Burden of wounds to the NHS: what has changed since 2012/13?

JULIAN GUEST
Catalyst Consultants, Poole, UK

The study known as the 'Burden of Wounds to the UK's NHS in 2012/13' was published across two articles (Guest et al, 2015; 2017a). This study led to a debate in the UK Parliament (House of Lords) on the development of a national strategy for improving the standards of wound care in the NHS (House of Lords Hansard, 2017). This had the effect of NHS England and NHS Improvement establishing the National Wound Care Strategy Programme (NWCSP) in the last quarter of 2018 (NHS England, National Wound Care Strategy Programme). In December 2020 another study was published which quantified how the burden of wounds to the NHS has changed between 2012/13 and 2017/18 (Guest et al, 2020).

The new study found that the NHS managed an estimated 3.8 million patients with a wound in 2017/18. This equates to a 71% increase in the annual prevalence of wounds between 2012/13 and 2017/18, and is consistent with the findings from our predictive model (Guest et al, 2017b), which forecast that the prevalence of wounds would increase by 11% per annum. Nevertheless, the increase in annual prevalence over the five years varied from 80% for acute wounds to 50% for chronic wounds.

It should be noted that the NHS may have managed more than 3.8 million wounds in 2017/18 (Guest et al, 2020). The reasons have been explained in detail in the published article and include the possibility of patients having a second leg ulcer or a healed wound recurring during the study period, but neither being identified due to a lack of granularity in patients' records. It is also noteworthy that 16% of all wounds had no recorded diagnosis and we were unable to deduce a wound type from the patients' records. Additionally, 9% of all wounds were a leg ulcer without any further description (i.e. venous, arterial or mixed). Consequently, the records of 25% of all patients with a wound lacked a recorded differential diagnosis (*Figure 1*), compared with 31% in 2012/13 (19% for unspecified leg ulcers and 12% for unspecified wounds).

A total of 70% of the wounds in the 2017/18 cohort healed during the study period (89% and 49% of acute

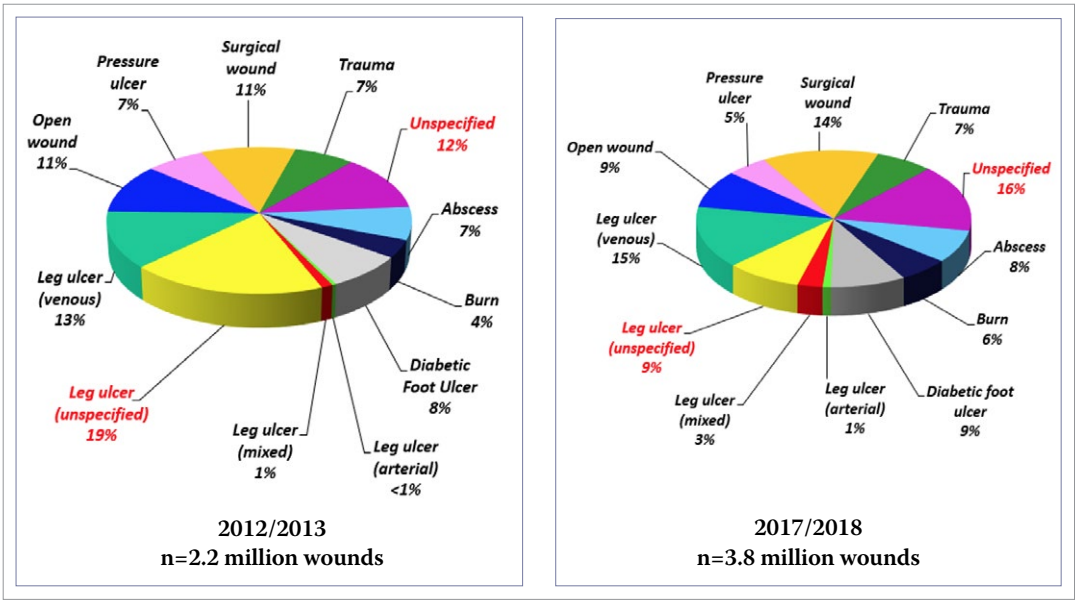

Figure 1. Distribution of wounds managed by the NHS

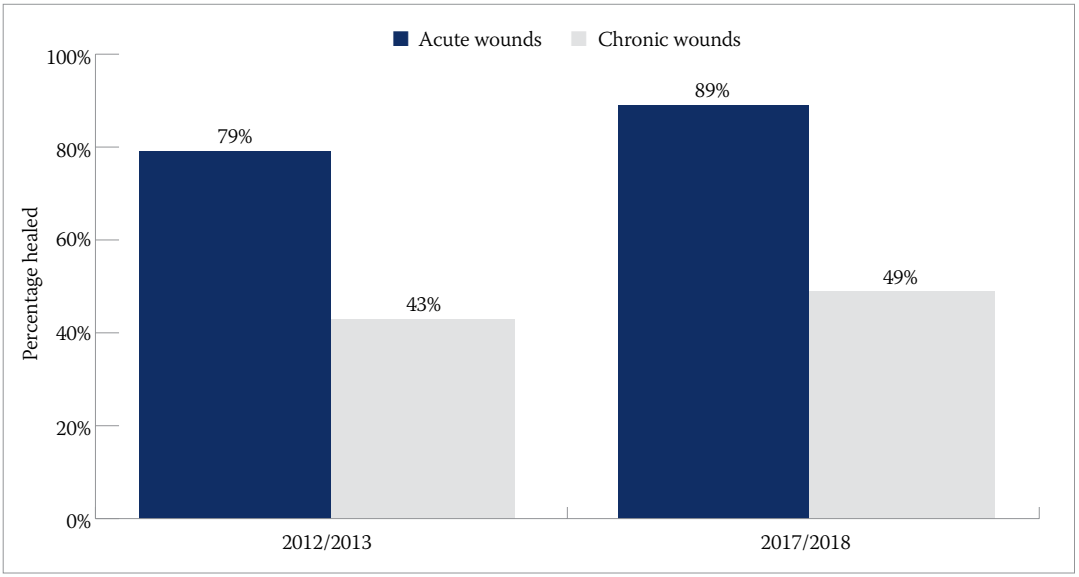

Figure 2. Wound healing rates in the burden of wounds studies

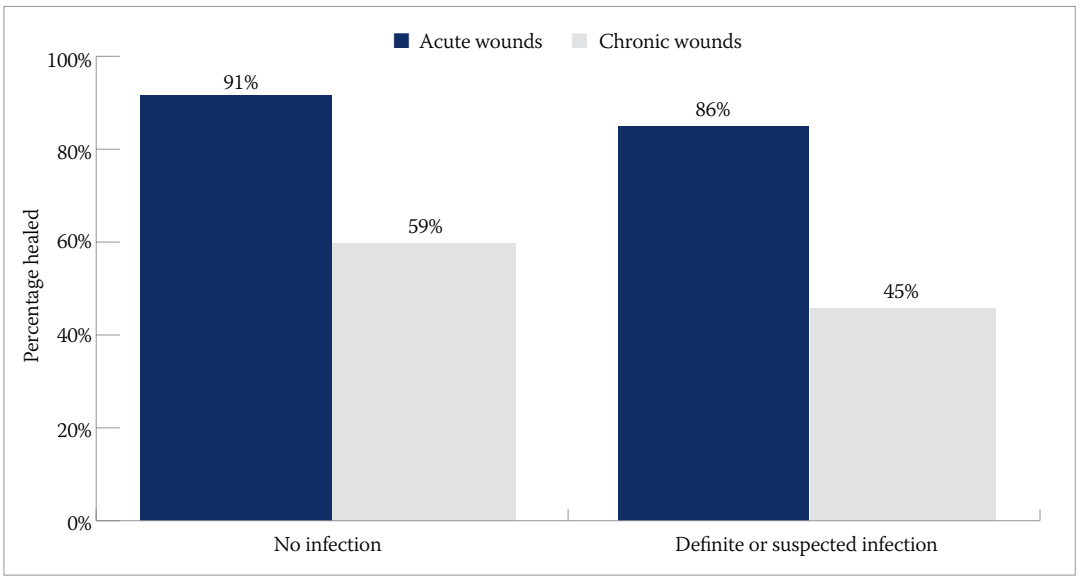

Figure 3. Wound healing rates in 2017/18 stratified by infection

and chronic wounds healed, respectively, (*Figure 2*). When compared with 2012/13, the healing rate was found to have increased by a mean of 13–14% over the five year period — equivalent to 2.3–2.5% per annum, year on year. However, this estimate masks the variance in healing, since the healing rate of diabetic foot ulcers (DFU) and pressure ulcers (PU) increased by 27% and 43%, respectively, whereas the healing rate of venous leg ulcers (VLU) and mixed leg ulcers (MLU) decreased by 21% and 28%, respectively.

The analysis showed that the healing rate exerted a large effect on the annual number of wounds, however other parameters also affected healing. One such factor was infection. An estimated 59% of chronic wounds healed if there was no evidence of infection compared with 45% if there was a definite or suspected infection. Nonetheless, the healing rate of acute wounds was unaffected by the presence of infection (*Figure 3*).

Smoking status also appeared to only affect the healing rate of chronic wounds. An estimated 38% of chronic wounds healed if patients were

'the total annual NHS cost of managing 3.8 million patients with a wound was an estimated £8.3 billion, which denotes a 48% increase in real terms since 2012/13'

smokers compared with 55% and 58% if patients were non-smokers or ex-smokers, respectively. Logistic regression indicated that the presence of cardiovascular disease, immunological disorders and renal disorders were independent risk factors for wounds not healing. Additionally, the presence of renal disease was an independent risk factor for non-healing of DFUs and diabetes was an independent risk factor for non-healing of VLUs.

One piece of information not included in the *BMJ Open* publication (Guest et al, 2020), but for which I have since been asked, was the length of time a patient had their wound. Wound healing was a clinical observation documented in the patient's record by their managing clinician, but not necessarily confirmed by a specialist and it is unknown if any consistent definition was used by the clinicians managing these patients. Furthermore, if a wound was not recorded as being healed it was considered to be unhealed. On this basis, the time for a wound to heal (if healing occurred during the study period) from onset (which may have occurred before the start of the study period) was a mean of one month per healed acute wound and a mean of four months per healed chronic wound (ranging from a mean of two months for a PU to eight months for a MLU). For those wounds that remained unhealed at the time the data were extracted from the database, the length of time patients had their wound from onset was a mean of nine months per unhealed acute wound (ranging from a mean of three months for a trauma wound to seven months for a burn to 18 months for a surgical wound) and a mean of 32 months per unhealed chronic wound (ranging from a mean of five months for an unspecified leg ulcer to 36 months for a VLU to 50 months for a PU).

While wound management is predominantly a nurse-led discipline, we found minimal clinical involvement of tissue viability nurses and other specialist nurses in direct patient management. We also noted that the percentage of patients accessing different resources increased over the five years along with the absolute amount of resource use. For example, between 2012/13 and 2017/18, there was >10,000% increase in the number of healthcare assistant visits, a 399% increase in the number of district/community nurse visits and a 51% increase in the number of practice nurse visits. Conversely, there was a 2% decrease in the number of specialist nurse visits. Additionally, dressing and bandage types were continually switched at successive wound dressing changes for the majority of patients, suggesting confusion and conflict within the treatment plan. It was not possible to infer from the patients' records which professional groups were the decision makers for changing dressing type and what the goal of treatment changes were,

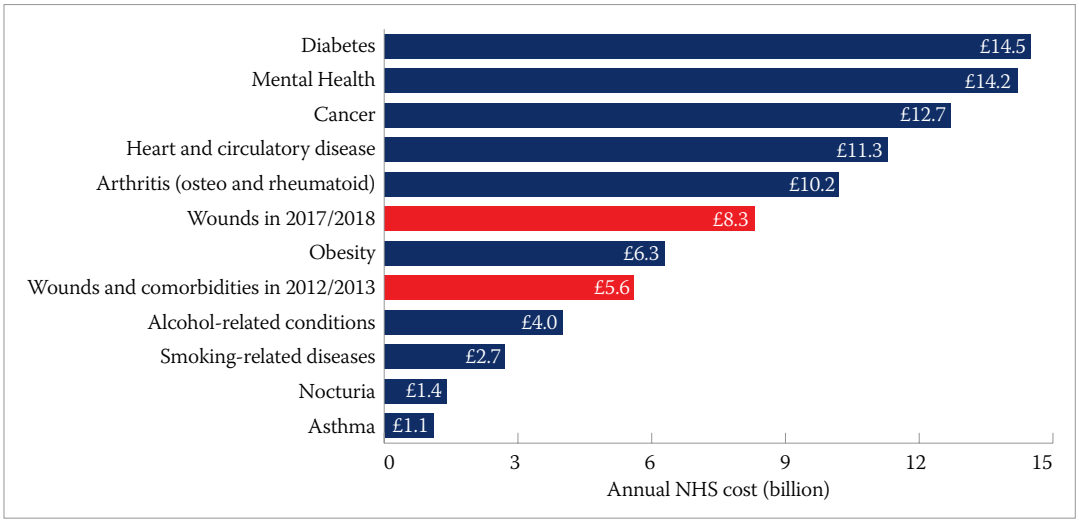

Figure 4. Burden of illness league table uprated to 2017/18 prices (Guest et al 2015; European Heart Network, 2017; Public Health England, 2017; Snowdon et al, 2017; Weidlich et al, 2017; Woolf, 2018; Asthma UK; Diabetes.co.uk, 2019; Full Fact, 2019; Roberts et al, 2019; Morriss, 2020; House of Lords Hansard, 2021).

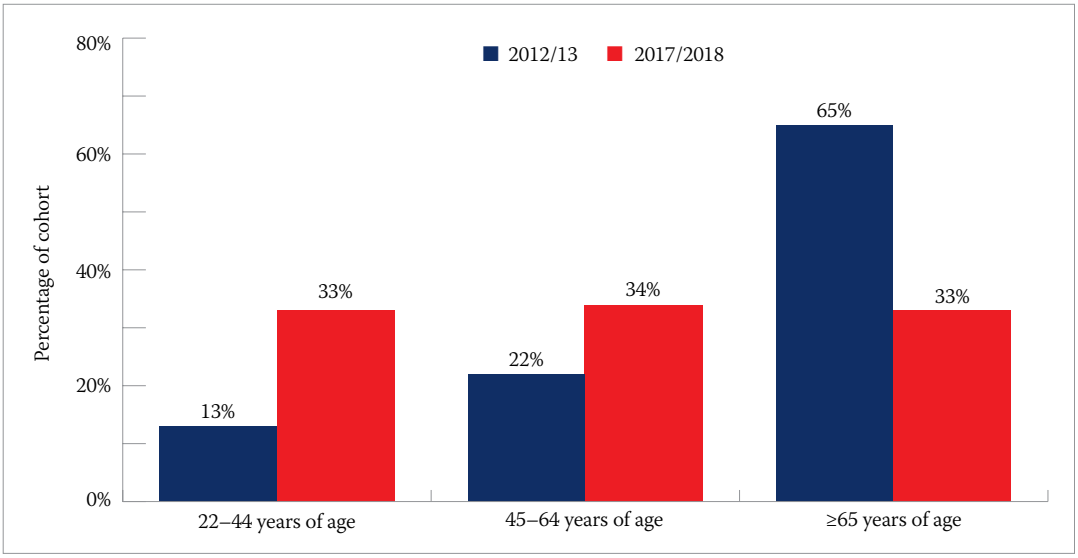

Figure 5. Age distribution of patients in the burden of wounds studies (difference between the two periods is significant; p<0.001)

since this information was not specifically recorded. Furthermore, the patients' records also lacked any evidence of consistent reporting of wound management processes, possibly reflecting the difficulties experienced by non-specialist health care professionals in the community.

The changes in use of healthcare resources was reflected in an increase in the annual NHS cost of wound care. The analysis found that the total annual NHS cost of managing 3.8 million patients with a wound was an estimated £8.3 billion, which denotes a 48% increase in real terms since 2012/13. In 2012/13, the total annual NHS cost of wound care was found to be comparable with that of managing obesity. However, five years later, the total annual NHS cost of wound care has overtaken that of obesity and was found to be approaching the combined NHS cost of managing osteo and rheumatoid arthritis (*Figure 4*), which was reported to be £10.2 billion in 2017 (Woolf, 2018).

The new study highlighted that resource use connected with managing the 30% of wounds that remained unhealed in the study year was substantially greater than that of managing the 70% of wounds that healed (e.g. 97% more district/community nurse visits and 85% more healthcare assistant visits). Consequently, the annual cost of managing the healed wounds was estimated to be £2.7 billion compared with £5.6 billion for the 30% of wounds that remained unhealed during the study period. In addition, the mean cost of an unhealed wound (£3,700) was approximately 2.5 times more than that of a wound that healed during the study period (£1,500).

A total of 67% of the patient population in 2017/18 was less than 65 years of age, whereas in 2012/13, 65% of all the patients were 65 years of age or older, suggesting that wounds are no longer the preserve of the elderly (*Figure 5*).

In parallel with these changes, there was a change in the percentage of non-smokers in the study population and a change in the distribution of comorbidities. In particular, in 2017/18, 53% and 56% of patients had cardiovascular and musculoskeletal disorders, but in 2012/13 an estimated 73% (p<0.001) and 37% (p<0.02) had these conditions, respectively. Most striking, however, was that 57% of the 2017/18 cohort had diabetes compared with 29% in 2012/13 (p<0.05). In response to a question raised in Parliament in January 2021 (House of Lords (HL11875)) (House of Lords Hansard, 2021), the Government advised that:

> *'An increase in wounds in younger patients is likely to be related to an increase in the prevalence of comorbidities in a younger population, as chronic wounds are usually due to comorbidities that affect wound healing, such as patients with diabetes, arterial disease and venous disease. NHS England and NHS*

Watch Professor Guest discus '*Cohort study evaluating the burden of wounds to the UK's National Health Service in 2017/2018: update from 2012/2013*' on TVN[TV] https://tinyurl.com/2rgxhdqv

Improvement fund the NWCSP, which is developing a number of quality improvement initiatives to prevent wounds and improve wound healing. NHS England and NHS Improvement also continue to prioritise diabetes prevention, including through The NHS Long Term Plan, which commits to fund a doubling of the NHS Diabetes Prevention Programme over the next five years, including a new digital option to widen patient choice and target inequality. Preventing diabetes and other comorbidities is key to reducing the prevalence of wounds in adults.'

Notwithstanding this Parliamentary answer, it seems unclear how the NHS can best respond to the ever-increasing demand for wound care. The NHS Long Term Plan (NHS England, 2019) has described how the NHS will move to a new service model, involving online digital GP consultations and redesigned hospital support to free-up about one-third of outpatient appointments (NHS England, 2019). Additionally, the NHS aims to create integrated teams of GPs, community health and social care staff (NHS England, 2019) with an aim of providing fast support to people in their own homes (NHS England, 2019). Commissioners will also be tasked to share decisions with providers on population health, service redesign and Long Term Plan implementation (NHS England, 2019). Such a change in the system may free-up healthcare resources and reduce costs. However, will these changes improve wound care and associated patient outcomes? Patients with wounds need face-to-face interaction with clinicians on a regular basis to monitor progress and have their dressings changed. It remains my opinion that the way forward is for the NHS to establish dedicated wound care clinics in the community at which patients receive consistent and integrated care from clinicians with qualified experience in wound care, with the clinics linking directly to electronic patient records which are integrated across all healthcare sectors. Such clinics could provide both direct care and holistic assessments of patients allowing coordinated management of any comorbidities which may impact on wound healing.

The impact of the COVID-19 pandemic on patients with a wound and their access to healthcare in general and wound care in particular is unknown. Moreover, the Government now considers that the virus 'will be around forever in some form'. Accordingly, I believe there needs to be a structural change within the NHS in order to manage the increasing demand for wound care and improve patients' outcomes, especially given the challenges resulting from the COVID-19 pandemic. WUK

REFERENCES

Asthma UK. tinyurl.com/4dkss5zq (accessed 10 February 2021)

Diabetes.co.uk (2019) Cost of Diabetes. https://www.diabetes.co.uk/cost-of-diabetes.html. (accessed 10 February 2021)

European Heart Network (2017) European Carviovascular Disease Statistics 2017 http://www.ehnheart.org/cvd-statistics/cvd-statistics-2017.html (accessed 10 February 2021)

Full Fact (2019) Mental health spending in the English NHS. https://tinyurl.com/u31g6p8m (accessed 10 February 2021)

Guest JF, Ayoub N, McIlwraith T et al (2015) Health economic burden that wounds impose on the National Health Service in the UK. *BMJ Open* 5(12):e009283. http://dx.doi.org/10.1136/bmjopen-2015-009283

Guest JF, Ayoub N, McIlwraith T et al (2017a) Health economic burden that different wound types impose on the UK's National Health Service. *Int Wound J* 14(2):322–30. https://doi.org/10.1111/iwj.12603

Guest JF, Vowden K, Vowden P (2017b) The health economic burden that acute and chronic wounds impose on an average clinical commissioning group/health board in the UK. *J Wound Care* 26(6):292–303. https://doi.org/10.12968/jowc.2017.26.6.292

Guest JF, Fuller GW, Vowden P (2020) Cohort study evaluating the burden of wounds to the UK's National Health Service in 2017/2018: update from 2012/2013 *BMJ Open* 10:e045253. https://doi.org/10.1136/bmjopen-2020-045253

House of Lords Hansard (2017) House of Lords debate on developing a strategy for improving the standards of wound care in the NHS. tinyurl.com/1sgd0ign (accessed 10 February 2021)

House of Lords Hansard (2021) Written Statements and Written Answers Session 2019-21, No. 175 21 January 2021. https://tinyurl.com/rr8ov6ta (accessed 10 February 2021)

Morriss E (2020) Economic impact of cancer in the UK revealed 2020. *Pharmafield* https://pharmafield.co.uk/healthcare/economic-impact-of-cancer-in-the-uk-revealed/ (accessed 10 February 2021)

NHS England. National Wound Care Strategy Programme https://www.ahsnnetwork.com/about-academic-health-science-networks/national-programmes-priorities/national-wound-care-strategy-programme (accessed 10 February 2021)

NHS England (2019) The NHS Long Term Plan 2019. https://www.longtermplan.nhs.uk/

Public Health England (2017) Health matters: obesity and the food environment *GOV.UK* tinyurl.com/jn9tdwdt (accessed 10 February 2021)

Roberts E, Morse R, Epstein S et al (2019) The prevalence of wholly attributable alcohol conditions in the United Kingdom hospital system: a systematic review, meta-analysis and meta-regression. *Addiction* 114(10):1726–37. https://dx.doi.org/10.1111%2Fadd.14642

Snowdon C, Tovey M (2017) Smoking and the public purse Institute of economic affairs discussion paper. tinyurl.com/4z427znm(accessed 10 February 2021)

Weidlich D, Andersson FL, Oelke M et al (2017) Annual direct and indirect costs attributable to nocturia in Germany, Sweden, and the UK. *Eur J Health Econ* 18(6):761–71 https://doi.org/10.1007/s10198-016-0826-x

Woolf A (2018) Tackling the elephant in the room. NHS England https://www.england.nhs.uk/blog/tackling-the-elephant-in-the-room/ (accessed 10 February 2021)