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Editorial – Volume 2 Issue 1
Lloyd D Hughes, Associate Editor

A warm welcome to the first issue in the second volume of the Scottish Universities Medical Journal.

In our first issue of 2013, the Scottish Universities Medical Journal have linked with the College of Medicine, a charity championing a culture of innovation, and patient collaboration in medicine. This partnership is to help promote the 4th annual Michael Pittilo Student Essay Award by publishing the work of the highest quality entries. This award commemorates the late Professor Michael Pittilo, Vice Chancellor of Robert Gordon University. Professor Pittilo was a scientist, educationalist and champion of inter-professional education.

“Developing Healthcare Services in a Recession – A Real Possibility”

It is becoming increasingly common to read and hear about healthcare services becoming overburdened by growing demand, alongside restricted supply secondary to reduced funding and staff redundancies. Indeed, the strain that this places on efforts to deliver high-quality, safe, and clinically effective healthcare have become all to clear with healthcare scandals including the Mid-Staffordshire NHS Trust and the Winterbourne View community care home. Clearly, a lack of resources and staff is not an excuse for criminally negligent care, but it does raise the question of how we can deliver high-quality healthcare in this challenging climate?

In this Scottish Universities Medical Journal issue we are delighted to publish work of healthcare students who discuss different approaches to improving healthcare delivery in the current political and social environment. Authors of these commentary-style articles discuss how different clinical, political and social approaches can improve healthcare access and sustainability of service provision. It proves to highlight numerous areas where politicians, NHS employees and patients alike can make a real difference to healthcare provision and outcomes without a huge increase in funding. Our two final papers discuss research projects being designed to improve healthcare outcomes for patients in the current NHS climate with mental health diagnoses and patients after a transient ischaemic attack.

The Scottish Universities Medical Journal will continue to be indexed in Cumulative Index to Nursing and Allied Health Literature (CINAHL), Google Scholar, Academic Search Complete and the Directory of Open Access Journals. I would also like to thank the Medical Protection Society, the University of Dundee, NHS Tayside, Wesleyan Medical and PasTest for their generous continued sponsorship and support of the SUMJ.

We will publish our second issue in early autumn with our usual mix of student and expert articles that cover a wide-range of medical topics. I very much hope you enjoy this special Scottish Universities Medical Journal edition.
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An Ageing Society
Are Reformers Forgetting About Paediatrics?

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ABSTRACT
Change in the NHS is needed given drastic budget cuts and an increased demand for care. Although this change is evident in adult medicine, with many of the ideas contained in the Government response to the Stafford Hospital scandal already in train, paediatric care has attracted little attention despite facing similar problems. This essay explores these problems and the possible solutions.

Key Words: Paediatrics; Healthcare Reform

Introduction
When the NHS was founded, nearly half of the population died before the age of 65 and hospitals were designed around people with ‘single organ’ or infectious diseases[1]. Now, infectious diseases have become easier to prevent or cure, but chronic non-communicable diseases - such as asthma and diabetes – have become more common[2]. This non-communicable disease pandemic threatens the sustainability of our health system[3], and this essay sets out to identify how to circumvent this threat with an emphasis on child health.

NHS Under Pressure
The pressure on the health service is clear: three quarters of hospital consultants report being under more pressure now than three years ago and over a quarter of medical registrars report an unmanageable workload[4]. Emergency admissions have increased by 37% in the last decade, yet the number of general and acute beds has fallen by a third compared to 25 years ago[5]. Although the average length of hospital stay for patients was gradually reduced to compensate for this, this has now leveled off and has even started to increase in some age groups[6]. All this comes in the face of NHS cuts of £20bn by 2015 and possibly £50bn by 2019-20[6]. Although a Department of Health spokesman said: “The NHS...is...on track to make the £20 billion savings target while keeping waiting times low, performing more tests and reducing infections even further”[5], the chief economist at the King’s Fund stated the former target was "barely achievable" and the latter was "frankly undoable"[7]. Waiting times have actually consistently risen from an all-time low since 2011[8], and in the Stafford Hospital scandal patients were “let down by a culture that put cost-cutting and target-chasing ahead of the quality of care”[9].

Understaffing is prevalent[10,11], with 17 hospitals not having enough staff “to keep people safe and meet their health and welfare needs” in 2013[12]. Although the greatest burden of non-communicable disease is in the elderly[13], care of chronic disorders in these patients has
been high on the policy agenda in many European countries for the past decade\textsuperscript{13-14}. Indeed, many of the ideas contained in the Government response to the Stafford Hospital scandal to improve older people’s care were already in train\textsuperscript{15-16}. In contrast, systems to deliver care to children with chronic disorders have attracted little attention\textsuperscript{17}, despite a similar increase in non-communicable disease\textsuperscript{17}, and there is a real sense among professionals and organisations that services for children and young people in the NHS have a low priority\textsuperscript{18}. For example, the UK Quality and Outcomes Framework incentivises chronic care treatment of adults yet contains almost no measures for children\textsuperscript{17,19}, despite the finding that child mortality rates in the UK are worse than most other developed countries in Europe\textsuperscript{17,20}, and that 2000 children’s lives could be saved each year if the UK could match the performance of Sweden\textsuperscript{21} - with improvement also likely to reduce health equality at all ages\textsuperscript{22}. The president of the Royal College of Physicians of Child Health recently stated that “we have failed to adapt system to changing epidemiology - we’re caught in 50yr old model”\textsuperscript{23}.

**Changing the Status Quo**

How can we change our model to be more suited to non-communicable disease? To make change happen you need three things: a sense that we have no option but to change, a given considering the aforementioned financial pressures and poor performance; a vision of what we might move to; and a plan of what we will do today to move towards the vision\textsuperscript{24}. So what is the vision? A recent article in the BMJ stated that for health systems to survive, successful innovations must spread\textsuperscript{3}. Perhaps then, looking at other countries will lead to improvements. The most significant recurrent factor in avoidable child mortality in the UK is a failure to recognise severe illness at the point of first contact between the child and the healthcare services, especially in doctors without any special knowledge of children’s health\textsuperscript{2,25}. In the UK, 50–60\% of GPs have had no formal postgraduate paediatric training\textsuperscript{26}, despite up to 40\% of consultations being with children and families\textsuperscript{18}, and although A&E departments dedicated to children and young people provide good care, the experience of children entering adult A&E departments can be quite different\textsuperscript{18}. Lack of knowledge or confidence in primary care is also reflected by the number of unnecessary admissions: with 36\% of referrals to paediatricians potentially avoidable\textsuperscript{26}, which puts pressure on hospitals.

In contrast, in Sweden, most GPs receive at least three months’ specialist training in paediatrics, being required to train either in paediatrics or in obstetrics and gynaecology, and often work in multiprofessional care centres, working closely – or collocated – with paediatricians and children’s nurses\textsuperscript{17}. Integration of primary and secondary services is also recognised elsewhere, such as Japan - where Renkei (which means cooperation and integration in Japanese) between different sectors has been one of the major concerns in healthcare\textsuperscript{27} - and the Netherlands - where transmural care was introduced in the early 1990s to provide care based on ‘cooperation and coordination between general and specialised caregivers’\textsuperscript{17,27}.

In Sweden, improved integration came about in response to perceived excessive decentralisation of services, with professionals working in separate organisations\textsuperscript{17}. Increasing specialisation has been observed in the UK – with 61 approved medical specialties in the UK compared to only 30 in Norway\textsuperscript{4} – and although it has contributed to increasing
survival rates for single conditions, it can remove consultants from the general medical admitting role and impair provision of continuity of care⁴.

Although highly specialised care is needed for certain disorders, such as childhood cancers, common non-communicable diseases can be cared for in the community to enable children and their families to live as normally as possible¹⁷. This idea of dehospitalisation is similar to what has been found in care of the elderly, with the idea of ‘right patient, wrong bed’, where acute wards were reported to poorly meet the needs of non-communicable chronic diseases¹⁴. Despite the high cost of hospitalisation, the NHS has been slow to develop comprehensive, effective alternatives to admission⁶, but they do exist.

For example, community-based care from nurses seems to be at least as effective as, and possible less expensive than, care delivered by a GP or paediatrician, and although present in the UK this isn’t extensive¹⁷. In Italy there is an initiative (Assistenza Domiciliare Pediatrica) to ensure as much care as possible for children with chronic disorders is delivered at home, such as those needing parenteral nutrition, oxygen therapy, or frequent blood sampling¹⁷. Self-management may also offer families greater control over their lives, less reliance on medical interventions, and potentially reduced morbidity⁵, and may be aided by new forms of patient communication, such as the CollaboRhythm platform - a speech- and touch-controlled collaborative interface for the office where doctor and patient make shared decisions -and use of mobile phones⁵.

The premise for the future must be that the NHS is there for children and young people, rather than that the child or young person is there for the service¹⁸. Although there is a broad consensus that integrating primary and secondary care and shifting many non-acute health services from hospital-based to community-based delivery could improve access and reduce costs, most countries have yet to do so¹⁷.

What can we do to bring about this change today? Firstly, we need to know why it isn’t happening. Consensus views of the difficulties encountered include: resistance to change¹⁷, especially in countries that have long established and well entrenched health systems such as the hospital-centric model of the UK⁵; financial disincentives to cooperation, with community services led by non-physicians possibly being viewed as a threat (both financially and in terms of job security)⁵; as well as organisational boundaries preventing cooperation between providers³,¹⁷. Early assessments in Sweden revealed similar problems - especially with physicians – but implementation was eased by allowing sufficient time for change, maintaining motivation by focusing strongly on quality improvement, and developing supportive policy and providing adequate funding.

Although adequate funding may not seem feasible given austere NHS cuts, introduction of integrated models in Sweden and the Netherlands emphasised its importance¹⁷. Savings are also predicted through greater efficiency, co-location and the benefits it brings, and through the joint planning and commissioning of services¹⁸. Funding needs to be part of a larger strategy to reassure or overcome the objections of staff if change is to succeed⁵, along with having evidence that changes resonate with the public, are scientifically sound, and show
evidence for potential reductions in mortality and morbidity\textsuperscript{3}. An important first step in this is the systematic evaluation of the quality of child health service, with very few examples available in European countries\textsuperscript{18}.

**Conclusion**

In conclusion, although the nature of diseases seen in children has changed over the last few decades, very little address has been paid to this problem in the UK. More will needs to be apportioned to this problem as the non-communicable disease pandemic is not exclusive to the elderly population and potential for improvement in care of children is both evident and necessary. Crucial to this are improved primary care provision – through improved postgraduate paediatric training and/or integration – and expansion of community care initiatives.

**References**

Available to view on the online version
Sustainability and Accessibility of Healthcare in Times of Austerity: Improved Health Promotion and Transportation Remain Essential

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ABSTRACT

The NHS aims to improve the health of the entire UK population. It is constrained by government budgets and so must consider cost-effectiveness. To maximise the benefit the NHS can provide we should focus on improving public health measures, particularly health promotion, and the accessibility of health services.

Key Words: NHS reform; sustainable healthcare; health promotion

Introduction

Gazing out of my bedroom window, I see an 85 year old man shuffling to the corner shop with his walking frame to buy some cigarettes. It is Mr Timms. He lives on the outskirts of our small rural village and his only income is his state pension. He has no family and few friends. He has mild dementia, so cannot drive, and his diabetes is poorly controlled. There is no GP surgery in our village and no public transport to reach the nearest one. Despite our nationwide health services he is left alone without help.

This scenario highlights key issues that are a real hindrance to optimising health care in the UK. In particular, age, disability and low income contribute to social exclusion and poor utilisation of services. For me, as a young student with a government loan and a car, these difficulties can be easily overlooked. Moreover, the UK population is ageing: those aged over 65 are predicted to rise to 23% of the total population by 2035, up from 17% in 2010. So, the issues of age and its comorbidities are only going to intensify. Yet in these times of austerity what are the options for change and improvement? Any strategy must be cost-effective and so the focus of improvement should be on public health measures and grass-roots management. If we can improve the accessibility and sustainability of our health services it will not only benefit the health of the current population but also the health of generations to come.

Improving sustainability

Health promotion and illness prevention can improve health care for an entire population and reduce the demand on health services, thus making them very cost-effective techniques. Health promotion is defined as “the process of enabling people to increase control over, and to improve, their health”. This can be done through a number of approaches including personal education and introducing healthy public policy to address different determinants of health. The determinants of health which can be targeted are shown in figure 1.
Personal education can help people to lead a healthier lifestyle and so reduce their risk of future disease and also enable people to manage their own illnesses without health care intervention. Media campaigns and school education should form the cornerstone of mass education simply because of the sheer number of people that can be reached in these ways. However, as long as Google searches for “healthy eating” return sites advertising diet pills and assurances about the latest liquid diet there will still be a role for healthcare professionals providing their patients with informed and balanced opinions.

If Mr Timms knew how to manage his diabetes through exercise and diet alone then it would empower him by reducing his reliance on health professionals. Simple education can encourage people to take responsibility and it also increases their sense of dignity. The traffic light scheme\(^4\) aims to visually highlight the nutritional content of different foods by colour coding the numerical values of fat, sugar, salt and energy red, amber or green according to whether the amount it contains is high, medium or low, respectively. This is one attempt to educate us all about the food we buy and so influence our choices in a healthier direction.

However, it has been shown that education alone is insufficient to change people’s behaviours\(^6\). Instead, although not yet implemented in the UK, there is accruing evidence that public policy, combined with education, can give the largest population effect\(^7\). Possibilities include discounting healthier food and taxing less healthy food. Discounting healthier food also carries the appeal of having a disproportionally greater effect on those people with lower incomes and so could potentially help address health inequalities (example 1). Taxation would not only reduce consumption but also generate revenue, which could be reinvested in public health programmes\(^8\). Unfortunately, this has been difficult to implement practically. The Danish ‘fat tax’ was abolished due to concerns over its economic viability and a number of attempts to introduce ‘soda taxes’ in the USA have so far failed.

Illness prevention can also be achieved in ways other than personal education. Immunisation programmes are highly effective as primary prevention of diseases and in the UK further immunisations against rotavirus and meningitis B are soon to be introduced to the routine childhood schedule\(^9,10\). The benefits of immunisations are well documented:
diseases can be eradicated, such as smallpox has been, immunised individuals are protected from the disease and even non-immunised have a lower risk of infection due to herd immunity\textsuperscript{11}. However, concerns about side effects and a perceived lack of need for immunisations can cause rates to fall. Outbreaks of measles in the UK, most recently in Wales, are thought to be due to reduced uptake of the MMR vaccine largely following public concerns over the refuted links with autism\textsuperscript{12}.

**Example 1** - Making the healthy choice the easy choice: when shoppers are both educated about the benefits of and given discounts on fruit and vegetables they buy more fruit and vegetables\textsuperscript{6}. Those who received only the discounts would use the money saved to buy other less healthy foods. Education alone had no effect on buying pattern\textsuperscript{6}.

Screening can pick up diseases before they have significant impact on health and at a stage where they are more easily treated. Currently in England, the routine screening programmes in adults are those for breast cancer, cervical cancer, bowel cancer, diabetic eye disease and abdominal aortic aneurysms\textsuperscript{13}. There are certain criteria that any screening programme should fulfil in order that they be beneficial and cost-effective\textsuperscript{14}. Not all diseases are able to be screened for: prostate cancer is an example of a disease for which screening is advocated but does not currently fulfil the criteria. Even if these services are offered it is essential that people are able to access them so that they and the population in general can benefit as much as possible.

**Improving accessibility**

Mr Timms finds it difficult to access the health care services available for a number of reasons. He is physically restrained by his age and frailty; there are no suitable public transport services; he does not have enough money to travel by taxi; he is socially isolated and cannot ask friends. Broadly speaking, there are two ways in which this can be overcome. We can either help Mr Timms to get to health services or we can bring those services closer to him.

There is often an over reliance on private cars for travel so that those without cars are left in difficult situations. Public transport links in key areas can be improved and travel subsidies provided where necessary. When designing new hospital sites the Department of Health has pledged to take patient access into account by encouraging public transport links and ensuring parking capacity is maximised\textsuperscript{15}. Further options include voluntary car schemes (see example 2) and an increase in dedicated specialist transport for those in most need.

**Example 2** - Fewer people in deprived areas own cars than in more affluent areas. This can make travel to health centres more difficult as shown by North Cornwall PCT where 80\% of people found it difficult to access healthcare other than by private car\textsuperscript{15}. Modbury Caring is an organisation which helps to address such difficulties: it is funded by donations and relies on volunteers to drive those patients to and from health services who would otherwise be unable to get there\textsuperscript{16}.
Increasing accessibility in this way would have a number of benefits over and above access to health care. People would also be able to reach shops more easily and to see friends more readily, perhaps improving their diet and reducing social exclusion. Health employees would benefit from better transport to and from work and visitors to hospital would be able to see their loved ones more easily. It would reduce the 3% of people who say they have missed appointments because of transport problems\textsuperscript{15} and so save money.

Conversely, an increase in community-based services can reduce the distance required for people to travel. Health services can be specifically placed in convenient locations in order to increase uptake. For example, in Colchester, a mobile health unit in supermarkets provides free NHS health checks and lifestyle advice\textsuperscript{17}. Services that have historically been offered by doctors and nurses do not necessarily need to be, as shown by the success of smoking cessation services operating from pharmacies\textsuperscript{18}. Having multiple health services located in the same building can maximise efficiency and patient choice.

**Health worker resilience**

The NHS is the largest employer in the UK and so has a dual role in providing health care to the nation and in providing income to 1.7 million people\textsuperscript{19}. It is known that employees who are healthier are more committed and less likely to take sickness leave\textsuperscript{20}. If the NHS can maximise the health of its employees it will not only improve the health of almost 3% of the UK population and save a vast amount of money due to reduced sickness absence but those employees will also be better able to care for the patients of the NHS. This is illustrated in figure 2 below. There have been some steps towards this. For example, the NHS has signed up to be part of the ‘cyclescheme’ in which employees can purchase a bike tax-free with monthly payments taken off their salary\textsuperscript{21}. These principles apply to all employers, not just the NHS, and central government may help subsidize such schemes in the future.

Figure 2.
Conclusion
In 60 years time, when I glance up from the television to look out through the sitting room window of my bungalow, I know what scene I would like to greet me. One that holds familiar houses of family and friends, a health centre round the corner, a flat pavement connecting a grocer’s at one end with a bus stop at the other. If this were Mr Timms’s view today who knows how much better his mental and physical health might be. By implementing simple public health policies today that focus on accessibility and sustainability at a grass-roots level we can help make it so that everyone can gaze out on such a scene tomorrow.

References
Available to view on the online version
The NHS in Recession – Embracing Technology and Structural Reform Alongside Patient Empowerment Is Key

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ABSTRACT

The NHS is a symbol of pride for the UK with a fundamental principle to provide comprehensive healthcare that is free at the point of access for all. Sustaining this caring concept is something that we should care about. However, in the current political and social climate real changes are required to allow the NHS to continue serving its fundamental purpose. This article outlines how empowering patients, embracing technology and reviewing current NHS structures may be able to help the NHS move through this difficult period for the UK as a whole.

Key Words: NHS reform; sustainable healthcare; health promotion

Introduction

The NHS was established in 1948 under the Labour government, but the post-war UK setting is starkly different from the modern day society in which the NHS exists. Thus, many aspects of the NHS are unrecognisable from when it was established although its fundamental aim of providing comprehensive healthcare that is free at the point of access for all has remained the same.

In its current form, the NHS is facing many difficulties due to the growing demand and limited supply of service provisions. The net expenditure on the NHS, as a proportion of Gross Domestic Product, has increased from 3.5% in 1951 to 8.2% in 2011. These expenses are predicted to rise and the growth is not sustainable with limited funding. Alongside this, the “Nicholson Challenge” attempts to salvage £20 billion in efficiency savings by 2015 that is adding pressure to the NHS to perform. In order to improve accessibility and sustainability of the UK health services, health creation in the form of reorganisation and adaptation of services needs to be considered.

Patient Empowerment

Firstly, individuals care about their own healthcare. Therefore empowering patients to take more responsibility for their health could be a step forward. The NHS constitution states that users make a significant contribution to their own, and their family’s, good health and well-being, and should take some personal responsibility for it. Self-management is not a foreign idea in the health sector and many other industries have reported savings by implementing self-services. Healthcare professionals should promote self-management of less acute medical conditions and actively discourage patients from becoming too reliant upon NHS services for conditions such as the common cold. Another approach has been the use of a self-riage system. A study by Hitchings & Bartner in 2009, tested the concept of self triage in
two sexual health clinics in London.\textsuperscript{4} As part of registration, a self-assessment form was given to patients in which they stated the reason for their visit. This enabled faster referral to the appropriate services (clinical nurse or doctor), as shown in figure 1 below.

\textbf{Figure 1: Comparison of patient pathways for the sexual health clinic: traditional vs. self-triage initiative \textsuperscript{4}}

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<tr>
<th>TRADITIONAL PATHWAY</th>
<th>SELF-TRIAGE PATHWAY</th>
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<tr>
<td>Patient</td>
<td>Patient</td>
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<tr>
<td>Receptionist</td>
<td>Receptionist</td>
</tr>
<tr>
<td>Clinical nurse</td>
<td>Clinical nurse</td>
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<tr>
<td>Clinical Doctor</td>
<td>Receptionist + SELF TRIAGE</td>
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<td></td>
<td>Clinical doctor</td>
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<td>Home</td>
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This resulted in shorter waiting times and improved efficiency of tailored services.\textsuperscript{4} The concept of a self-triage system could be applied to other health departments, such as Accident and Emergency, that may improve access to services and minimise wastage of resources or inappropriate referrals.

Importantly, for patients to be able to self-manage their conditions, they do need to be able to assess their own medical condition, at least in a simplistic way. Indeed, the internet creates ease of access and a vast number of opportunities for patients to take responsibility for their health. For example, the development of NHS 111 (formally known as NHS Direct) as an online self-assessment tool, allows patients to check their symptoms and receive appropriate medical advice remotely. This system reported dealing with 8 million calls per year with 40\% resulting in self- management.\textsuperscript{5} Through the self-assessment pathway, NHS Direct estimated saving the NHS £213 million in 2010 by avoiding inappropriate patient visits to A&E and GP.\textsuperscript{6} Taking advantage of internet acumen could improve access and sustainability of health services in the UK as costs are reduced at the service interface.
Patient Education

Education for patients is fundamental to ensure sustainability of health services. In some cases, patients will not seek medical services until their condition has transcended a certain threshold. However, this results in higher costs of external failures for NHS, such as more invasive or long-term treatment. Thus, a shift of focus to illness prevention is essential. If there was more public awareness of certain symptoms for disease recognition, such as red-flag signs for bowel cancer, as well as promotion of a healthy lifestyle then future healthcare costs could be reduced.

Currently, there are some national initiatives that aim to improve patient outcomes through education and awareness. For example, the “F.A.S.T” campaign for stroke has been a major success. It simply emphasises that sudden problems with the face, arms and speech should warrant immediate alert of emergency services. A survey by the National Audit Office in 2010 noted that 85% of stroke patients and carers of people who had experienced a stroke were aware of the F.A.S.T campaign.  

Another example is the meningitis awareness campaign that was launched in Winter 2012. This focused on educating people on the key symptoms of meningitis to prompt early symptom recognition. The campaign targeted the public by using simple methods to provide information to patients such as, distributing fridge magnets with a symptom checklist (Figure 2).

Figure 2: Meningitis symptoms checklist

These educational strategies have improved public awareness of important medical conditions outside of hospital settings. Patient education initiatives are especially important for conditions where early recognition and timely management is imperative for patient outcomes.
It is also applicable to self-assessment of more long term conditions, for example, the national ‘Be Clear on Cancer’ campaigns. These highlight the main symptoms of various cancers through a range of media including posters, television and radio. For example, successful pilot schemes of a campaign focusing on lung cancer in 2011/12 showed an average of 14% increase in early diagnosis due to increased patient education and awareness of potential lung cancer symptoms.\(^9\) This patient self-assessment campaign has been re-launched this summer to further promote awareness.\(^9\)

If this educational approach is extrapolated into other areas of healthcare, it could considerably minimise long-term costs. As an example, it was estimated that severe hypoglycaemic attacks, which require hospital admission, cost the NHS approximately £30 million per year in 2010/2011.\(^10\) These costs have been predicted to rise but if patients were given more education on the early self-assessment of hypoglycaemic symptoms, such as a checklist, these expenses may be significantly reduced.

Furthermore, healthcare professionals should educate patients on their condition and promote the use of simple tests so that they can acquire the knowledge and skills to enable them to manage their own health. This is especially applicable to long-term conditions. For example, GPs/practice nurses may encourage the use of home monitoring devices for glucose levels and blood pressure. This approach may help to engage patients with their own care but also highlights when blood pressure or glucose control are not optimal. However, healthcare professionals are not the only source of patient education about health. Established in the NHS in 2004, the Expert Patient Programme (EPP) provides free courses to educate patients with long-term conditions and promote self-care. In 2010, EPP saved approximately £1,800 per patient per year by reducing the number of visits to the GP and hospitals.\(^11\) These forms of programs are potentially hugely important to the NHS with the UK’s ageing demographics and increasing proportion of patients with multi-morbidity. Indeed, the Department of Health estimates that there are 15 million people in the UK suffering from a chronic condition.\(^12\) If the EPP figures are extrapolated to just half of this proportion, £12.6 billion could be saved.

**Embracing Technology**

Telemedicine has become an increasing appealing method of health management. A recent study indicated that supervision of physiotherapy exercises for patients with cystic fibrosis could be done efficiently by video-conference rather than attendance at specialist healthcare centres.\(^13\) This could improve equality of access to healthcare support for patients in remote areas and also reduce the pressure on health service waiting lists. Telehealth is considered to be cost-effective and lowers costs for health providers.

Another opportunity could be for post-operative patients who could communicate their recovery with the medical team from the comfort of their own home. A review of palliative paediatric care reported that administering support and monitoring via telehealth reduced anxiety levels for patients.\(^14\) With telemedicine, there is less disruption of daily activities for patients since there is no need to physically attend appointments. Correspondingly, there is greater dignity for patients because they have motivation for their own care and recovery
can be undertaken in their home rather than a hospital environment.

Other branches of technology can be utilised to create options for healthcare. Already there are a number of medical applications for smartphones that involve tutorials and video demonstrations for patients as well as monitoring capabilities. In 2012, the Health Secretary Andrew Lansley recommended 500 smartphone applications that could be “prescribed” to patients. For example, smartphone tools for dietary regulation can scan the bar codes of food items and report the calorie content. With the number of smartphone users rising at a rapid rate, this method of managing healthcare may improve access and compliance for more patients as they are able to take control of their healthcare. This system is also cost-effective and sustainable since inappropriate hospital visits may be reduced. There are many future possibilities for these electronic systems including health promotion and increased coverage for healthcare screening programmes, such as self-checking for breast cancer.

Recently, the Department of Health trialed a Whole System Demonstrator Programme which evaluated the use of telehealth and self-monitoring of patients suffering from diabetes, COPD or heart failure. It reported that using telehealth can reduce mortality rates by 45% and also decrease elective as well as emergency admission each by 15-20%. The success of this trial has led to a concordant “three million lives” campaign to use these technology systems in healthcare to enhance the lives of 3 million people within 5 years.

However, it should be noted that there are limitations to these technological approaches. Firstly, barriers to implementation of new systems and set up costs need to be outweighed by the benefits. There has been advances in using home self-monitoring systems, for example home blood pressure monitoring kits for hypertension, which report some success but still need further evaluation to warrant national uptake.

Additional challenges include difficulties maintaining patient compliance, ensuring patients are given enough training to use the self-monitoring equipment and encouraging self-care that moves away from the traditional interface. Despite, the younger generations becoming more adept at using apps and other technical devices, some of the older population may still find it difficult to use the new equipment. Therefore, in order for technology strategies to be effective in healthcare, there needs to be focus on patient empowerment and patient-centered implementation.

**Structural Change**

The nature of healthcare is constantly changing as new conditions emerge and innovative treatments are discovered. However, the static nature of the NHS structure has led to a mismatch with the changing expectations for healthcare. These inefficiencies need to be addressed in order to enable optimal distribution of the limited health resources.

In terms of sustainability, funding is a key concern for the NHS. Opportunities to create more of a public-private healthcare mix are associated with negative connotations of inequality and inequity but the principles of user-funding could augment healthcare provision. Simply stated, the main aim of the UK healthcare system should be to cater for patient needs and
with this central principle, it is essential to move past the impasse surrounding the stigma of privatisation. The recent Health and Social Care Act 2012 was met with raging controversy as it supported increased adoption of a mixed model of public and private healthcare provision. The reforms encourage involvement of private providers and mixed markets, for example Independent Sector Treatment Centres (ISTCs) which provide NHS care but are owned by private organisations.

Despite concerns over privatisation, the public-private mix is not a new concept in the UK’s healthcare structure. Historically, the government introduced the Private Finance Initiatives (PFIs) which utilized the monetary advantage of private companies. Although showing initial success by relieving the use of public funding, there has been concern over PFIs future effects on the healthcare market, such as inefficiencies and increasing competition. Although moving away from the NHS concept of ‘free healthcare’, the Health and Social Care Act reforms attempt to establish a sustainable structure for the changing healthcare environment. With a mix of private and public services, income could be generated and then be put back into the healthcare system. For example, co-payments for prescriptions already provide some reimbursement for health services. Payment for certain services may also deter some patients who do not actually need the services and may also reduce the ‘did not attend’ (DNA) rates. This could lead to sustainable efficiency savings for the NHS.

There are many complexities associated with a mixed public-private health service, including two-tiered systems and a ‘hub and spoke’ tendency; whereby the public sector dealing with emergencies and complex cases, whereas the private sector ‘cherry picks’ standard procedures. Even with the reforms, the future of the healthcare structure in the UK is still somewhat elusive. Nonetheless, for the NHS to remain accessible and sustainable there needs to be a source of funding and healthcare workers need to be involved in the process of adapting the provision of services since they are at the forefront of the healthcare battle.

**Conclusion**

Possible strategies to combat the NHS in recession include key steps of empowering patients to take responsibility for their health, incorporating new technological advances to encourage self-management and monitoring away from the interface, and adapting structural reform (Table 1).

**Table 1: Summary of NHS Strategies to Develop the NHS in Recession**

<table>
<thead>
<tr>
<th><strong>EMPOWERING PATIENTS</strong></th>
<th><strong>TECHNOLOGY</strong></th>
<th><strong>STRUCTURAL REFORM</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-assessment</td>
<td>Telehealth and Telecare</td>
<td>Adapting to the changing healthcare environment</td>
</tr>
<tr>
<td>Self-management</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Patient education</strong></td>
<td>Internet and smartphone technology, such as apps</td>
<td>Public-private mix</td>
</tr>
<tr>
<td>including symptom recognition and transferring skills from the interface</td>
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The NHS is facing numerous challenges that are putting pressure on the services provided.
Unfortunately there is no single panacea to relive the increasing burden on the health services in the UK. However, accessibility and sustainability of health services may begin to be achieved by focusing on solving the problems of the process, such as funding and illness prevention, rather than “re-arranging the deckchairs of the Titanic”.  

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Available to view on the online version
Person Centred Nutrition: Developing An Innovative Approach to Health Outcome through Nutrition

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ABSTRACT

The disease centred model currently used by conventional medicine has resulted in the NHS failing to keeping pace with the demands placed on it. Personal Centred Nutrition offers an alternative approach.

Key Words: nutrition, evidence based medicine, functional medicine

Introduction

The disease centred model currently used by conventional medicine has resulted in the NHS failing to keeping pace with the demands placed on it. By looking at disease as a single entity rather than taking into account the person that has a given disease, biochemical, epigenetic and environmental individuality is ignored. In the functional medicine textbook\(^1\) William Osler is quoted as saying: “It is more important to known what person has the disease than which disease the person has.”

In contrast to conventional medicine, functional medicine is essentially patient centred, rather than disease centred. One branch of this is person centred nutrition, which aims to provide individualised diet and lifestyle advice, whilst acknowledging the psychosocial elements of health. A key part of the functional medicine approach is collaboration between the health care professionals and the patient; the outcome of this being a patient-driven protocol, with increased tendency to compliance.\(^2\)

One of the greatest challenges in modern health care is the weakness of the evidence base. The aim of this paper is to critically analyse the current research paradigm and explore possible new methodologies to improve patient outcomes

Evidenced Based Medicine

Evidence based medicine is the approach adopted by conventional medicine. Currently there is a deluge of wide and varied information available via the internet when searching for health solutions which can be both confusing for patients and indeed provide contradictory information. This creates a bottleneck of information, much of which is ambiguous and biased. This has lead to increased interest in evidence-based research, particularly in the arena of social sciences. This has made way for the need for organisations such at the Cochrane Collaboration. Their role is one of administration of grading schemes and thus dissemination and distilling of best evidence, supposedly making it easier to access ‘good evidence’\(^3\). With a more reliable evidence base, policy makers and practitioners can
make better-informed decisions and this evidence base is commonly use to develop clinical practice guidelines and local disease management protocols.

Current evidence based medicines use a hierarchy that gives randomised controlled trials (RCTs) and meta-analyses supremacy The benefit of this is that clinical decision-making is objective and in theory statistical analyses helps to address problems of bias. However, in reality technological, gender, cultural and publication bias are still problematic.

From a person centred nutrition point of view, RCTs are aimed at bringing drugs to market (such as orlistat for weight loss) rather than assessing more complex health outcomes. RCTs are expensive, making them predominantly industry led. This wide adoption by the pharmaceutical industry combined with the high financial stakes has created a financial bias with increasing pressure to report positive outcomes and suppress negative outcomes. Opportunities to study clinically important questions became marginalized and this poses a threat to the reliability of the knowledge base.

**Person Centred Nutrition – The Time for a New Approach**

In person centred nutrition we want to take in to account bio-individuality, rather than adopting the one size fits all approach of conventional medicine. The problem with this is that to handle the vast amount of cellular and molecular data, mathematical models must be employed.

A number of statistical approaches are used in the modelling of this data, including using Frequentist Statistics and Bayesian Inference. To handle complex health problems involving large databases of health information, electronic health record data can be pooled together and used to explore patient outcomes. If this data can be pulled into a standardized format that is accessible in the public domain, it can be utilized in multiple ways including new hypothesis testing and biomarker discovery.

A successful example of combining these approaches is evidenced in a recent study that used a combination of Bayesian methodology and traditional frequentist approaches to look at multiple patterns of sensitization in children with atopy. An unsupervised machine learning approach was adopted to divide the participants into different classes based on atopic vulnerability. The use of Bayesian methodology enabled the authors to identify structure within the data in the form of clusters. This machine learning approach culminated in five classes in total. This five-class model was representative of a complex latent (not directly measureable) structure. Atopic vulnerability was clustered into 4 definite classes the 5th cluster indicative of no atopy (Fig 1).

They then went on to explore the affiliation between the clusters and asthma. Following this, utilization of a supervised learning approach allowed them to then pose the question of how prophetic the clusters were of developing asthma? The authors’ investigations give them the platforms to articulate to the medical profession that perhaps it is time to progress towards a more sophisticated definition of atopy, with a consideration of sub-classes under the atopy umbrella.
Figure 1: Graphic representation of a hidden Markov model

This strategy is also championed by Sharma and Minhas, who propose that Bayesian statistics can be employed to integrate information from RCTs and observational studies with the patient’s unique biology: “In this approach the gold standard would be the best explanatory model of the disease and the mechanism of action of the treatment”. The development of the best explanatory model is the focus of biological research; the systematic use of Baysian methods would provide a method of testing the best explanatory theory preserving this perceived benefit of EBM while which is independent of expert opinion, thereby broadening its conception of evidence. Such a model would be applicable to any condition and would not be limited by how common the condition is. It could therefore be used as a source of evidence where none currently exists.

There are a number of challenges in the application of computer science to nutritional data. Policy change would be required in order to achieve the necessary standardization of data reporting. Furthermore, journals would have to lay down various requirements and produce information in a readable and reproducible form.

Research Approaches to Person Centred Nutrition

Genetics

An area finding increased momentum is genetic based nutrition. Joost explains that person centred nutrition is not new. Diets based on population group, life stage and disease are
already common; what is new is nutrition advice based on genetic testing. He states that: “It is therefore a reasonable assumption that a knowledge of the interactions between genotype and diet (and other lifestyle factors) will be of major help when assessing disease risk and when initiating preventative measures.” In theory, the concept of personalized nutritional recommendations that are based on genetic data should help to fine-tune the prevention of nutrition-associated diseases.

The combination of genetic profiling with the measurement of disease biomarkers makes it possible to identify subjects in the pre-disease state, giving leverage in the area of prevention. As biomarkers are a dynamic entity the goal of prevention may be procured through sufficient dietary intervention. “Undoubtedly the combination of evidence based nutrition and early biomarker–based diagnostics will be mandatory to enable accurate tailor-made nutritional advice in the future.” Once refined this process could help to save resources by targeting advice, and help to improve client compliance.

However, the infancy of this type of research presents a number of problems. It is difficult to counsel on the basis of individual SNPs (single-nucleotide polymorphisms) because we don’t know how they will interact with each other within a given individual. Using genetic information opens the possibility of developing subpopulation specific nutrition protocols and functional foods.

We are at a stage where science has the tools to explore gene-diet-disease interactions, but more data is needed through intervention studies to confirm these findings. In addition, there are other variations in the expression of genes such as “epigenetic modifications and copy number polymorphisms” that add as extra layer of complexity.

Metabolomic Profiling (Metabolomics and Personalized Metabolic Signature)

A recent report submitted to the Parliamentary Office of Science and Technology emphasised the importance of personalized medicine. Human diversity creates the potential of genetic stratification within populations. The targeting of medical treatments based on a patient’s genotype, combined with a growing knowledge of pharmacogenetics (genetic differences in drug metabolism) and pharmacogenomics (pharmacogenetics extending to the development of drugs that have been tailored for specific genetic profiles), permits greatest patient efficacy and minimizes adverse drug reactions. This greater understanding will catalyse the development of novel drugs. Pharmacogenomics could potentially see the wane of so-called blockbuster drugs and abolition of the stance that “one size fits all”. This personalized approach can also be applied to nutrition.

Ginkgo Biloba is an example of a nutrient that can be used to alter significantly the transcription of hundreds of genes. A wide range of genes are affected by Ginkgo Biloba including those for nerve growth, differentiation, regulation and function, mitochondria, and antioxidant protection.

Metabolomics is a rapidly advancing area of biology. The idea is that groups of people fitting specific metabolic profiles could be recommended more sophisticated diets than those
currently recommended by the government. This concept is in its infancy but gaining momentum. Gibney et al13 proffers that this expanding field will allow people to be grouped into metabolic phenotypes so that resources would be saved by targeting advice to the relevant individual at an early stage.

**Systems Biology**
Another possible avenue for improving the evidence base for person centred nutrition would be the integration of systems biology. Systems biology provides a structure for agglomerating models of biological systems; emerging applications of systems biology that are likely to be of particular importance during the decade to follow:

(a) pathway-based biomarkers14
(b) global genetic interaction maps14
(c) systems approaches to identify disease genes14

Systems biology works on a molecular level, having the capacity to give an extra dimension of information. Details of molecular mechanisms could be integrated into EBM and although in its infancy, this field has an abundant of potential going forward. ‘Other studies focus on the modular organisation of the networks or the presence of network motifs. It seems that this aspect of systems biology could lead to the development of appreciable fundamental insights into the principles that underlie biology5. However it is worth noting that systems biology needs to take into account epigenetics4. It is all well and good having the gene but of course if the former is silent the gene is not expressed.

**Functional Medicine**
Whilst insight into genetics and biochemistry has value, the power of the individual’s case history must not be under-estimated as numerous inputs “subtly influence overall risk of disease or treatment response”11. The functional medicine approach aims to integrate a person’s history with measures of biochemical individuality, taking into account environmental, social and psychological factors in a holistic approach to healthcare that empowers the patient.

**The Future**
In summary we are developing a platform to revolutionise the evidence base for complex health issues, utilizing the best aspects of both Bayesian and Frequentist Statistics and the rapidly advancing field of machine learning. In the future, perhaps incorporation of the function medicine model making additional use of the patient’s history, psychosocial and environmental milieu will assist in generating a more advanced and bespoke patient outcome, thus in time achieving an improvement in the overall health of the population.

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Available to view online
Developing health promotion and chronic disease management
A remedy for a NHS in a recession?

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ABSTRACT
While use of health services is increasing, the resources available in the NHS remain limited. The health service will only remain sustainable by aiming to prevent ill health. This must be done for those already suffering from chronic diseases and by preventing the occurrence of disease from the outset.

Key Words: health sustainability; health promotion; health reform

Decreasing risk through health promotion
Old age is associated with more ill health and as the population ages this will place a greater burden on the NHS. However many common diseases associated with old age like chronic obstructive pulmonary disease (COPD), diabetes and cardiovascular disease have similar modifiable risk factors.

The World Health Organisation identified these as smoking, unhealthy diet and physical inactivity. Projects have been undertaken to discourage these behaviours and encourage a healthy lifestyle. The Active Schools programme aims to encourage children to participate in more exercise, while the Change4Life advertising campaign shows the ‘hidden nasties’ in everyday foods. The ban on smoking in enclosed public places has reduced the number of smokers and the health impacts of this are already apparent. In the 5 year period after the Scottish ban was introduced the percentage of the population who smoked fell from 25.4% to 23.3%. However, the influence of the smoking ban is not clear as the figures are in line with a trend of reduction in smoking. In England, second hand smoking in bar workers has decreased on average by between 73% and 91% since the ban. In terms of health benefits, Sims et. Al found a statistically significant reduction of 2.4% in emergency admissions for myocardial infarction after the ban and a similar report found there to be an immediate 4.9% drop in adult emergency admissions for asthma over 3 years.

In the hope of reducing smoking further, legislation is to be put in place in Scotland to introduce standardised packaging for cigarettes. Data from Australia, the only country who has this legislation in place, shows that smokers were 81% more likely to consider quitting at least once a day in the previous week when smoking cigarettes in plain packaging. A systemic review by the Public Health Research Consortium showed that standardised packaging makes cigarettes less attractive and appear to be of lower quality.

Another risk factor for many diseases is alcohol; it is involved in 1 in every 8 bed days in hospital. A pragmatic approach is being used in London to help to ease this burden: ‘Booze buses’ help those intoxicated by alcohol without the need for them to be admitted to hospital. A more preventative approach is being used in Fife (Scotland). A mobile alcohol intervention unit gives advice to youths on reducing alcohol intake. 41% said that they had reduced their alcohol intake after this intervention. On a national scale, Scotland passed an act to introduce minimum unit pricing in June 2012 which will set the minimum unit price as 50 pence. This was not without problems: a petition for judicial review was filed by the
Scottish Whisky Society stating that minimum unit pricing is contrary to EU law, not effective in tackling alcohol abuse and punishes responsible drinkers. A later ruling refused the petition.

Evidence put forward by the University of Sheffield suggests that 60 lives will be saved in the first year of a minimum being instated, increasing to 318 by year 10. Furthermore, a Canadian study found that a 10% rise in alcohol cost reduced consumption relative to other drinks by 16.1%. In tobacco similar results have been found with a 10% increase in price causing a decrease in their use by the general population by 4.1%.

Early diagnosis
Where disease is present, early detection can reduce morbidity and mortality. This is done through screening programmes that have been shown to be successful:

- 20 years since the introduction of the Cervical screening programme, the incidence of cervical cancer almost halved and the mortality rates decreased by almost two-thirds.
- With 12 to 18 years of screening the relative risk reduction in mortality from colorectal cancer is 16%.

However, health inequalities limit the uptake of these programmes. The Black report was one of the first reports to bring to light the stark impact of health inequalities. This report concluded that health inequalities were due to social differences in income, education, diet, employment and conditions of work; not failings of the NHS.

Uptake of breast cancer screening gives a current example of this, thirty years on. Goddard and Smith found that people from poorer economic backgrounds use breast cancer screening less due to factors like cost of travel and time taken to attend the appointment.

Levesque et al identified five dimensions of healthcare accessibility: 1. approachability, 2. acceptability, 3. availability and accommodation, 4. affordability and 5. appropriateness. There are projects across the country focusing on each of these dimensions. The Borders Health in Hand website provides health information for those with long-term conditions, increasing accessibility by removing cost of travel and providing the information in the 6 languages most common to the area. This website is part of a larger project collaborating with local workplaces and libraries to increase the accessibility of health resources. As part of this, training sessions are available at local libraries that signpost people to helpful websites.

Improving chronic disease management
For those who suffer from chronic conditions the aim is help them to be as healthy as possible and stabilise their condition. This will prevent unplanned hospital admissions (UHAs) which are distressing for patients and expensive for the NHS. UHAs put a strain on resources by increasing waiting times and disrupting elective procedures, costing the NHS £11 billion per year. Additionally, hospitalisation increases the incidence of hospital acquired infections, pressure sores and leads loss of independence. Covinsky et al. found that 35% of over 70s admitted to hospital decreased their ability to perform activities of daily living.

Purdy et al. conducted a systematic review of interventions to UHAs. They found that in
some circumstances education and self-management, exercise and rehabilitation and telemedicine (for example blood pressure monitors\textsuperscript{29}) can reduce UHAs. Case management, care pathways and hospital at home were found to either have no effect or increase them. However, these have been found to improve patient experiences and provide cost effective care overall\textsuperscript{30}.

Croydon\textsuperscript{31} piloted the first virtual ward that aimed to reduce UHAs by managing patients in the community. Mr KP (a patient in the study), was referred to one of the virtual wards after an exacerbation of COPD\textsuperscript{32}. Once admitted a multidisciplinary team cared for him giving him access to support from nurses, a pharmacist, social worker, occupational therapist, physiotherapist. Additionally a specialist team who work across several virtual wards were available including specialist nurses, the palliative care team and a dietician. The ward provided the default communication point for all services in order to integrate his care. His case manager identified when he became ill quickly, administered antibiotics and prevented a hospital admission.

The structure of virtual wards is such that one virtual ward is linked to 3 or 4 GP practices. Medical input comes through either the ward matron (who leads clinical work on the ward) talking to a duty GP from each of the GP practices every day or by making an appointment to see the patient’s usual GP. On a virtual ward there are 100 patients, a proportion of them will be discussed on a virtual ward round every day, another section will be discussed weekly and the rest monthly depending on their circumstances and stability.

The virtual ward project uses risk prediction tools\textsuperscript{33} to identify those at risk of future hospital admissions. Other projects have targeted people who have already had multiple hospital admissions. These projects were unsuccessful due to regression to the mean: the improvement would have happened without intervention\textsuperscript{34-36}. The most commonly quoted example of regression to the mean, is patients with a common cold. By the time a patient sees their GP, their cold is at its worst and will improve as a result of the patients’ immune response regardless of the GPs action/advice.

In the event that an elderly person is admitted to hospital, the comprehensive geriatric assessment can be used. This creates a plan for care basis on their medical, psychosocial, functional and environmental issues. It has been found to decrease mortality and also functional impairment, making them more likely to live at their own homes at follow up rather than at an institution\textsuperscript{37}. The use of this approach is not yet widespread, but there is evidence for its efficacy\textsuperscript{38}.

**Self-Management**

Self management reduces hospital admissions\textsuperscript{39} and allows an individual to actively manage their own illness using problem solving and setting goals. Various projects have been started to support patients through this. The patient passport\textsuperscript{40} was developed by people suffering from arthritis for people with the condition. The passport records a patient’s medications, changes to their condition and changes in their ability to carry out daily living. This allows patients to take ownership of their condition and so maintaining their independence and dignity. It also facilitates information sharing between health care professionals to improve illness management and integrate services.

The voluntary sector performs many roles which provide vital support to the health service including their support for people who are self-managing. The Co-creating health project\textsuperscript{41}, developed by The Health Foundation, has been encouraging self-management in people
with COPD since 2007. An evaluation of the first phase of this project explored co-delivery of training courses by someone with COPD and a healthcare professional. The courses were for professionals and patients and both groups found that it changed their perception of their role in healthcare. The combination of initial training and long-term support, for example buddying systems, was vital to make self-management sustainable. Overall, this self-management programme improved quality of life.

A similar project is the Expert Patient Programme. This course is solely facilitated by lay volunteers. It covers a variety of skills including coping with feelings of depression, relaxation techniques and planning for the future. An evaluation found that it was very likely to be a cost effective alternative to the usual care given to people with long term conditions. It was found to have a greater benefit on health in those with lower self efficacy and health related quality of life. This shows the importance of signposting people to projects which are likely to benefit them most.

The shift from compliance to concordance-based practice is essential for self-management. It encourages patients to be involved in decisions regarding their own healthcare, empowering them to take an active interest in their health whilst respecting their autonomy. Also self-management is underpinned by appropriate use of medicines.

**Creating a healthy NHS workforce**

Creating a sustainable health service relies on a resilient workforce. The Boreman report explores health worker absenteeism and presenteeism (those at work but unwell, who cannot perform to their full potential). Absenteeism varies from 2 to 6% between locations. The majority of long-term absences are due to acute medical conditions, musculoskeletal problems and mental health problems.

Services that actively improve the health of workers increase resilience. The ‘Addenbrooke’s Life’ initiative provides free pilates classes for workers and quarterly health testing days where BMI and BP are checked. On these days advice is given on diet and exercise, amongst other things. A survey carried out showed that 70% of staff rated the initiative good or excellent.

The Boorman report puts forward the business case for ensuring that staff are well: it proposes that a third of sickness absence could be cut saving the NHS £555 million. Creating a healthy workforce will provide better teams who do not have the pressure of working harder due to staff absences. Importantly, the report also highlighted the direct relationship between staff wellbeing and patient satisfaction. Similarly a link was found between staff wellbeing and meticillin-resistant Staphylococcus aureus (MRSA) outbreaks, although it was not possible to say whether the relationship was causal. Franco et. Al also found that better support for healthcare workers leads to better patient outcomes: improvements in morbidity and mortality and increased patient satisfaction.

A major problem for the NHS workforce is ‘burnout’. Burnout is generally defined in terms of three criteria: depersonalisation, emotional exhaustion and personal accomplishment. A survey of over 500 GPs was done in 2012 and found that 46% were emotionally exhausted, 42% were depersonalised and 34% had low levels of personal accomplishment. Another survey undertaken earlier this year of 1800 GPs showed these figures had increased to 72%, 41% and 97% respectively equating to 43% that are at high risk of burnout.
A Cochrane review\textsuperscript{53} looked into secondary prevention of burnout and job related stress including stress management training. This involves educating employees to be aware of situations in work that may become stressful and ways to avoid this happening or to relieve the stress should it have already occurred. The review found that long term interventions with refresher sessions may have a sustained positive effect, but further trails would be needed to validate this.

**Looking to the future**

It is important to remember that currently the NHS compares well to other healthcare systems in the West. A study by the Commonwealth fund\textsuperscript{54} of 7 Western countries found that the UK has the most efficient healthcare system, providing good access to healthcare and good quality of care in comparison to the other countries studied. Where the NHS falls short is in patient centred healthcare and in helping to create long, healthy and productive lives.

In order to move forward this information is important: the NHS is beginning from a good place but there are some areas for improvement. To create a sustainable, accessible health service for the future the areas for improvement as well as the successes must be evaluated using an evidence based approach.

Rolling out successful projects must be done cautiously: when targeted at a different population the same framework may fail. It is equally important that the greatest number of people benefit each the project. This involves signposting patients to services relevant to them in the NHS and the voluntary sector.

Health care and social care must work together to create a sustainable model. In the first quarter of 2013 125,410 beds were occupied by delayed discharge patients and a proportion of these are due to waiting for a social care package\textsuperscript{55}. In Scotland a bill incorporating the results of a consultation into integration of health and social care is due later this year\textsuperscript{56}. This bill will also see the integration of their budgets.

The ageing population is also important to consider. This may burden the future health service in two ways: age related illnesses will create more patients and more worker absences. However, currently health related spending attributable to aging is $1\%$\textsuperscript{58}. The report which found this also described how an aging population can make economies more competitive by facilitating ‘morbidity deflation’ through healthy ageing combined with more people in their 60s and 70s participating in formal and informal work. It found that the productivity of countries with ageing populations could be increased by 10\% of GDP in future decades.

Risk factors for illness include lifestyle factors and health inequality. There is a striking correlation between income inequality and health and social problems\textsuperscript{59,60,61}. A document by the World Health Organisation\textsuperscript{61} describes ten principles for policy action to reduce social inequalities and improve health. Whitehead\textsuperscript{62} created a typology to categorise actions that tackle social inequalities in health. The categories involved strengthening both individuals and communities, improving living and working conditions and promoting healthy macro-policies affecting the whole population. Individuals may be strengthened through education and self confidence building. By acknowledging the positive strengths of people so giving them the capacity to act in ways that improve health\textsuperscript{63}. Strengthening communities allows communities to work together to improve their identified health priorities whilst also building social inclusiveness and a less divided society. This works on the theory that
exclusion of people from society denies them their dignity and self respect leading to worse health outcomes.\textsuperscript{64}

Research and medical advances also remain important in improving health\textsuperscript{58}. The morbidity and mortality of conditions like atherosclerosis have been improved by drug advances and whilst others like dementia could benefit from similar advances. However, in the era of multi-morbidity and chronic ill-health there will need to be a focus upon patient self-care and patient education as a method of improving health outcomes as medical magic bullet are less likely to benefit this population.

**Conclusion**
Therefore there is a great challenge ahead: improving the health of the nation is a complex task involving healthcare workers, current patients and future patients. However the NHS is beginning from a good position: it is efficient and it is innovative. There are many projects taking place that aim to improve health by illness prevention and health promotion. By carefully sharing these projects and encouraging new ones, the health service will be accessible and sustainable into the future.

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Available to view on the online version
Addressing Individual Lifestyle Choices – Education, Health Promotion, and Patient Engagement

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ABSTRACT
The NHS has a growing user-demographic, and with rising demand, the NHS cannot function in the same way as people have come to know and expect. Innovative ways need to be employed to improve the accessibility and sustainability of health services. Lifestyle is a major contributor to the rise in NHS demand as there has been a move away from personal responsibility and accountability to a culture where cure is better than prevention. To improve health services, it would be advantageous to design better health campaigns that employ engaging behaviour models to instil long-term behavioural changes with regards to lifestyle behaviours and choices. This article will discuss the need for effective health campaigns with an emphasis on behaviour models.

Key Words: health promotion; obesity; patient centred care

The NHS – At a critical point
Health services are largely encompassed by the National Health Service (NHS), with the Department of the Health (DoH) managing public health campaigns. The NHS is a much appreciated institution providing quality care and treatment for patients and has been an intrinsic aspect of many individuals’ lives. The U.K. population has increased incrementally over the past decades and in mid-2012 the population was 63.7 million, approximately 420,000 more than that recorded in mid-2011. As the population increases, so too does the demand on healthcare services, putting strain on the NHS which is already struggling to cope with the rising number of users as a result of an ageing population who are living longer. It is therefore apparent that healthcare provision needs to be examined in order to cope with the increase in demand. However, reforms to the NHS are not easy to enact as the British people hold the NHS in high regard and rely on it to be freely accessible and ever-present in the form they have known. Hence, the recent government proposals to reform the NHS have been met with opposition, exemplified by the ‘obituary’ to the NHS written in The Independent criticizing the way in which the NHS is being exposed to increasing privatisation. The NHS simply cannot function effectively and efficiently in its current form, providing care and treatment to those in need of it, with its current user-demographics.

Patient lifestyle choices – a major economic burden on the NHS
The NHS annually spends more than £5 billion on obesity-related conditions, £5 billion on smoking-related conditions, and £2.7 billion on alcohol-related conditions. These conditions are the result of lifestyle choices impacting on an individual’s health, accounting for over £10 billion in healthcare costs, approximately 9% of the current NHS budget. As a measure to improve the health of the nation, and the resources and sustainability of the NHS, it would be advantageous to explore ways in which an individual’s lifestyle choices
could be changed to promote health and prevent lifestyle-related diseases burdening the NHS.

According to the 2011 Health Survey for England, obesity has increased substantially over the period of 1993 to 2011 from 13% to 24% in men and 16% to 26% in women. 23% of adults are obese with a BMI of over 30 and 61% are overweight or obese with a BMI greater than 25\textsuperscript{9}. Incredibly, 33% of 10-11 year olds and 23% of 4-5 year olds also have a BMI greater than 25\textsuperscript{10}. In 2010, obesity was responsible for 11,173 episodes of treatment in hospitals equating to 25,322 bed days with a mean stay in hospital of 3.7 days\textsuperscript{11}. If current trends in obesity remain, the estimated annual cost to the NHS in 2015 for diseases related to being overweight and obesity amount to £15 billion with obesity alone predicted to demand £9 billion\textsuperscript{12}.

Obesity causes a huge array of medical problems including complications arising in surgery, using general anaesthetic safely, immobility, vascular disease, arthritis, and diabetes. Doctor-diagnosed diabetes prevalence increased in men from 2.9% in 1993 to 7% in 2011, and 1.9% to 4.9% in women over the same time period\textsuperscript{9}. It is estimated there are 2.8 million people with diabetes and it is predicted to increase to 4 million by 2025\textsuperscript{13}. The rise in obesity is predicted to correlate with a rise in diabetes prevalence of 6-8.5 million and 5.7-7.3 million cases of stroke and heart disease\textsuperscript{7}. Evidently, more needs to be done to change the attitudes and behaviours of individuals to lifestyle choices in order to promote health and prevent disease, consequently easing the strain on NHS services and resources that is currently imposed upon them.

**Changing Patient Behaviour – the Holy Grail of Health Promotion**

There has been great interest in the extent to which government legislation can enact on individual lifestyle choices and associated behaviours. A number of countries have enacted laws in an effort to curb lifestyle-related diseases by targeting the products, such as food\textsuperscript{14}, smoking\textsuperscript{15}, and alcohol\textsuperscript{16,17}. These measures have sought to change the behaviour of the individual indirectly via legislation, rather than try to directly alter the individual’s behaviour. These efforts have had some effect notably with regards to smoking and alcohol consumption. The smoking ban in the U.K has brought about decreases in the cases of asthma and heart disease\textsuperscript{18,19}. There has also been success across Europe where France, Germany, and Spain have seen decreases in the numbers of smokers since the introduction of legislation pertaining to smoking in those countries\textsuperscript{15}.

Alcohol consumption has also been seen to be curtailed related to government policy most notably in the Soviet Union\textsuperscript{16} and in Sweden\textsuperscript{17}. In the Soviet Union, Mikhail Gorbachev established in 1985 an anti-alcohol campaign in an effort to reduce mortality rates. This campaign saw prices of alcohol increase and its sale was restricted. During the time between 1985 and 1990, alcohol consumption reduced by a substantial 40%, and the male mortality rate decreased by 25%. However, after dissolution of the Soviet Union, this act was repealed due to popular dissatisfaction, and to the lost revenue from reduced alcohol consumption. The high mortality rates resumed after the repeal with a 40% surge between 1990 and 1994\textsuperscript{16}. This example highlights the short-term effect of legislation and the need for long-
term behavioural change. If people had been engaged with and aspects of lifestyle behaviours dealt with accordingly rather than dictated to, then when the anti-alcohol campaign had been repealed there may have been a positive outcome. In Sweden, the problem of alcohol was tackled in a different way. A government initiative was launched in 2004 due to the high consumption of alcohol. It was designed to be an active and engaging programme that rarely used didactic methods. It aimed to promote awareness of risk and stressed the importance of early detection while giving issues relating to alcohol a prominent position in the health care service, and it invested heavily in educating the staff fronting alcohol treatment services on how to engage with service users effectively. The programme was successful in its aims but long terms quantitative data has yet to come to fruition.

Legislation on food has also been attempted in light of the obesogenic pandemic. In 2011, Denmark enacted a tax on foods that had a nutritional profile of more than 2.3% saturated fat. This tax was expected to generate 200 million euro per year while reducing the consumption of saturated fat by 4%14. However, in 2012 this tax was repealed largely on the grounds that consumers were going to neighbouring countries (Germany and Sweden) to buy these taxed products at a lower price20. Hungary, Finland, and France have similar legislation, enacted in 2011, for foods high in sugar, and salt14, but whether these taxes will result in any meaningful changes in terms of lifestyle behaviours and choices is yet to be seen. They may work, but they may not and echo the outcomes mentioned above of Russia and Denmark.

The crux then comes when the government dictates the lifestyle behaviours and choices of its citizens resulting in an infringement of civil liberty and freedom of choice. It must surely be more advantageous and in accordance with a democracy to give people the information, tools, and support to facilitate their own lifestyle changes. Public health campaigns should be more than mere didactic diatribes, they should engage with the people they are seeking to reach. Public health campaigns are successful in increasing awareness but they fail to encompass mechanism to instil behavioural change that leads to the adoption of healthier lifestyle behaviours being non-existent.

In order for long-term and efficient lifestyle behaviour change, there needs to be an alternative to the indirect and seemingly short-lived effects that enactment of taxation and legislation can bring. The government is unable to force people to change their behaviours and attitudes to lifestyle choices, but it should make available sufficient information to allow individuals to make informed decisions about their lifestyles. By acting in this way, lifestyle-related diseases and associated conditions may reduce which would ease the strain being seen on the current NHS system. This is achievable through the implementation of behaviour models21, of which there are numerous forms that focus on instilling change in the individual. These include the health behaviour model (HBM), the information-motivation-behaviour skills model (IMBSM), theories of planned behaviour (TPB) and reasoned action (TRA), and social cognitive theory (SCT) (see table 1).
Behaviour models, exemplified in table 1, can be comprehensive tools to assess the potential success and/or failure, and efficacy, of a health and lifestyle campaign. Without understanding the importance of behaviours towards health, health campaigns may meet with limited success\(^2\). The DoH has used the above models, in conjunction with social marketing, to tackle behaviours relating to smoking (Smokefree), stroke (FAST), and obesity (Change4life)\(^3\). Furthermore, the Expert Patient scheme incorporates these models to instil in the individual change from within rather than relying on didactic means\(^4\).

<table>
<thead>
<tr>
<th>Model</th>
<th>How it works</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBM</td>
<td>The behaviour of an individual is determined by the perceptions of susceptibility to and severity of a health related condition, alongside the benefits and barriers of engaging in action to overcome the condition, including treatment.</td>
<td>An individual may feel impenetrable by the flu virus on account of a perceived strong immune system so does not adhere to hand washing practices, and in a flu epidemic does not feel the need to take precautions (i.e. Flu vaccination, wearing a face mask).</td>
</tr>
<tr>
<td>IMBSM</td>
<td>Focuses on: knowledge to support motivation; opportunity to move towards favourable attitudes to new behaviour(s) while making use of social support networks; and reinforcement through actions.</td>
<td>Providing weekly/monthly informative workshops on nutrition and cooking, followed up by a cooking demonstration/session, with time to cook/eat with others and share experiences of food/recipes/cooking. This may aid in the adoption of cooking more often and engaging more with the food eaten.</td>
</tr>
<tr>
<td>TRA</td>
<td>Looks at the individual's: behavioural intent; attitude to that behaviour; and how the individual sees how people known to him/her view that behaviour being performed (subjective norm). Both attitude and subjective norm need to be present to lead to behavioural intent, and then to the behaviour being adopted.</td>
<td>An individual may want to do more exercise because they feel over-weight. His/her family may think it is a good idea, thus reinforcing the individual's intent leading to a more likely adoption of the chosen behaviour.</td>
</tr>
<tr>
<td>TPB</td>
<td>Expands on TRA to include perceptions of behavioural control which encompasses how the individual may see how difficult the behaviour is to be adopted. The perception of behavioural control can feed into the attitude and subjective norm as well as into the intention.</td>
<td>An individual may want to do more exercise because they feel over-weight. His/her family may think it is a good idea, thus reinforcing the individual's intent leading to a more likely adoption of the chosen behaviour. However, to do more exercise, the individual feels they must go to the gym regularly which will cost money and the individual is unable to afford it which may result in the behaviour not being adopted.</td>
</tr>
<tr>
<td>SCT</td>
<td>The behaviour is dependent on the interaction between the individual's cognitive processes (thoughts, feelings, memory); the observations of others; and of the interaction between the environment and the individual's behaviour. Self-efficacy is the major influencing factor.</td>
<td>Seeing a famous person of similar age/gender/ethnicity following a healthy diet may incite an individual to identify with that person leading to greater self-efficacy awareness, and to the adoption of that new behaviour.</td>
</tr>
</tbody>
</table>
Examples of Public Health Campaigns Changing Patient Behaviour
The expert patient scheme is designed to enable those suffering with chronic conditions to self-manage, increase confidence, and improve quality of life. The scheme involves the patient taking control of their condition, with support from healthcare professionals, as well as sharing responsibility for treatment. Feedback from the scheme shows that patients have increased self-efficacy, and are more confident in managing symptoms and pain. Furthermore, patients are more resourceful and they are more engaged with healthcare professionals and treatment, with reduced visits to GPs and Accident and Emergency departments.

FAST is a campaign designed to make people aware of the signs of stroke, as well as the causes and results of having had a stroke. £8 million has been invested in the FAST programme and it has resulted in healthcare costs of £25 million being saved.

The Smokefree campaign targets smokers and provides them with reasons to stop smoking and it also offers tools and aids to facilitate quitting the habit. Smokefree in 2001/2 cost £24.7 million but this has increased substantially to £88.2 million in 2011/12 and the initiative has saved the health service £1.5 billion by the number of smokers quitting the habit. The effect of the Smokefree campaign may explain the reduction in smoking over the period 1993 to 2011 as it reduced from 28% to 23% in men and from 26% to 19% in women with smoking over 20 cigarettes a day also reducing from 11% to 5% in men and 8% to 3% in women over the period 1993 to 2011.

Change4life is a campaign to reassure people that it is not too late to alter behaviour. It encompasses not just diet, but other lifestyle activities such as smoking, alcohol consumption, and physical activity. It is a multifaceted health campaign with an interactive focus aimed at engagement. The Change4life programme has, in 2011/12, been provided with £14 million to continue its delivery focusing on dietary and lifestyle choices the results of which can take time to become apparent. Possibly as a result of the 5-a-day campaign, fruit and vegetable consumption of 5 or more portions a day slightly increased over the period 2001 to 2011 from 22% to 24% in men and 25% to 29% in women with peaks in 2006 of 26% in men and 32% in women. Adults, aged 19-64 years, consume, on average, 4.1 portions of fruit and vegetables with older adults consuming 4.4 portions, and 11-18 year old boys consume, on average, 3 portions per day and girls 2.8 portions.

These schemes seek to engage individuals with their health, helping them to understand lifestyle choices, to encourage changes in attitudes and behaviours, and to ease the economic and resource burden on healthcare services.

Nutrition – An Area where Public Health Should Focus
By giving individuals control over their own health and by engaging with them rather than dictating what they should do, the health of the nation may improve. An aspect with which engagement is crucial is diet. Nuijten and Lenoir-Wijnkoop suggest that the way to improve public health and healthcare systems’ expenditure and sustainability is to encourage nutrition to be at the focus of public health campaigns. Lenoir-Wijnkoop et al suggest that
nutrition will have a positive impact on reducing the economic burden placed on healthcare systems through adverse lifestyle choices. Nutrition could be the key to preventing lifestyle-related diseases, improving the quality of life for those suffering with chronic conditions, and to improving the accessibility and sustainability of health services as less people would be reliant on them due to fewer cases of lifestyle-related diseases demanding healthcare resources. However, Lenoir-Wijnkoop and Nuijten both state that the beneficial role nutrition can have on individuals will take time to come to fruition as it needs to become an intrinsic aspect of an individual's life, as exemplified by the 5-a-day and Change4life health campaigns.

Consequently, the behaviours of an individual towards diet and lifestyle choices need to be examined further in order to design effective campaigns that target behaviours to improve health and well-being. By incorporating behaviour models into health campaigns, focusing on behavioural change, health services may be better equipped to deal with non-lifestyle-related diseases. Resources and finances would become more available as fewer people would be using healthcare services for lifestyle-related diseases. By shifting the balance from treatment of disease to prevention, healthcare services would become less burdened, with resources more available to those in desperate need of them.

References
Available to view on the online version
The Findings of a Nationwide Audit – The Future of NHS Inflammatory Bowel Disease Services

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ABSTRACT

Cases of inflammatory bowel disease across the United Kingdom continue to rise. This article examines the opportunities that exist in different care settings to improve inflammatory bowel disease services, given the financial constraints currently faced by NHS.

Key Words: inflammatory bowel disease; audit; Crohns disease; Ulcerative colitis

Introduction

The proportion of the United Kingdom suffering from inflammatory bowel disease (IBD) [encompassing both Crohn’s disease and ulcerative colitis (UC)] is currently at 1 in 200 Table 1). This is a significant section of the population and accounts for an estimated cost to the National Health Service of £720 million each year¹.

Table 1: Comparison of Crohn’s Disease and Ulcerative Colitis²

<table>
<thead>
<tr>
<th></th>
<th>Crohn’s Disease</th>
<th>Ulcerative Colitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average age of patient at onset</td>
<td>10 - 40</td>
<td>10 - 40</td>
</tr>
<tr>
<td>Signs and symptoms</td>
<td>Reduction in appetite</td>
<td>Bloody diarrhoea with mucus</td>
</tr>
<tr>
<td></td>
<td>Weight loss</td>
<td>Pain in the lower abdomen</td>
</tr>
<tr>
<td></td>
<td>Diarrhoea</td>
<td>Weight loss</td>
</tr>
<tr>
<td></td>
<td>Abdominal pain</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perianal abscesses</td>
<td></td>
</tr>
<tr>
<td>Extra intestinal</td>
<td>Inflammation of joints</td>
<td>Inflammation of joints</td>
</tr>
<tr>
<td>manifestations</td>
<td>Inflammation of eyes</td>
<td>Inflammation of eyes</td>
</tr>
<tr>
<td></td>
<td>Inflammation of skin</td>
<td>Inflammation of skin</td>
</tr>
<tr>
<td></td>
<td>Inflammation of liver</td>
<td>Inflammation of liver</td>
</tr>
<tr>
<td>Common medications</td>
<td>Oral or i.v. glucocorticosteroids</td>
<td>Oral or i.v. glucocorticosteroids</td>
</tr>
<tr>
<td></td>
<td>Azathioprine or 6 mercaptopurine</td>
<td>5-aminosalicylic acid (e.g.</td>
</tr>
<tr>
<td></td>
<td>Infliximab (Remicade)</td>
<td>mesalazine)</td>
</tr>
<tr>
<td></td>
<td>Adalimumab (Humira)</td>
<td>Sulfasalazine</td>
</tr>
<tr>
<td></td>
<td>Surgery is not curative</td>
<td>Surgery (colectomy) can</td>
</tr>
<tr>
<td></td>
<td></td>
<td>be curative</td>
</tr>
</tbody>
</table>

The characteristics of IBD, such as chronic inflammation of the colon in UC, or any aspect of the gastrointestinal tract in Crohn’s, alongside (bloody) diarrhoea and abdominal pain, mean that the contact that this group of patients have with healthcare professionals and associated costs are considerable. These are relapsing and remitting conditions and consequently, although the requirement for care may fluctuate in its intensity, it must
constantly be available. To assess the availability and quality of such care, between September and December of 2006 a nationwide audit of IBD services and care was carried out\(^5\) (with a total of 212 hospitals submitting data out of 281 invited), which noted wide variations in care between centres. Subsequently, a working group was set up which established the IBD standards for patient care\(^6\) to try and standardise the healthcare that patients with IBD receive. The working group, comprising organisations such as the British Society of Gastroenterology and Crohn’s and Colitis UK, set the following standards:

- High quality clinical care
- Local delivery of care
- The maintenance of a patient centred service
- Patient education and support
- Information technology and audit
- Evidence based practice and research

Since 2006 subsequent audits have been carried out every two years to monitor progress. This has primarily been done through the use of questionnaires, which does have limitations as a means to obtain clinical data - with such a method there is a standardisation of questioning which leaves questions open to possible misinterpretation and the often retrospective nature of questioning allows for error. However these disadvantages have to be balanced against the large amounts of data from a variety of sources that can be gathered through this means to improve patient care. The finite resources available to the NHS make the standardisation of care a challenge; however there are opportunities within the reports that could lead to improvement in care provision without placing an additional burden upon the NHS.

**Primary Care**

Often, when a patient first experiences IBD symptoms advice is sought from their general practitioner (GP). GPs must recognise symptoms of IBD promptly and refer patients to specialists to receive appropriate care. The same also applies when an existing IBD patient experiences an exacerbation of symptoms and requires access to secondary care services through their GP. The severity of symptoms can accelerate quickly, underpinning the need for swift action to be taken.

The report on the results of the UK wide primary care questionnaire\(^5\) (to which there were 1675 respondents) carried out as part of the 2010 third round of the IBD audit, found a correlation between the level of confidence felt by GPs in recognising IBD symptoms and the ease with which secondary care was accessed. The report noted that, over 30\% of GPs [from the 1675 respondents] who felt they were somewhat or very confident in recognising IBD symptoms reported no problems in accessing secondary care services, compared to just over 20\% of GPs who expressed less confidence. While both of these figures are undoubtedly lower than is desirable, an increase in confidence in the handling of these conditions is proven as having a positive effect on the ability to access secondary care. This demonstrates the importance of establishing good communication between local GP practices and hospitals - knowing the correct person in the hospital to contact locally helps raise the confidence amongst GPs in appropriately dealing with their patients. Not being aware of an appropriate referral pathway could lead to a patient experiencing a delay to any specialist input, causing a further exacerbation of symptoms and necessitating a hospital admission which otherwise may have been avoided.
Another significant finding was that only 47% of GPs agreed with their respective hospitals that it would be possible to receive a referral within seven days for a patient experiencing an exacerbation of symptoms. Overall 59% of GPs believed that it would not be possible to receive a referral within seven days, in contrast to the 88% of their respective 184 hospitals surveyed who stated that this would be possible for adult patients. It may also be argued that an inconsistency between what is ‘thought’ by GPs and hospitals is inconsequential as long as the hospitals have achieved targets for 7-day referral lists. However it is indicative of the existence of a lack of communication between care providers that could negatively impact other aspects of IBD patient management. Lastly, there was disparity between the results relating to the management of patients receiving immunosuppressive therapies, which require regular review due to their potent side-effect profile. In 78% of cases where GPs stated that the monitoring of these patients was either the responsibility of primary care or was shared between primary and secondary care, the monitoring was stated by the local hospital as being their responsibility alone.

The results of this questionnaire highlight that work focused at improving communication between healthcare professionals in primary and secondary care and making clear clinical care pathways are required to help optimise clinical care that patients receive. Low levels of confidence amongst GPs in being able to effectively handle IBD patients have to be addressed. This may occur through increased availability of education as part of continued professional development (for example, such as those offered by the BMJ Learning5) and through increased interaction with secondary care so that neither exist in isolation from each other.

### Key Recommendations for Developing Primary Care Management of IBD

+ Improve confidence levels amongst GPs in treating patients with IBD
+ Increase educational opportunities available to GPs about IBD
+ Improve communication between primary and secondary care

### Secondary care

The duty of care for IBD patients falls primarily to secondary care clinicians so this naturally is the area where most of the focus has been on in terms of improving and developing services. Whilst, in some cases, improvements in care can only result through significant cost being incurred by the NHS (such as the increased provision of toilets on dedicated gastroenterology wards or increasing the number of clinics provided), they can also be made through restructuring of current facilities and making them more clinically efficient. The third round of the IBD audit7 identified the importance of a named clinical lead amongst an IBD team. Three quarters of the 202 centres that took part in the audit stated that a clinical lead had been appointed; this still leaves 25% of centres without an individual occupying this position. A clinical lead can play an important role in promoting high quality care and the improving of services, in helping to develop a management plan for patients experiencing a range of symptoms, and also in building relationships with other health care workers. While it is to a centre’s, and therefore to a patient’s, advantage for someone from an existing team to occupy this position, a costly investment in training would have to occur and demand to justify such an appointment would have to be proven.

Patients who suffer from IBD may be treated with a wide variety of complex drugs; this may include corticosteroids, immunosuppressants and biologicals. Each drug has the potential to cause significant side effects to a patient (Table 2).
**Table 2: IBD drug classes and possible side effects**

<table>
<thead>
<tr>
<th>Drug class</th>
<th>Side effects</th>
</tr>
</thead>
</table>
| Corticosteroids (e.g. prednisolone)             | • Immunosuppression  
• Cushing’s Syndrome or Cushing-like symptoms  
• Increase in blood sugar  
• Decrease in bone mineral density |
| Immunosuppressants (e.g. azathioprine)          | • Increased risk of opportunistic infections  
• Nausea  
• Hair loss  
• Small increased risk of lymphoma |
| Biologicals (e.g. infliximab)                   | • Immunosuppression, leading to increased risk of opportunistic infections  
• Infusion related reaction such as shortness of breath  
• Small increased risk of lymphoma |

Hospital pharmacists can play a key role in advising IBD specialists and the patients about the benefits and potential risks of these drugs before a course of treatment is started. The third round of the audit\(^8\) revealed that less than 50% of hospital sites had a pharmacist with a special interest in IBD as part of the IBD team, and only 9% of IBD meetings had regular pharmacy input. The majority of drugs used in IBD are widely used for other autoimmune conditions (such as rheumatoid arthritis, psoriasis and systematic lupus erythematosus), so it is probable (in large general hospitals at least) that pharmacists with knowledge of these drugs would be on site and could offer valuable input to IBD meetings. It has been proven that pharmacists may be able to provide advice that can improve drug regimens for patients with chronic illnesses thus reducing potential side effects that are suffered\(^9\).

Rapid access to specialist care was mentioned in the context of GP referral. However, in some centres access to specialists is given directly to the patients, whether this may be via telephone, email or drop in clinics. 90% of centres offered a telephone helpline\(^10\). Giving patients the ability to directly contact specialists places them at the centre of their own care whilst ensuring that lengthy delays in treatment are not incurred. It should, however, be made clear to patients that such a service must only be used when new IBD symptoms are experienced, as it could prove costly both in terms of finances and in terms of the specialist’s time if unnecessary contact is frequently made. Patients must be sufficiently educated to have an understanding of their conditions, enabling them to recognise any break through symptoms. A similar system of rapid access to secondary care services is present in other conditions such as cancer, where patients have access to oncology telephone advice twenty-four hours a day to ensure that care is readily available when needed\(^11\).

**Key Recommendations for Developing Secondary Care Management of IBD**

- Appointment of a clinical lead
- Consultation with hospital pharmacists
- Rapid access to specialists
Self-care
A diagnosis of IBD can have a dramatic impact on a person’s life. The diagnosis is frequently made in young people, and it is vital then that they feel able to handle their condition (managing symptoms, stoma care, nutrition, knowing side-effects of medications). Specialists must work in partnership with patients and ensure that their concerns are fully and appropriately addressed. Each patient presents with a unique combination of symptoms and responses to drug therapies, consequently care must be tailored to the individual if positive health outcomes are to result. A report on the results of an inpatient questionnaire conducted as part of the third round of the IBD audit found that 51% of 2028 patients that responded stated that they felt all their doctors during their hospital stay knew enough about their condition. This appears to be an area where some improvement is required to raise confidence levels amongst patients in the medical staff treating them. However, such figures may be misleading as they may have resulted from IBD patients coming in contact with a number of doctors at different levels of training during an average stay in hospital. Patient education is also central to the promotion of self-care. 99% of hospital sites provided patients with contact information for patient organisations (primarily Crohn’s and Colitis UK). These organisations help to educate patients about their conditions, while also bringing them in contact with other sufferers. This reduces feelings of isolation amongst patients (and their families) and provides comfort in knowing that others are also experiencing similar, often embarrassing, symptoms. The NHS recognises the value that education can add to patients with chronic diseases and (in England) an ‘Expert Patients Programme’ exists that all patients with chronic health conditions can access. This emulates the ‘Chronic Disease Self-Management Program’ that has been present in the United States since the 1970s and has been proven to have a positive impact on quality of life. Care plans are often used for people with long-term health conditions and can play an important role in IBD management. A written care plan for patients was only available in 33% of sites in a recent review. A care plan may cover areas like diet, exercise, medicines and emergency contact numbers. The development of such plans helps to ensure that patients who are less likely to ask questions about the management of their conditions receive the same high levels of information as patients who readily make enquiries. This is especially relevant in newly diagnosed patients and those receiving immunosuppressant and biological therapies.

Key Recommendations for Developing Self Care Management of IBD
+ Providing patients with contact details of patient organisations
+ Patient education
+ Development of care plans

Conclusion
Cases of inflammatory bowel diseases continue to rise and it is essential that the NHS be able to meet the requirements of this group of patients. As has been demonstrated through consideration of most recently published IBD audit results there are key areas where improvements can be made at little or no cost to the NHS. These improvements involve health care professionals reflecting on their own practice - good communication skills and respect between colleagues cannot be overstressed as central to this. Primary and the patient is able to achieve the highest quality of life possible for them.

References
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Proposing a Trial in Home Based Cardiac Rehabilitation Programmes – A way to effectively tackle modifiable vascular risk factors?

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ABSTRACT

Stroke is a major cause of mortality and morbidity which may be prevented by early intervention following a transient ischaemic attack (TIA). How to optimise such prevention, however, remains unknown. This paper therefore argues for a randomised controlled trial to assess the effectiveness of a home-based cardiac rehabilitation programme, based on the ‘Heart Manual’, begun within 2 weeks of a TIA, compared to usual care. Potential benefits for patients could include improved well-being and reduced risk of further vascular events, including stroke.

Key Words: Vascular disease; home-based cardiac rehabilitation programmes; Transient ischaemic attacks; the ‘Heart Manual’; secondary prevention.

Introduction

With services overburdened by growing demand and restricted supply, there is an opportunity for health creation by providing an adapted home-based cardiac rehabilitation programme for patients who have recently suffered a transient ischaemic attack (TIA). This approach may improve the accessibility and sustainability of health services in the UK by using an already established treatment for this patient group as well as reducing their future risk of developing further vascular events.

Stroke prevalence, impact and risk

Stroke killed 5.7 million people worldwide in 2005 and is estimated to cause 6.5 million deaths in 2015, with stroke survivors often being left with considerable disability. In 2006, approximately 1,700 TIA s and 4,000 strokes occurred in Northern Ireland alone. TIA is defined as “a transient episode of neurological dysfunction caused by focal brain, spinal cord or retinal ischaemia, without acute infarction”. The costs associated with both the acute hospitalisation and long-term follow-up care of patients with a past medical history of stroke is huge. Importantly, many strokes are preceded by TIAs, particularly within the first 90 days. Therefore the immediate period after a TIA is a crucial time to intervene to reduce the risk of stroke and interventions (drug and non-drug) in this period have been the focus of much clinical research.

Stroke risk following a first TIA
The 90-day risk of vascular events following a TIA, excluding events within the first week after diagnosis when the risk is highest, is 18%5. The ABCD² score in TIA patients is used to identify the future risk of stroke3. The ABCD² score consists of the following:

<table>
<thead>
<tr>
<th>Elements of ABCD² score</th>
<th>Points</th>
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</thead>
<tbody>
<tr>
<td>Age 60 years or above</td>
<td>1</td>
</tr>
<tr>
<td>Blood pressure 140/90mmHg or above on first evaluation</td>
<td>1</td>
</tr>
<tr>
<td>Clinical symptoms of focal weakness with spell</td>
<td>2, OR</td>
</tr>
<tr>
<td>Or, speech impairment without weakness</td>
<td>1</td>
</tr>
<tr>
<td>Duration of 60 minutes or more</td>
<td>2, OR</td>
</tr>
<tr>
<td>or 10-59 minutes</td>
<td>1</td>
</tr>
<tr>
<td>And Diabetes</td>
<td>1</td>
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</table>

The presence of a new infarct on brain imaging, indicating that the patient has actually had a stroke, places the patient at higher risk of a further stroke within the first 90 days6. Therefore, intense medical input is useful to help triage those patients most at risk of a stroke and subsequently direct patients towards appropriate secondary prevention.

**Secondary prevention reduces risk of second stroke**

Immediate assessment of TIA patients following the initial event, with initiation of secondary prevention, focusing on pharmacological interventions, can reduce the 90 day risk of stroke to 2% within the research setting7. These results have however not been replicated within routine practice8. Typical drug therapy initiated post-TIA event includes anti-platelets (aspirin, dipyridamole, and/or clopidogrel), statins and anti-hypertensives, if required.

Despite the benefits of drug therapy, non-drug approaches are of vital importance and, alongside reducing stroke risk post-TIA, may promote patient independence and engagement with their own health. Indeed, evidence is growing regarding the contribution of change in modifiable risk factors to reductions in cardiovascular deaths and there is a need to consider how to promote non-pharmacological measures within secondary prevention.

**VO₂max links with stroke risk and exercise**

Cardiorespiratory fitness, measured by VO₂max, is inversely correlated with mortality9-12, the progression of carotid atherosclerosis13 and the risk of stroke. An increase in VO₂max of 3.5 ml/kg/min was associated with a 17% decrease in stroke risk14, with similar findings noted in a meta-analysis15. Aerobic exercise can increase VO₂max by up to 30% in sedentary persons16 and sub-acute stroke survivors who participated in a twelve week supervised exercise programme demonstrated an increase in VO₂max of over 1ml/kg/min from baseline17. However there is an absence of published data linking post-TIA exercise to change in subsequent stroke risk.
Pedometers promote exercise

One method of promoting exercise and potentially improving VO2max is through the use of pedometers\(^{18}\). Pedometers are small waist-borne instruments that count the number of steps taken by the subject. Pedometers have been shown to be accurate and reliable in measuring ambulatory activity and their use has been suggested to increase patient engagement in exercise\(^{19-22}\). Pedometers appear feasible for use by patients with stroke although their accuracy at slow walking speeds has been questioned\(^{23-24}\). No reports have been identified regarding the use of pedometers as a physical activity promotion tool by patients with TIA or within the acute stroke setting and indeed a recent systematic review on the role of exercise post-stroke, has highlighted the lack of studies in the acute and sub-acute periods\(^{25}\).

Increasing steps per day by between 2,500-3,000 leads to weight loss and some reductions in blood pressure\(^{20, 26-27}\). Physical activity public health recommendations have been translated into pedometer targets\(^{26}\), with 100 steps per minute congruent with moderate-intensity activity 20 and 130 steps per minute considered vigorous intensity activity\(^{26}\). Pedometers can be used to give visual feedback to patients on their physical activity intensity as well as the total number of steps taken and the duration of activity.

Underlying pathological mechanism and risk factors for TIA

TIAs and strokes are most commonly caused by the embolic or thrombotic consequences of atherothrombotic disease\(^{28-29}\), which is similar to the underlying pathological mechanism for cardiovascular disease\(^{30-32}\). As well as sharing a similar underlying pathological mechanism, cerebrovascular and cardiovascular disease share common underlying risk factors\(^{31, 33}\) and there is a high prevalence of asymptomatic coronary artery disease post-TIA\(^{5, 32-35}\). Atrial fibrillation (AF) is also a common cause of stroke, with AF being more common in those with ischaemic heart disease.

The modifiable risk factors for all vascular diseases include smoking, excessive alcohol intake, physical inactivity, dietary factors, hypertension, dyslipidaemia, diabetes, and obesity\(^{36}\) as well as low VO2max\(^{9, 10-12, 37}\). Thus there are several lifestyle interventions that might contribute to a substantial reduction in the risk of vascular events post-TIA and there is evidence that the earlier these interventions can be introduced, the better the outcome\(^{5, 8, 38-39}\). National guidelines also state that TIA patients should be reviewed in a specific clinic within one week of the diagnosis\(^{8}\).

Tackling modifiable vascular risk factors with cardiac rehabilitation

Although cardiovascular and cerebrovascular disease share common underlying pathological mechanisms and risk factors, cardiac rehabilitation for secondary prevention is only offered to patients in the UK who have suffered specific cardiovascular events, e.g. myocardial infarction\(^{40}\). NICE (National Institute for Health and Clinical Excellence) have recommended that the components of cardiac rehabilitation should include exercise, health education and stress management\(^{40}\). Health education would include addressing the known modifiable vascular risk factors as well as advice regarding work, mental health and sexual activity\(^{40-41}\).
These components are all addressed in the “Heart Manual”, a home-based cardiac rehabilitation programme.9

The “Heart Manual” is the only validated home-based cardiac rehabilitation programme supported by NICE for patients who have had a myocardial infarction (MI)52. It is based on the Health Belief Model of behaviour change theory and uses cognitive behavioural techniques, including goal setting and its use has been associated with reductions in depression, anxiety and cholesterol levels and improved quality of life43. The “Heart Manual” has also been associated with reductions in blood pressure, improved exercise capacity and smoking cessation rates which are comparable to those achieved with hospital-based cardiac rehabilitation programmes44. The “Heart Manual” has been shown to strengthen illness control beliefs45 and increase confidence in recovery and self-perceived progress46.

Cardiac rehabilitation after a MI results in a statistically significant reduction in re-infarction, cardiac mortality, and all-cause mortality47 and these conclusions were similar to a recent Cochrane Review48. Furthermore, a five-week cardiac rehabilitation programme improves VO2max by 3-4 ml/kg/min in low risk post-MI patients49, which is supported by an earlier study50, which would have a positive impact on stroke risk following a TIA and improve the patient’s quality of life.

A Cochrane Review demonstrated hospital-based and home-based cardiac rehabilitation programmes, most of which used the “Heart Manual”, can result in similar health gains51, with home-based programmes improving adherence to the programme52. Moreover, home-based cardiac programmes have shown longer-term sustainability of health benefits compared with hospital-based programmes53. Thus there is strong evidence to support the use of a home-based programme in a patient population with cerebrovascular disease, which shares underlying pathological mechanisms and risk factors.

The ‘Heart Manual’ addresses each of the modifiable vascular risk factors, managing one risk factor each week, whilst encouraging the patient to slowly increase their activity over the six week programme in the setting of their home and addressing the issues of anxiety and depression following the diagnosis of TIA. The manual therefore involves education and motivation of the patient to address these risk factors. The manual is aided by a facilitator who contacts the user at approximately 1 and 4 weeks and helps the user to identify local support resources, for example smoking cessation services, as well as tackling any issues which they may have. The ‘Heart Manual’ utilises the behaviour change techniques of goal setting, barrier identification, setting graded tasks, self monitoring, feedback, relapse prevention and stress management.

Innovation
The author therefore proposes a trial, based in primary care, to assess the effect of a home-based vascular rehabilitation programme with the addition of a pedometer on VO2max, which is a marker of future risk of vascular events as well as death. The intervention is based on a home-based cardiac rehabilitation programme, the ‘Heart Manual’, that has been shown to be effective for patients following myocardial infarction and other cardiac events.
This proposal also incorporates the use of a pedometer, as a tool to prompt physical activity and promote longer-term behaviour change, providing a means of objective personal feedback regarding achievement of goals. The proposal also emphasises self-management and patient dignity as the rehabilitation programme will be home-based as well as an early intervention, aiming to initiate this within two weeks of the TIA (after being reviewed in a specialist clinic) to maximise the benefits to patients. This research project therefore has the potential for significant economic impact in the NHS and for impact on patients’ quality of life and disability and proves that the UK health systems, as well as the people that work within the NHS, still care about their patients.

**Concluding Remarks**
Patients who have just suffered a TIA, are at high risk of suffering further vascular events and therefore at high risk of disability and death. From previous research, we know that if we target these patients with immediate secondary prevention, the future risk of vascular events can be reduced although this risk reduction has not been replicated within routine practice. Using the recognised cardiac rehabilitation model within TIA holds much promise, particularly with a home-based approach. If this study of the ‘Heart Manual’ within the cerebrovascular patient population proves successful, the next stage in knowledge translation will be to refine the intervention design, based on the pilot study findings and to develop an international, multi-centred, randomised controlled trial, of a home-based vascular rehabilitation programme to reduce the subsequent risk of vascular events after suffering a first TIA. This research project therefore has the potential for significant economic impact in the NHS and for impact on patients’ quality of life and disability.

**References**
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Application of Mental Health Physical Activity Education Tool in Healthcare – Study Development

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ABSTRACT
Despite the Government providing additional funding for mental health services and research, it is grossly less than other physical health services. Treatment and positive development of mental health issues remain the biggest challenge for The Scottish Government. A connection has been made between physical and mental health and thus accessible rehabilitation programmes may benefit patients mentally and physically. In the last two decades, a number of studies, clinical and non-clinical have highlighted the positive affiliation between physical activity/exercise and reducing symptoms of depression. Depression is a major health inequality worldwide affecting 121 million people from all backgrounds. It has many affecting factors such as biological, psychological and social implications that are wide ranging from mild to severe depression. Individuals living with chronic physical health problems can go on to develop mental health problems or mental health problems can be aggravated by physical health conditions.

Key Words: mental health; physical activity; depression

Introduction
Despite the Government providing additional funding for mental health services and research, it is grossly less than other physical health services. Treatment and positive development of mental health issues remain the biggest challenge for The Scottish Government. A connection has been made between physical and mental health and thus accessible rehabilitation programmes may benefit patients mentally and physically. In the last two decades, a number of studies, clinical and non-clinical have highlighted the positive affiliation between physical activity/exercise and reducing symptoms of depression. Depression is a major health inequality worldwide affecting 121 million people from all backgrounds. It has many affecting factors such as biological, psychological and social implications which are wide ranging from mild to severe depression. Individuals living with chronic physical health problems can go on to develop mental health problems or mental health problems can be aggravated by physical health conditions.

De Koning, Verver and Van Den Heuvel et al. observe that a substantial amount of healthcare costs come from inefficient operational output. Quality healthcare is reliant on all health professionals involved improving their knowledge and skills in these methods of improvement. With this in mind the author would like to explore the implementation of a quality improvement (QI) project with regards to a test for change relating to education and participation in physical activity as an intervention to manage mental health issues such as depression. Depression is a major health inequality worldwide and affects 121 million people from all backgrounds. It is said to be one of the main causes of disability in the world with 1 in 5 people in Scotland alone experiencing depression at some point in their lives.
Individuals living with chronic physical health problems can go on to develop mental health problems or mental health problems can be aggravated by physical health conditions. Furthermore, mental ill health can even be a prerequisite to physical ill health. Moussavi et al. supports this in a study by The WHO World Health Survey of adults to attain health data using ICD-10 criteria for baseline prevalence of depression. The study surmised that the co-morbidity of depression has a more degenerative effect on health compared with depression alone as depression is frequently co-morbid with chronic diseases. Therefore tackling mental health issues will affect physical health gains such as individual’s better management of their own condition.

Despite the Government providing additional funding for mental health services and research, it is grossly less than other physical health services. Key problems highlighted have been funding shortages, poor inpatient services, limited access to services and discrimination. Nevertheless, achievements have been made with regards to mental health services and people themselves are taking greater responsibility with regards to their own mental health and well-being through self-management. Subsequently, treatment and positive development of mental health issues remain the biggest challenge for The Scottish Government with 44% of individuals in Scotland who receive benefits due to disability having mental illness as a primary condition.

The author has a keen interest in health, physical activity and depression levels and is keen to explore if the implementation of a quality improvement tool can have a positive impact on an individual’s mental well-being.

Quality Improvement
There is a growing need for quality improvement (QI) in healthcare and although methods have been proven they are not without challenge within a healthcare setting. Batalden and Davidoff describe QI to be the continued efforts of all involved in healthcare including all health professionals, patients, families, carers and researchers alike to bring about better health, better care systems and continued learning and development (see figure 1).

Figure 1: Linked aims of Improvement

Mental Health and Effects of Physical Activity
Depression has many affecting factors such as biological, psychological and social implications which are wide ranging from mild to severe depression. Due to depression having wide ranging classifications, a formal definition of severity of depression is classified
by the use of the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV) diagnostic criteria.13-14

Treatment for depression differs from person to person.17 One such technique is the prescription of exercise through interventions called Exercise Referral Schemes, which is a referral by a primary care professional to a custom made physical activity programme, involving an initial assessment with monitoring and supervision throughout the programme.17,21 Generally, these programmes require involvement of a number of professionals and the individual is required to go along to their local leisure centre where they will receive a tailored physical activity programme at a discounted monthly membership.22 Recommended guidelines have been well documented to be at least 30 minutes of moderate intensity exercise 5 days per week.5,8 Although, various studies have indicated that different intensities and duration of physical activity/exercise may have different effects on depression levels.23

Other interventions include walking and cycling schemes, which are participants can access.22 Consequently, Williams21 found that this referral scheme did little to improve physical activity levels in non-active individuals and that the barriers to the uptake of the scheme required to be addressed by the NHS.

Literature suggests that there are potential barriers to service users taking part in physical activity, such as limited experience of physical activity, impact of medication or level of support needed. Williams21 highlighted participants’ personal barriers to uptake being lack of self-esteem, lack of social support and low body image. Furthermore, with regards to exercise scheme barriers, inadequate professional supervision and intimidating environments were also noted.21 Although these barriers where identified there have been few well conducted qualitative studies to fully explore participation and adherence barriers.21 These barriers may be addressed by assessing participant’s readiness to participate and behavioural change attitude along with the possibility of increasing the variety of exercise programmes on offer which can then be more tailored to individual preferences.21 Moreover, NICE22 public intervention guidelines state that exercise referral schemes may only be recommended as part of research study to define efficacy.

Other potential barriers can be in relation to limited access to services and may also be of negative consequence to the uptake of Exercise Referral Schemes.1 Nine out of ten patients diagnosed with depression are treated in primary care in the UK.24 However, quality discrepancies have been observed with relation to accessibility of primary care in mental health.25 In particular, this has been seen as a “one size fits all” approach which is unrealistic, therefore there are patients living with mild to moderate depression who’s needs are not being met.24 This also calls for targeting of GP’s and their successful identification of individuals with depressive symptoms to promote recovery through early detection.26 Literature has found that many individuals with depressive symptoms were actually going unnoticed by GP’s.27

A connection has been made between physical and mental health and thus accessible rehabilitation programmes may benefit patients mentally and physically.2,4,5

In a 10-year cohort study of depressed patients, Harris, Cronkite and Moos21 found increased physical activity reduced depression. This study uses various measures such as the Health and Daily Living Form (HDL), used at various points throughout the study.21 The patient group was defined by using criteria constructed using the Research Diagnostic
Criteria (RDC) and The Global Depression Index (GD) to diagnose patients as clinically depressed. Furthermore, measures were constructed regarding physical activity and exercise coping along with 2 stressor indexes being drawn from the HDL. The study surmised that clinically encouraging depressed patients to partake in physical activity is beneficial. Moreover, in the last two decades, a number of studies, clinical and non-clinical have highlighted the positive affiliation between physical activity/exercise and reducing symptoms of depression. Although a range of measures being used to define depression makes it difficult for comparison of studies, a positive affiliation is apparent.

Further studies have also looked at length and intensities of physical activity. Teychenne et al. conducted an analysis observing physical activity and likelihood of depression in adults and found that five out of seven of the intervention studies highlighted a positive affiliation between length and intensity of physical activity session and reduced likelihood of depression. ACSM support this by advising not only can individuals take part in moderate intensity activity for 30 minutes at least 5 days a week but vigorous intensity physical activity can be partook for a minimum of 20 minutes, 3 days a week or intensity can be combined to meet recommendations. However, the reduction of depressive symptoms and likelihood of depression may also be due to the social factor of the individual being involved and supported in a social setting. Although, studies have found that social factor effect is generally not been shown to have a connection to the benefits of exercise. Conversely, Saxena et al. advised that physical activity as a health promotion strategy has not yet been studied in depth.

Effectiveness of physical activity and medication or Cognitive Behavioural Therapy (CBT) has shown no difference between interventions. Strohle and The Scottish Government recommends that implementation and optimum benefits of physical activity for clients, requires a multi-disciplinary team (MDT) approach of all health professionals involved in the clients care. Thus, as outlined by local guidelines and studies, physical activity and established interventions can work together to promote self-management and recovery of clients diagnosed with depression.

Accepting Submissions for Upcoming Issues

Go to: http://sumj.dundee.ac.uk for further details
Quality Improvement Project: Implementing a mental health physical activity education tool

Planning stage
The National Institute for Health and Clinical Excellence (NICE) (2008), The Scottish Government (2010) and The Scottish Intercollegiate Guidelines Network (SIGN) (2011) recognise the benefits of physical activity as an effective approach for tackling mental health and improving the physical health of people with mental illness (see figure 2).

Figure 2: The Way Forward Mental Health Figure

Studies support this by advocating that mental health care delivered locally would be more effective through the progress of local QI systems specially designed to integrate national standards. Furthermore, observations from literature established that a community approach improved social support in communities and encouraged positive changes in physical activity practises.

Developing a Local Study Developing Physical Activity for Patients with Mental Health Diagnoses in the West of Scotland
The author plans to implement a quality improvement project that aims to support mental health issues in the community using resources already available, a local gym environment, with the objective of promoting self-management of mental health issues through participation in physical activity. This project will be carried out over a 3 month period using the quality improvement method of Plan, Do, Study, Act (PDSA) methodology. National guidelines recommend, that a physical activity programme be 3 sessions per week of moderate intensity ranging from 24 minutes to 1 hour in duration and be structured and group based. Therefore these guidelines will be used in the implementation of this study. The success of the project will be measured by the uptake of mental health groups in the area, use of the Hamilton Depression Rating Scale to measure reduction rate of depressive symptoms and the referral rate of GP’s to these sessions.

Participants will be selected anonymously by health professionals with the criteria of a diagnosis of depression. The patient journey will involve an initial assessment of need through a GP or other healthcare professional, which would normally be sent to the local
health development officer to contact the patient to go along to their local leisure centre or community walking group to begin a tailored programme.22 Potential participants will be notified by post as to the study and the opportunity to participate, sending informed consent back to the researcher if consent given. The six essential ethics factors for the protection of participants will be adhered to, along with steps taken to protect vulnerable groups.35-36

Participants will take part in a walking group both inside a gym environment and outside in local green space. This programme would be continually monitored and would involve a patient follow up to monitor progress.22 There are many different rating scales used for depression disorders in clinical practice and research settings.34 The author has chosen to use The Hamilton Rating Scale, even though, in a review of the scale, conclusions were drawn that despite being the gold standard of assessment of depression used in healthcare for over 40 years, a revised scale would be beneficial to replicate current trends, and utilise current psychometric methods and definitions of depression37. Moreover, the psychometric measures, reliability estimates and validity measures of the scale reliably conform to established criteria and that the scale is proven to be effective in identifying change37. It also deals directly with clients already diagnosed with depression and its ease of use and efficiency in terms of the information the researcher seeks makes it the preferred choice of the author38.

The author will use the Hamilton Depression Scale as a baseline for the study and to identify change. Participants will then complete the scale once a month to measure any changes to their diagnosis. Any negative results will be referred back to the MDT to support clients and make changes for re-entering the study if the client wishes to continue.

PDSA (plan, do, study, act)
The initial stage of the PDSA cycle is defining what is to be achieved.39 In particular to clear goals, changes identified to reach the overall improvement aims and how improvement or change will be seen to be a success.39 The goal of this study is to ascertain whether the implementation of a mental health, physical activity education tool using RCC with PDSA quality improvement methods would be successful in the promotion of self-management and recovery of individuals diagnosed with depression. Therefore supporting national objectives to increase quality and access to mental health services promoting individuals to self-manage and promote recovery through independence.4 This study aims to use evidence based approaches and research for this including development of partnerships of all involved and promotion of mental health in communities.4 This will be achieved by a MDT of key staff to share expertise and knowledge including health professionals working directly with mental health patients, GP’s, gym staff and patients themselves will be educated to the benefits of exercise. MDT meetings will take place before, throughout and after intervention to increase the success of a positive and beneficial patient journey as outlined in the Healthcare Quality Strategy.40 Patients will not be present at these meetings but will continue to liaise with their own support staff to allow them to be involved with their own care. The inclusion of patients to be involved in their own care is imperative for project success as recent research conducted through use of focus groups confirmed that service users want to be physically fit and active.4 The method of including a MDT to be involved in the project improves communication between health professionals and reduces any barriers to change if the project was to become fully operational.41

Likewise, a MDT of specialised allied health professional interventions can also assist service users/carers to overcome potential barriers addressed previously.4,9 A multi-disciplinary approach involves all health professionals working with clients with a diagnosis of
depression to come together and share their expertise and work closely together to provide a positive patient journey to allow successful self-management and recovery by assisting access to the right information, education, support and services available. For example, primary care professionals, community psychiatric nurses or GP’s would be aware of the benefits of exercise for mental well-being and the social prescribing of exercise referral by referring the patient onto the appropriate professionals. Likewise, exercise professionals would be aware of other health co-morbidities, psychological or medication issues relating to mental ill health.

The NHS ascertain that the key to success of a quality improvement project using PDSA methodology is planning, continuous testing and implementation of changes which lead to improvement (see figure 3a and 3b for model). The PDSA method as a test for change enables the author to test the improvement on a small scale which is less disruptive to other staff and other on-going initiatives. Furthermore, it is also time and money efficient, reduces risk and failure rates and is key for quick learning. This method is also very effective to provide evidence to key stakeholders and senior staff that the improvement can lead to real and positive changes.

_Figure 3a: PDSA Quality Improvement Model_

An important consideration for success of QI projects is the attention to leadership support as senior staff can have the ability to undermine or drive a programme forward. Furthermore, a study of measuring the quality of healthcare found that the absence of data showed a significant barrier to doctor or senior staff becoming involved in quality improvement projects. Therefore recognised guidelines and up-to-date performance data will be collated to use as a baseline to ascertain whether current standards are being met which also concentrate on reducing failure rates rather than just improving quality. Data collection and measurement of the project will take place on a monthly basis to assess, collect and compare data. This also enabled the author to ascertain what learning came from the previous month and any changes, if any are required for next cycle.
The author recognises that sustainability of a project usually receives poor attention and that sustainability is dependent on a variety of factors such as finance, leadership or managerial input. Improvements from change can be lost due to newer practises not being considered. However, use of the PDSA cycle supports active learning that provides all health professionals with the knowledge to improve and maintain knowledge. Furthermore, the use of PDSA cycles allows for the inclusion of current new methods to still be trialled and tested without disruption to other service areas or lost due to other new practises.

Figure 3b: PDSA Quality Improvement Model – The Key Questions

Conclusion

It is clear that depression is a major health inequality worldwide and that treatment and positive development of mental health issues remain the biggest challenge for The Scottish Government.

A connection has been made between physical and mental health and studies are growing with regards to the positive affiliation between physical activity and reducing symptoms of depression and thus accessible rehabilitation programmes may benefit patients mentally and physically. However, the author recognises the limitation of previous data for comparison of other similar projects as few were found. This does however; make way for further research regarding similar projects’ as there seems to be a gap in this area regardless of local and national guidelines.

This potential study also has limitations with regards to referrals made to the researcher as each client is at a different stage in treatment, however, this is why it’s important that a
multi-disciplinary team are involved for the sharing and communication of information about the clients care and therefore promote a positive and effective recovery for the client as per local and national guidelines. These guidelines recognise the benefits between physical activity and mental health and recommend the use of this knowledge to be teamed with accessible physical rehabilitation programmes to promote self-management of individuals diagnosed with mental health disorders.

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