someone else. Knowing what someone else thinks is important, but understanding *how* they think is the key to effecting change.

Courage. Everything of value worth achieving demands taking a risk for others. Another major influence in my life is the former AMA president, Dr. Bruce Shepherd. It was upon his shoulders and through his courageous vision that the modern Australian Medical Association has been built.

At my first encounter with Dr. Shepherd who had enjoyed a high, combative profile in Australia through the 1980s, I told him I didn't like him. He responded, "I am going to give you a lot of advice. The first is to never pass an opinion on someone you have not met".

Bruce Shepherd later taught me the importance of having people around you possessed of two qualities. The first was that they had to be 'overenthusiastic' to the point of having to be 'hosed down' a couple of times a day.

The second quality was belief. "Surround yourself," he said, "with people who have been prepared to bleed for a cause in which they believe. That you share that cause is

less important than that they have been prepared to give their all for their beliefs".

When I assumed the presidency of the Australian Medical Association in 1993, it was a different time. Australia was emerging from a period of virulent anti doctor sentiment in which the motives and incomes were questioned as the fodder of daily political discourse. Doctors had been embraced as the enemy in a class struggle.

Consumerist movements – many in receipt of government funding – were demanding 'equity and justice' as the nascent push to de-medicalise the health care system gathered momentum. Health financing was seen as an instrument of control.

'Free' healthcare was equated to 'good' healthcare. One half of Australia's health-care system funded its endless wants in outpatient services. The other half, catering for our needs – hospital care, was seriously rationed as governments systematically withdrew political and financial support for the private sector.

Intra professional rivalries and resentment of medical groups to one another with widening income differentials concluded a gloomy scenario. The early priorities were policy, personnel – bringing people together, organisational structure and the political dimensions of the challenges ahead.

How, I asked myself, could we harness the idealism in members of the profession to practical achievements serving others? Externally, we had to actively engage the political process at all levels and in doing so, form coalitions with unlikely groups.

The AMA would have to go where it had rarely ventured – so called 'social policy'. To abandon idealism was to not only court irrelevancy, but would diminish the profession's authority and influence in its pursuit of its legitimate professional and industrial interests.



Although many of its members had dedicated their lives to improving the health of indigenous Australians, the AMA had done little in the public policy space to address the appalling health, premature deaths and existential despair of the first Australians. Spurred on by the AMA's advocacy, the health minister repeated to a Sixty Minutes journalist whilst touring remote Australia, what he had said to me privately when I first nominated Aboriginal health as an urgent, national health priority.

The journalist asked, "Why, after eleven years in government is the situation still so bad?" The Minister replied, "I've spent a lifetime reading polls, and concern for Aboriginal people has not been in the top million issues worrying the voters".

I travelled the length and breadth of Aboriginal Australia, bringing to the consciousness of middle Australia – the 'voters' – the shocking circumstances of indigenous Australia, what should be done to address it and admitting the prior neglect of the profession at its representational level. When standing in a pit of poisoned dog carcasses to illustrate a point about a process that had led to sick Aboriginal children, an official hurled abuse, "that's not the sort of thing the president of the AMA should be doing!" I firmly replied, "Yes, it is precisely what the president of the AMA should be doing".

Similarly in tobacco control, it's not good enough to pass a motion, tuck it under the profession's collective pillow, go to sleep and expect someone else to take up the fight. It required leadership at public demonstrations to get the industry out of sport and debate credible business and sporting identities to have its media promotion banned. At one point I had to hold up to Australia's National Press Club a packet of cigarettes with a barely readable health warning. Alongside it I held a packet of Ratsak which boldly stated in black on gold, "Kills Rats and Mice".

That act resulted in the then government moving the same day on new, graphically powerful health warnings.

The health and human effects of unemployment, aid programmes and rights for women in the developing world, repeal of laws banning homosexuality, population and environment, boxing, gun control, female genital mutilation, illicit drugs, youth despair, euthanasia and many other issues were driven by the AMA.

The AMA's political influence rose as did its membership. But it was not supported by all. One physician wrote, "The health problems of Aboriginal people are social issues beyond the scope and responsibilities of doctors. Get back to health". Another was blunter, "As you are no longer interested in my income, I hereby tender my resignation".

A recently qualified anaesthetist argued that she saw no reason to join the AMA. She had "little in common with other doctors" and, "unemployment and tobacco advertising had little to do with her".

More than a few politicians told me that the medical profession was in danger of 'losing its credibility' because of its increasing outspokenness on social issues that in their opinion had nothing to do with health.

Why does any medical practitioner study medicine, engage in research, teach and generally strive for excellence? Surely it is because our commitment to an ethic of service to other human beings, as individuals and a community, overrides notions of a preoccupation with our own influence and importance.

Yes, we have obligations to individual patients, *uberrima fides* – to always act in the utmost good faith. But we also have two others. In joining the profession we assume responsibilities for the broad, epidemiological aspects of health.

We also have a responsibility to society itself. Doctors must be agents of change, challenging and changing the way our country and world thinks about a range of health and social issues. We must also be a voice for those who have neither power nor influence.

The Australian government is proposing to legislate generic packaging of cigarettes. In doing so, it will break the link between the packing and the sophisticated marketing created by the industry that entices pubescent young people. As they cross the threshold to what is frequently a lifetime of pitiable addiction, ill health and premature death, they are drawn to an aspirational image created for them.

Why should a product injurious to human health at any level of consumption recommended by the manufacturer be packaged as if it were chocolate or perfume? Will the WMA take up the cause knowing that if Australia prevails over the industry, the rest of the world will inevitably follow with generic packaging? Another issue that the WMA could embrace is that of newborn deafness.

Hearing is the primary sense for communication. Today, with early screening, a cochlear implant and audio verbal therapy, a baby born profoundly deaf can, by the age of five be fully integrated into the hearing, speaking world attending normal schools.

Yet there are those who think deafness is a 'gift', who consign these children to the deaf world. Does the WMA not see a role for itself in transforming the lives of the deaf throughout the world as a respected, powerful advocate? Gestures of intellectual independence from professional organisations and associations mean that whatever you stand for will remain in obscurity.

Medicine is not confined to textbooks and journals, but extends into the life and fabric of society itself. As such, we have an obliga-

tion to demonstrate an activism of caring. In this, the WMA remains an untapped agent of change for good.

The key is to keep an open mind, nurture the inner integrity of your intellect and recognise that your ultimate success will derive from the humanity shown to others.

It seems we live in a world of fundamentalist intolerance, in vast ignorance of the long

term consequences of decisions we make and that are made for us. With global economic uncertainty, tectonic shifts in geopolitics and rapid technological change, what we need most is – one another.

The world needs a strong, coherent medical voice on much more than issues of a 'strictly medical nature'. The extent to which it does so will determine its influence and respect. The profession has a responsibility

to shape those polls so studiously read by our politicians. In doing so, it can change the world.

*The Hon Brendan Nelson,
13th President, AMA;*

*Australia's Ambassador to Belgium,
Luxembourg and the European Union;
Australia's Representative to NATO & WHO*

Capacity Building Collaboration in the Area of Undergraduate Medical Education: an experience from Gadjah Mada and Maastricht University



Geraldine van Kasteren

Universitas Gadjah Mada (UGM) in Yogyakarta on the island of Java, Indonesia traces its origins to 1949 when a group of Indonesian intellectuals established a foundation which subsequently gave birth to the Universitas Gadjah Mada.

UGM is the oldest and leading university in Indonesia striving to stay on the cutting



Titi Savitri P Damardjati

edge of educational affairs and scientific development. In addition, it has always been a goal of UGM to give something back to the community, both providing social services, as well as producing students who are dedicated to the greater Indonesian population. UGM Faculty of Medicine was founded earlier in 1946 when during the war, the medical school in Jakarta was moved to Klaten.

The cooperation between the Universitas Gadjah Mada (UGM) and Maastricht University (UM), Maastricht, The Netherlands has a long history which can be traced back to 1980s. Both universities have shared a strong interest in innovation of its health professions education, with the ultimate purpose of making the education more relevant for the societies that they serve. UGM Faculty of Medicine

(UGMFM) has been a pioneer in educational innovation, in Indonesia and internationally, especially in community-based education and in introducing innovative learning formats. The Faculty was the first to introduce small group tutorials applying problem-based learning (PBL) methodology in Indonesia since 1985.

In 2002, the whole curriculum was changed into a PBL curriculum using block system, first in its international program in medicine, later also in the regular medical program. Already in the early 1990s UGMFM established the so-called 'skillslab' to train its undergraduate students – a development supported by a co-operation with Maastricht University. New government laws in 2002 obligate all medical schools in Indonesia to develop and implement competence-based medical education with a family medicine orientation. Standards of Competence for Indonesian Medical Doctor was issued by the Indonesian Medical Council in November 2006.



Thanks to previous innovations, UGMFM is nationally a leader in this important change process. In order to be able to develop its medical education further in these directions, UGMFM intended to do a major curricular reform of which external support is needed, especially to strengthen the knowledge and skills of staff, to monitor the progress as well as to improve the management system which is more compatible with the competence-based philosophy.

In the current collaboration project with Maastricht and Groningen Universities, specific attention is given to clinical education, which has not been standardized in Indonesia and often is of low quality. Next to GMUFGM, several teaching hospitals, district hospitals and community health centres in the region surrounding the city of Yogyakarta got supports from the project in relation to the strengthening of clinical teaching.

This includes training of hospital staff involved in clinical teaching and provision of books, educational equipment and skills lab. Another focus is continued support for developing and refining the new curriculum, in which PBL and skills training are more consistently applied and a family medicine orientation are developed. This involves staff training, both on the spot, but also some graduate training (masters and PhDs in medical education) in the Netherlands. Furthermore, it supports the development and production of teaching materials (like so-called 'block books', skills lab manual, literature references, study guide, etc) for the whole undergraduate curriculum.

Attention has also been given to the sharing of GMUFGM's experiences in medical education innovation with other 52 medical schools throughout Indonesia through sharing of expertise in national seminars, training, and study visits. Also this project contributes to the Indonesian Medical Council (IMC) as a national regulatory body, to be able to develop a national assessment and accreditation system through sharing of expertise.

The overall aim of this project is to strengthen competence-based clinical education using a Problem Based Learning strategy, to enhance the competencies of Indonesian medical graduates, who will subsequently provide better quality health care.

Maastricht University, through the office of MUNDU, in collaboration with Groningen University supports capacity development in higher education in general and in medical education in particular, through facilitating innovation of educational methods, curriculum development, training of staff, improvement of teaching and learning resources, the establishment of new courses etc.

Whenever there is a clear demand for the expertise that Maastricht University and its network can provide MUNDU is willing to sup-

port. MUNDO is facilitating the process and connects the experts from both sides in teams with a shared vision of what needs to be accomplished. In MUNDO we believe that real capacity development, especially in higher education, is more than doing a project. It is about establishing open minded partnerships based on equity, reciprocity and mutual respect.

Such partnerships enable academics and students to step over institutional and country borders, and engage in a free flow of knowledge and ideas for the advancement of their own country as well as the global society. This we believe is sustainable capacity development.

During the course of this Project funded by the Dutch Government, trust and sincer-

ity have grown out of those involved which have overcome some obstacles.

Lessons learnt from this long collaboration between the universities are first of all that a strong basis of mutual trust and respect is required to have effective exchanges of ideas. This can only be built in the course of time, patient is needed. Secondly strong leadership is indispensable for a change process to have the chance to succeed. Management capacities in the organization are equally important to be able to feel the impact of increased capacity of the individuals in the organization. A good monitoring system needs to be developed both for the project as well as for the faculty. An open communication system (internal and cross cultural) is needed to ensure developments are shared and understood.

Lastly an intensive collaboration project is a great learning experience for all project members involved; theories and methods that might already be implemented in one institute need to be redesigned or adapted for the other to be useful, a copy-paste approach is doomed to fail.

Only persons who are open minded and are capable of modifying their views and opinions to a changing context will succeed in capacity building with a sustainable impact.

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News from the CPME (Standing Committee of European Doctors)

CPME represents the National Medical Associations of 27 countries in Europe and works closely with the National Medical Associations of countries that have applied for EU membership as well as specialized European medical associations



Konstanty Radziwill



Birgit Beger

CPME Spring Board meeting and General Assembly in Brussels on 30 April

At its Spring Board meeting and General Assembly held in Brussels on 30 April and chaired by CPME President Dr. Konstanty Radziwill, the CPME members came together to discuss latest items of interest for the European Medical Profession, including policies which look at the bigger picture of public health. The CPME inter alia approved a document addressing health inequalities and outlining main actions, furthermore a position on the Innovation Partnership for Active and Healthy Ageing, and also a policy on climate change and its relevance for health. However, CPME positions regarding the core business of professional policy, like the European Working Time directive, the Professional Qualification directive and European Health Workforce were discussed as well. The day before the meeting, national experts from the National Medical Associations addressed policy subjects in specific working groups.

Dr. Paul Timmers from the European Commission DG Information Society and Media (Director of Directorate H: ICT addressing Societal Challenges) was invited as a guest speaker and addressed the EU eHealth Policy Developments and the Innovation Partnership on Active and Healthy Ageing, a Flagship initiative from the European Commission involving three Directorate Generals (DGs): DG Health and Consumers, DG Information Society and DG Research. The CPME is member of the Steering Group for the Innovation Partnership.

This article aims at highlighting a few of the many topics discussed at the fruitful CPME spring meetings.

Innovation Partnership on Active and Healthy Ageing

CPMEs' Statement on 'the European Innovation Partnership on Active and Healthy Ageing' sets out main points for action for a successful planning and execution of the next stage within the European Innovation Partnership on Active and Healthy Ageing. The overall outcome set by the EU is to increase healthy lifespan in the EU by two years by 2020. According to CPME, much of the "innovation" required will not be a new form of telemonitoring or telemedicine, (although these are clearly important, and will drive the involvement of industry), but a new way of working horizontally across different clinical disciplines and sectors. CPME suggests identifying pathways for piloting that have established clinical management, role identification, measurable outcomes and a degree of patient involvement.

While "hard" evidence of improved outcomes is essential, "soft" evidence is also important. These include more qualitative assessments, such as independence, increased confidence in self-management, and reduced isolation. Workforce issues of health

professionals, as well as innovative technologies, a sustainable health policy even in times of financial crises for the health care systems are decisive elements for any strategy of the innovative partnership from the doctors' point of view.

Health Inequalities

In an own initiative position paper which is based on a survey among CPME members, the CPME addresses three major reasons for caring about health inequalities. The first is that avoidable health inequalities are simply and many would say immorally unfair. The second is that avoidable health inequalities often infringe an internationally acknowledged human right to health. The third is that health inequalities are economically costly – societies with smaller health disparities do better in economic terms than societies with wider health inequalities.

As an organisation of medical doctors, CPME concentrates its lobbying activities on health related issues to reduce inequalities and give priority to the following measures: improving the data and knowledge base and mechanism for measuring, monitoring, evaluation and reporting; improvement in infrastructure, especially water and housing; improved maternal and child health care; securing the right to health for disadvantaged people including illegal immigrants and asylum seekers.

At the National Medical Associations' (NMA) level, CPME recommends that NMAs contribute to the reduction of social gradients by drawing government attention to the ratification of international conventions or charters that secure the right to health and lobby health authorities for better healthcare, particularly for the disadvantaged people.

The survey on health inequalities conducted by CPME among its members in 2010 showed that the social determinants are

often more important than differences in access to health care. The main reasons for health inequalities are the social gradients.

European Health Workforce

The European Health Workforce is encountering the problem of shortages of workers and workers' mobility. The European Commission has established that in 2020, 1 Million health care professionals will be missing in the European Union. The CPME believes that there is a need to offer more attractiveness to the medical profession by giving good working conditions and good pay. To assess the current situation, a first step the CPME will undertake is to gather data among national medical associations.

The CPME will closely monitor further developments in the review process and will take an active stand for the interests of the healthcare workforce and their patients.

European Working Time Directive

In response to the review of the Working Time Directive 2003/88/EC, the CPME restated its previous position that the opt-out clause is to be abolished. On-call time is working time as stipulated by the European Court of Justice as well as compensatory rest has to be granted immediately following longer working periods. The CPME co-signed and submitted these comments on the review of the Working Time Directive together with AEMH (European Association of Senior Hospital Physicians), EANA (European Working Group of Practitioners and Specialists in Free Practice) and FEMS (European Federation of Salaried Doctors).

Task shifting

The CPME adopted a policy on the impact of task shifting on doctors in training which



calls for adequate training opportunities for junior doctors. CPME recommends that each member state ensures that adequate training opportunities are ring-fenced for doctors in training and that the wider impact of task shifting is investigated in order to ensure that patients receive care from the most appropriate health professionals without compromising on education and training standards for doctors in training.

Recognition of Professional Qualifications

European physicians welcome the three challenges set by the European Commission in the revision of Directive 2005/36/EC on professional qualifications. These challenges – simplification of the existing system of recognition of professional qualifications, facilitation of the access of professionals to the internal market, and enhancement of trust in the system – enjoy the full support of European physicians.

The CPME supports greater transparency of training contents specified at national level instead of a 'European' curriculum for training.

eHealth

The delegations decided to consider the CPME note on a professional electronic ID card for doctors as a basic document for further developing its policy.

CPME has participated in the Steering Group by the European Commission on the professional ID card, which started in January 2011 in the context of the revision of the Professional Qualification Directive.

The CPME will continue its work on assessing the scope of applications of an electronic ID card for professionals and is engaged in a debate on how to prepare European doctors for the challenges of eHealth.

Currently, CPME is involved in the 'eHealth joint action in the eHealth Governance Initiative' and the EU funding project 'Chain of Trust' which aims at a better understanding of challenges from a users' point of view (including doctors, patients, nurses, pharmacists), including the national and regional level.

Climate Change

The CPME delegations adopted a position paper on climate change which calls for developing evidence of a substantial and measurable benefit to health arising from greenhouse gas reduction, and will encourage its members to lobby for inclusion of the economic and health benefits in the Durban COP17 agreement. The Durban COP17 agreement is expected to be adopted at the next United Nations conference on climate change (COP17) in Durban at the end of this year.

The CPME position paper underlines that what was almost universally apparent was that little is understood about the beneficial effects to health brought about by greenhouse gas reduction. It is essential that doctors within the EU give more leadership on this issue.

The CPME can play a role in (a) publicising these benefits at both EU and Member State level, (b) influencing national governments to place these co-benefits on the Durban agenda, (c) encourage further work to be done on analysis at MS level, and (d) influencing national negotiators.

Apart from this, the CPME is involved in the Commission Working Group on Green Infrastructure organised by DG Environment. This initiative has been created out of concern for the effect climate change will have on biodiversity. The uncertain effects on infectious disease transmission and prevalence is just one example of a damaging biodiversity impact, but CPME's mem-

bership has been additionally welcomed because of its interest in co-benefits, and therefore expertise in emphasising within new Commission work a "health in all" approach to all the EU's climate change work.

Pharmaceuticals

Revision of the Clinical Trials Directive 2001/20/EC

In its response to the consultation, the CPME in general agreed with the revision of the 'Clinical Trials Directive' 2001/20/EC as proposed by DG Health and Consumers, but underlined *inter alia* that there should be one single framework for all clinical trials considering certain variations, e. g. as to non-interventional trials taking into account the protection for patients and the respective workload involved. The non-commercial/academic investigators should receive some financial or other support in order to cope with the administrative workload. However, also in view of the recent pharmacovigilance legislation 2010/84/EU, in any case, a "race to the bottom" needs to be prevented i. e. requirements for clinical trials must not be diminished.

New CPME Members

At its spring meeting, the CPME accepted the application of the Albanian Order of Physicians and welcomed them as new observer member to the CPME.

Next CPME meetings

The Autumn CPME Board meeting and General assembly will take place in Brussels on 26 November 2011.

Dr. Konstanty Radziwiłł, President, CPME
Birgit BEGER, Secretary General, CPME
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Innovation, Efficiency and Productivity in Health Services...

Keynote speech at the *Innovation in Healthcare: Improving Care, Driving Efficiency conference*. 12th May 2011, the Barbican, London



Lynne Maher

Can you imagine a time when the experience of millions of patients, families and care givers has been fundamentally transformed?

For example, there would be no-one waiting unnecessarily for care; an end to the millions of unnecessary patient visits; hospital bed days and clinician tasks eliminated; care provided is reliably 'right first time' – instead of the typical 40–45% defect rate; and staff have stopped 'firefighting' and concentrate on quality care.

All this *is* actually happening somewhere in health systems today. Around the world people working in every aspect of health-care services have been innovating, resulting in efficiency, productivity and exceptional care for patients. However, the fact that it is not standard everywhere is a major challenge which requires innovation. I will return to this later.

Innovation

What do we mean by innovation in the context of health services and can innovation really lead to efficiency and productivity? This is a question that I get asked many times by colleagues from both within the National Health Service (NHS) and across the world. My answer is always "yes, it can".

Anyone involved in innovation will know that the mere mention of the word will evoke a debate about its meaning. If you seek a definition through a search engine such as Google, you will be rewarded by at least 61,800,000 returns [1]. I would argue that the word itself is actually not that important, and instead of getting hung-up on semantics, we need to focus on the people who want to be innovative and what it means to them in their particular context. Within the NHS, we often start discussions with local teams by describing innovation as "*Doing things differently and doing different things, to create a step change in performance*" [2] before moving to explore exactly what this might mean for their challenges and aspirations in their local context.

In health services we need innovation in technology and clinical devices, information systems, care processes and organisational systems to name a few. All of these play their part and are integral to the way that health services are delivered.

The increased need for innovation

The benefits of innovation have been articulated by many [3, 4] and innovation has

been cited as a major contributor in turning around challenged or ailing organisations [5]. The recent financial crisis has created increasing pressure on health budgets, many of which have been reduced or in the least remain static. For example, the NHS in England has enjoyed a decade of unprecedented growth at an average rate of 6.6% a year [6] but is now facing the challenge of reducing its financial expenditure in order to achieve in an environment of rising costs, expectations and health needs. This reduction represents the need for health services to effectively reduce expenditure by £20 billion in the next three years.

For some, the economic crisis will result in actions that represent pure cost cutting, which often leads to compromised quality and rarely results in innovation. However, for others it can actually provide a fertile platform for innovation by stimulating organisations to engage in conscious and deliberate thought about how to meet the need to deliver higher quality care with fewer resources. It is in this type of environment that a crisis can stimulate innovation which in turn can result in new ways of providing services and new ways of working at reduced cost, while increasing the quality of care.

Leadership responsibility

Innovations often emerge from front line staff [7] and there is a massive leadership responsibility in supporting this to enable it to happen. Leaders have a disproportionately large effect on the cultures of organisations and systems, and need to signal to staff, through communication and action, that they are seeking and supporting innovations in order to overcome current challenges [8].

In a recent study [10] within the NHS, two thirds of staff respondents stated that they were not adequately supported by senior leaders to undertake innovation and

improvement activities. If staff do not feel supported, they are much less likely to be inspired to have or try out new ideas.

*"...Strategies and processes alone are not sufficient to drive the degree of change we are seeking...the NHS should focus on tackling the **behaviours and cultures** in the system that stand in the way". Sir David Nicholson, Chief Executive of the NHS. NHS Annual Report 2009 [9].*

Many leaders believe that they do support staff and here lies a problem: a disconnect between what is *believed* by leaders and what is *happening* from the perspective of staff. A new diagnostic framework which identifies seven dimensions that are important and influential to the culture for innovation in organisations has proven to be useful for staff, who can share their views on how supported they feel, and for leaders who, when furnished with information from the survey, can better understand how to create a culture where innovation can flourish.

Seven Dimensions of Innovation Culture [8]

- *risk taking*
- *resources*
- *knowledge*
- *goals*
- *rewards and recognition*
- *tools and methods*
- *relationships*

Risk Taking is about establishing an organisational climate where people feel free to try out new ideas by judging any risks appropriately. Leaders in innovative organisations demonstrate that they are more interested in learning from 'failure' than in punishing it.

The **Resources** dimension considers the broadest sense of the word. The climate for innovation is enhanced if people know that

they have the 'resource' of authority and autonomy to act on innovative ideas, as well as some financial resource to support the new work.

Broad-based **Knowledge** is the fuel for innovation. We create better conditions for innovation when information, from both within and outside the organisation or system, is widely gathered, easily accessible, rapidly transmitted, and honestly communicated.

Contrary to what some may believe, the literature clearly shows that **Goals** can actually support innovation. Organisational and system leaders should signal that innovation is highly desirable by setting aspirational goals in specific areas, and challenging teams to find ways to realise the vision.

Rewards for innovation are symbols and rituals of which the main purpose is to recognise innovative behaviour. Because it is all about encouraging more of this sort of behaviour, the best rewards are those that appeal to people's intrinsic and individualised motivation.

In high-performing organisations, innovation is the product of the deliberate use of practical **Tools**. Leaders need to consider how they build capability and capacity in deliberate methods for creative thinking, idea management and implementation.

"Undervaluing and under investing in the human side of innovation is a common mistake".

Rosabeth Moss Kanter 2006 [11]

The **Relationships** dimension refers to the patterns of interaction in the organisation or system. Innovative ideas are rarely the product of a lone genius, therefore environments where staff are routinely exposed to a wide range of different thinking, from a wide-range of people, with a wide range of

backgrounds and points of view, provide rich soil for the growth of innovation.

A mindset of abundance

In times of austerity, we often focus on what we feel we do not have; for example, we feel we don't have enough financial resource, we don't have enough beds, we don't have enough clinical staff, we don't have enough choice to provide the type of services that we would like to. This leads us into a specific mindset which can result in a downward spiral of negativity and despondence and in turn, this can result in a reduction of performance in staff and ultimately the organisation. It is exactly at times of constraint that we should focus on what we do have and ensure that we use those resources wisely. Paul Batalden said, "We should work not from an assumption of scarcity, but from an assumption of abundance" [12]. Within the NHS for example, we know that we have an abundance of highly skilled nurses, just over 400,000 of them. How can we as leaders help those 400,000 nurses help us to achieve the transformational change that is needed in our system? How can we encourage them to identify new ways to provide care that increases quality and at the same time reduces cost?

Would words such as "let's start a new cost improvement programme" or "we are stopping the employment of all temporary staff" or "you need to reduce consumables including stationary in order to reduce costs" inspire those nurses who want to provide the best care that they can to patients and their families? The answer is no, this will lead them into the mindset of cost cutting. However, there is a massive opportunity to harness the will, the skills and expertise of thousands of nurses and this can be achieved by focussing on the way *any* particular challenge is framed. By making it clear to staff, through communication and action, that innovation is needed in order to overcome current challenges, leaders can

utilise the abundance of nursing resource to achieve organisational goals. When communicating the challenge, it needs to be obvious that new ideas are desirable and that the aim is not to just tinker with the status quo or apply a blanket cost cutting formula. Staff need to understand what and how they as individuals or small teams can actually contribute.

If we return to the current NHS challenge of maintaining high quality care while reducing costs by £20 billion over the next three years and articulate that to ward staff, it simply feels too overwhelming. It is a leadership responsibility to help staff to be able to effectively understand what all of this means for them. One way of achieving this is through effective communication which frames the challenge and aspiration in a way that is more tangible and achievable within a local context. For example, rather than only articulate the high level challenge of reducing costs across the whole NHS (the £20 billion) leaders need to be able to identify what their organisation – down to the detail of each ward and department – can contribute (Table 1: Framing to engage staff).

Table 1. *Framing to engage staff*

From	To
<ul style="list-style-type: none"> • The NHS needs to reduce its costs by £20 billion 	<ul style="list-style-type: none"> • As an organisation, we need to contribute to the overall cost reduction for the NHS
<ul style="list-style-type: none"> • Everyone needs to work within the new Cost Improvement Programme (CIP) 	<ul style="list-style-type: none"> • We are launching a 'call for ideas' from all staff and patients and their families
<ul style="list-style-type: none"> • With immediate effect there will be no employment of temporary staff 	<ul style="list-style-type: none"> • We need new ideas that could maintain quality and reduce cost on each ward by at least £11,000 this year; if we can save more, that would be even better
<ul style="list-style-type: none"> • All staff must reduce consumable use including stationary 	<ul style="list-style-type: none"> • These ideas could be about reducing waste, changing the way we work or looking at the materials we use, for example

Designing services with patients and family members

Following the theme of abundance, we also need to recognise both the sheer volume of patients and family members and the valuable input they can provide. In conversations with colleagues at the Design Council in London about designing services with customers, the group reflected that '*Patients and families are the biggest untapped resource in the NHS*'.

By working in partnership with patients, using methods that have been adapted from the service design industry, staff have been able to demonstrate many changes that have had a fundamental impact on health service delivery. For example, when focusing on the actual experience of being part of a health care process (rather than focusing on the process primarily from a clinical perspective) one service, which was considered to be one of the best performing within an organisation, made 42 improvements, including removing steps in the process, which added no value to the patient, and improving safety – both of which reduced

overall cost. A primary care organisation considered transferring neurological services into the community in order to bring care closer to the homes of patients living with multiple sclerosis (MS). It was thought that this option would increase quality, although it was actually more expensive than the current provision. After working with people living with MS and their families, they discovered that this would not improve 'their' experience, it would actually make things more difficult. With the current system patients were able to co-ordinate their various health needs into one visit to the hospital, the change would mean they still needed to make a trip to the hospital and in addition, they would have a trip to the community unit, resulting in an additional visit from their perspective.

The real problem for those living with MS was getting specialist information and other help – advice about benefit payments, help with movement or repairing wheelchairs and other equipment. The primary care organisation had good intentions, however their proposed solution was more expensive and it did not provide a better experience for patients, the actual customers of the service. The result of working closely with patients and family members was in fact to maintain the existing hospital consultant led service but patients and staff worked together to explore new and more effective ways to access services and information that they needed and this led to the development of a new social network site that they designed together [13].

Learning from other industries

We also have to remember that patients and their families bring not only their perspective of experiencing health services, they can also offer knowledge and expertise from other aspects of their daily life – such as their work roles. Innovation often occurs through the adaptation of something common to one industry, which is new to



another. There are many illustrations of this within the NHS, for example, when exploring how to improve safety, a checklist was adapted from the aviation industry and is now being used by both airline pilots and surgeons alike. Tools and techniques for understanding customer experience have been adapted from the service design industry and lean methodology is now almost commonplace after being adapted from the manufacturing industry.

It is this last example that has particularly yielded improvements in efficiency and effectiveness. The NHS Institute for Innovation and Improvement has utilised lean methodology within a variety of health care settings in order to increase productivity and release time for professionals to focus on high value-adding activity. The Productive Series [14] incorporates seven programmes designed to support different areas within health services. All have resulted in an increase of efficiency, productivity and quality at lower cost.

When using the Productive methodology [14], hospital ward teams report an increase in direct patient care time by 40%. This means nurses spending more time with patients, less time on administration increasing their ability to create more capacity for value-added work. Unplanned staff absence rates dropped by 6% in organisations using the 'productives', which not only represents a cost saving, but indicates an increased positive feeling for staff.

In addition to increasing quality, the programmes can also lead to the reduction of cost. The Productive Operating Theatre programme can provide an average trust with an improvement opportunity of over £7 million through, for example, the reduction of waste, increase in safety and more efficient scheduling. The Productive Leader tools can help staff free up between 40 and 46 days per year in eliminating tasks that were actually 'wasteful'. Although early in its development, the Productive General

Practice has already identified both qualitative and quantitative improvements.

The Productive Series [14]

Productive Ward
Productive Community Hospital
Productive Community Service
Productive Leader
Productive Mental Health Ward
Productive Operating Theatre
Productive General Practice – in development

I will now return to the beginning of this paper and the issue of what is happening 'somewhere'... In healthcare we have examples where the experience of millions of patients, families and care givers *have* been transformed – for example; where no-one is waiting unnecessarily for care, an end to the millions of unnecessary patient visits; hospital bed days and clinician tasks eliminated; care provided is reliably 'right first time' – instead of the typical 40–45% defect rate; and staff have stopped 'firefighting' and concentrate on quality care.

If only these innovations that have the potential to significantly impact on quality and cost were implemented on a large scale, in every healthcare organisation, the result would be a true and radical transformation of services. Unfortunately this is not the case, but rather we see 'islands of improvement' when we desire a sea of transformation. There is a massive amount of innovation within health services; our next big challenge is to focus our attention on new ideas that could break the physical and behavioural barriers impeding the widespread 'adoption' of these innovations into routine practice.

Can NHS staff achieve ever increasing quality and productivity and bring about a health service more focussed on the individual needs of patients? Yes, they can –

and we know this because some are already doing it.

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What Australia (and the Rest of the World) Can Learn from US Health IT Policy



George Margelis

Health IT or EHealth as it is called in many parts of the world is predicted to radically improve the delivery of health-care. However, its implementation has been difficult, and despite billions of dollars being spent around the world there is still much conjecture about whether it can meet its promise. Australia, the United States and almost every other Western country has invested in it, and is looking for outcomes. However, the policy aspect of it has not advanced as fast as the technology aspect.

In recent times, under the Obama administration a renewed initiative has taken place in the United States, which I believe has been a great leap forward in connecting the policy with the technology.

Whilst criticized for the amount of money invested, which was as much driven by a need for health reform as it was from a need to stimulate the economy during the great-

est economic downturn since the Great Depression, it has awoken interest in the effective use of information technology in healthcare, and potentially set a new benchmark for the rest of the world.

I recently spent a week at the Harvard School of Public Health where I attended a residential course on Leadership Strategies for Healthcare IT. The course was run by two gentlemen who are fairly legendary in the world of ehealth.

Dr. John Glaser, the former CIO of Partners Health, the amalgamation of Massachusetts General Hospital and Brigham and Women's Hospital in Boston, which now includes several more facilities and some 6000 physicians in Massachusetts and adjoining states.

Dr. Glaser was called upon by the US government in 2009 to draft the meaningful use provisions of the ehealth legislation. And Dr. John Halamka, CIO of Care Group, the amalgamation of Beth Israel Deaconess hospital and several other hospitals in the region with over 2000 physicians. He is also CIO of Harvard Medical School and heads a number of government initiatives in the US.

You may ask why focus on the USA when it is recognized that their healthcare system is in trouble. The Commonwealth Fund reports that despite being the most expensive in the world the quality of their healthcare ranks amongst the lowest [1].

This has been recognized by the government and health reform, as we are all aware, is a very hot topic in the USA today. It is an area that they have focused on, and quoting Sir Winston Churchill, "You can always

count on Americans to do the right thing – after they've tried everything else". I believe they are now at that stage.

So there are three facets of ehealth policy I want to explore.

The first is the concept of Meaningful Use [2]. In 2009 President Obama and the US Congress passed ARRA, the American Recovery and Reinvestment Act which provided almost \$800 Billion to stimulate the US economy in response to the Global Financial Crisis of 2008.

Within that legislation was some \$25 Billion for ehealth. However, the genius of the legislation was the need for the recipients of this funding to demonstrate 'Meaningful Use' of the technology to be eligible. At the time the legislation was enacted meaningful use had not been defined? Dr. John Glaser and others were seconded to Washington to the office of the National Coordinator for Healthcare Information Technology, another Bostonian Dr. David Blumenthal to develop the definition.

The key issue is that the meaningful use criteria do not relate to technology, but rather to health outcomes and the accurate and timely reporting of this data. They are also staged, phase one, whilst not trivial will allow most physicians to get onboard by 2011, but stage 2 extends into disease management, clinical decision support, patient access and empowerment and improved bi-directional communication, while stage 3 focuses on aggressive quality safety and efficiency improvements and population health outcomes.

Linking clinical outcomes to ehealth is the key to the successful implementation in the USA, and we have seen a radical shift in the thinking of ehealth companies over the last year or so with this focus on meaningful use. Tying the reimbursement to the desired outcomes, basic Pavlovian psychology has driven this change.

The second concept is that of 'Bending the Curve', a term used by President Obama in the 2009 State of the Union address, referring to slowing down the rapid increase in US healthcare costs[3]. The issue is not just the gross increase in spending, but the heterogeneity of this spending.

Highlighted by an article in the New Yorker by Dr. Atul Gawande [4], a Boston surgeon with a knack for incisive writing on health matters. In this article he talks about McAllen, Texas, a town with the dubious distinction of being one of the most expensive healthcare markets in the country, second only to Miami. Its other claim to fame is being the Square Dance Capital of the World.

You may argue that the New Yorker is not the best peer-reviewed journal for health policy around, and I would agree, but Dr. Gawande has used it very effectively to take much of the work published in Health Affairs and other learned journals and bring it to the attention of the government and the lay press.

The debate has now arisen on how ehealth can aid in flattening the discrepancies in healthcare spending in the US by the sharing of information, the ability to compare in near real time services, costs, outcomes and use that to influence the provision of high quality care.

Dr. Gary Gottlieb, the CEO of Partners Healthcare spoke at the event about the need for a High Performance Learning healthcare system. To enable those clinicians need to be able to share information and learn from each other in a non confrontational way. Ehealth provides that opportunity.

The third issue is the 'Accountable Care Organization', a new concept where healthcare providers form an ACO and provide care. They can be paid by capitation or fee for service, but they also receive reimbursement

for reducing costs and meeting quality improvement markers.

In this way they are accountable to the patients and the third party payer for quality, appropriateness and efficiency of healthcare provided.

In Australia, these may equate to our Medicare Locals or even our Super Clinics, but in the US there has been a lot of work defining them, and also working out the ehealth implications. ACOs do not need to be physical entities; they can be virtual entities that take advantage of advances in ehealth technologies, including technologies that allow healthcare workers to reach right into the homes of patients.

Again Atul Gawande has led the way in publicizing in the lay press what ACOs can achieve [5]. In an article in last week's New Yorker called "The Hot Spotters" he looked at how innovative care models have significantly decreased the costs of care and significantly improved the quality. It basically comes down on concentrating resources where they make a difference and focus.

So what are the three lessons we can take from these ehealth policy perspectives from the US?

1. Set goals that are relevant to politicians, providers, patients and technologists so that they can all aim at the same goal. Don't set different goals for different groups; you need to unite them with a common goal. Meaningful use did that in the US.
2. Publicize the problem so everyone can understand. Don't lock it into articles in the MJA; get it out in a way everyday people can understand. Atul Gawande is a good example; his work ended up in the NY Times, the LA Times, Time magazine and became an issue of discussion in the lay press, the medical press

and even the IT press. Make sure everyone knows what the problem is.

3. Define a solution and work towards it. It may not be perfect, it may not even be right, but a focused solution people can deliver to is better than a weighty strategy which people will debate forever. The ACO is the embodiment of healthcare reform, and people are developing them as we speak.

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Speaking Book Takes UN Award for Education and Training

“The Speaking Book created for low literacy health education receives the prestigious TIGA Award – (Technology in Government Awards) from the UN Economic Commission for Africa.”

The Awards, according to the Information and Communication Service of the Economic Commission for Africa (ECA) are co-organised by the Economic Commission for Africa (ECA) and the Government of Finland in collaboration with the eLearning Africa Scholarship Trust, the organizer of the eLearning Africa annual event. The awards are given in recognition of initiatives aimed at exploiting information and communication technologies (ICTs) for education and training in Africa.

“The second leg of the long-awaited 2011 Technology in Government Awards (TIGA) in the ‘ICT in Education’ category were celebrated at a high-profile event and ceremony, Friday morning. Over 1,400 participants from about 80 countries are attending the eLearning Africa, 6th International Conference on ICT for Development, Education and Training, at the Mlimani City Conference Centre, Dar es Salaam, Tanzania.

In remarks read by his representative at the ceremony, ECA’s Executive Secretary and UN Under-Secretary-General, Mr Abdoulie Janneh said, “today we see signs that more and more ICT applications are being integrated in all sectors in Africa including in government, education, health and in the economic sectors.”

He, however, noted that whilst the adoption of ICTs in education in Africa is on the increase, “it is a fact that the continent still falls

behind, which is why these awards are so important.” He added, “It is indeed necessary for the youth in Africa to gain acquainted with the 21st century skills in order to increase the competitive advantages of Africa.”

The Speaking Book project aims to make education about critical issues accessible to all regardless of literacy or education level. This ‘world first’ is created by South Africans for Africans and focuses on rural, vulnerable and excluded people living in disadvantaged regions of Sub-Saharan Africa and communities around the world. Improving health care is a top priority for Africa and through the Speaking Books (www.booksofhope.com), access to essential medical information for low literacy, rural, and vulnerable Africans is improved.

“Receiving this TIGA Award recognizing the impact and importance of the Speaking Book is a great honor for us, as well as all our sponsors from the Pharmaceutical Industry, Government Health Departments, and major NGO’s, for their support to ensure that disadvantaged communities are able to obtain and understand critical health education. Their support has made it possible for Speaking Books to be distributed throughout Africa, in India, China, South America and the USA, and covering 45 titles in 15 languages” says Brian Julius, Director of Books of Hope.

For further information, please contact Brian Julius info@booksofhope.com

Contents

Editorial	81	Why Cancer Prevention isn’t Working Well Enough	106
Global Forum on Human Resources for Health . . .	82	Leadership and the Medical Profession	108
Violence in the Health Care Sector – A Global Issue	87	Capacity Building Collaboration in the Area of Undergraduate Medical Education.	111
Physician Suicide and Resilience: Diagnostic, Therapeutic and Moral Imperatives	90	News from the CPME	113
Whole Genome Sequencing – a New Paradigm for Clinical Care?	98	Innovation, Efficiency and Productivity in Health Services...	116
Overview of the Vaccines in Preventing Infectious Diseases	103	What Australia Can Learn from US Health IT Policy	120