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EDITORIALS

Continuing medical education in the 21st century

Needs to recapture professionalism in lifelong learning



MALCOLM WILLET

FEATURES, pp 484, 486, 487
ANALYSIS, p 490

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The relations between large bodies of money and the healing professions have often been ambiguous. Commercial interests have sought to influence the course and content of doctors' education. On the other hand, foundations established through personal wealth have funded some of the principal reports and reflections that have shaped professional education. For example, the Carnegie Foundation supported Abraham Flexner's 1910 report on the state of medical education in North America. This changed medical schools dramatically in terms of scientific education and commercial influence. As a result, more than 100 schools based on commercial interests closed in subsequent years. Over the following decades, the medical professional and academic communities established accreditation systems of setting standards and mutual site visits with audit, and later quality improvement.

The interlinked Committee on the Accreditation of Canadian Medical Schools and Liaison Committee on Medical Education currently accredit approximately 150 undergraduate programmes in North America. These committees have profoundly affected undergraduate and postgraduate education by stimulating effective pedagogy devoted to producing dedicated, ethical, and skilled doctors for the future.

In Canada and the United States, respectively, the Committee on the Accreditation of Continuing Medical Education and the Accreditation Council for Continuing Medical Education attempt to do the same for continuing professional development in an environment more akin to the "wild west" that Abraham Flexner observed and excoriated 100 years ago.

The US based Josiah Macy Foundation recently sponsored a conference exploring the state of continuing education.¹ The conference was attended by some of the leading developers of continuing education in the US. The resulting report's reflections on the questionable scientific basis for the practices and content of much continuing education, emphasis on the welfare of doctors rather than their patients, and commercial entanglements are distressingly similar to those noted by Flexner in undergraduate education almost 100 years ago (box).

Unlike Flexner's review, the report is not the result of an extensive series of visits to active medical schools and sites of education. Instead, it is the consensus of a group of people whose experience

and scholarship represent the breadth and depth of the cumulative development of continuing education in the US. It is an analysis of the current state of affairs; it summarises the lessons to be learnt and provides recommendations for the future.

Most of the observations and recommendations of the report have support in the evolving literature on adult education, systems of care,² professionalism,³ and the behavioural impact of both continuing education and the inducements offered by industry.⁴⁻⁶ These observations are not kind to the professions, their educators, or the existing systems of non-academic accreditation. We are presented with a picture of a disorganised system of education with obvious foci of excellence (most in universities) but with most commercially supported events shading more towards product promotion and the welfare of doctors than prioritised dedication to enhancing the care of patients. Much of the pertinent literature is summarised and referenced in the excellent series of presentations and responses that form the substance of a well presented, concerned but balanced, resource for all who participate in professional development in the North American context and well beyond.

Summary of the findings of the Macy report

The quality of patient care is profoundly affected by the performance of individual health professionals

Traditional lecture based continuing education is largely ineffective in changing the performance of health professionals and in improving patient care

Continuing education should be less reliant on presentations and lectures and more focused on practice based learning

Most financial support for accredited continuing education comes from commercial entities. Accredited organisations that provide continuing education should not accept commercial support from drug or medical device companies, either directly or indirectly through subsidiary agencies

Current accreditation mechanisms for continuing education are complex yet insufficiently rigorous. Compared with earlier formal stages of medical education, continuing education is fragmented, poorly regulated, and uncoordinated

Organisations authorised to provide continuing education should be limited to professional schools with programmes accredited by national bodies, not-for-profit professional societies, and other healthcare organisations that are distanced from commercial interests

The unwavering focus of professional continuing education should be to improve clinical performance and patients' health. The report begins by saying that at present continuing education will not achieve this aim. It then dissects the reasons for this failure. The failings include: the methods of education, the focus of education, systems of accreditation, commercial influence, lack of interprofessional continuing education, and limited use of datasets and information technology. The account of these failings is incisive and is supported by experience and evolving evidence. Most of the time that health professionals spend in obligatory "lifelong learning" is taken up by continuing education, and it should be approached with at least the amount of devotion to quality and lack of third party bias that is expected of undergraduate and postgraduate education. The broad consensus is that this is currently not the case.⁷ Educational methods often veer into sales pitches, doctors' enjoyment can trump the needs of patients, and for-profit entities fund as much as half of the educational offerings—frequently with inadequate safeguards against bias. The reasons behind this situation are currently being explored and those explorations are well represented by the papers and responses in the Macy report.

Professional privilege for autonomy and self regulation is granted by society on the assumption that professionals will dedicate their skills to the betterment of citizens and society as a whole. Because of our human capacity for self deception, professionals and their organisations must conduct themselves in lives marked by self reflection and peer review. Yet it seems that doctors are not as well versed in self assessment as they would like to believe. Evidence indicates that as far as the assessment of educational needs is concerned, doctors are not skilled in self reflection. A recent systematic review concluded that, "A number of studies found the worst accuracy in self-assessment among physicians who were the least skilled and those who were the most confident. These results are consistent with those found in other professions."⁸ This resonates with my experience of chairing a task force to develop the Canadian Medical Association's ethical guidelines for relationships between doctors and industry (subsequently adopted by most medical organisations in Canada). In two years of cross country hearings we never met the fabled doctors who were inappropriately influenced by gifts and the support of industry—we met their colleagues, their teachers, even their siblings, but never them.

It is not good enough simply to shake our heads and chalk this up to human foibles. Two messages from last year's Association of American Medical Colleges' report deserve close attention: "First, the task of convincing physicians, who are selected for their ability to reason, that they are not reliably reasonable is not simple. Second, though people cannot exercise unlimited control of their instinctive behavior, they are capable of imposing some modifica-

tions on it. Purposeful structuring of relationships and interactions to diminish potential conflicts of interest reinforces that capability."⁹

These are important observations because the current unsystematic and casual approach to much of continuing education fails to meet the standards of rigour that society expects of professionals.

Implementing recommendations in the Macy report will require concerted efforts within the healthcare profession, between different parts of the profession, and within the extensive institutional and community partnerships that have a mutual stake in the health of the public. The recommendations emphasise the role of academic health institutions in ensuring quality, appropriateness, and effectiveness through processes such as accreditation—particularly of interprofessional training. Several initiatives are already under way in several of the recommended areas, such as interprofessional accreditation, educational methods, and commercial interests.¹⁰ The report outlines several of these, including the US National Alliance for Physician Competency, the "Trusted Agent" initiative, and the US Conjoint Committee on Continuing Medical Education. The last of these initiatives states that a system of continuing professional development and improvement for doctors should enhance quality of care, support professional activities, assess professional educational needs, elicit professionalism, motivate learners, and produce measurable outcomes.

A century after Flexner's report, national professional organisations in Canada and the US are undertaking detailed reviews of undergraduate education. Many believe that it is time for continuing education to catch up.¹¹ Although the Macy report is neither as biting nor as eloquent as Flexner's report, if the profession in the US and its partners respond effectively to its content, and if other countries follow suit, the impact of continuing education on clinical practice and patients' health will be profound.

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Informed consent and palliative chemotherapy

Better information is needed about prognosis and treatment, along with decision aids to help patients interpret it

RESEARCH, p 492

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Informed consent is central to management decisions in modern medical practice. However, sharing information with patients about the value of chemotherapy for advanced metastatic cancer is highly challenging. In the linked study, Audrey and colleagues assess how much oncologists tell patients about the survival benefit of palliative chemotherapy during the first consultation after a diagnosis of metastatic colorectal cancer, pancreatic cancer, or non-small cell lung cancer.¹

Although chemotherapeutic options have improved, life expectancy in people with metastatic cancer is often short, survival benefits of treatment may be modest, and the potential for unpleasant or life threatening side effects is high. Nevertheless, chemotherapy is increasingly given closer to the end of life,² and patients are having to decide whether or not to have treatment at the same time as facing the harsh realities of dying.

To make informed choices, patients need up to date consistent information and comprehensive and expert communication from their oncologists and supportive care teams. However, the literature highlights a lack of shared understanding between patients and their doctors, and between different specialists around key areas—the prognosis of advanced cancer, the aims of treatment, and the chances of benefit.³ Patients' expectations are also shaped by the lay press and the internet, including information about new treatments that are unavailable through the public sector but can be obtained privately.

Studies from several countries conducted over the past 20 years suggest that patients with metastatic cancer accept lower chances of benefit and higher risks of severe side effects than would be accepted by matched healthy controls or healthcare professionals.³ Wide variations exist, however, with some people accepting treatment with a one week survival benefit and high levels of toxicity and others refusing treatment with a potential two year extension of life and minimal side effects.⁴

It is not clear why patients accept such high risks for low benefits. Patients' expectations of prognosis seem to be an important factor; one study reported that people who thought they would live at least six months if the current plan of care remained the same were 2.6 times more likely to favour life extending treatment over treatment aimed at palliation than those who thought they had only a 10% chance of surviving that long.⁵ Doctors are generally poor at predicting prognosis, however, tending towards overoptimism,⁶ and this could have an important effect on patients' decisions to accept chemotherapy.

Several studies have highlighted the link between the desire to maintain hope and the use of chemotherapy in advanced disease. In one study, maintaining hope was one of the most important aims of second line

chemotherapy for breast cancer,⁷ and another commented that patients may be given chemotherapy because of the need to do something active even if they were unlikely to benefit.⁸ Patients may also be offered and accept palliative chemotherapy because of a reluctance to confront the issues that surround dying.⁸

How information on prognosis and chemotherapy is shared probably influences patients' decisions. One randomised control trial has shown that in patients with breast cancer who were considering adjuvant chemotherapy, those given detailed information about prognosis and treatment drawn from a web based tool made different decisions from those not given such information.⁹ However, it is difficult to obtain reliable information about prognosis and treatment options in advanced disease, and no nationally agreed information about prognosis or risks of palliative chemotherapy is available. Most patients say they want full information about diagnosis and prognosis³ but do not always receive such information from their oncologist. But they may not necessarily want the whole truth all of the time¹⁰ or want to be fully involved in decision making once information has been received.¹¹

In all consultations assessed by Audrey and colleagues, the patient was told that the cancer was incurable and the aim of treatment was to slow tumour growth and provide palliation.¹ The details of potential survival benefit were mostly vague or even avoided after an explicit request. No oncologist had a consistent approach to sharing this information and no patterns of information sharing could be identified in terms of disease type or characteristics of the oncologist or service. Although members of the patient's family were often included in the consultation, other contextual factors were unclear, such as whether the patient had met the oncologist before and whether further support, such as from a specialist nurse, was available. It was also unclear whether patients were offered alternative management, such as supportive and palliative care, or how the patient's understanding was ascertained.

The authors conclude that more training should be offered to oncologists to help them share such information sensitively and effectively. The study also highlights the need for more research into how to transfer this information more effectively. This should include in-depth exploration of consultations, using techniques such as discourse analysis, to investigate the dynamics of the consultation¹²; the development and evaluation of nationally agreed and updated information about the prognosis of advanced and metastatic cancer and the benefits of palliative chemotherapy; and the development of decision aids to help patients interpret the information offered.¹¹

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Obesity in children

May not predict obesity in adults, but monitoring is essential



LEONARD MCCOMB/GETTY IMAGES

In the linked study, Funatogawa and colleagues compare growth curves of body mass index from children to adolescents, and then to young adults, in Japanese girls in birth cohorts from 1930 to 1999.¹ The authors find that obesity in childhood fails to predict obesity in adulthood. Their finding begs a wider question about the meaning and effects of excess body weight in children, and whether monitoring the prevalence of childhood obesity is worth while.

This study, which repeatedly examined cross sectional samples from the 1930s to the 1990s, found that although body mass index increased in girls aged 5-12 years in each decade, it did not translate into higher body mass indexes in women aged 17-25 years a decade or so later. If anything, as the children became fatter the young women became thinner. The interpretation given in the paper is that, for girls (but not, apparently, boys), adiposity in childhood does not predict adiposity in adulthood.

Several caveats need to be mentioned. Even in recent decades the 5-12 year olds were not fat by Western standards—for example, at age 12 the fattest cohort (born in the 1980s) had a mean body mass index below 19, compared with over 20 for girls in England and Wales in 1998. Around 12% of Japanese girls of that age were overweight in the mid-1990s, compared with more than 20% in the United Kingdom at that time, using the same criteria. The data may therefore be showing not that Japanese children have become fat, but that in the earlier decades they were underweight.

Also, the paper says little about the social pressures that may encourage Japanese girls to reduce weight in adolescence and enter adulthood with remarkably low body mass indexes (typically around 20.5 at age 21, compared with 23.5 for young women in the UK in the 1990s), or the reported rise in cigarette smoking in young Japanese women, which may accompany attempts to suppress appetite, along with reports of increasing numbers of girls with anorexia.

Certainly, the trends reported for women in Japan differ from those found in Western populations. Longitudinal data from the United States indicate that the chance of being an obese young adult rises from 11% for an 8 year old child of normal weight to 55% for an overweight 8 year old, rising to 71% if that child's parents are also overweight.² Longitudinal studies in the UK show a modest but significant correlation between adiposity in childhood and adiposity in subsequent adulthood for children of parents of normal weight, with a stronger correlation if the child's parents are also overweight.³

The new paper does, however, challenge the importance of monitoring children's obesity if the result is a poor predictor of later obesity. What is the purpose?

Firstly, obesity in childhood is a risk factor for disease, regardless of obesity status in adulthood. Clinical surveys suggest that one in five obese children has hypertension—equivalent to more than 100 000 children in the UK.⁴ In addition, one in four to five obese children has raised blood cholesterol and raised triglycerides, one in three is hyperinsulinaemic, one in 12 has impaired glucose tolerance, and one in four shows hepatic steatosis.

Secondly, childhood obesity that continues into adulthood is particularly important because the duration of adiposity can be a greater risk factor than the degree of adiposity, at least for hepatic disorders and for indicators of the metabolic syndrome. Indeed, a long duration of any unrecognised comorbidity of obesity will increase the severity of the comorbidity and the need for more extensive treatment.

And thirdly, if interventions to reduce childhood obesity are to be evaluated, then monitoring the current levels and subsequent trends in adiposity in children is essential. How else will we know what works and what does not?

And this brings us to a final and encouraging piece of news. Frequent monitoring tells us that some recent trend data show a possible levelling off of the previous steep increase in the prevalence of childhood obesity found in

RESEARCH, p 500

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most countries. Data from the US indicate no increase in childhood obesity between 2003-4 and 2005-6, with a possible fall in prevalence for non-Hispanic white children.⁵ Data from France suggest that the prevalence of obesity in children in higher socioeconomic groups may have declined slightly.⁶⁻⁸ Data from Switzerland show a more substantial decline, and data from several Swedish cities also indicate a decline from previous high levels, at least for girls.⁹

Whether the tide is really starting to turn is hard to judge. But only by continuing to monitor children's body weight will we know the answer.

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Complications of type 1 diabetes in adolescents

Even those with normal albumin excretion should be closely monitored

RESEARCH, p 497

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The incidence of childhood onset type 1 diabetes has doubled over the past 10 years,¹ and this has long term implications for the risk of diabetic complications. Adolescence seems to be a crucial period because diabetic microangiopathic complications, such as microalbuminuria and retinopathy, are rarely seen before the age of 11, although the prepubertal duration of disease and glycaemic control are important.²

In the linked study, Gallego and colleagues report that 36% of young people aged 11-18 years screened in a well resourced central assessment unit in Australia developed diabetic retinopathy after a relatively short duration of diabetes (median 4.9 years).³ In a recent *BMJ* study, Amin and colleagues reported a 26% incidence of microalbuminuria during adolescence in an inception cohort of 527 young people, followed for a mean of 9.8 years.⁴ They also found that the cumulative prevalence may be as high as 50%, much higher than that seen in a similarly designed adult cohort, and that both persistent and intermittent microalbuminuria may predict development of diabetic nephropathy.⁴

In adult studies, the development of diabetic nephropathy and the risk for severe proliferative retinopathy are closely linked.⁵⁻⁶ In the Wisconsin epidemiological study of diabetic retinopathy, clinical proteinuria, the marker of diabetic nephropathy, was associated with a 2.3-fold increased risk for proliferative retinopathy.⁵ In the Steno study, 74% of patients with proteinuria and only 14% of patients free of proteinuria developed proliferative retinopathy.⁶ However, associations between microalbuminuria—an early marker of diabetic nephropathy and risk of cardiovascular disease—and retinopathy are less clear.⁷⁻⁸

Early studies identified microalbuminuria as being associated with retinopathy,⁷ but subsequent studies found weaker associations between these complications.⁸ Gallego and colleagues explore these

associations in adolescents and convincingly show that, although raised albumin excretion is a risk factor for retinopathy, this association is partial.³ Also, retinopathy still occurred in young people who had normal albumin excretion throughout follow-up, and it was associated with raised diastolic blood pressure—cumulative risk was 57% after 10 years in people with a blood pressure greater than the 90th centile.

A limitation of this study and that reported by Amin and colleagues is that, despite long term follow-up, the incidence of the most important clinical end points—proliferative retinopathy, diabetic nephropathy, and cardiovascular disease—are limited because the cohorts were recruited during childhood. The finding of background retinopathy or raised albumin excretion may not necessarily indicate progression to more serious sight threatening retinopathy or life threatening diabetic nephropathy and cardiovascular disease. Nevertheless, these observations are important and emphasise the need for regular screening during adolescence.

Systematic longitudinal screening for microalbuminuria and retinopathy is recommended during early adolescence.⁹ Background retinopathy or abnormal albumin excretion may identify people at particular risk, independently of glycated haemoglobin, as a result of genetic background or environmental exposure. Interestingly, both studies documented higher risk in adolescent girls,³⁻⁴ in contrast to adult studies where men seem to be at higher risk.

The high prevalence of early markers of complications during adolescence should also prompt debate on the need for additional treatment to provide potential cardiorenal protection during adolescence, when concentrations of glycated haemoglobin invariably increase.⁹ Angiotensin converting enzyme inhibitors are increasingly used in adults because they reduce

the risk of progression of microalbuminuria¹⁰ and potentially retinopathy,¹¹ while also reducing the risk of cardiovascular disease.

Statins are also being prescribed to reduce the risk of cardiovascular disease and may slow down the progression of diabetic nephropathy.¹² These drugs could afford similar renal, cardiac, and retinal protection in the adolescent population. The development of microalbuminuria is associated with a generalised endotheliopathy, including raised lipids and inflammatory markers, decreased renal function, coagulopathy, and increased blood pressure. These associations could explain the close links between the risk of progressive nephropathy and retinopathy.⁷

Currently, few data are available on the efficacy of angiotensin converting enzyme inhibitors and none is available on the use of statins in adolescents with type 1 diabetes. These areas are being investigated by the adolescent diabetes intervention trial (AdDIT). This multicentre multinational study, which is supported by the Juvenile Diabetes Research Foundation, Diabetes UK, and British Heart Foundation, is investigating the effect of these drugs in high risk adolescents—defined as those with raised albumin excretion—in Australia, Canada, and the UK (www.medschl.com/paediatrics/AddIT). Until the results of that study are available in 2012-13, these drugs should be reserved for adolescents with clear evidence of hypertension or hyperlipidaemia, because improving glycaemic control through intensive insulin therapy is the only risk factor modification that has been proved to be effective.⁹

Gallego and colleagues' study raises the important question of whether strict control of blood pressure in people with normal albumin excretion may also prevent retinopathy, but in the absence of controlled trials we cannot tell. However, both the Gallego and the Amin studies highlight the importance of following up

subjects at low risk (as defined by albumin excretion) as well as high risk in all future natural history and intervention studies of adolescents with type 1 diabetes.³⁻⁴ The predisposition to each of these complications may vary according to environmental exposures and genetic background. These differences could have an important effect on future interventional strategies.

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