

## Recognising and Enabling Clinician-led Quality Improvement Initiatives: the Spinal Pressure Care Clinic (SPCC)

BB Lee, R Iedema, S Jones, O Marial, J Braithwaite, D Long

### Abstract

**Objective:** This paper describes efforts to manage spinal cord injured patients with pressure areas through a complex multidisciplinary outpatient intervention that was implemented at two different hospital sites. The paper presents the achievements of this clinic-level organisational change project, which showed improved levels of efficiency and effectiveness at both sites.

**Approach:** The study measured staff activity, severity of condition, surgical intervention and in-hospital length of stay pertaining to two patient cohorts presenting at spinal units in two different Australian hospitals. Data were collected by the clinical team with the assistance of a database manager who reviewed the data collection process periodically and compared across sites. Data was stored within a computerised database.

**Results:** The intervention led to an 11% reduction in patient length of stay when first trialed and a 68% reduction in length of stay (off a lower baseline) when trialed in a second location. This type of pre-emptive outpatient therapy is now standard care for tertiary spinal services in New South Wales.

**Conclusions:** Despite clear evidence of practice improvement and clinician-initiated organisational improvements, local managers and funders/purchasers are constrained in providing resources to consolidate documented improvements. This case study highlights the need for building management and funder/purchaser capacity to respond to the organisational and resource implications of successful clinician-led quality improvement initiatives. If quality improvement is an imperative within the current Australian health care system, it needs to become possible for clinic-level achievements to be subsequently made sustainable.

**Abbreviations:** SPCC – Spinal Pressure Care Clinic; SCI – Spinal Cord Injury.

**Keywords:** clinical practice improvement; organisational change; spinal rehabilitation; pressure areas; multidisciplinary clinical care.

### Bonsan Bonne Lee FAFRM(RACP)

Prince of Wales Spinal Medicine Department  
Sydney, Australia  
Centre for Clinical Governance Research in Health (CCGR)  
School of Public Health and Community Medicine  
University of New South Wales  
Sydney, Australia

### Rick Iedema PhD

Associate Dean (Research), Professor of Organisational Communication, Faculty of Humanities and Social Sciences  
University of Technology  
Sydney, Australia

### Sonia Jones BNurs, BSc

Clinical Nurse Consultant, Royal North Shore Hospital  
Spinal Unit  
Sydney, Australia

### Obaydullah Marial MPH

NSW Spinal Cord Injuries Database Manager, Prince of Wales  
Hospital Spinal Medicine Department  
Sydney, Australia

### Jeffrey Braithwaite PhD

Professor and Director  
Centre for Clinical Governance Research in Health  
Faculty of Medicine, University of New South Wales  
Sydney, Australia

### Debbi Long MA

Anthropologist and Research Fellow  
School of Public Health and Community Medicine  
University of New South Wales  
Sydney, Australia

Correspondence:

Email: blee@medicalinformatics.net

### Introduction

With growing insight into the shortcomings of health care services around the world, [1-5] clinical practice improvement is increasingly regarded as an imperative that applies to clinicians across the board as a way of demonstrating lifelong learning. [6] The production of data about various aspects of clinical work is central to the demonstration of lifelong learning. Such data are seen as guarantor of regular scrutiny and improvement of practice. This perspective is

given special force with the dictum 'you can't manage what you can't measure'. [7]

On the other hand, Deming, who is often credited with this dictum, has made it known that he regards that which is not measurable as equally important for making management decisions. [8] Others too have raised questions about the 'reasonableness' that some assume to be engendered, as if by magic, by presentations of formal data. [9] One event that calls the above perspective into further doubt is the case of the 'Bristol Royal Infirmary Paediatric Surgery Department'. As Stephen Bolsin, Bristol Royal Infirmary anaesthetist at the time, and Mark Colson have noted, despite a wealth of surgery mortality data being available in the hospital between 1985 and 1996, little was done to address the high patient death rates. [10,11]

Bolsin and Colson argue that more effective systems need to be put in place to keep check on what clinicians do: 'there must be effective systems within hospitals to ensure that clinical performance is monitored'. They conclude on the need for 'a system of independent external surveillance to review patterns of performance over time and to identify good and failing performance'. [10] In favouring external surveillance, Bolsin and Colson place their faith in performance monitoring that involves not just peers, but health care managers as well. Indeed, their solution links general data production directly to inspectorial management.

Like Bolsin and Colson, we regard performance management as being overdue and critical. However, we caution against framing data review and performance monitoring activities only in terms of external surveillance and top-down monitoring. This is because it is likely to reduce the ability of clinicians at 'the coal face' to enact self-initiated organisational change, or 'to measure and manage'. In this paper, we present an empirical case study about a spinal outpatient service initiated within two metropolitan teaching hospitals, to support the argument that cross-professional monitoring of data should, in the first instance, satisfy another function; that of recognising and enabling health care practice improvement, initiated by practitioners at the unit-level.

### **Spinal Pressure Care Clinic, data and practice improvement**

The Spinal Pressure Care Clinic (SPCC) that is used to empiricise this argument is a multidisciplinary outpatient intervention which manages clients presenting with pressure sores. It is part of the New South Wales State Spinal Service and was designed using 'post-bureaucratic' design

principles, [12] emphasising frontline staff involvement, initiative and enterprise. The clinic intervention bridges the hospital and community, facilitating inpatient and outpatient service delivery to occur in ways that allow alignment of overall treatment goals. In many cases it focuses on the importance of appropriate timing and location of interventions. An example of this concept is the clinic's aim of relocating traditional inpatient services such as aggressive nutritional supplementation and expensive pressure area care equipment prescription, traditionally only available within hospital situations, into the community sphere. This means people can benefit from these services prior to surgical procedures. The clinic also blurs hospital and community boundaries by commencing the post-hospital discharge process weeks or months prior to admission so post-operative destinations are explored and organised, well prior to surgical intervention. This in turn means that people arrive for designated surgical procedures in better condition with healing wounds and, post-procedure, have appropriate discharge destinations waiting for them.

### **Methods**

A retrospective review of the past records of SCI patients admitted for pressure area operative care at hospital site A (SPCCI) from October 1998 to October 2000 was undertaken by two of the authors (Lee and Jones) in order to establish the average length of stay for SCI-related pressure area care prior to the SPCC intervention. The subsequent length of stay (LOS) of SPCC I-assisted admissions was then compared to this baseline at site A. The duration of time allocated by each discipline to managing the patients prior to hospitalisation was collected by all staff members and recorded in a computerised database (units = minutes of intervention). The data was routinely audited by a clinician (Lee) and a database manager (Marial), and queries (clinical and data) cross-checked with team members.

During the period of the SPCC I intervention, those patients who were not admitted for a surgical procedure were considered to have been conservatively managed. The estimate of prevention of admission for pressure area care was derived from 'total procedures performed within the data collection period' compared to 'total patients managed within the period of June 2000 and December 2001' (where SPCC I non-selectively managed 47 patients within 53 episodes of care). It is possible that patients who were admitted outside of the data collection period could have re-presented subsequently to the centre or other centres for operative interventions, however this information was not available for inclusion in this paper.

A similar process was undertaken at site B (SPCC II), except the data of both SPCC II patients and non-SPCC II patients were collected prospectively from April 2003 until October 2006. Patients were non-selectively managed by SPCC II. However, emergency admissions without SPCC II prior involvement or those already admitted without SPCC II intervention were included in the comparison statistics.

The 'costs of cohort' figure was estimated via inpatient length of stay at both intervention sites. This was calculated assuming a bed day cost of \$750 AUD per day. The total direct costs did not include the cost of surgical, equipment and community costs, nor indirect and societal costs such as time out of the work force and as such are likely to be an underestimate of true costs.

**Data analysis**

Between June 2000 and December 2001, SPCC I 47 non-selective patients were managed. Plastic surgical operations using the SPCC 'prehabilitation' protocol took place between December 2000 to December 2001. All patients undergoing surgery through the SPCC system suffered a Grade 4 pressure area, the most severe grade on our ranking system from the National Pressure Ulcer Advisory Panel Guidelines. [13] These patients' LOS fell to an average of 88 days, compared to 99 days for grade 4 pressure areas and 97 days for all grades between October 1998 and October 2000. These falls,

described in Figure 1, occurred since the SPCC's initiation in June 2000, with the expense of 234 hours of staff outpatient intervention.

These achievements contributed to 77% of SPCC intervention clients avoiding hospitalisation during the course of the clinic. The rise in efficiency comparing grade 4 pressure areas, the only type operated on during the SPCC intervention, was \$8250 (11 inpatient days @ \$750/day) per average admission for a SPCC assisted plastics procedure. Figure 2 describes the overall cost savings. Total efficiency savings for the 11 admitted patients was \$91,000 for the course of the pilot with additional cost savings resulting from the prevention of admission in approximately four out of five referred patients. This is potentially the most significant impact from the SPCC intervention, from the perspectives of direct hospital cost savings and individual patient quality of life, and from a broader societal perspective of improved health care service provision.

The authors draw to the reader's attention that the rate of operative intervention and the costs involved reflects the follow-up period of the data, which extends only to patients admitted for procedures and their subsequent LOS at the time of closure of the clinic. This does not include patients who may have presented for procedures after clinic closure, nor those who may have presented to other centres for

**Figure 1: Spinal Pressure Care Clinic: length of stay for spinal patients admitted with Grade 4 pressure areas pre-intervention (1998) and post-intervention (2000)**

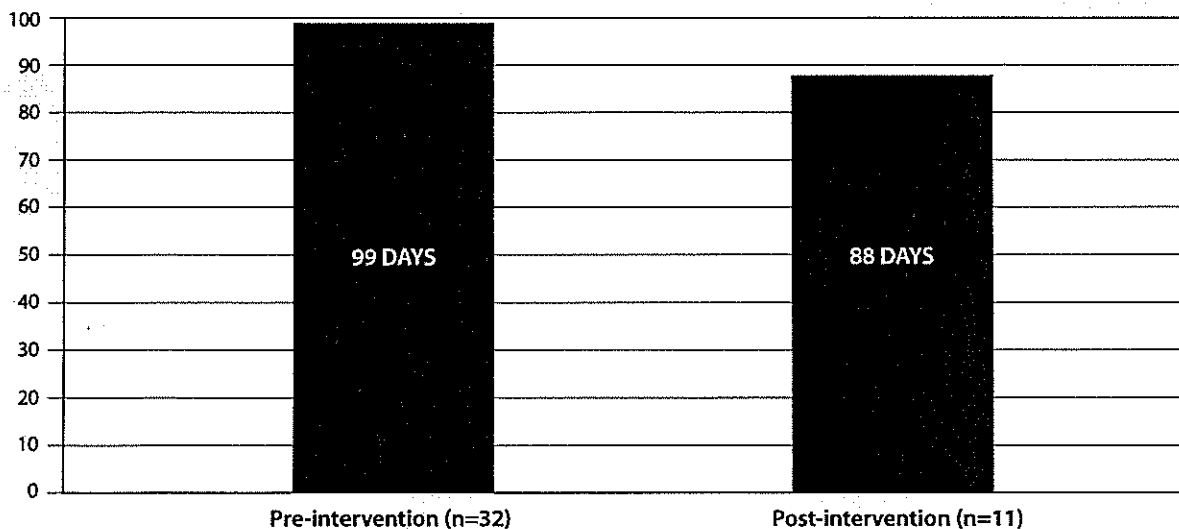
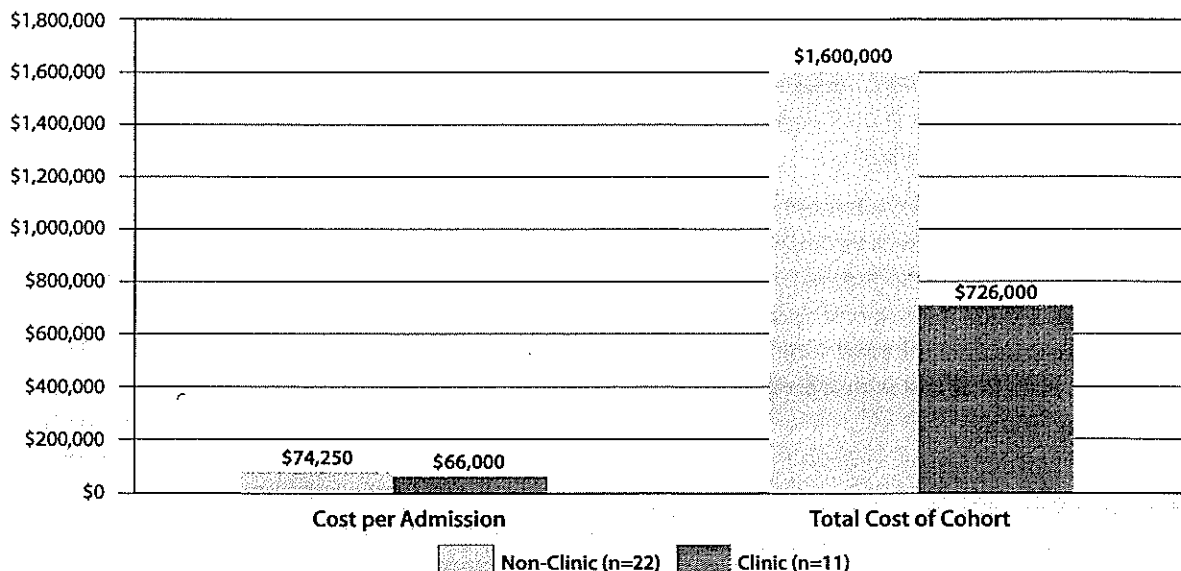


Figure 2: Cost per patient admission and total direct costs: pre-intervention (1998) and post-intervention (2000)

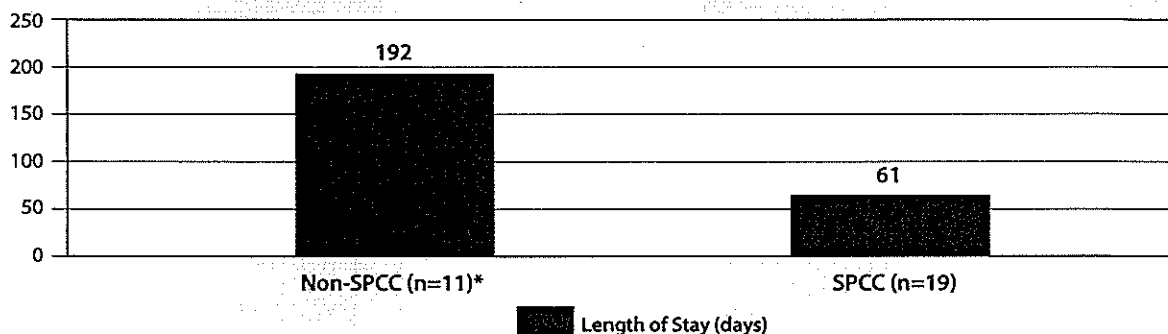


procedures, for whom linked health care data would have been required. It is possible that the actual number of patients who underwent operative procedures is higher than the figures available.

After two years of operation at hospital site A, the SPCC intervention was closed by the clinicians due to insufficient resources. The SPCC model was subsequently re-established in the spinal unit of another Sydney metropolitan hospital (SPCC II). Here, hospital data were gathered from all patients receiving surgery for pressure areas in this clinic between mid-2003 and late-2006, and compared to data of patients

treated in the same period who underwent surgery for pressure areas without attending the SPCC II clinic. The average length of stay for non-clinic patients was 192 days, compared to 61 days for SPCC II patients (Figure 3). During SPCC II, state government funding, as opposed to local level funding was obtained. This enabled the employment of staff with prescribed clinical roles to operate the clinic which was previously done on top of routine clinical work. Meanwhile, the original hospital site of SPCC I reactivated the original clinic within a changed clinical structure.

Figure 3: Patient length of stay (days): Non-SPCC II patients compared with SPCC II patients, April 2003 - October 2006



\* These statistics do not include one person who died after presenting with pressure related sepsis in the non-SPCC group.

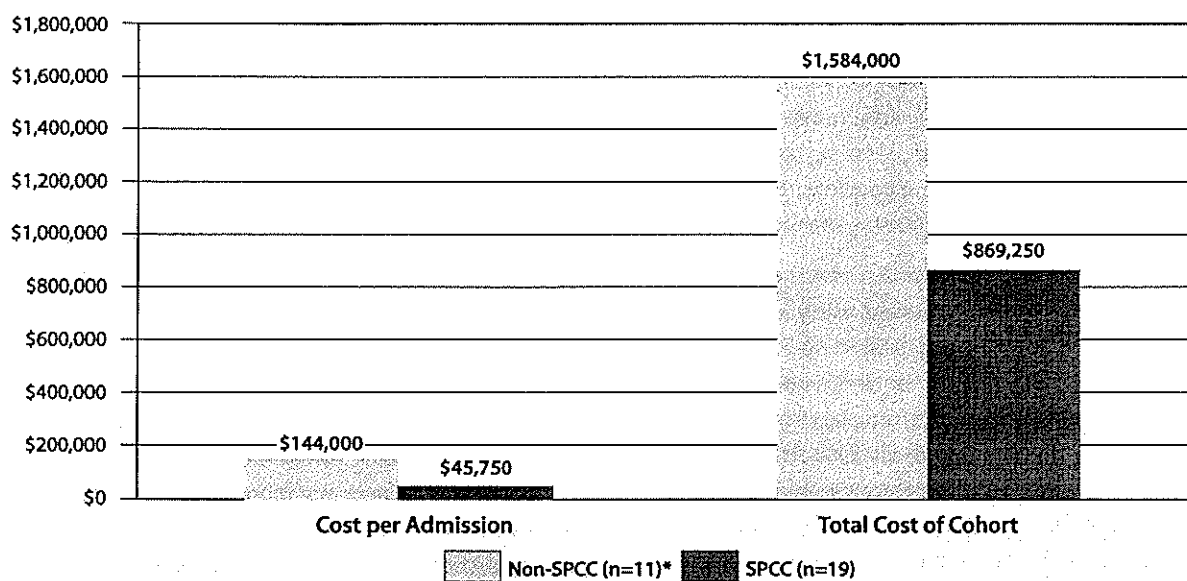
As described in Figure 4 below, non-clinic patients cost, on average, AUD\$144,000 per procedural admission, whereas SPCC II patients cost a third of this (AUD \$45,750; Figure 4). The data show that the eleven patients who did not go through the clinic cost the hospital a total of nearly 1.6 million dollars. The nineteen patients who went through SPCC II cost the hospital just over half of that.

Unfortunately, this does not reflect the actual flow-on costs on a hospital level where the effective centralisation of specialised care and complex procedures puts sustained pressure on scarce shared resources. This pressure on, for example, hospital beds and theatre time continues to create ongoing challenges to the attempt to improve clinical outcomes beyond the levels described. These constraints on effective and efficient delivery of clinical care are outlined in greater detail elsewhere. [14-16]

of spinal patients. Second, there were the inter-hospital links to ensure that spinal plastics rehabilitation was contextualised by effective pre-operative management of adverse risk factors. These included nutrition, infrastructure and equipment issues, mental/emotional state, appropriate pressure relief and wound care. Finally, there were the unit-internal links and communications that rendered the unit a model as a multi-disciplinary site. These processes took place with the support and cooperation of local nursing, medical, surgical and allied health clinical team leaders and with peer support workers. The simultaneous operations of these links and connections ensured that spinal care practice became a systemised, data-generating and performance-improving unit. [17-22]

The efficiency data cited must be read against the background of a number of other factors that were organisational

Figure 4: Cost per patient admission (direct costs): SPCC II compared with non-SPCC II April 2003 to October 2006



\*The cost of one death in the non-SPCC group in a patient presenting with sepsis is not included in this analysis.

NOTE: 192 inpatient days (@ \$750 per day) is approximately \$144,000 per procedural admission compared to SPCC associated costs of (61 inpatient days @ \$750 per day) of approximately \$45,750 per procedural admission. The total direct costs of managing 11 patients NOT using the SPCC model was \$1,600,000. The total direct cost of managing 19 SPCC model patients was \$870,000. This cost does NOT include direct surgical, equipment, and community costs, nor indirect and societal costs such as time out of the work force.

### How were SPCC improvements achieved?

The SPCC achievements occurred against a background of a number of acute and non-acute service integrations. First, there were state-level links that the unit realised by establishing connections across metropolitan, rural and regional care centres that participated in the treatment

and socio-cultural. These are: flexible data management; communication sharing; standardised and multi-disciplinary patient assessment; 'manager management'; systemised care and 'enhanced responsibility and commitment of staff'. Each of these is briefly reviewed and their relationship to the achievements shown is clarified.

## Contributing Factors

**1. Flexible and reflective data management:** Each patient was case managed by a medical and nursing team member. This provided a broad safety net whereby if an omission was made it was likely to be identified and rectified by someone within the team. Even if the omission went unrecognised by the case managers it would be picked up when data were collated. Because omissions or a lack of follow-up data were documented, the person collecting the data was able to take action and request the appropriate person to rectify the situation, thereby improving care outcomes.

**2. Communication sharing:** A pro-forma letter was designed to incorporate a section with general details (name/date/problem, etc), and which also allowed each clinician a place to record their interventions/recommendations. This prevented repetition within patient notes and saved time. It also enabled pertinent and current information to be dispersed to all group members. The resulting intimate knowledge that team members had of each SPCC patient enabled the team to determine the most opportune time to plan to admit patients. Admission priorities were not decided upon by any one team member but were collaborative decisions, with admission times expedited by the local nursing manager.

**3. Standardised and multi-disciplinary patient assessment:** The patients were assessed using a standardised pre-assessment form, which helped to identify which team members needed to be involved. Despite the standardising influence of the form, team members were not limited by their traditional clinical roles. The nursing role allowed nurses to comment on wound dressings (a nursing role), but also to identify seating and mattress issues (usually an occupational therapy role), and to initiate referrals autonomously if it was felt necessary (usually a medical role). This role flexibility exposed the unit's clinicians to practices of other disciplines which increases team effectiveness in multidisciplinary clinical teams. Certainly this was an important factor in the SPCC initiative, where its multidisciplinary approach led to a growing understanding of the roles of colleagues, and in some cases the acquisition of some additional basic skills. Team members were encouraged to discuss patient situations, often with the main modality being informal routes of information exchange reinforced with more formal meetings.

**4. Managing the manager:** Team members were encouraged to adopt 'manage the manager' relationships

with community case managers and workers. This was because the unit identified its point of leverage as being the pre-admission phase. Technologies such as telephone, video-conferencing and digital photography were integrated into assessment protocols to allow this to occur.

**5. Systemising care:** Decisions regarding timing of surgery were reached by consensus between the surgical and rehabilitation teams. This took place when the patient's physical and nutritional conditioning were optimal, and where acute and potential discharge infrastructure and social issues were addressed, or were underway. Specific interventions to optimise wound condition prior to surgery, such as changes of dressings or negative pressure dressings (vacuum) therapy, were co-ordinated with the assistance of the orthopaedic and plastic surgery team. Where possible, a pre-admission contract was made between the patient, community services and the discharge destination, for resources to be available at the proposed discharge date.

**6. Enhancing staff responsibility and commitment:** [23] The staff in the unit were responsible for securing their own funding. Staff have had to interact directly with the division's business manager and provide a business plan in a relevant language, ie that of economics. This led to the use of effectiveness studies, cost estimates and tracking of relevant clinical outcomes. Every staff member in the clinic was made responsible in this way. This was because of the need to construct and justify business plans aiming to obtain state and area-based funding. This put additional pressure on the clinicians, and also had the danger of staff feeling that more human outcomes, such as quality of life, were not as well expressed in statistics and were being neglected. SPCC attempted to discuss these intangibles among the team as part of the total client equation.

In summary, systemising spinal care delivery centred on a multi-disciplinary and multi-site integration of the clinic's services. The work process integration of these aspects of the care involved creating 'a weave of commitments' that encompassed members of the SPCC unit, community personnel as well as specialists across different specialist areas. This weave of commitments was achieved on the basis of communicative and cooperative strategies described above which put the social context and interpersonal relationships among relevant staff centre-stage.

## Discussion

The achievements of the SPCC I and SPCC II interventions and the clinic's managerial innovations might encourage the expectation that practice improvement of this calibre should attract attention and support. Due to ongoing resource constraints at both hospital sites, the clinics have, at various times, been dependent upon clinicians voluntarily working beyond their allocated clinical loads. The inability of SPCC I to garner support without the ructions of clinician-led disbandment and subsequent state-based funding applications, despite the evidence presented in the practice review data, puts paid to Bagian et al's [7] notion that explicit information has a natural and automatic purchase on managerial and bureaucratic decision-making. The question that this problem highlights is, how much practice improvement information is potentially ignored by funders because its content and implications challenge predetermined resource allocation decisions?

Messages about the need to improve the organisation of care have frequently not been heeded. [24] In fact, some notorious cases (eg, Bristol Royal Infirmary in Britain; King Edward Memorial Hospital in Perth, Australia) have highlighted how poor practices can become so taken for granted as to become unheard and invisible. Although increased managerial supervision and surveillance, more frequent monitoring and improved information technological support have all been cited or even imposed as solutions, none of these top-down methods have delivered on their promises. In the final analysis, the main source of improvement seems to be related not to intensity of surveillance and control, but to how clinicians who embody leadership, insight and enthusiasm structure their work processes and relationships. The SPCC study provides evidence to support this view.

We are led to conclude that data and data management cannot be divorced from the clinical practices that instantiate those data. Spiegelhalter and colleagues [11] state that had existing data been properly utilised, 'the divergent performance for Bristol might have been detected earlier'. These same authors also comment that such conclusions are ultimately contingent upon 'good quality data'. It is clear that the quality of data, their reliability and representativeness, cannot be dictated and controlled from above, and remain contingent upon a tight relationship with the processes from which they are abstracted. Put in different terms, clinicians' commitment to the data is crucial. The quality of data is likely to be compromised if their principal purpose is not to reveal to clinicians the outcomes of their own work, but to strengthen top-down monitoring and surveillance. As long

as clinicians do not and are not encouraged to engage with ways of representing their work that is both constructive and reflexive, they will see little reason to participate in producing and using data for any purpose, whether for improvement or monitoring.

It is possible at a local hospital level that there is a divergence between interventions which clinicians see as beneficial and those that hospital managers are able to support. There is not just the challenge of explaining to local managers that increasing near term operating and in-hospital costs and increasing the rate of through-put of surgical procedures will produce SPCC-like improvements and efficiencies. The real obstacle is established resource allocation practices within the system, preventing local managers from being more financially responsive and proactive.

In summary, the case study presented highlights the contradictions and dilemmas that are at the heart of complex care. Improvements and savings notwithstanding, there is limited motivation at the tertiary hospital level to actively attract large numbers of highly resourced intensive cases from outside local catchment areas, particularly if these cases have a reasonable chance of re-presentation for a variety of physical, functional, psychosocial and socioeconomic reasons. This barrier is a common one for high-level disability groups, and often makes co-management of these patients problematic, even when they are insured through and utilise private hospital alternatives. It is clear that improvement data of the kind presented here are but one facet of a complex set of relationships and practices.

## Conclusion

An organisational focus on the clinical work is central to clinicians achieving the objectives of effectiveness, efficiency and quality of care. If improvement of existing practices is to become the norm in the way that the literature suggests it should, management agendas that focus principally on cost containment, and clinician agendas that focus principally on patient advocacy, will need to be aligned. [25] Explicit data explaining how specific resource expenditures achieve specific outcomes will need to be mobilised for clinicians and managers to be able to strike agreements about the objectives and direction of clinical practice improvement initiatives.

The onus now rests on clinicians to engage in self-management and lifelong learning [26] by becoming more oriented to producing and acting on clinical activity data. This should transmute into recognition on the part of managers that these attempts at improvement are unlikely

to remain untouched by resource implications. The case study presented in this article showed that when clinicians improve their practices, management is not necessarily in a position to act on their achievements.

An important part of clinical practice improvement, therefore, is building the health departmental capacity to respond to the organisational and resource implications of improvements in the efficiency, effectiveness and quality of specific care practices. Hospital funding needs to be flexible enough to reward and encourage care practices that reduce the burden of complex chronic illness prevalence on the community.

The spinal unit case study presented in this paper provides a model example of how local practices can be linked to information collection systems and improved qualitatively and financially in a 'bottom-up' way. To achieve lasting impact of clinical practice improvement initiatives requires the commitment of those who plan and can intervene in the allocation of health care resources as much as it does the clinicians who have initiated the improvement.

### Competing Interests

The authors declare that they have no competing interests.

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