

How do we achieve healthy skin for all?

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The burden of skin disease

The pressing need for the greater inclusion of skin disease prevention and treatment in national health policies is further affirmed by a substantial and growing body of research aiming to quantify the health and economic burden of dermatological disease.

There is a significant morbidity and mortality associated with skin disease. Acne vulgaris and psoriasis have been linked with suicidal ideation¹, and one study demonstrated that psoriasis has as much negative physical, social and psychological impact as life-threatening conditions such as angina or cancer². There were nearly 4,000 deaths from skin disease in the UK in 2005, with malignant melanoma accounting for 1% of all deaths from cancer³. It is the 23rd most common cause of cancer death worldwide, estimated to be responsible for more than 46,000 deaths in 2008⁴.

Total direct expenditure in the NHS in England and Wales in 2005/06 for skin diseases was £1,424 million, representing 2.23% of total NHS expenditure⁵. The annual overall UK costs of atopic eczema was suggested to be around £465 million in 1996, and although a now dated statistic, it highlights the magnitude of the financial cost to society that chronic skin diseases have.

It is clear that skin disease places an enormous burden on societies worldwide. With clear goals in mind, there must be a push towards adapting current healthcare models to accommodate and alleviate the effect that skin disease has on society, and ultimately towards achieving healthy skin for all.

Prevention of skin disease

A crucial step in attaining healthy skin for all involves the primary prevention of skin disease, which is characterised by attempts to prevent the disease from occurring. There is a well established correlation between early disease detection and improved survival in melanoma, with 5-year survival for localised disease being 98% and falling to 16% in the presence of distant metastases⁶. Prevention is thus extremely important, and practical applications have already been found: There is some evidence that use of sunscreens may prevent skin cancers such as basal cell carcinoma⁷, squamous cell carcinoma⁸ and melanoma⁹, which has been a well known educational focal point for reducing skin cancer in recent years.

The patient education strategies for the detection of melanoma were greatly enhanced with the introduction of the ABCD acronym in 1985¹⁰. More recent efforts include the SunWise School Program which aims to teach children how to protect themselves from overexposure to the sun. An analysis of the program's efficacy suggested that if it continues through 2015 at current funding levels, then it should prevent over 50 premature deaths, almost 11,000 skin cancer cases, and 960 quality-adjusted life-years among its participants¹¹. It is thus worthwhile to educate children about sun safety; small to modest behavioural alterations

may result in significant reductions in skin cancer incidence and mortality. Implementing this type of scheme on a global level might be a challenging task, but since there is strong evidence for its success, this may be a very sensible option to consider.

Vaccination is another important concept in preventing disease. With relevance to skin disease, two new prophylactic vaccines were approved in 2006 by the Food and Drug Administration: the human papillomavirus (HPV) and herpes zoster (HZ) vaccines. The HPV vaccine is intended to reduce infection with the most common HPV types that cause anogenital disease, including cervical cancer and genital warts, whilst the HZ vaccine is intended to prevent shingles and its complications.

Research in to vaccines for the commonest skin conditions is challenging, yet potentially revolutionary in achieving healthy skin for all. Acne vulgaris, for example, affects more than fifty million people in the US, and the severity of this disorder is associated with the immune response to *Propionibacterium acnes* (*P. acnes*)¹². Current systemic therapies such as isotretinoin can be effective, but carries a risk of side effects including xerosis, epistaxis, myalgia, hyperlipidemia, and teratogenicity¹³. Despite substantial research into potential new therapies for this common disease, vaccines against acne vulgaris are not yet available. However, vaccination targeting a surface sialidase of *P. acnes* has been shown to reduce *P. acnes*- induced inflammation in vivo and neutralize *P. acnes* in vitro¹⁴, providing implication for new treatment of acne vulgaris. The implementation of routine immunisations for skin conditions would not only have a considerable effect on the overall incidence of disease but would also markedly lower the direct and indirect costs associated with health care; a 1994

study of the cost-effectiveness of a varicella vaccination program in the United States showed savings of \$384 million per year¹⁵.

Empowering the patient: therapeutic patient education and skin self-examination

People with skin conditions should have their care managed at a level appropriate to the severity and complexity of their condition, acknowledging that this may vary over time.

Levels of care can be divided into self-care (Level 1), generalist care (Level 2), specialist care (Level 3) and supra-specialist care (Level 4)¹⁶. Level 1 and level 2 have the greatest scope for achieving an improved overall level of skin care.

One step towards achieving healthy skin for all is improving patient education about dermatological illness¹⁷. Atopic dermatitis (AD), for example, is a chronic skin condition affecting up to 20% of children, and can have a largely detrimental effect on quality of life (QoL) due to xerosis with relapsing episodes of flares with pruritus and inflammation. Fortunately, topical treatment with creams and ointments is effective, however it must be actively tailored to the condition of the patient's skin on a daily basis. Thus, the success of this therapy is dependent on the patient's mastery of applying the treatment, i.e. utilising the right preparation at the right time in the right place. Unsuccessful treatment of AD can be linked to poor adherence and ultimately stopping therapy altogether. How can we work with patients to achieve better education about managing their condition, and therefore achieve healthier skin?

Therapeutic patient education (TPE) is a continuous process of patient-centered medical care¹⁸ involving the acquisition of skills such as self-management and treatment adaptation. Patients gain control over the management of their condition and are thus empowered which is advantageous to both patients and their families, reducing anxiety levels in parents of children with AD¹⁹, and directly leads to better disease management.

However, compared with TPE for other diseases such as asthma, it is relatively underdeveloped in dermatology. Notably, however, several hospitals worldwide have recently developed educational centres known as "atopic schools"²⁰. Compared with standard care, six group sessions involving disease and treatment information dissemination for two hours each week involving both interactive and academic approaches resulted in sustained reduction of AD severity and improved QoL²¹. This approach has already been extended with success to other countries such as France²². If these centres and programs can be extended further to more countries, and to other common conditions in dermatology such as psoriasis, there may be genuine scope to improving patient education.

Skin self-examination (SSE) is another method enabling patients to take an active role in their health by being aware of the lesions present on their skin, so that uneven, different or changing lesions can be identified and brought to the attention of a physician. One study concluded that by performing SSE, melanoma mortality may be reduced by up to 63%²³, making it an extremely worthwhile strategy to implement on a wider scale.

Improving patient adherence to medication

For patients on long-term therapy for a chronic disease, adherence to therapy is often vital for achieving optimal results. This may be an intuitive relationship for some, but patients' appreciation of this and the will to act upon it cannot be taken for granted²⁴. The WHO defines adherence as: 'the extent to which a person's behaviour – taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health-care provider'²⁵. Psoriasis is a prime example of a skin condition with generally poor adherence to medication, the most common complaints including slow absorption (44% of patients), application frequency greater than once-daily (41%), staining of clothes (34%) and bedding (27%)²⁶.

There are a number of ways to address the problem of nonadherence, and thus improve QoL for patients. One study showed that adherence to treatment appears to increase two days before and two days after physician visits²⁷; a follow-up visit shortly after treatment initiation may therefore increase adherence and achieve better outcomes. The ease of use affects treatment preference and adherence, with patients generally preferring 'less messy' treatments that are easy to apply²⁸. Therefore, the treatment vehicle choice should be tailored to the individual patient, as a patient is more likely adhere to a medication if it comes in the preferred vehicle. This raises the issue that despite theoretical considerations as to which vehicle should be clinically most effective, treatment in a preferred vehicle may result in a better outcome for a particular patient due to greater adherence²⁹. Additionally, enhancing the healthcare professional–patient relationship, such as by improving communication, has been shown to improve medication adherence and hence treatment outcomes in psoriasis³⁰. This may be achieved by taking more time to explain the condition and the rationale for treatment, demonstrating how to apply the medication, or even

encouraging behavioural cues such as setting alarms as reminders to take treatment. For children with chronic skin diseases, sticker charts have been shown to be effective in improving adherence to treatment³¹.

Provision and quality of health services

Three key components in defining quality of care are effectiveness, safety and patient experience³², and services should constantly review and measure themselves against these three key components, following the specific guidance for the specialty. Commissioners and providers of services must ensure that people with skin conditions have access to a full range of dermatological services and, where appropriate, that these are in concordance with NICE guidance or national standards³³.

In order to achieve healthy skin for all, inequalities in provision of dermatological health services must therefore be tackled. The Royal College of Physicians recommends a whole-time equivalent (WTE):population ratio for consultants in dermatology in the UK of 1:62,500³⁴, but this was scarcely achieved in 2011. Areas with the biggest shortfall of NHS dermatology consultants include the North East, with 1:140,000 - 1:150,000, and Northern Ireland, with the biggest shortfall of greater than 1:150,000. Only London had an acceptable ratio. Interestingly, studies have shown that teledermatology (TD), an exchange of medical information concerning skin disease via telecommunication hardware, can supplement infrequent specialist dermatology service in remote areas³⁵, however, this model of care was limited by cost and the inherent limitations of TD which include difficulty in

communicating a thorough history and absence of details for the tactile component of palpation where relevant.

The 2008 audit also showed that highly valuable specialist dermatological nurses had variable provision across the UK, with 20% of departments having no specialist nurses to support and educate patients skin diseases. Patients who had seen the nurse had significantly more knowledge about their treatment duration, how to obtain a repeat prescription, and who to contact for more support. Furthermore, a systematic review found evidence of better use of topical therapies and reduced severity of skin conditions associated with nurse-led care in dermatology³⁶. Therefore, in order to improve dermatological healthcare services, this shortfall in specialist dermatology nurses should be addressed.

Dermatology in primary care

Dermatology is predominantly an outpatient-based specialty, and in the UK, referrals are mostly made via general practitioners (GPs)³⁷ with 24% of GP consultations relating to skin conditions³⁸. The relatively new role of GPs with a special interest in dermatology has expanded the service capacity to deal with the rising demand for specialist advice, and thus has improved accessibility, convenience and reduced waiting list times, ultimately leading to consultants being able to focus on the most complex conditions³⁹.

However, there is evidence to show that skin conditions are poorly managed in the primary care setting. Although skin diseases could be better managed in primary care, better

management is hindered by a continued lack of appropriate training in the primary care setting, and primary care health practitioners were under no obligation to have training in dermatology which would help with their diagnostic skills⁴⁰. A study in 2006 from Sheffield reported that of 176 suspected malignant melanomas referred for assessment, the diagnosis was confirmed histologically in 21⁴¹, confirming the clear deficiencies in GPs' abilities to recognise malignant skin lesions⁴².

Addressing the needs for improved dermatology education of GPs is therefore an important factor in achieving healthy skin for all. The Skin Conditions in the UK document highlighted the importance of information about the epidemiology of skin conditions and gaining an understanding of which skin conditions are seen most commonly in particular settings and why patients are referred for specialist care⁴³.

Thus, regular seminars run by dermatologists for GPs to refresh their knowledge and be updated on new treatments for skin conditions would likely be beneficial. The drive for better education might even extend to include a more extensive dermatology rotation in medical school - a study of 43 GP registrars in 2003 identified that four had no undergraduate training in dermatology, and 21 had two weeks or less⁴⁴.

Conclusion

The important challenge of achieving and maintaining healthy skin for all is a complex and multifactorial issue. Primary prevention certainly plays a large part in lowering the incidence of skin disease, and national campaigns to raise awareness of skin conditions and how to

prevent them or seek help regarding them should remain at the forefront of our minds. Dermatological research, such as into new vaccinations and treatments, is essential, and must be a frontrunner when considering budget allocations.

Empowering the patient through educational strategies in managing their skin conditions, such as through TPE, is crucial, and doctors must keep treatment adherence in mind when prescribing for chronic diseases. Geographical differences in dermatology healthcare professional provisions may be an issue, especially in the North of England, and whilst teledermatology has mixed evidence regarding its efficacy, a drive to recruit more consultants and specialist nurses may be an alternative solution - undoubtedly a complex issue in itself.

Finally, deficiencies in primary care dermatology have been exposed by numerous studies, and this is an unacceptable truth - long term educational interventions must take place to rectify this, especially as we see more skin conditions treated exclusively in primary care: "A small number of highly trained specialists see 6.1% of all patients presenting with skin problems each year whilst the remaining 93.9% are seen by health care professionals who, through no fault of their own, have had very limited training in the diagnosis and management of skin problems"⁴⁵. Thus, by incorporating these strategies into a comprehensive plan, we can take a positive step towards achieving healthy skin for all.

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