The challenges for wound healing in patients with schizophrenia

KEY WORDS
- Health risks
- Improving outcomes
- Mental capacity
- Schizophrenia

In 2012, the Schizophrenia Commission published 'Schizophrenia — the Abandoned Illness' and called for an integrated approach to care. In the realms of wound healing, this is essential to enable ownership and improve outcomes. Lifestyle 'choices' are frequently referred to when examining risks of diabetes and cardiovascular disease in this group of people. However, are these really a choice or a consequence of illness and medication? Understanding the effects of the illness on brain function, how medication contributes to physical disease and how it can manifest itself in delayed healing is an important step to breaking down the invisible healthcare barrier faced by people with a serious mental illness.

In October 2014, NHS England published the Five Year Forward View setting out how the NHS needed to change in response to longer life spans, complex healthcare needs and increased patient choice (NHS England, 2014). Tackling health risks and breaking down barriers were identified as key areas to promote wellbeing and independence. The disparity between mental and physical health funding is well known (NHS England, 2014; Glasper, 2016); it is only in recent years that successive governments have considered redressing this imbalance and building on the rhetoric of No Health Without Mental Health (Department of Health [DH], 2011).

In England, 1% of the population have either schizophrenia or bipolar disorder (Centre for Economic Performance, 2012). Whilst a seemingly small figure, this is set against a population of 53 million (Office for National Statistics, 2011) and equates to 530,000 people. Those with a serious mental illness, i.e. schizophrenia or bipolar disorder, are at increased risk of poor physical health due to lifestyle 'choices' (Glasper, 2016), which can impact their wound healing capabilities. In 2013, the Chief Nurse of England issued a call to action for nurses identifying key areas to improve patient care. Action area 1 mapped out the need to work more effectively across different healthcare arenas to improve outcomes, whilst area 2 sought to use patient feedback to drive quality and improve people's experience of care. This article looks at what schizophrenia is, the related physical health risks that impact on wound healing and strategies to improve care outcomes.

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WHAT IS SCHIZOPHRENIA?

The National Institute of Mental Health (NIMH, 2016) defines schizophrenia as 'a chronic and severe mental disorder that affects how a person thinks, feels and behaves. 'People with schizophrenia may feel they have lost touch with reality ... the symptoms can be very disabling'. Risk factors for developing schizophrenia include childhood trauma, bereavement, genetics, drug abuse, virus exposure and oxygen deprivation at birth (Tingle, 2012; NIMH, 2016). Most people are aware of the 'positive' symptoms of schizophrenia, as, when experienced, they are demonstrably evident, i.e. responding to hallucinations or expressing delusional thoughts. Less known are the 'negative' and 'cognitive' symptoms (*Table 1*) yet these can have huge implications on patients' control over health choices. Schizophrenia lacks the media focus of other mental illnesses, such as depression (Tingle, 2012), with media coverage generally appearing after a catastrophic event, such as a stabbing, rather than in an informative light; this has fuelled stigmatisation and has disadvantaged patients.

One treatment used to manage the symptoms of schizophrenia is antipsychotic medication;

Table 1. Symptoms of schizophrenia (NIH, 2016)		
Positive: behaviours not generally seen in healthy people. Can cause people to 'lose touch' with reality	**Negative**: associated with disruptions to normal emotions and behaviours	**Cognitive**: symptoms can be subtle for some and more severe for others with changes in memory or other aspects of thinking
Hallucinations	'Flat effect' (reduced expression of emotions via facial expression or voice tone)	Poor 'executive functioning' (the ability to understand information and use it to make decisions)
Delusions	Reduced feelings of pleasure in everyday life	Trouble focusing or paying attention
Thought disorders (unusual or dysfunctional ways of thinking)	Difficulty beginning and sustaining activities	Problems with working memory (the ability to use information immediately after learning it)
Movement disorders (agitated body movements)	Reduced speaking	

Box 1. Case example

Miss Jones is 53 years old with a venous leg ulcer of 3 year's duration; she has been attending a community wound clinic on a weekly basis for her ulcer to be dressed. Miss Jones has decided not to attend twice-weekly as she does not like public transport; home visits are not an option due to environmental factors. The ulcer to her left medial gaiter is covered with 100% slough and she has developed weeping varicose eczema on her right leg. Treatment at the point of referral was a povidone iodine primary dressing and absorbent secondary dressing secured with a tubular bandage, wool layer and retention bandage. A review of Miss Jones' records identified she had an ankle brachial pressure index above 1.3 and had been referred to vascular services in February 2016. She had been discharged from there following two episodes of non-attendance. Miss Jones exhibited positive symptoms of schizophrenia and the expression of some of her thoughts had alarmed the clinic nurses'; however, they did not interfere with her ability to make a decision regarding her leg ulcer management. Chatting over the course of three appointments helped build trust and Miss Jones consented to her Community Psychiatric Nurses (CPN) being contacted for support with managing her leg ulcers (they were again locally infected and needing antibiotics). The CPN shared that Miss Jones had difficulty when a lot of people were around and was anxious about hospitals, so it was agreed that if an appointment could be facilitated, the CPN would go with Miss Jones to support her. A call to the vascular surgeons secretary and liaison with the GP has ensured Miss Jones' appointment is the first of the day when less people are about. Her CPN agreed to take her to provide support, offer continued reassurance that the hospital are not going to 'keep her' and take away information to help reinforce what the problem with her legs is and how best to treat this.

results vary, some people will be symptom-free but others will not. There are first and second generation antipsychotics, with the latter more likely to cause metabolic side effects, such as weight gain and diabetes. MIND (2016) note that these drugs can stop active symptoms "bothering" the person rather than removing them; they are less successful in managing negative symptoms. It should be noted that some patients decline to take medication and whilst some of the thoughts expressed are delusional — i.e. thinking they are Jesus or Napoleon — there is no risk of harm either to themselves or others from the thought alone. This can be difficult for the generalist nurse, who is unsure how to respond when these thoughts are expressed, and increases stigmatisation (Sartorius, 2007). Dual diagnosis in this group is common, with higher rates of negative outcomes, homelessness and poor money management compared with the general population (Drake and Mueser, 2001).

The Schizophrenia Commission (2012) highlighted 'poor access to general practitioners and general hospitals' as an area for concern, recommending that GP training be extended in mental illness to facilitate improved care. There is an argument that this recommendation include general nurse training to enhance primary care service provision and support flexible solutions to increase access to secondary healthcare (*Box 1*).

Mental health services to support people with a diagnosis of schizophrenia vary across the UK; Leicester, Leicestershire & Rutland have Assertive Outreach for complex needs, Early Intervention for first episodes of psychosis and Community Psychiatric Nurses (CPN) for those who engage with services. With patient consent, care coordinators within these can be contacted to help support access to general healthcare.

HEALTH RISKS AND THEIR IMPACT ON HEALING

People with schizophrenia die an average of 15 to 20 years before the general population (Tingle, 2012; Glasper, 2016), largely due to their higher risk of poor physical health (Glasper, 2016; Tranter, 2013). A combination of medication and lifestyle choices lead to higher rates of obesity, alcohol dependency, type 2 diabetes and heavy smoking (Centre for Economic Performance, 2012; Pendlebury and Holt, 2010). Cardiovascular disease as a result of these risks is high, accounting for 60% of all deaths (Pendlebury and Holt, 2010; Tranter, 2013) and health screening is essential, although Glasper (2016) noted that only 62–82% of GPs' currently offer this. A literature review has been unsuccessful in identifying wound incidence specifically related to people with

Table 2. Key nutritional components in wound healing Ord (2007)	
Nutrient	**Role in wound healing**
Protein	▸▸ Required for the synthesis of new tissue and increased tensile strength ▸▸ In protein depletion, oedema that occurs as an initial response to any wound will be exacerbated. This will impair oxygen and nutrient delivery to the site
Energy, fats and carbohydrate	▸▸ Needed to prevent protein being used as an energy source ▸▸ Fatty acids are a major component of cell membranes ▸▸ Poor energy intake leads to malnutrition, which will impair the body's immune system
Vitamin A	▸▸ Maintenance of epithelial tissue ▸▸ Promotes granulation and improves collagen synthesis
Vitamin K	▸▸ Coagulation
Vitamin C	▸▸ Formation and maintenance of collagen ▸▸ Promotes angiogenesis ▸▸ Increases the absorption of iron ▸▸ Antioxidant
B Vitamins	▸▸ Involved in protein and energy metabolism
Iron	▸▸ Essential for transportation of oxygen thus optimises tissue perfusion ▸▸ Involved in collagen synthesis and increases tensile strength
Zinc	▸▸ Formation and maturation of collagen ▸▸ Membrane stabilisation ▸▸ Component of many enzyme systems

schizophrenia. It would stand to reason though that diabetic foot ulcers and leg ulcers would be prevalent as well as possible self-injury from periods of active psychosis.

DIABETES AND SCHIZOPHRENIA

The incidence of type 2 diabetes in the general population is increasing due to obesity and lack of exercise. Pendlebury and Holt (2010) noted that people with a serious mental illness were 2–3 times more likely to develop diabetes due to genetic and environmental factors, as well as the illness itself and its treatment with second-generation antipsychotics. The Schizophrenia Commission (2012) reported that only 8% of people with schizophrenia as a diagnosis were in employment; low income is directly linked to poor diet, smoking and lack of exercise. This is supported by Sharp and Clark (2012) who found socio-economic status was linked to higher levels of smoking, malnutrition, obesity and inactivity; all factors in the development of a diabetic foot ulcer (DFU). Social isolation, poor education and lower socio-economic status increase the risk of developing a DFU (Apelqvist, 2013) and are frequently found in people with schizophrenia. Additionally, low income affects ability to attend hospital appointments and buy well-fitting shoes; the latter has often been seen by the author with patients wearing trainers and having active ulceration. Diabetic foot wounds are therefore likely but positive symptoms of schizophrenia may inhibit engagement (Pendlebury and Holt, 2010) and cognitive symptoms the ability to process information given to make an informed decision about treatment. Burns and Firn (2002) considered that this group might also have a higher diabetes-associated complication rate due to their inability to effectively manage their diet.

DFUs are at high risk of infection due to neuropathy and peripheral arterial disease (Amin and Doupis, 2016); insight into the condition and glycaemic control are also factors. Uncontrolled blood glucose, whilst being an indicator of infection in the 'stable' patient, can contribute to infection in prolonged hyperglycaemia by reducing the number of leukocytes (Ord, 2007). Increased glucose in the bloodstream acts as a food source for bacteria and inhibits neutrophil activity, thus allowing pathogens to thrive (McIntosh, 2009). Vascular insufficiency is common in diabetes and directly impacts on infection rates as haemostasis is delayed (Sharp and Clark, 2012); potential pathogens are further aided by hypoxia at the wound bed, inhibiting neutrophil and macrophage activity. Many DFUs are not 'found' until blood is seen on socks and self-neglect is a common feature of schizophrenia (Burns and Firn, 2002), increasing the infection risk. Clozapine, a second-generation antipsychotic, can cause a drop in leukocytes and so patients taking this drug are closely monitored (Rethink, 2017). Progression from the inflammatory stage of healing can be delayed by a reduction in leukocytes; inflammatory cytokines remain in the wound bed for longer to compensate (Kidman, 2008). An extension of this stage of healing suppresses the formulation of granulation tissue unless excess proteases are managed. Negative symptoms of schizophrenia may affect the patient's motivation to attend appointments at clinic and concord with treatment plans. This will be problematic where regular debridement is needed to reduce pressure or remove debris/ microbes in the wound bed to minimise infection risk and promote healing.

SMOKING AND SCHIZOPHRENIA

The incidence of smoking in those with schizophrenia has been cited as 57% (Gurillo

Box 2. Mental Capacity Act — five key principles (DH, 2005)

- Presumption of capacity
- A person must be given all practicable help before anyone treats them as unable to make a decision
- A person is not to be treated as unable to make a decision just because they make an unwise decision
- Anything that is done for or on behalf of someone who lacks capacity must be done in their best interests
- Actions or decisions taken on behalf of someone who lacks capacity should be the least restrictive option of their basic rights and freedoms

et al, 2015) with varying explanations from boredom or distress to a desire to self-medicate. Health outcomes linked to smoking are well known, however, Partti et al (2015) also identified a greater susceptibility to impaired lung function in those with schizophrenia, increasing the likelihood of a hypoxic wound. Although heavy smoking contributes to atherosclerosis and hypoxia, the main action of nicotine/tar ingestion is to impede collagen synthesis and deposition, leading to a delay in healing (Sørensen et al, 2009) and poor tensile strength. Fibroblast mobility in terms of binding to the initial fibrin mesh is also affected (Cope, 2014), resulting in a weakened extracellular matrix (ECM). These points substantiate Wigston et al's assertion (2013) that chronic wounds in smokers are slower to heal.

Participation in smoking cessation programmes is affected by the negative and cognitive symptoms outlined in *Table 1*; to improve health outcomes people need support to make informed decisions and stay healthy (NHS England, 2014; Cope, 2014).

OBESITY AND SCHIZOPHRENIA

Second-generation antipsychotic medications are implicated in the development of type 2 diabetes and obesity in schizophrenia (Pendlebury and Holt, 2010; Correll et al, 2011). Where morbid obesity occurs, vascularisation of the skin is poor due to the level of adipose tissue, increasing the risk of dehiscence and pressure ulceration. As noted earlier, the high level of patients not in employment and reliant on state benefits will cause conflict on where to spend limited resources. Borras et al (2007) in a small study of 57 outpatients reported that 72% of income was spent on psychoactive substances, i.e. tobacco, alcohol, cannabis. Although that figure may not be entirely replicated in the UK, it is an indicative figure and suggests that nutritional intake as a result is likely to be poor. It should also be noted that antipsychotic drugs cause increased appetite and varying levels of sedation, both factors that may contribute to obesity.

The role of nutrition in wound healing has been explored over many years and key components are summarised in *Table 2*. Healing wounds require high levels of energy and protein, yet those who are malnourished have insufficient nutrients to maintain and repair their tissues (Acton, 2013). Stassnig et al (2005) reviewed studies on the diets of patients with schizophrenia and found that as well as overall calorific intake being greater, there was a lack of fruit and vegetables and higher intake of saturated fats. The impact of this on wound healing is tenfold in increasing the risk of a wound becoming chronic and being more susceptible to infection.

ALCOHOL AND SCHIZOPHRENIA

Alcohol misuse is the most common comorbidity in schizophrenia (Kemp and David, 2001), present in 20–50% of caseloads in the UK (Burns and Firn, 2002). The effects of alcohol misuse on wound healing are multi-faceted. At a cellular level, collagen production and angiogenesis are disrupted (Wigston et al, 2013) and the inflammatory response is inhibited. These alone will increase infection risk and delay healing, however, the reduction in associated fluid intake will affect the transport of, possibly limited, nutrients to the site and reduce skin elasticity. Nutritional intake with alcoholism is also depleted further impacting on healing potential.

IMPROVING CARE OUTCOMES

The Nursing and Midwives Council (2008) charges registered nurses' to ensure they consider their patients' wishes and preferences in providing care, which can be challenging when the treatment of choice is declined (Beldon, 2014). Before any treatment is commenced consent is required (DH, 2009); to not have this and proceed on a competent adult can lead to a charge of battery (Tingle, 2017). The Mental Capacity Act (2005) has five key principles to guide staff (*Box 2*) and allows for unwise decisions, as well as acting in the patients best interests; these are key with this client group and approach will need altering in line with presentation.

The negotiation of treatment plans needs to reflect consideration of the positive and cognitive symptoms of schizophrenia for meaningful

Box 3. Improving concordance in schizophrenia (adapted from Kemp and David, 2002)

- Simplify the care regime
- Make appointments for the same day/time each week
- Simplify language; use reflection to check understanding
- Provide information verbally and in written format
- Non-judgemental approach (expect variable concordance)
- Early follow-up if appointments missed
- Explore ambivalence to treatment
- Repeat key messages about care
- Liaise with mental health worker (if they have one) for support with treatment; this could be antibiotic concordance or help to attend hospital appointments
- Allow extra appointment time.

Box 4. Case example

A 33-year-old inpatient with florid delusional beliefs and over activity was not responding to psychiatric treatment. They had type 1 diabetes and, prior to this episode of illness, had always looked after their feet. On admission, they had bilateral ulcers on the soles of their feet, no dressings on and sock fluff/dirt in the wound beds. Over a period of 5 months the patient had multiple antibiotics (in line with local severity of infection guidance) and had had one admission for sepsis; the multidisciplinary team at the foot clinic advised that because of osteomyelitis, amputation of bilateral great toes was needed. Due to lack of capacity, a best interests meeting was held involving the patients' mental health team, family, TVN and members of the foot clinic. It was decided that although amputation was needed, it was not an emergency and the patient should have more time to respond to psychiatric medication in the hope that they would become well enough to make the decision themselves.

engagement to take place. Information should be provided at a level the patient can understand and be repeated where necessary to aid understanding of their wound and how they can support healing (Vuolo, 2014). For patients in the community, nurses may find concordance is good providing it is on their clients' terms; this is essentially non-problematic and demonstrates a decision respected and a willingness to deliver care on the patient's terms (Beldon, 2014). Good documentation is required as evidence of treatment discussions; this should be revisited at identified intervals to reflect any changes in the patient's opinion on the care plan (Nichols, 2014). Difficulties arise where a patient is considered to be 'non-concordant'; this carries negative connotations and implies the patient is being difficult (Nichols, 2014). The question we need to ask though, is has information has been provided at a level that can be understood and time given to explore treatment options (NHS England, 2016). For the patient with schizophrenia, experiencing cognitive symptoms, processing verbal information is difficult, often choices are not written down in layman's terms that can be read and considered at home. If patients have a mental healthcare coordinator, concordance can be improved through positive reinforcement of treatment needs. Providing the patient gives a name and consent, enlisting this person's support can not only improve healing potential but also provide guidance on positive ways to engage with someone who has schizophrenia (*Box 3*).

An area of the Mental Capacity Act (2005) that can be subject to poor application is the principle of 'best interests.' Tingle (2013) noted that the process of decision-making for 'best interests' was not always applied in line with the Act and there is an argument that those with a serious mental illness should be encouraged to make a valid advanced decision regarding treatment should they develop, for example, a DFU. 'Best-interest' decisions are required for persons assessed as lacking capacity, whose needs are usually complex; all involved in their treatment and care should be invited to a meeting to consider the benefits versus burden of treatment (Nichols, 2014; Griffith, 2014) (*Box 4*). The difficulty, even if a decision is made to act in the 'best interest,' is how to impose their wound care. In the author's experience, such instances are rare, as to restrain somebody to apply a dressing is counter-productive and, in reality, the patient will simply remove it.

CONCLUSION

People with schizophrenia are at increased risk of wound chronicity. Improved outcomes can only be achieved using a holistic approach to the mental and physical; comorbidities need managing and patients need to be supported to attend appointments. The International Consensus on Optimising Wellbeing (Wounds International, 2012) identified key areas for improving concordance: better symptom management, active involvement in care, products that fit with lifestyle and an empathic approach. Stigma associated with schizophrenia is the biggest barrier to this, with 87% reporting discrimination to the Schizophrenia Commission (2012).

Guest et al (2015) estimated the cost of unhealed leg ulcers as £4,472 per patient as opposed to £788 for healed, whilst Vowden and Vowden (2016) cited an infection rate of 50% in DFUs (leading to approximately 25% amputations). Lack of optimal leg ulcer treatment is high among the general population (Guest et al, 2015), however, with some schizophrenic patients, access to treatment is impeded by their declining hospital appointments at vascular and foot clinics. The Five Year Forward View (2014) echoed the International Consensus on Optimising Wellbeing (2012) for a shared approach to care, but for this to be successful nurses need to work across boundaries and engage with patients to identify and solve their concerns. Individuals with schizophrenia are less likely to complain of physical health problems and five times more likely

to be admitted as an emergency (Burns and Firn, 2002; Glasper, 2016). Active involvement of mental healthcare coordinators (with consent), information to aid decision-making and careful listening can all improve outcomes.

The framework of Leading Change, Adding Value (NHS England, 2016) needs the investment of passion, commitment and resources to build on the Five Year Forward View (NHS England, 2014). Only then will this vulnerable client group get the support and access to wound care they need. WUK

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