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GUEST EDITORIAL

Complex Interventions and The Amalgamation of Marginal Gains: a way forward for understanding and researching essential nursing care?

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Recently, several reports have suggested that nursing may have lost its way (Care Quality Commission, 2014). In the UK the Winterbourne View Report (Department of Health, 2012) and the Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry (Francis, 2013) demonstrated that failures to assure aspects of fundamental nursing care not only leads to distress and dissatisfaction, but often to wider patient safety failures or in some extreme cases mortalities. Alongside these findings there has been a call in recent years for improved care in the basics of nursing and an international campaign to shift the emphasis of nursing practice back to the basic essentials or ‘fundamentals’ of care (Kitson et al, 2010). The modern working definition of essential nursing care now includes the provision of physical comfort, the patient’s need for psychological support, and the establishment of a meaningful encounter with the nurse (Kitson et al, 2013). In Kitson’s work, literature and expert consensus has identified fifteen fundamentals of care with nutrition, elimination, mobility, and hygiene being those with the highest agreement amongst experts (Kitson et al, 2010).

In late 2014 I had my own personal opportunity to reflect on nursing care. At the time, I was mid-way through putting together a grant application to develop and test an essential nursing care intervention. This particular Monday, however, rather than continue with the process of developing the research design and methods something else happened. Within 20 minutes of sitting at my desk and the onset of crushing chest pain I wound up in the local emergency department being diagnosed with a myocardial infarction. Unusually for most 55 year olds, I then experienced several days of health care in a hospital. It utterly changed my thinking about the grant application and the programme of research the team and I were planning. It also challenged my views about how one might define the process and outcomes of nursing interventions.

Our original ideas had been to work with the various components of essential care by replicating and building on a successful research programme currently being undertaken in three academic nursing departments in the Netherlands, coordinated by Professor Jan Hammers, a long standing colleague and friend.
This programme seeks to take promising nursing interventions directed at components of essential care – bathing, communication, mobility, for example – and subject them individually to randomised controlled trials (RCTs) of effectiveness. Jan and I have previously called for more RCTs in nursing (Richards and Hamers 2009), particularly using the UK Medical Research Council (MRC) framework for researching complex interventions (Medical Research Council, 2008; Richards and Borglin, 2011), a position endorsed by this journal’s editors (Griffiths and Norman, 2013). What I experienced those few days in 2014 made me reconsider the wisdom of such an approach.

There is nothing like a prolonged period of inactivity in hospital to promote reflection and rumination. Once my acute medical needs had been met, a process that took around three hours, my principle health care contacts were with nurses. I experienced both excellent and less than impressive nursing care. More importantly, I observed the small effects on me of relatively minor interventions from nurses. And most importantly, I saw how these marginal gains added together in a process of accumulation.

Since Sir Dave Brailsford, the team manager of the world’s most successful cycling team, first articulated it, the concept of the ‘amalgamation of marginal gains’ (Cavendish, 2010) has gained traction in management and business development texts. Brailsford took Team GB from an average and underperforming sports outfit to a team that has swept all before it. Although he had some additional funding to do this, his methods have become a byword for attention to detail, precision and effectiveness. His process has been to take possible components that might influence performance and try to find at least a 1% margin of improvement in each single component. By ‘amalgamating’ these ‘marginal gains’ he has pushed the team’s performance beyond everyone else. Nutrition, design, clothing, mechanics, materials etc. have all been marginally improved with the result that the overall package produces results well beyond the reach of competitors.

What might you ask has this to do with nursing and research into nursing care? As noted above, small actions by nurses individually had only a marginal impact
on my wellbeing but considered as a whole they have an uncanny resemblance to the Brailsford method. Three examples are instructive.

Lying in my hospital bed my cannula with its two input lines kept catching on the bed sheets. As night drew close the incoming night sister saw this and placed a simple muslin sleeve around my arm and hand to prevent this happening. Previously, the lines had been left dangling all day unnoticed by her nursing colleagues.

Secondly, unable to leave my bed to go to the toilet, I had to use a urine bottle for the first time in my life. My fluid output was so significant that I kept filling it up and I worried about this a lot – would there still be room in the bottle when I needed it; it was embarrassing to keep asking for another one, etc. The simple expedient of leaving me with two bottles eliminated my concerns.

Finally, an older man was admitted to the next bed. He had had a fall, was shocked and confused and somewhat loud. His worst moments came when his blood pressure cuff automatically inflated, causing him to shout out in pain and confusion – as most readers will know, automatic pressure cuffs inflate to a high pressure before deflating to record their systolic and diastolic readings. I discovered that one rarely sleeps in hospital. However, after this had happened a number of times the nurse on duty switched off the automatic timing system and instead resorted to the traditional method of timing and taking regular readings herself, thereby enabling her to explain to the guy what was happening before she applied pressure. Things calmed down considerably as a consequence.

What sort of nursing ‘interventions’ were these? However, one might classify them, they were simple, individually they made only a marginal difference to me, but in total they significantly reduced both my discomfort and anxiety. I cannot imagine that any of them are in a protocolised intervention manual suitable for testing in a trial. They covered actions associated with the essential care needs of comfort, elimination, communication and sleep. Sadly, this nurse’s actions stood in stark contrast to her colleague previously on duty, who had a communication style that was absent, abrupt or incongruent, and had allowed my worries to build. Both nurses could have been described as offering essential nursing care
and yet one, the one whose attention to detail around these multiple factors, reduced my feelings of discomfort and distress whilst the other left me worried, unreassured and unhappy.

If I needed any more persuading, I left hospital convinced that it was unlikely our various ongoing and planned international nursing trials using reductionist methods would find a significant result for any one specific nursing intervention. It seemed to me that Brailsford was right. Tiny changes, each in themselves producing apparently marginal gains, needed to be amalgamated in order to lead to world class nursing. It led me to pose our research team two questions:

1. In our clinical trials, how do we identify, separate out and measure marginal gains, i.e. small effect sizes, from random variation in outcomes?
2. Are nursing outcomes defined by the *aggregation of marginal gains*?

For methodologists and trialists question 1 is critical. Within a complex interventions framework (Medical Research Council, 2008) we often describe complex interventions as being the product of interacting behaviours. Process evaluation methods seek to understand this and identify the contribution of individual components. But what if we cannot do so because the effect of these components cannot be distinguished from the ‘noise’ of random variation. A 1% gain, described by Brailsford as marginal, is within the likely error range for most measures. What statistical methods might one apply in order to persuade a research audience that these are real effects and not spurious?

For nursing theorists, particularly the thinkers around essential or fundamental care, question 2 is highly pertinent. Again, by identifying agreeing and separating out the individual components of fundamental nursing care do we miss the power of amalgamation? Indeed, for theorists, practitioners and researchers alike, could not Brailsford’s concepts and methods resonate with us? Might we need to define nursing outcomes in trials and in practice in terms of his concept of the ‘*amalgamation of marginal gains*’? Put like this, nursing becomes even more the ‘quintessential’ complex intervention as we have previously described it (Richards and Borglin, 2011). It also provides us with a significant test of the MRC methods framework. If we can cope with both marginal gains and
amalgamation in this framework then we will indeed make progress in the long overdue march to true evidence informed practice.

References


