3.5 billion hours of nurse time released by 2030: Potential efficiency gains from shared care and long-wear advanced foam dressings

The prevalence of chronic wounds is increasing, adding to the burden on the already overstretched nursing population. There is a clear need for new ways of working to mitigate the issues faced by nurses. The benefits of shared care and greater patient involvement are well documented and can be applied to chronic wound care for clinically appropriate patients. Long-wear advanced foam dressings can support a shared-care approach by allowing nurses and patients to practice undisturbed healing. This article introduces a mathematical model that proposes by using long-wear advanced foam dressings within a shared-care approach some 3.5 billion nursing hours globally could be saved by 2030. Releasing this time has the potential to improve patient quality of life and allow nurses to spend more time where it is most needed, improving quality of care and outcomes.

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The prevalence of chronic wounds is increasing, adding to the burden on the already overstretched nursing population. There is a clear need for new ways of working to mitigate the issues faced by nurses. The benefits of shared care and greater patient involvement are well documented and can be applied to chronic wound care for clinically appropriate patients. Long-wear advanced foam dressings can support a shared-care approach by allowing nurses and patients to practice undisturbed healing. This article introduces a mathematical model that proposes by using long-wear advanced foam dressings within a shared-care approach some 3.5 billion nursing hours globally could be saved by 2030. Releasing this time has the potential to improve patient quality of life and allow nurses to spend more time where it is most needed, improving quality of care and outcomes.

Worldwide, healthcare professionals (HCPs) have identified their own time constraints as a significant barrier to providing optimal care to patients with chronic wounds (Moore and Coggins, 2021). Prior to the COVID-19 pandemic, there was a global shortage of almost 6 million nurses — as a result of the pandemic and taking into account that some nurses are set to retire — the nursing shortage could be as high as 10.6 million by 2030 (Buchan et al, 2020).

Furthermore, the prevalence of chronic wounds is also increasing, leading to escalating annual costs associated with treatment and management (Milne et al, 2020). The impact is also felt by patients with chronic wounds, who often undergo disruptive treatment regimens, which can impact on their quality of life and their ability to conduct their activities of daily living (Alam et al, 2018).

As a result, many nurses who treat patients with chronic wounds are adapting their practice to enhance patient experience and optimise the use of their time by encouraging greater patient involvement (Kapp and Santamaria, 2017). This approach is known as shared wound care, whereby patients are supported by clinicians to become more directly involved in managing their own wounds.

The benefits of improved patient involvement are well-documented, with shared care practices being successfully adopted among a variety of patient groups, for example, those with stomas (Ketterer et al, 2021), urinary incontinence (Pizzol et al, 2021) and diabetes (University of Southern California, 2021). In most cases, shared care requires a multifaceted approach to interventions (National Institute for Health and Care Excellence, 2021), including consideration of lifestyle changes, patient and carer education, changes to clinical decision making and pathways, telemedicine, or potential for varying treatments, whether it be dressing selection, drug therapies or surgical solutions.

Shared wound care

It is estimated that 60% of patients with chronic wounds have some degree of involvement in their own wound care (Moore and Coggins, 2021). Results from two international surveys were published in 2021: one surveyed 511 HCPs who treat chronic wounds in a community setting (Moore and Coggins, 2021) and a second surveyed 715 patients (Moore et al, 2021). Key findings from the survey included:

- Two-thirds of patients with chronic wounds who have their dressings changed at home by a clinician require at least twice-weekly

Author details on page 14

Box 1. Features of ALLEVYN◊ LIFE as long-wear advanced foam dressings.

- Wear time of 5 to 7 days (Simon and Bielby, 2014; Joy et al, 2015; Smith+Nephew, 2016b; 2016a)
- Change indicator to minimise the visual impact of exudate and shows patients and clinicians when to change the dressing, helping to minimise clinically unnecessary dressing changes (Rossington et al, 2013; Stephen-Haynes et al, 2013; Simon and Bielby, 2014; Smith+Nephew, 2016d; 2016c)
- Excellent exudate management to prevent leakage (Smith+Nephew, 2012b; Rossington et al, 2013; Stephen-Haynes et al, 2013; Simon and Bielby, 2014)
- Optimal patient comfort (Rossington et al, 2013; Simon and Bielby, 2014)
- Odour control and leak prevention to extend wear times and patient tolerance (Smith+Nephew, 2012a; 2016a; Rossington et al, 2013)
- Showerproof (Smith+Nephew, 2016b).

dressing changes, while 33% require dressing changes 4 to 7 times per week (Moore and Coggins, 2021). However, evidence suggests that up to half of such dressing changes may be clinically unnecessary (Joy et al, 2015).

- 44% of HCPs reported that some patients could benefit from the use of dressings with longer wear times (Moore and Coggins, 2021).
- 77% of HCPs reported that higher levels of patient involvement could improve patient quality of life (Moore and Coggins, 2021).
- *Table 1* summarises the reported benefits of shared wound care for patients and practitioners (Moore and Coggins, 2021).
- If suitable patients were able to be more involved in their own wound care, 74% of clinicians reported that it would enable them to spend more time with patients who require more specialist support (Moore and Coggins, 2021).
- Nearly half (49%) of patients would prefer a dressing that could be worn for 5 to 7 days (Moore et al, 2021).

Offering patients, for whom it is clinically appropriate, the choice of a long-wear advanced foam dressing may support the implementation of a systematic shared wound care programme. Such dressings that have an evidenced wear time of up to 7 days (e.g. ALLEVYN◊ LIFE Advanced Foam Dressings, Smith+Nephew, *[Box 1]*) and promote undisturbed wound healing, can help reduce wastage of time and resources associated with chronic wound care (Stephen-Haynes et al, 2013; Joy et al, 2015).

3.5 Billion Hours Model

This article aims to show that, when appropriate, the selection of long-wear advanced foam wound dressings by enhancing patient involvement in their care can have a demonstrable and quantifiable benefit on nursing time. To achieve this, a conservatively calculated model was devised to estimate how many working hours could be potentially liberated by nurses using long-wear advanced foam dressings on chronic wounds in the community.

The 3.5 Billion Hours Model estimates that up to 3.5 billion hours could be released by 2030 through the introduction of long-wear advanced foam dressings within a systematic shared care approach.

The 3.5 Billion Hours Model: how was it estimated?

The 3.5 Billion Hours Model was estimated by statisticians and created from published figures on the global nursing workforce and chronic wound burden. This was combined with reported clinical efficiencies that could be delivered by using long-wear advanced foam dressings. The lowest reported clinical efficiencies were used to maintain a conservative estimate of how many hours can be liberated *[Figure 1]*.

Number of nurses worldwide

The first step was to calculate the number of nurses by population density worldwide using World Health Organization (WHO) data, unless specific data were available to indicate a lower number (WHO, 2020; Europa.eu, 2021).

Regions were removed from the model if their healthcare infrastructure did not align with

Table 1. Reported benefits of shared wound care for patients and practitioners (Moore and Coggins, 2021).

Benefit to the patient	Benefit to the practitioner
Independence — Patients are more in control of their own time as they do not need to wait for a nurse to visit and they can go about their activities of daily living (i.e. not needing to take time off work for appointments). **Privacy** — There is no need for a new or different nurse to enter their home and examine them at each appointment. **Increased compliance** — Patients are more likely to comply (in wound treatment and other lifestyle advice) if they feel part of decision making process compared to a passive participant in their care. **Attitude** — Overall, patients may feel more positive, empowered and enthusiastic if they are fully engaged in their care.	**Timing** — The clinician can spend more time with patients with complex needs and wounds, who are unable to self-care. **Cost** — The cost for the care provider is reduced if there are fewer or shorter visits. There may also be fewer dressing changes as there is currently an attitude among clinicians of 'I might as well change the dressing now I am here'. **Relationship** — If the patient is engaged, the clinician and patient have a shared goal which can make the practitioner–patient relationship stronger. **Better reporting** — A patient who understands the wound can give accurate updates to the practitioner, as well as notifying the clinician if the wound deteriorates and needs specialist care.

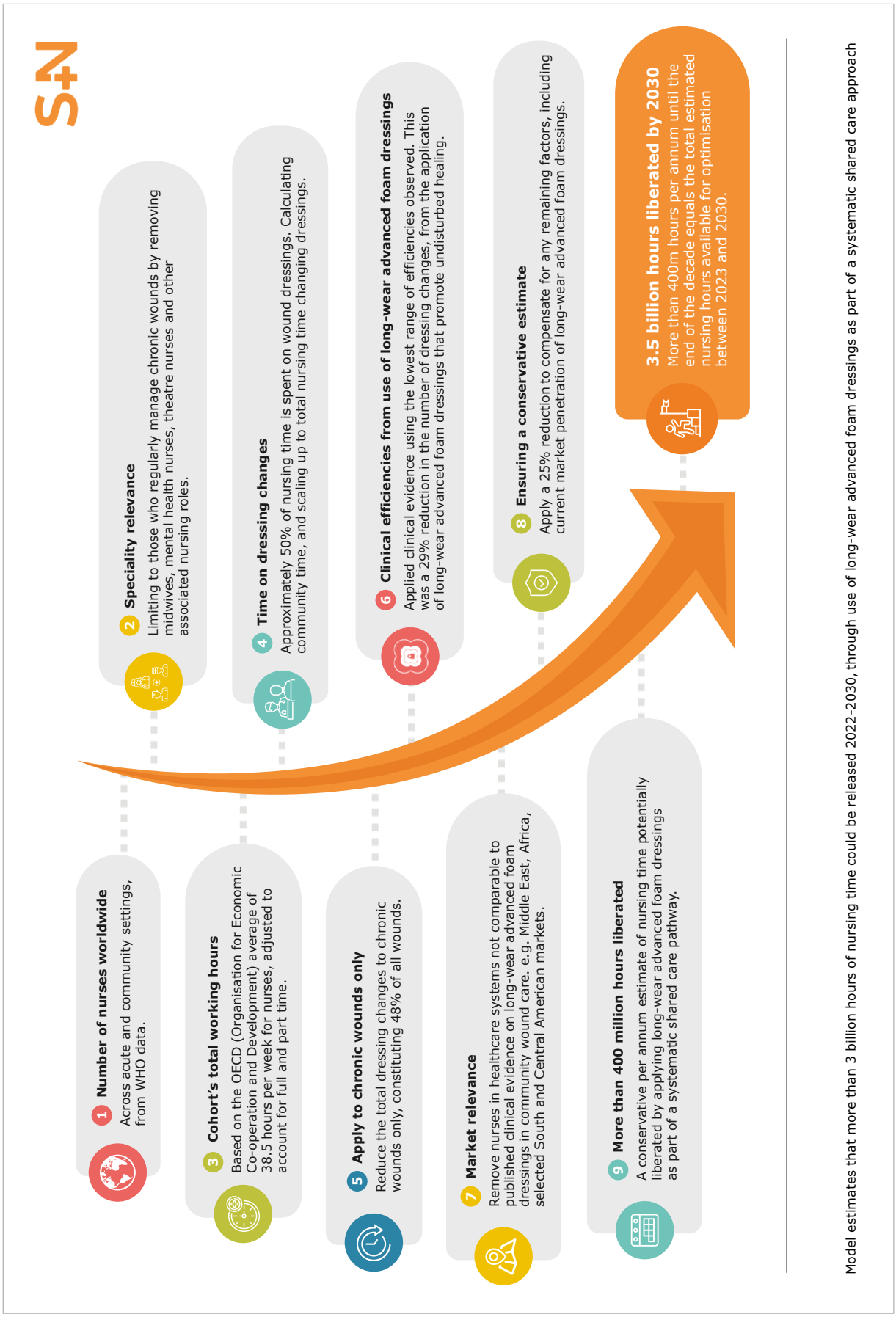

Figure 1. The 3.5 Billion Hours Model — 3.5 billion nursing hours released by 2030.

published clinical evidence that supports patient involvement and shared care practices. Regions that were removed included Africa, the Middle East (except Israel), and some Central and South America countries.

Speciality relevance

To obtain an estimate of the total number of registered, professional community nurses globally, nurses in training and those with nursing assistant roles were removed from the model (Davies, 2020). While there is evidence that 25% of care home residents have some kind of wound (Kingsley et al, 2010) and that care home nurses are involved in wound care management, for the purposes of this model, nurses who work in care home were removed.

The data modellers also extracted those in specialist roles, such as midwives (WHO, 2022), theatre nurses (AACNNursing.org, 2019; Zippia, 2021) and mental health nurses (Samele et al, 2013; WHO, 2014, 2019; Itzhaki et al, 2018; Regis College Online, 2018).

The removal of non-comparable regions and associated nurse professionals yields a conservative estimate of 17.7 million registered community nurses who work with patients with chronic wounds.

Nurse's total working time — hours spent on changing wound dressings

Total nurses' working time was adjusted to account for nurses who are in full and part time employment (Trinkoff et al, 2006; China Labour Bulletin, 2018; Oecd-iLibrary.org., 2021; Sky News, 2021; Erieri.com, 2022). The model also takes into account that approximately 50% of community nursing time involves wound management and dressing changes (Lindholm and Searle, 2016).

Time on dressing change

Globally, it is estimated that community nurses administer 70% of wound care (Lindholm and Searle, 2016). The main calculations in this model were made on the basis of community wound care management, then scaled up to embrace the remaining 30% of wound care managed in the hospital setting. The result then equates to total wound care time.

The model applies to chronic wounds only

Acute wounds were removed from the model to reflect that community nurses typically manage chronic wounds (Nissanholtz-Gannot et al, 2017; Davies, 2020; Schnur, 2020), which comprise 48% of the total wound burden (Guest et al, 2017).

Apply clinical efficiencies — nurse time optimisation

Evidence shows that using long-wear advanced foam dressings reduces time spent on wound dressing changes by an average of 47%, with upper and lower values of 64% and 29% (Stephen-Haynes, et al, 2013; Simon and Bielby, 2014; Joy et al, 2015; Krönert et al, 2016; Tiscar-González et al, 2021). Incorporating the most conservative efficiency rating into the model, the calculation estimates that applying such dressings can reduce the time burden of dressing changes by at least 29%. This time saving was factored into the final calculation for potential nurse time savings.

Allowing for further considerations

To further ensure this model remains a highly conservative estimate, a final reduction was applied to the potential nursing hours liberated by the implementation of dressing changes as part of a shared care approach to chronic wound care. The number of hours was reduced by 25% to allow for any remaining skewing factors that may affect the implementation of shared care approaches with long-wear advanced foam dressings. This includes current adoption rates of long-wear dressings as one such example, estimated to be at 20.5% worldwide (SmartTRAK, 2021).[1]

Results — how many hours can be liberated globally?

The methodology to develop the model was derived from a highly conservative estimation of the number of nursing hours that could be liberated using long-wear advanced foam dressings where clinically appropriate. The final time release for nurses globally was calculated at just over 433 million hours per annum. Over the next 8 years to 2030, it is estimated that almost 3.5 billion nursing hours could potentially be released if long-wear advanced foam dressings are adopted as part of an integrated shared care approach *[Table 2]*.

Discussion and recommendations

The 3.5 Billion Hours Model shows how the implementation of long-wear advanced foam dressings has the potential to liberate a proportion of nursing time currently devoted to potentially clinically unnecessary dressing changes (Joy et al, 2015). It is important to be cognizant that incorporating long-wear

[1]Based on SmartTRAK data, this article acknowledges that not all wound dressings can be substituted with foam dressings.

Table 2. 3.5 billion hours released by 2030 — regional breakdown.		
Region	**Wound care practitioner (e.g. nursing) hours liberated per annum**	**Hours released by 2030**
Europe (inc. Russia, Turkey)	136,090,072	1,088,720,576
China and Japan	114,776,619	918,212,952
North America	89,822,187	718,577,494
India	59,089,926	472,719,408
Central and South America	23,391,664	187,133,316
Australia and New Zealand	8,835,505	70,684,043
Israel	1,202,431	9,619,445
Total	**433,208,404**	**3,465,667,234**

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advanced foam dressings into existing practice in isolation would not be sufficient to release 3.5 billion hours of nursing time. It is only when strategies, such as shared wound care, are adopted alongside the use of long-wear advanced foam dressings that healthcare economies can realise the full clinical and economic benefits. In order for this practice shift to be implemented optimally, and embraced by healthcare systems, practitioners and patients, certain factors need to be considered:

- Access to long-wear advanced foam dressings
- Patient selection for shared wound care
- Nurse-led patient education and resources.

Access to long-wear advanced foam dressings

Dressings that have an extended wear time of up to 7 days may improve patient quality of life (e.g. washing, odour control); reduce unnecessary dressing changes allowing for undisturbed healing and minimising the risk of wound infection; manage exudate; and indicate when dressing change is required can yield optimum benefits within a shared care context (Moore and Coggins, 2021).

Long-wear advanced wound dressings have a comparatively higher price versus standard wound dressings. However, the use of long-wear advanced foam dressings can reduce time spent on dressing changes by at least 29% and are generally associated with better clinical outcomes (Stephen-Haynes, et al, 2013; Simon and Bielby, 2014; Joy et al, 2015; Krönert et al, 2016; Tiscar-González et al, 2021). Therefore, a cost-benefit case can be made through collaboration between those who manage organisational budgets and those who prescribe.

Patient selection for shared wound care

All patients and/or their carers have unique needs in relation to shared wound care, and not all may be suitable to be involved in shared wound care practices. Where a person sits on the 'shared care continuum' is dependent on their ability, confidence and willingness to be involved in their own wound care, alongside the particular wound needs and their support system away from the clinic (Moore et al, 2021). Additionally, the degree a patient/carer can be involved can change over time so the patient and/or informal carer requires ongoing assessment throughout treatment.

Assessment of the patient and/or carer's suitability for shared wound care should include the following: the patient's overall health status (including dexterity and mobility); their understanding of their condition and treatment; the extent to which they want to participate in their care; motivation to adhere to treatment and undertake lifestyle changes; their mental and physical capability; previous experience of treatments; and availability of family and carers to support shared care (Wounds International, 2016; Moore and Coggins, 2021).

Clinicians are already adopting shared care practices within wound care with some patients taking responsibility over their own dressing changes following clinician-led training and assessment. Furthermore, shared care practices have somewhat been accelerated by the COVID-19 pandemic and will likely continue to build momentum in the years to come. In order to support clinicians with patient selection and education, resources such as the Shared Wound Care Discussion Guide have been developed for HCPs to identify where patients sit on the shared wound care continuum and to understand how best to facilitate and support patients/carer who choose to be more involved in wound care (Moore et al, 2021). There is ongoing international evaluation of the Shared Wound Care Discussion Guide to identify its place in practice (Moore et al, 2021).

Nurse-led patient education and resources

Nurse-led patient education is the basis of effective shared wound management. Depending on what the patient and/or carer is able and willing to do, key elements of education and coaching can include:

- how to identify likely risks of complication, such as the signs and symptoms of infection
- how to report progression of the wound
- who to contact if they have concerns or the wound shows signs of deterioration

- the steps involved in changing a wound dressing
- education on the dressings themselves (Wounds International, 2016; World Union of Wound Healing Societies, 2020).

Next steps

Against the backdrop of increasing nursing shortages (Buchan et al, 2020) and an increasing chronic wound care burden (Sen, 2021), it is important that potential solutions are sought — of which shared care and long-wear advanced foam dressings may play an important role.

The 3.5 Billion Hours Model estimates that 3.5 billion hours of nursing time can be liberated by 2030. To achieve this, access to long-wear advanced foam dressings, systems to identify patient suitability for shared wound care and nurse-led education and resources will need to be in place.

One barrier to accessing long-wear advanced foam dressings use is perceived cost: often is it the per dressing cost rather than the total cost of care that is a marker of cost effectiveness. Additionally, the concept of shared wound care is often perceived to not be cost beneficial to the nurse if they are paid per visit (Moore and Coggins, 2021). Overcoming this perceived barrier will involve educating clinical staff and payers on the shared wound care model at the same time.

The 3.5 Billion Hours Model is one component of myriad considerations associated with the shared care concept. Evaluating it alongside the Shared Wound Care Discussion Guide to assess a patient's suitability for shared care and then use the appropriate product and evaluate the outcomes to get the approach right and from there could spread it more widely across their patient population. Focusing on the community setting will identify the potential of the 3.5 Billion Hours Model.

Conclusion

The model presented estimates that 3.5 billion nursing hours could be liberated by 2030 if long-wear advanced wound dressings are adopted within a shared wound care approach. Shared wound care, does not mean that patients are receiving less care, but a different approach to their wound care that has been shown to benefit both patients and practitioners.

While implementing shared care approaches requires time investment from the outset, a case can be made for the potential long-term benefits. Rigorous and internationally recognised materials may be required for widespread education, implementation and measurement of progress of integrating the 3.5 Billion Hours Model through shared wound care practices.

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