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Complete List of Authors:	Parand, Anam; Imperial College London, surgery and cancer Dopson, Sue; University of Oxford, Saïd Business School Vincent, Charles; Imperial College London, Surgery and Cancer
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The self-reported role of chief executives in a quality improvement initiative: a qualitative study

ABSTRACT

Objective: To explore the role of hospital Chief Executives (CEOs) in a quality and safety initiative: the Safer Patients Initiative (SPI).

Design: Qualitative interview study.

Setting: 19 organisations participating in the main phase of the SPI programme across the UK.

Participants: 17 Chief Executives overseeing 19 organisations participating in the main phase of the SPI programme.

Main outcome measure: Self-reported perceptions of CEOs on their contribution and involvement within the SPI programme.

Results: The CEOs in this study recognised the importance of their part in the SPI programme and gave detailed accounts of the value that they believed to have brought at all of the different stages of the process: from the initial application of the initiative, through overseeing and encouraging the process, to its sustainability after resources diminish. In exploring the parts played by the CEOs, five primary roles were identified: 1)resource provision; 2)staff motivation & engagement; 3)commitment & support; 4)monitoring progress; and 5)embedding programme elements.

Conclusion: This study has attempted to address the call for more research-informed guidance on the role of senior management in quality improvement initiatives. It draws on empirical material from 19 healthcare settings to present the reports of 17 CEOs on how they added to the undertaking of an organisation-wide quality and safety collaborative. The findings suggest that the CEOs provided key participation within the SPI programme and their reported actions were ones that were considered significant to their perceived achievements of the programme. Illustration of the type of involvement that these executives engaged in imparts guidance for other managers at this level opting into a similar intervention.

ARTICLE SUMMARY

Article Focus

- To qualitatively explore the self-perceived role of hospital Chief Executives (CEOs) in a quality and safety initiative: the Safer Patients Initiative (SPI).

Key Messages

- The findings suggest that the CEOs provided key participation within the SPI programme and their reported actions are ones that were considered significant to their perceived achievements of the programme.
- Five primary managerial roles within the SPI programme were identified: 1)resource provision; 2)staff motivation & engagement; 3)commitment & support; 4)monitoring progress; and 5)embedding programme elements.
- Queries raised are on the tangible benefits of the executives' programme monitoring actions and on practical steps to creating the "right" environment for QI.

Strengths & limitations of this study

- This study addresses the call for more research-informed practical guidance on the role of senior management in QI initiatives. It makes an evidence-based contribution to the quality debate around leadership in healthcare by drawing on original empirical material collected across 19 healthcare settings to present the reports of 17 chief executives on how they added to the undertaking of a high-profile organisation-wide QI collaborative. The findings impart guidance for other managers at this level opting into a similar intervention.
- The CEOs' self-reports may be subject to social desirability bias. Similarly, self-selecting bias may derive from the fact that the CEOs volunteered for the high-profile initiative, arguably leading to an over-estimation of the involvement that senior managers at this level would typically engage in within most improvement initiatives within their Trusts.
- No association can be made between the CEOs' roles and the successes/failures of the SPI programme.

FUNDING

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COMPETING INTERESTS

There are no competing interests.

INTRODUCTION

The number of quality improvement initiatives in the healthcare sector is growing rapidly. They share in common, a goal to improve processes, structures and systems through continuous quality improvement techniques in order to improve outcomes of care.[1-3] Research examining these programmes and larger-scale collaboratives have found some evidence of their impact;[4] their sustainability;[5, 6] and economic benefits.[7-9]

Literature discussing what makes these initiatives effective and sustainable often make mention of the essential contribution of senior management.[10] The type and degree of support from management was one of five areas suggested to affect the effectiveness of a quality collaborative by a collective group of quality improvement experts.[11] This echoes earlier research findings on this subject.[12] In a review of healthcare Board level and senior management behaviours associated with quality improvement outcomes, Øvretveit (2009) identified a plethora of studies that impart the importance of managerial involvement and engagement in quality and safety improvement.[13] Actions frequently referenced as beneficial included displays of senior management commitment and support [14] and creating the right culture.[15] However, Øvretveit concludes that there is little research-based practical guidance to outline the details of the senior management role in leading improvement and calls for more academic research on this topic.[13]

This study aims to answer this call by exploring the self-reported participation of Chief Executives (CEOs) involved in the second phase of an organisation-wide quality and safety collaborative, the

Safer Patients Initiative, to better understand the role of Board level senior managers within such initiatives.

The Safer Patients Initiative

Funded by the UK Health Foundation, the Safer Patients Initiative (SPI) was developed by the Institute for Healthcare Improvement (IHI). It was piloted with four UK NHS organisations in its first phase (2004-2006) and applied at a further 20 in its second phase (2006-2008).[16, 17] Designed to achieve improvements in patient safety, SPI attempted to make changes at an organisational level and in front line care processes within four clinical areas through implementing a number of clinical working practices with continuous quality improvement and process measurement techniques. The main elements of the SPI programme are outlined below in Box 1. Today, much of the principles of SPI have continued with 18 of the involved organisations opting in to the follow-up initiative 'The Safer Patients Network'.

—Box 1—

METHODS

Sample

Setting

Interviews were carried out across 19 of the 20 NHS hospitals participating in the second phase of the SPI programme across four geographical locations in the UK: England, Northern Ireland, Scotland and Wales. The hospitals varied in terms of type (e.g. teaching) and size. The biggest participating Trust had a total of 22,000 staff (not all of their hospitals were involved in SPI) and the smallest had 2,100 staff (est. June 2008). Two Trusts each had two hospitals involved in SPI.

Participants

A purposive sampling strategy across all 20 organisations aimed to include the Chief Executives at all of the participating organisations. These senior managers were often involved in the 'Leadership workstream' that governed the SPI programme across all of the clinical workstreams in which it was implemented. This workstream were advised to walk around the hospital in "Leadership Walkarounds" and to have a strategic prioritisation of quality and safety.

Seventeen interviews were conducted with CEOs representing 19 of the 20 hospitals participating in the SPI programme. There were only 17 participants because two of the CEOs managed more than one participating hospital and one CEO did not participate in the interviews (please see Table 1 for participant demographics).

—Table 1—

Procedure

The data collection period was between April-August 2008 towards the official end of the SPI programme and comprised of face-to-face interviews lasting approximately between 45-60 minutes. Interviewees were shown a research information sheet, briefed on their anonymity and asked to sign a form consenting to audio recording the interviews for transcription and analysis. A standardised semi-structured interview topic schedule was used by two interviewers (pairings of five different researchers, JB, AP, SB, SI, APo), which addressed the senior managerial role along with a host of issues regarding the programme. This is because the study investigated a number of issues surrounding SPI of which the senior management role was one topic of investigation.[18, 19] Example questions directly asking about their role included: *"What are your main responsibilities?"* and *"how were/are you involved in SPI?"*

Data Analysis

The interviews were transcribed by professional transcribers. Qualitative analysis, based on content and grounded theory analysis, was performed with the aid of NVivo 8 software.[20, 21] The transcripts were initially content analysed by the five researcher interviewers. This comprised of identifying aspects pertaining to the executives' work towards the programme. Each transcript was coded for direct and indirect references to their involvement. Open coding was then carried out by one researcher (AP). Codes related to CEOs' perceptions of the importance of their involvement in the SPI programme, their contributions, barriers/enablers and activities associated with the programme. Axial coding was performed to group and relate the emerging themes. After iterative refinement of the relationships, a model of factors and sub-factors emerged on the role of the CEO in the SPI programme. To ensure reliability of coding and interpretation, a sample of data fragments were checked and resolved through dialogue within the multi-disciplinary team. The sample of one interviewer per Trust did not allow for robust contextual or organisational comparisons.

FINDINGS

The levels of involvement in the programme varied between the executives, however almost all gave detailed accounts of the value that they believed to have brought at all stages of the process. They considered their involvement in the initiative as a significant influence on the potential for programme success/failure.

"I went away on leave, came back, and it had just all gone downhill because I wasn't there." (Interviewee 8)

Barriers to their involvement included management of a large Trust and their limited time. Whilst early involvement in the process, learning about the programme and having other executives and staff engaged with the programme were described as facilitators of their engagement. It was recognised

that in larger Trusts, CEOs reported a lesser contribution to the SPI programme, referring to their Clinical Director or Medical Director as more involved in the process.

> *"the [x] Trust has a turnover of £[x], and therefore directors in the [x] Trust fulfil the role that might in smaller organisations be occupied by Chief Executives. So the Medical Director has really been my deputy, my representative at all those things."* (Interviewee 15)

> *"it's really important the Board is engaged early on in a real way"* (Interviewee 3)

Five primary managerial roles within the SPI programme were identified (presented in Table 2). These factors are described within this section along with example quotations provided in Table 3. In terms of weighting, the factors 'commitment & support' and 'monitoring progress' were referred to by almost all CEOs. Most CEOs also discussed 'embedding programme elements' and 'staff motivation & engagement'. Resource provision was the theme that was least mentioned, but was still referenced by more than half of the CEOs.

—Table 2—

1. RESOURCE PROVISION

Funding to support the SPI programme was deemed important and many CEOs saw this as their task to secure and provide it. They recognised this as one of their considerable contributions to the programme. This took two forms: their activities to bid and secure funding (both at the application stage of SPI and for its continuation) and their authorisation of resources (both financial and human resources). Each organisation involved in the programme were provided with an allotted sum of money (approx. £270,000 per hospital) and external resources, such as external monitoring by IHI. After the official two year period of implementation, withdrawal of these resources instigated plans to ensure that resources covered by initial funding and support could be continued. The most common resources authorised by CEOs for the SPI programme were: time allowed for SPI work and training; data support personnel; and an SPI coordinator to oversee the project.

2. STAFF MOTIVATION AND ENGAGEMENT

The CEOs described activities that empowered, motivated and reinforced staff involvement with the SPI programme. In accounts of motivating staff, the CEOs described *"creating an appetite"* and "*free[ing] up peoples thinking",* reporting an aim of changing staff attitudes to improve behaviour towards the programme. Their actions to empower staff included providing autonomy through allowing them more power to authorise resources. Particularly when describing motivating or empowering actions, the CEOs asserted the importance of listening to the frontline to get their input on safety issues. Leadership walkarounds were considered a particularly useful tool for shared dialogue and as a listening exercise. The walkaround involved speaking with frontline staff across the hospital and was the principal activity of the CEOs position in the 'leadership workstream'. More benefits of the walkarounds in SPI are discussed elsewhere.[22] Communication was particularly described as key to staff engagement with the programme. CEOs reinforcing behaviours included expressions of vocal encouragement or disapproval. At times the CEOs were called in to deal with resistance to the programme, whereby they would either discuss the situation with the resisters, attempt to instil a sense of purpose, or in the worst case, threaten disciplinary measures for not adhering to SPI practices. Doctors were singled out as the profession with the most resistors, therefore facilitating doctor engagement was a commonly cited role. Mention was also made of encouraging Board buy-in. The CEOs who attended SPI learning sessions to learn about relevant improvement practices reported that their learning helped when engaging others.

3. COMMITMENT & SUPPORT

All 17 CEOs unanimously agreed on the importance of executive commitment and most believed that, in some way, they were a support to frontline staff. Some CEOs described acting as a role model to others and many agreed on the powerful effects of visible commitment. Demonstrations of commitment included some of their aforementioned actions: attending learning sessions; emphasising the purpose of SPI; attending leadership walkarounds; integrations of safety into the Board agenda such as safety stories at meetings; speaking at sessions to explain the programme; and providing

approval for SPI related practices. Some made the point that acting as a figurehead is not enough, instead that acts of commitment need to follow. They asserted the potential for failure if their commitment was absent. A few of the interviewees recognised their role in creating the right climate and environment for others to undertake the programme work effectively, however they fell short of offering detailed description of what this actually involved. The interviewees reported to further aid their staff with statements of purpose and direction. This endeavor has also been referred to as *"selling"* the process. This was done through disseminating the programme aims and targets via workshops to staff and presentations to the Board. The CEOs also increased their involvement when SPI work activity was not heading in the right direction.

4. MONITORING

Monitoring the progress of the initiative was a frequently reported activity. The CEOs monitored progress by reviewing SPI outcome measures at Board meetings. Often in the form of presentations, safety-style dashboards and Run Charts,(23) outcomes were reviewed on a weekly or quarterly basis, depending on the Trust. This took the form of processed information rather than raw data. While regularly reviewed, it was not always analysed or auctioned and a couple of CEOs pointed out that it is not really driving change at the Board. However, many CEOs agreed that it both raised awareness and flagged safety issues, as well as offering the Board an opportunity to prioritise, openly discuss, understand and address trouble areas. Monitoring of progress was not only to explore challenges, but also as way of ensuring targets were met. It was additionally considered as a method of increasing frontline compliance and indirectly generating accountability on programme leads for progress.

5. EMBEDDING PROGRAMME ELEMENTS

Many CEOs discussed changing system processes and strategies in order to facilitate change necessary for new SPI activity and procedures. Embedding them into existing systems and processes was considered the most efficient way to sustain practices. Changing strategies and agendas, particularly at the Board level, was believed to help integrate the SPI programme. Examples included adding SPI targets into mission statements and strategic objectives. Integration of programme

elements into existing systems involved amendments to processes, such as changes to performance management systems and strengthening lines of accountability associated with targeted outcomes. Putting reporting mechanisms in place and incorporating SPI elements into other existing initiatives, such as LEAN, were other frequently quoted methods of integration, as was including practices into staff objectives and individual performance management.

—Table 3—

DISCUSSION

Almost all of the CEOs in this study recognised the importance of their part in the SPI programme. The executives gave detailed accounts of their activities and perceived value they brought to all of the different stages of the process: from the initial application to start the initiative, through overseeing and encouraging the process, to its sustainability after resources diminished. This supports proposals that senior management make a significant contribution to quality and safety improvement initiatives in the healthcare setting.[11-13] Yet, our findings have also inferred that CEOs in bigger Trusts may have a lesser role to play than in smaller ones, especially if the CEO is in charge of more than one hospital. In these instances, the Medical or Clinical Director may subsume the outlined roles. This theory could be investigated with a more robust sample size. In exploring the parts played by the chief executives, five primary roles were identified: 1)resource provision; 2)staff motivation & engagement; 3)commitment & support; 4)monitoring progress; and 5)embedding programme elements.

Studying the components of the senior management role in a hospital setting in the US, Bradley et al (2003) identified that the following manager-related variables affected their quality improvement (QI) initiative: senior management engagement; management's relationship with clinical staff; the promotion of an organisational culture of QI; support of QI with organisational structures; and procurement of organisational resources for QI.[10] Our findings considerably overlap with theirs,

although interestingly our CEOs made more reference to their role as a monitor of the process. This included reviewing SPI measures and ensuring that programme targets were met. This difference in finding may be attributable to the fact that the CEOs most often did not take any actions based on their monitoring behaviour. Dissimilarly to ours, Bradley et al's study interviewed 45 hospital staff, only five of whom were senior managers. Monitoring may then be a function that was seen most by the CEOs alone. Reported benefits of the monitoring role of raising awareness of safety issues, trends and providing an opportunity for open discussion were all inward facing benefits for the Board. Indeed, a couple of managers conceded that direct actions were not taken based on reviews. Yet, performance assessment has been suggested as a significant managerial function in QI initiatives.[23] Further understanding of the benefits and beneficial ways of monitoring are required in order to guide managers on how to best carry out this task.

Managerial commitment was an expected finding considering literary support for this inside and outside of healthcare.[24, 25] We identified manifestations of commitment from: attending SPI learning sessions; leadership walkarounds; prioritising safety on the Board agenda; talks explaining the programme; stamps of approval for programme practices; stating its purpose; and creating the right climate/environment. On the latter, research has implied the relevance of senior managerial influences in building the right culture for improvement.[15] Whilst a few of the interviewees recognised their responsibility in this, they did not define their activities. Recent articles offer managerial actions on producing a good patient safety culture,[26] but less is known on creating the right culture for QI.

The manager-clinician relationship has been referred to as central to successful QI in the NHS,[27] with recognition that QI initiatives require an open and mutual communication between management and clinical staff.[28, 29] Our interviewees emphasised that the benefits of shared dialogue with clinical staff was both to receive input on quality and safety and to engage staff. Indeed, senior managers have been identified as holding a facilitating responsibility,[23, 30] including research from another study on the first phase of the SPI programme.[31] The present study shows that this entails

motivating and empowering staff by providing them with more autonomy, reinforcing SPI compliant behaviours and attendance at the learning sessions to learn about improvement practices. Such learning is supported by studies that recommend managers to enhance their QI knowledge.[13] CEOs involvement in resource provision is also supported by research proposals that senior managers' activities for safety include granting resources for a comprehensive safety programme and permitting staff time for safety.[32] Others agree that healthcare managers focus on finance for QI.[28] Our findings show that the most common resources authorised by CEOs for the SPI programme were time allowed for SPI work and training, data support personnel and an SPI coordinator to oversee the project. However, these were mostly prescribed by IHI, and, while CEOS were happy with their distribution, they otherwise may have chosen different areas to resource.

Finally, a role reported as essential to achieving sustained learning and outcomes involved embedding SPI activity and procedures into existing organisational systems, strategies and processes. Recommendations based on our findings are to: modify Board agendas and prioritise safety; integrate programme targets into mission statements and strategic objectives; strengthen lines of accountability and introduce reporting mechanisms associated with programme outcomes; and incorporate programme approaches into other existing initiatives. Change of structures and systems by management has been shown to assist in the sustainability of QI programmes.[10] In other analyses of the SPI programme, its integration within organisational structures and processes featured dominantly within strategies to sustain it.[33] Such tasks arguably fit within the remit of senior management and further support the argument that their activity is relevant to collaborative methods being sustained.[11]

Limitations

It is important to highlight that this research does not provide any association between the CEOs' roles and successes/failures of the SPI programme. It instead describes the CEOs' self-reported contribution to the programme and its self-perceived achievements. These self-reports may be subject to social desirability bias, especially as the interviewees were involved in the application process to

secure implementation and supplementary programme funding. Equally, the fact that this sample volunteered for this high-profile initiative brings with it a self-selecting bias that is arguably likely to have led to an over-estimation of the involvement that senior managers at this level would typically engage in within most improvement initiatives in their Trusts. Another note worthy point is that the SPI programme achievements remain unclear. In a large formal evaluation of hospitals involved in the SPI programme, while gains in quality and safety were found, the gains were no larger than in the control hospitals that were not involved in the programme.[34] The difficulty, however, in ascertaining the impact of such programmes has been duly noted.[4, 35] In particular, there may have been improvements in specific areas in some hospitals which were not detected by the broader evaluation. The evaluators themselves further noted that large scale effects may take a longer time to surface.[34]

Conclusion

This study has attempted to address the call for more research-informed practical guidance on the role of senior management in QI initiatives. It makes an evidence-based contribution to the quality debate around leadership in healthcare by drawing on original empirical material collected across 19 healthcare settings to present the reports of 17 chief executives on how they added to the undertaking of a high-profile organisation-wide QI collaborative. The findings suggest that the CEOs provided key participation within the SPI programme and their reported actions are ones that were considered significant to their perceived achievements of the programme. The reports reinforce conclusions in change management and the safety literature that have stressed the importance of CEO involvement, as well as providing new evidence for specific roles performed. Queries raised are on the tangible benefits of the executives' programme monitoring actions and on practical steps to creating the "right" environment for QI. In providing a case-study illustration of the type of involvement that senior management engage in within an improvement collaborative, the study imparts guidance for other managers at this level opting into a similar intervention.

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CONTRIBUTORS

All co-authors contributed to the study design and review of drafts of the article. This paper has used data from the research study entitled: 'The Journey to Safety: The Safer Patients Initiative' led by Professor Charles Vincent, Director at the Centre for Patient Safety and Service Quality at Imperial College London. The research team who assisted with data collection and analysis included the author and Susan Burnett (Organisation and Management Research Team Lead), Dr Jonathan Benn (Lecturer in Quality Improvement Healthcare) and Anna Pinto (Research Psychologist) and Sandra Iskander (NHS manager).

ETHICS APPROVAL

Ethical approval was obtained from the NHS National Research Ethics Service Leicestershire, Northamptonshire and Rutland Research Ethics Committee 2. Reference no. 07/H0402/69.

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SPI Aims
• Mortality: 15% reduction
• Adverse events: 30% reduction
• Ventilator-associated pneumonia: 0 or 300 days between
• Central line bloodstream infection: 0 or 300 days between
• Blood sugars within range (intensive care): 80% or more within range
• MRSA bloodstream infection: 50% reduction
• Crash calls: 30% reduction
• Harm from anticoagulation: 50% reduction in adverse events
• Surgical site infections: 50% reduction
Workstreams *(example change elements)*
• Perioperative care *(deep vein thrombosis prophylaxis, beta-blocker use)*
• Medicines management (medicines reconciliation, anticoagulants)
• General ward care *(early warning systems, rapid response team, hand hygiene)*
• Critical care *(ventilator bundle, central line bundle, daily goal sheets)*
• Leadership *(leadership walk-rounds, strategic prioritisation of quality and safety)*
Programme tools and methodology:
• Continuous quality improvement: semi-autonomous teams
• PDSA cycles and small tests of change
• Incremental spread to successively larger work systems
• Process measurement and analysis of run charts to determine effects
• Expert faculty support from IHI (site visits, conference calls, online email support)
• Large-scale learning sessions for multi-disciplinary improvement teams
• Online extranet for uploading and comparing process data with monthly feedback
• Collaborative learning community for networking and sharing best practices

Box 1: The Safer Patients Initiative - A Description

Gender	Clinical/Non-clinical Background	Tenure in Trust	No of SPI Hospitals Overseen by CEO
Male	Non-clinical	6-9 years	1
Male	Non-clinical	0-11 months	1
Female	Clinical	21 or more years	1
Male	Non-clinical	3-5 years	1
Male	Non-clinical	1-2 years	1
Female	Non-clinical	1-2 years	2
Male	Non-clinical	6-9 years	1
Male	Non-clinical	0-11 months	1
Male	Non-clinical	3-5 years	1
Female	Non-clinical	10-20 years	1
Female	Non-clinical	10-20 years	1
Male	Non-clinical	6-9 years	1
Male	Non-clinical	0-11 months	1
Female	Clinical	0-11 months	1
Male	Non-clinical	1-2 years	2
Male	Non-clinical	10-20 years	1
Male	Non-clinical	3-5 years	1

Table 1: Participant demographics

First Order Factor	Sub-factor	Factor Description
1 RESOURCE PROVISION	1.1 Securing funding	This factor refers to the CEO function of securing funding for the SPI programme and allocating financial and human resources to aid the implementation and continuation of the programme.
	1.2 Resource allocation	
2 STAFF MOTIVATION & ENGAGEMENT	2.1 Motivation & empowerment of staff	This factor describes CEOs motivating, involving and engaging clinical staff with the SPI programme through communication, methods of empowerment and reinforcement.
	2.2 Shared dialogue	
	2.3 Reinforcement of staff involvement	
3 COMMITMENT & SUPPORT	3.1 Display of visible commitment	This factor refers to the CEOs' demonstration of their own commitment to the programme along with the CEOs' role of support (not through resources) to clinical staff involved in SPI. This includes "*creating the right environment"* for staff and *"selling"* the programme to them.
	3.2 Creation of right environment/climate	
	3.3 Directing staff & stating purpose	
4 MONITORING PROGRESS	4.1 Reviewing SPI measures	This factor illustrates the CEO activity of monitoring programme outcome measures and regularly requesting and reviewing overall performance on SPI, as well as indirectly generating accountability on progress.
	4.2 Performance management	

5 EMBEDDING PROGRAMME ELEMENTS	5.1 Strategy & agenda change	This factor comprises of changes made by the CEOs to strategies, agendas and processes in order to integrate SPI procedures and practices into them, so that they are sustained.
	5.2 Process adjustment	

Table 2: Factors and sub-factors associated with CEO role in SPI

First Order Factor	Sub-factor	Example Quotes
1 RESOURCE PROVISION	1.1 Securing funding	*"we would probably take a paper to our trust executive group shortly after that with a decision…whether to continue on the current method, if so, are we going to internally fund it"* (Interviewee 6) *"obviously once the pilot's ongoing, it's over to us. We did make a decision to put aside a £200,000 patient safety reserve, a SPI reserve if you like, to fund the consequences of any initiatives that might come out or any requirements that might come out."* (Interviewee 7)
	1.2 Resource allocation	*"we resourced the central office, if you want to call it that, and tried to ensure that people had time, and energy, and the desire to do the right thing there."* (Interviewee 16) *"You have to do it and do it well and do it properly and fully and resource it properly. And I guess the NHS as a whole and to some extent us as well have a history of getting in to projects, not resourcing them properly, and then doing them half heartedly. And then they never work and you wonder why, and the answer's bloody obvious actually. But they won't let you do that with SPI."*(Interviewee 12)
2 STAFF MOTIVATION & ENGAGEMENT	2.1 Motivation & empowerment of staff	*"I think we created the appetite. Nobody was knocking on our door saying they wanted to do patient safety so we created the appetite. So I guess that was top down."* (Interviewee 9) *"what I'm majoring on is attitude and behaviour"* (Interviewee 3) *"we changed some of the delegations and then we've slowly over time relaxed those to try and increase level of autonomy..So I suppose it was part of me trying to free up people's thinking actually..my first couple of meetings saying, well what 8 of those at 300 quid? Well do it you know and they just found that really liberating because that meant they made some really big strides in the middle of the project."* (Interviewee 14)
	2.2 Shared dialogue	*"what I see it [my role] as doing is setting an example that's about having the right dialogue.. And once you've got that engagement, and you've got that dialogue, these issues become central to the debate."* (Interviewee 16)

		"talking to the staff actually and more importantly listening to the staff about what's going on. You always learn such a lot..When did you last have an incident? What was, what caused it? What did you do about it?.. How many opportunities do you get to raise these sorts of issues?" (Interviewee 13) *"They [walkarounds] help the visibility mantra which everybody says about executive teams don't they? They have been an interesting cross check about the things that you think are going on in the organisation"* (Inteviewee 17)
	2.3 Reinforcement of staff involvement	*"clearly if they've [clinical staff] not been following our policies in terms of hand washing and so on, they'll be disciplined. Simple as that..I've got nurses ringing me up saying I've told a doctor off, he hasn't changed his behaviour and we're now following that up..They've been talked to..some of that is about saying, excuse me, but you are doing this actually."* (Interviewee 3) *"what I then used..saying right where are all the surgical CDs who are looking at their shoes, why aren't you doing it? And next time we meet to talk about this I want to know your experiences on how you do it, so you sort of try and create a purpose to it"* (Interviewee 14) *"initially it was more around initial conversation with [director name] and getting him on board"* (Interviewee 16)
3 COMMITMENT & SUPPORT	3.1 Display of visible commitment	*"If they don't see you believe in it, why the hell should they struggle?"* (Interviewee 2) *"I think the most important role is to be seen to be committed to it.. It's all very well being a figurehead, but this doesn't allow you to get away with just turning up for the celebratory glass of wine or whatever it is. You've actually got to be in there and do it"*(Interviewee 12) *"we've puffed our chests up and said we are serious about this and then we have to follow through. But what's interesting now that we are*

		following through, people believe it and there is a visible, noticeable difference in the last two or three weeks out there on the wards in terms of consultants, they're taking their ties off, they're rolling their shirts up, they're washing their hands and people are challenging." (Interviewee 3)
	3.2 Creating the right environment/climate	*"What a Chief Executive has to do is to build a coalition of support to a broad framework within which people work."* (Interviewee 15) *"And it's about creating the right climate..in some respects I created a climate of restraint"* (Interviewee 14)
	3.3 Directing staff & stating purpose	*"We're a unified board. And one of the things I was keen that we did was to make this something that the whole board was interested in and not just the acute hospital because some of the learning will run across other parts of our service out in the community. So from day one we put together a very broad communication."* (Interviewee 9) *"we have a five year vision that actually can be brought down to one sheet of paper. Eventually it will be in several vehicles, it will be a glossy document that will be presented to all new staff, that will be brought out at the start of any project meeting...on the one page one, the work SPI appears..So a Chief Executive has to do some top down things, about setting a tone, setting a direction...The first one [task], to adopt it, to take advice, to accept advice. The second one, then, is to learn enough about it that you can speak authoratively. Chief Executives have to be able to speak about everything for 90 seconds..so a Chief Executive needs to have a 90 second elevator speech..that you can turn to a group of doctors, in the right situation, and say SPI is really the thing because, and then you list whatever"* (Interviewee 15)
4 MONITORING PROGRESS	4.1 Reviewing SPI measures	*"we are seeing well populated Run Charts, we're being able to use and understand the data more effectively, both at a senior level and within the teams."* (Interviewee 9) *"I'm regularly looking at the information that is produced from it, I wouldn't say I'm looking at the data itself...It's normally a presentation, or patient story, or something like that..so that's changed the Board in that you're not straight into finance..But whether we're hugely different to*

		where we were 18 months ago, I don't know really."(Interviewee 10) *"at the breakfast meetings we go through, we go through all the [SPI] measures"* (Interviewee 7)
	4.2 Performance management	*"we've got a different design for our performance management.. data points that will be demonstrated for assurance purposes at the board."* (Interviewee 3) *"I think it's in our operational plan, it's a performance measure in there, so therefore, when we meet the divisions on a monthly basis, one of the things we'll be asking them for is their SPI measures."* (Interviewee 10)
5 EMBEDDING PROGRAMME ELEMENTS	5.1 Strategy & agenda change	*"for me, it's, it'll be a way of doing things, integrated into where we are, and it has to be key item on every agenda, the things that's shaping the debate."* (Interviewee 16) *"I had to make some clear statements from the word go about where it [SPI] was on the agenda, so it was, it has been the first item on the Management Board agenda for the last 18 months. The patient SPI, right, where are we, what have we achieved, what are we doing?..we've set, tried to set it in the strategic context of what the Trust is doing. The Trust Board adopted a new mission statement..that there would be three main themes..and one of them was the Safer Patient Initiative and patient safety."* (Interviewee 13)
	5.2 Structure change & embedding for sustainability	*"make sure that the elements of SPI that we keep are integrated into our performance management regime."* (Interviewee 4) *"the way we've rolled out SPI..we integrated it into people's directorate objectives, that's why we keep the profile up."* (Interviewee 5) *"that's how you begin..you narrow the gap between the activities of the initiative and disciplines around directorate management and delivery, you narrow that by drawing it together and holding people to account for outcomes"* (Interviewee 14)

Table 3: Factor Example Quotes

BMJ open

The self-reported role of chief executive officers in a quality improvement initiative: a qualitative study

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The self-reported role of chief executive officers in a quality improvement initiative: a qualitative study

ABSTRACT

Objectives: To identify the critical dimensions of hospital Chief Executive Officers' (CEOs) involvement in a quality and safety initiative: the Safer Patients Initiative (SPI), and to offer practical guidance to assist CEOs to fulfil their leadership role in quality improvement.

Design: Qualitative interview study.

Setting: 20 organisations participating in the main phase of the SPI programme across the UK.

Participants: 17 Chief Executive Officers overseeing 19 organisations participating in the main phase of the SPI programme and 36 staff (20 workstream leads, 10 coordinators, and six managers) involved in SPI across all 20 participating organisations.

Main outcome measure: Self-reported perceptions of CEOs on their contribution and involvement within the SPI programme, supplemented by staff peer-reports.

Results: The CEOs in this study recognised the importance of their part in the SPI programme and gave detailed accounts of the perceived value that their involvement had brought at all stages of the process: from the initial application of the initiative, through overseeing and encouraging the process, to its sustainability after resources diminish. In exploring the parts played by the CEOs, five dimensions were identified: 1)resource provision; 2)staff motivation & engagement; 3)commitment & support; 4)monitoring progress; and 5)embedding programme elements. Staff reports confirmed these dimensions, however the weighting of the dimensions differed.

Conclusion: This study has attempted to address the call for more research-informed practical guidance on the role of senior management in QI initiatives and identify dimensions of CEO involvement within SPI. It draws on empirical material from multiple healthcare settings to present the CEOs' key participation that they considered to significantly contribute towards the programme and new evidence for specific critical dimensions of their involvement. Illustration of the type of

involvement that these executives engaged in imparts guidance for other managers at this level opting into a similar intervention.

ARTICLE SUMMARY

Article Focus

- To qualitatively identify the perceived critical dimensions of hospital Chief Executive Officers (CEOs) involvement in a quality and safety initiative: the Safer Patients Initiative (SPI).

Key Messages

- The findings show that the CEOs provided key participation that they and others considered to significantly contribute towards the SPI programme.
- Five primary managerial roles within the SPI programme were identified: 1)resource provision; 2)staff motivation & engagement; 3)commitment & support; 4)monitoring progress; and 5)embedding programme elements.
- Queries raised are on the tangible benefits of the executives' changing structures & embedding for sustainability and on practical steps to creating the "right" environment for QI.

Strengths & limitations of this study

- This study addresses the call for more research-informed practical guidance on the role of senior management in QI initiatives. It makes an evidence-based contribution to the quality debate around leadership in healthcare by drawing on original empirical material collected across 20 UK healthcare settings. The findings impart guidance for other managers at this level opting into a similar intervention and outline certain actions pertaining to different stages of the programme.
- The CEOs' self-reports may be subject to social desirability bias. Similarly, self-selecting bias may derive from the fact that the CEOs volunteered for the high-profile initiative, arguably leading to an over-estimation of the involvement that senior managers at this level would typically engage in within most improvement initiatives within their Trusts. However we have

tried to lessen this limitation with supplementary analysis with staff views of those involved in SPI.

- No association can be made between the CEOs' dimensions and the successes/failures of the SPI programme.

FUNDING

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COMPETING INTERESTS

There are no competing interests.

INTRODUCTION

The number of quality improvement initiatives in the healthcare sector is growing rapidly. They share in common, a goal to improve processes, structures and systems through continuous quality improvement techniques in order to improve outcomes of care.[1-3] Research examining these programmes and larger-scale collaboratives have found some evidence of their impact;[4] their sustainability;[5 6] and economic benefits.[7-9]

Literature discussing what makes these initiatives effective and sustainable often make mention of the essential contribution of senior management.[10] The type and degree of support from management was one of five areas suggested to affect the effectiveness of a quality collaborative by a collective group of quality improvement experts.[11] This echoes earlier research findings on this subject.[12] In a review of healthcare Board level and senior management behaviours associated with quality improvement outcomes, Øvretveit (2009) identified a plethora of studies that impart the importance of managerial involvement and engagement in quality and safety improvement.[13] Actions frequently referenced as beneficial included displays of senior management commitment and support [14] and creating the right culture.[15] However, Øvretveit concludes that there is little research-based practical guidance to outline

the details of the senior management role in leading improvement and calls for more academic research on this topic.[13] This study intends to answer this call by exploring the self-reported participation of Chief Executive Officers (CEOs) involved in the second phase of an organisation-wide quality and safety collaborative, the Safer Patients Initiative (SPI), to better understand the role of Board level senior managers within such initiatives.

The Safer Patients Initiative and our previous research

Funded by the UK Health Foundation, the Safer Patients Initiative (SPI) was developed by the Institute for Healthcare Improvement (IHI). It was piloted with four UK NHS organisations in its first phase (2004-2006) and applied at a further 20 in its second phase (2006-2008).[16 17] Designed to achieve improvements in patient safety, SPI attempted to make changes at an organisational level and in front line care processes within four clinical areas through implementing a number of clinical working practices with continuous quality improvement and process measurement techniques. The main elements of the SPI programme are outlined below in Box 1. Today, much of the principles of SPI have continued with 18 of the involved organisations opting in to the follow-up initiative 'The Safer Patients Network'.

In our previous research, we have investigated individual topics concerning the SPI programme, including organisational readiness for SPI, clinicians' engagement with SPI, leadership walkrounds prescribed by SPI, and predictors and perceptions of impact of SPI. In the pilot phase of SPI, survey responses by those involved (clinical leads, coordinators and management) rated senior management support as the highest ranking strength in the implementation of SPI,[18] whilst qualitative analyses revealed manager involvement as a reported facilitator of medical engagement in SPI.[19] This involvement comprised of allocating resources, having good management-doctor relationships, and commitment at executive management level. As a highly focused topic within a smaller sample, it would be useful to find out whether the dimension of medical engagement emerges as an essential aspect of CEO involvement within the programme. Similarly, the broad indication of commitment and support at senior management offer a good starting point to investigate what dimensions potentially

contribute to their involvement being rated as a strength of programme implementation. Other interview findings at this phase emerge from examination of the impact of SPI, showing that senior managers helped to remove barriers and empower staff to change processes through events such as leadership walk-rounds.[20] In research on the main phase of SPI, we extracted further perspectives on leadership walkarounds that revealed that they can help executives learn about their organisations and help clinical staff overcome misperceptions of the executives and raise hidden issues and overcome bureaucracy.[21] In light of these findings, it is likely that leadership walkrounds will feature as a critical dimension of CEO involvement in SPI. Our present study intends to find what other dimensions exist and how they are related. In our longitudinal quantitative work, programme implementation factors, including senior management processes, were found to contribute significantly to change in organisational safety climate and capability linked to programme milestones, above and beyond the effects of programme contextual factors and organisational preconditions.[22] However, here we do not learn which senior management processes are perceived to be important. In other examination across two time points, we identified strategies for sustaining SPI that were reported to require senior management help on financial and human resources for the programme.[23] While not always identified by the coordinators as a senior management function, a few facilitating strategies appeared to be those within the remit of management action or authorisation, such as incorporating elements into induction and training. We need to explore further to find out whether these indeed are senior management activities or not. In addition, the coordinators considered 'management involvement' generally to facilitate continuation of the programme and suggested that it was essential to feedback to senior management to keep SPI aims high on their agendas to improve their understanding and enthusiasm for the programme. Exploring CEO actions may highlight the reasons why this is important, for example whether feedback elicited follow-up actions by the managers. Other generic findings from investigation at the main phase revealed executive management commitment to quality as a strength of the programme according to ratings from both senior management and frontline staff.[24] Similarly to our other studies, what possible acts took place was not within the scope of this quantitative study.

On the whole, our previous research has suggested an importance in managerial involvement and commitment in SPI and identified a few potential dimensions of this involvement. Some of these findings however have grouped different positions of management together and all of them were restricted by a specific subject of analysis. What is missing then is a study to detail the parts played by senior management. Many have offered countless assumptions that senior management should lead quality improvement and proposed suggestions of how to lead,[25] but we intend to offer evidence on the critical dimensions of their actual involvement rather than opinions on what this should be. Our specific research aims are to identify the critical dimensions of hospital CEOs involvement in SPI, and to offer practical guidance and classifications that will assist CEOs to fulfil their leadership role in quality improvement.

—Box 1—

METHODS

Sample

Setting

Interviews were carried out across all 20 NHS hospitals participating in the second phase of the SPI programme across four geographical locations in the UK: England, Northern Ireland, Scotland and Wales. The hospitals varied in terms of type (e.g. teaching) and size. The biggest participating Trust[1] had a total of 22,000 staff (not all of their hospitals were involved in SPI) and the smallest had 2,100 staff (est. June 2008). Two Trusts each had two hospitals involved in SPI.

Participants

[1] *A Trust is a public sector organisations led by a Board that manages one or more hospitals to ensure their quality and financial performance and service developments*

A purposive sampling strategy across all 20 organisations aimed to include the Chief Executive Officers at all of the participating organisations. These senior managers were often involved in the 'Leadership workstream' that governed the SPI programme across all of the clinical workstreams in which it was implemented. This workstream were advised to walk around the hospital in "Leadership Walkrounds" and to have a strategic prioritisation of quality and safety.

Seventeen interviews were conducted with CEOs representing 19 of the 20 hospitals participating in the SPI programme. There were only 17 participants because one CEO did not participate in the interviews (we have reason to believe this was because s/he was busy in the process of moving on to another Trust), and two of the CEOs managed more than one participating hospital. Specifically, every Trust was managed by a different CEO and only two Trusts had more than one hospital participating in the SPI programme, therefore two CEOs oversaw two hospitals participating in SPI, while the rest each oversaw one participating hospital. Please see Table 1 for participant demographics.

—Table 1—

Supplementary analysis was carried out on 36 interviews with staff involved in the SPI to verify/challenge the CEO self reports. This comprised 20 workstream clinical leads (five per workstream), 10 programme coordinators, and six management (two directors of nurses, two medical directors, a general manager, and a clinical governance manager), which amounted to two interviewees per CEO, including the CEO not interviewed.

Procedure

The data collection period was between April-August 2008 towards the official end of the SPI programme and comprised of face-to-face interviews lasting approximately between 45-60 minutes.

Interviewees were shown a research information sheet, briefed on their anonymity and asked to sign a form consenting to audio recording the interviews for transcription and analysis. A standardised semi-structured interview topic schedule was used by two interviewers (pairings of five different researchers, JB, AP, SB, SI, APo), which addressed the senior managerial role along with a host of issues regarding the programme. This is because, as shown in the introduction, the study investigated a number of issues surrounding SPI of which the senior management role was one topic of investigation. Example questions directly asking CEOs about their role included: *"What are your main responsibilities?"* and *"how were/are you involved in SPI?"* and for other staff: *"how was/is your senior management/executives involved in SPI?"*

Data Analysis

The interviews were transcribed by professional transcribers. Qualitative analysis, based on content and grounded theory analysis, was performed with the aid of NVivo 8 software.[26 27] The 17 CEO transcripts were divided by the five researcher interviewers so that three of the researchers content analysed three transcripts each (JB, SB, SI) and two researchers content analysed four transcripts each (AP, APo). This content analysis comprised of identifying any text, indirect or direct, pertaining to the executives' involvement (actions, work or contributions) within the SPI programme. This resulted in one Nvivo node (code) containing all references to CEOs involvement. Open coding was then carried out by one researcher (AP) on this node as well as on all of the CEO transcripts in order to both compare with the other researchers' inclusions that they identified the text as CEO involvement and to be carry out a thorough analysis in order not to overlook any relevant text. At this stage of analysis, more specific codes were identified in accordance with the aim to draw out the critical dimensions or roles of CEO involvement in SPI. Therefore, codes related to perceptions of CEO contributions and actions were identified. The importance of their involvement in the SPI programme, and barriers and enablers were also coded to provide additional contextual information to the managers' roles. All references coded concerned the managers' actual involvement/contributions and barriers or enablers faced, as opposed to their opinions on what managers in their position should do or would likely face.

Next, individual codes were grouped into related themes in order to build a model of the main dimensions and their sub dimensions. No previous theory was used to analyse the data, all categories were developed from the data. After iterative refinement of the relationships, a model was identified that consisted of the critical dimensions of the CEOs involvement within the SPI programme, based on the CEOs' reports. To ensure reliability of coding and interpretation, a sample of data fragments were checked and resolved through dialogue with other members of the team and the model was considered by external members of the team for their opinion on whether the sub dimensions have face validity under the chosen dimensions. Next, the same analysis (bar the initial content analysis) was carried out on staff transcripts. The dimensions from the staff reports were compared with the model that emerged from the self reports. The sample per Trust did not allow for robust contextual or organisational comparisons. The findings section pertains to the CEO reports, with a supplementary summary of the reports by staff.

FINDINGS

The levels of involvement in the programme varied between the executives, however all gave accounts of the value that they believed to have brought at all stages of the process. They considered their involvement in the initiative as a significant influence on the potential for programme success/failure.

"I went away on leave, came back, and it had just all gone downhill because I wasn't there." (Interviewee 8)

The most reported barrier to their involvement was their time constraints to participate within programme efforts, which was often attributed to the demands of managing a large Trust. Facilitators of their engagement included early involvement in the process (from helping at the application stage or/and from attending the first learning session), learning about the programme (such as the quality improvement techniques, the targets set, the support networks available, and the motivational impetus delivered by IHI) and having other executives and staff engaged with the programme were described

as. It became apparent that some CEOs delegated their Clinical Director or Medical Director to enact the critical dimensions mentioned by other CEOs.

> *"the [x] Trust has a turnover of £[x], and therefore directors in the [x] Trust fulfil the role that might in smaller organisations be occupied by Chief Executives. So the Medical Director has really been my deputy, my representative at all those things."* (Interviewee 15)

> *"it's really important the Board is engaged early on in a real way and that the Board begins to see the data."* (Interviewee 3)

Five primary managerial roles within the SPI programme were identified (presented in Table 2). These dimensions are described within this section along with example quotations provided in Table 3. In terms of weighting, the dimensions 'commitment & support' and 'monitoring progress' were referred to by almost all CEOs. Most CEOs also discussed 'embedding programme elements' and 'staff motivation & engagement'. Resource provision was mentioned less than the others, but was still referenced by well over more than half of the CEOs and consequently stands firm as a critical dimension of CEO involvement in SPI. Although not discretely, our findings show some indication of the stages in which CEOs most get involved in these dimensions, most notably resource allocation before the start and (to a lesser extent) at the end of the programme, followed by engagement, motivation, commitment and support for staff, and towards the end of the process the CEOs are more likely to engage in decisions and strategies to embed the programme elements in order to sustain it.

—Table 2—

1. RESOURCE PROVISION

Funding to support the SPI programme was deemed important and many CEOs saw it as their task to secure and provide it and recognised this as one of their considerable contributions to the programme.

This took two forms: their activities to bid and secure funding (both at the application stage of SPI and for its continuation) and their authorisation of resources (both financial and human resources). Each organisation involved in the programme were provided with an allotted sum of money (approx. £270,000 per hospital) and external resources, such as external monitoring by IHI. After the official two year period of implementation, withdrawal of these resources instigated plans to ensure that resources covered by initial funding and support could be continued. The most common resources authorised by CEOs for the SPI programme were: time allowed for SPI work and training; data collection and data support personnel; and an SPI coordinator to oversee the project.

2. STAFF MOTIVATION AND ENGAGEMENT

The CEOs described activities that empowered, motivated and reinforced staff involvement with the SPI programme. In accounts of motivating staff, the CEOs described *"creating an appetite"* and "*free[ing] up peoples thinking",* reporting an aim of changing staff attitudes to improve behaviour towards the programme. Their actions to empower staff included providing autonomy through allowing them more power to authorise resources. Particularly when describing motivating or empowering actions, the CEOs detailed the benefits they gained from listening to the frontline to get their input on safety issues. Leadership walkrounds were considered a particularly useful tool for shared dialogue and as a listening exercise. The walkaround involved speaking with frontline staff across the hospital and was the principal activity of the CEOs position in the 'leadership workstream'. Communicating with staff was particularly useful in attempting to encourage their engagement with the programme, through conversations on issues arising from implementation of programme elements and reinforcing behaviours including expressions of vocal encouragement or disapproval of non-compliance. At times the CEOs were called in to deal with resistance to the programme, whereby they would either discuss the situation with the resisters, attempt to instil a sense of purpose, or in the worst case, threaten disciplinary measures for not adhering to SPI practices. Doctors were singled out as the profession with the most resistors, therefore facilitating doctor engagement was a commonly cited role. Mention was also made of encouraging Board buy-in. The Board is made up of executives (including the CEO) and non-executives and, through regular meetings they collectively oversee,

offer direction and are responsible for the financial and quality performance of the hospitals within their Trust. Therefore, they hold crucial control over the activities, culture and quality and safety of their organisations and consequently their engagement is likely to be influential. CEOs engaged the Board through discussions at meetings, those CEOs who attended SPI learning sessions to learn about relevant improvement practices reported that their learning helped when engaging others, as they were more knowledgeable on various aspects of the programme, such as quality improvement techniques and targets set.

3. COMMITMENT & SUPPORT

All 17 CEOs unanimously agreed on the importance of their commitment and most believed that, in some way, they acted as a support to staff implementing the programme. Some CEOs described acting as a role model to others and many agreed on the powerful effects that their visible commitment has had. Demonstrations of commitment included some of their aforementioned actions: attending learning sessions; emphasising the purpose of SPI; attending leadership walkrounds; integrations of safety into the Board agenda such as safety stories at meetings and prioritising it on the agenda; speaking at sessions to explain the programme; and providing approval for SPI related practices. These were considered demonstrations of commitment to SPI because they required observable effort by the CEOs to prioritise, promote and become involved in the programme. Some made the point that acting as a figurehead is not enough, instead that the outlined acts of commitment need to follow. A few described the potential for loss of momentum if their commitment was absent, illustrated by examples of times CEOs were unavailable to commit. A few of the interviewees recognised their role in creating the right climate and environment for others to undertake the programme work effectively, however they fell short of offering detailed description of what this actually involved. The interviewees reported to further aid their staff with statements of purpose and direction. This endeavor has also been referred to as *"selling"* the process. This was done through disseminating the programme aims and targets via workshops to staff and presentations to the Board. The CEOs also increased their involvement when SPI work activity was not heading in the right direction.

4. MONITORING

Monitoring the progress of the initiative was a frequently reported activity. The CEOs monitored progress by reviewing SPI outcome measures at Board meetings. Often in the form of presentations, safety-style dashboards and Run Charts,(23) outcomes were reviewed on a weekly or quarterly basis, depending on the Trust. This took the form of processed information rather than raw data. While regularly reviewed, it was not always analysed or actioned, however many CEOs agreed that it both raised awareness and flagged safety issues, as well as offering the Board an opportunity to prioritise, openly discuss, understand and address trouble areas. Monitoring of progress was not only to explore challenges, but also as way of ensuring targets were met. It was additionally considered as a method of increasing frontline staff compliance indirectly through feedback at Board/project meetings on whether staff were complying with SPI prescribed activities. Accountability was also said to be generated at these meetings through assessment of targets met and actions delivered. The CEOs primary intention to monitor the process and its key indicators was to become familiar with the programme and to keep track of progress rather than to improve compliance. Timeframes were set by the workstream leads and coordinators but CEOs would query the programme leads if they were falling behind on self-imposed deadlines and targets. Outside of the meetings, the CEOs did not audit the programme's progress or compliance to it, instead they relied on the implementers of the programme to report back on these, especially if there were any problems.

5. EMBEDDING PROGRAMME ELEMENTS

Many CEOs discussed changing system processes and strategies in order to facilitate change necessary for new SPI activity and procedures. Embedding them into existing systems and processes was considered the most efficient way to sustain practices and the most cited approach used. Changing strategies and agendas, particularly at the Board level, was carried out to help integrate the SPI programme, because, through adding SPI objectives (i.e. patient safety) high on the agenda and amending strategies to focus on SPI prescribed activity and aims, it raised the profile of SPI/patient safety targets and created plans to achieve them. Examples included adding SPI targets into mission statements and strategic objectives. Integration of programme elements into existing systems involved

amendments to processes, such as changes to performance management systems and strengthening lines of accountability associated with targeted outcomes. Putting reporting mechanisms in place and incorporating SPI elements into other existing initiatives, such as LEAN, were other frequently quoted methods of integration, as was including practices into staff objectives and individual performance management.

—Table 3—

Staff reports of dimensions of CEO involvement in SPI

Overall, the reports from the clinical workstream leads, programme coordinators and other managers involved in the SPI programme suggested that executive involvement in the programme was important. The dimensions of CEO involvement can be closely matched to those that emerged from the self-reports, however, different weightings were placed on the dimensions to those offered by the CEOs' transcripts and a couple of sub-dimensions did not present themselves in the additional analysis. The most referenced dimension in the staff reports was of 'commitment & support', followed by the majority referencing 'monitoring progress' and over half reporting 'staff motivation & engagement', yet 'resource provision' was mentioned by only a quarter of the interviewees almost solely referring to allocation of resources (i.e data collection, IT help and backfill time) rather than securing funding. Even fewer mentioned the action and benefits of the CEOs embedding programme elements, with no mention of their activities to change structures and embed programme elements for sustainability, instead mentions were of agenda change alone. No new dimensions emerged from the staff data, only a few activities not mentioned in the self reports. Despite the difference in weighting of the dimensions, the peer reports substantiated the activities reported by the CEOs, such as their work towards the application of the programme, attendance at learning sessions and leadership walkrounds (initially considered apprehensively by many frontline staff but later welcomed). Moreover, the peer reports offered further insight into why CEO involvement was important and what each dimension offered to them. For example, staff feedback and presentation to the CEOs on SPI

data measures (in the form of high level data and metrics in Run Charts and traffic light measures) and summaries of progress and future plans (through verbal presentations and written reports), were reported to provide awareness, recognition, solutions and direction from the CEOs. These were considered invaluable, especially the recognition of staff work, and staff conveyed their wish to avoid disappointing the CEO. This suggests that subtle acts of listening to presentations, reading reports, understanding and acknowledging the difficulties faced in implementation and the strides made were all benefits grained from CEOs monitoring data and attending meetings. The CEOs may not realise the strength of such straightforward acts that are often not as tangible as other reported actions, such as putting measures on the Trust Board dashboard. As such, the peer-reports offer an enlightening perspective on the involvement by CEOs that differs from the CEO reports. Whilst most staff agreed that their CEO was engaged in the process and that their described commitment was valuable, they also portrayed the role of the CEO as secondary and supplementary to their own role in SPI. That is, the staff recognised themselves as the true implementers of the programme, while the CEOs were perceived to be best placed to offer assistance in the form of organisation-wide messages (statements of importance of the programme), recognition, direction, and trouble shooting. Although the CEOs did not make references to being involved in the groundwork, nor did they state whether they felt involved adequately, opinions on these emerged clearly from the analysis of the staff interviews with expressions of a preference for more involvement by their CEO on the dimensions outlined or more from this involvement. For example, remarks cited the disappointment at the lack of feedback and actions following the walkrounds and, whilst the walkrounds were conveyed as a mark of commitment and examples supported CEOs claims that they empowered staff at the frontline to authorise resources and fix problems themselves, this was not viewed as empowering by all, but rather as CEOs disregarding the opportunity to action organisation-wide changes. Alongside this, some reluctance to ask for help was communicated by the staff. Speculation over why there was less involvement than desired by their CEOs insinuated that they were preoccupied with organizational restructures and foundation status or other higher priorities, that they had superficial reasons for being involved (i.e. funding and profile), and that they were only concerned with a couple of aspects of the whole programme (meetings and walkrounds). Lastly, the peer reports highlighted the following

activities and benefits of the CEO involvement that were not emphasised by the CEOs themselves: ensuring the right people are nominated for the programme, acting as a figurehead when IHI visited and meeting with the CEO of their paired SPI organisation (the 20 organisations paired up to share learning), maintaining external links with primary care Trusts, and offering an organisational perspective across all four workstreams. Please see Table 4 for example quotations for each dimension of CEO involvement, further details on the nuances from the peer reports will be reported elsewhere.

—Table 4—

DISCUSSION

All of the CEOs in this study recognised the importance of their part in the SPI programme. The executives gave detailed accounts of their activities and perceived value they brought to all of the different stages of the process: from the initial application to start the initiative, through overseeing and encouraging the process, to its sustainability after resources diminished. This supports proposals that senior management make a significant contribution to quality and safety improvement initiatives in the healthcare setting.[11-13] In exploring the parts played by the chief executive officers, five critical dimensions were identified: 1)resource provision; 2)staff motivation & engagement; 3)commitment & support; 4)monitoring progress; and 5)embedding programme elements. Staff views of CEO involvement closely matched the dimensions that emerged from the self-reports by the CEOs, however, the dimensions of embedding for sustainability and resource provision did not surface as markedly and the weighting of the dimensions differed from the CEOs' reports. The findings from both analyses further infer that Medical or Clinical Directors may subsume these outlined critical dimensions and that much of the dimensions of CEO involvement transfer to other Board members.

Studying the components of the senior management role in a hospital setting in the US, Bradley et al (2003) identified that the following manager-related variables affected their quality improvement (QI) initiative: senior management engagement; management's relationship with clinical staff; the promotion of an organisational culture of QI; support of QI with organisational structures; and procurement of organisational resources for QI.[10] Our findings considerably overlap with theirs, although interestingly our CEOs made more reference to their role as a monitor of the process. This included reviewing SPI measures and ensuring that programme targets were met. While CEOs reported all inward facing benefits for the Board (i.e. raising awareness of safety issues, trends and providing an opportunity for open discussion), the staff reported different benefits comprising recognition, solutions and direction. Further understanding of the benefits and beneficial ways of monitoring could assist managers on how to best carry out this task.

Managerial commitment was an expected finding considering literature support for this inside and outside of healthcare.[28 29] We identified manifestations of commitment from: attending SPI learning sessions; leadership walkrounds; prioritising safety on the Board agenda; talks explaining the programme; stamps of approval for programme practices; and stating its purpose. On the latter, research has implied the relevance of senior managerial influences in building the right culture for improvement.[15] Whilst a few of the interviewees recognised their responsibility in this, neither they nor the staff define these activities. Recent articles offer managerial actions on producing a good patient safety culture,[30] but less is known on creating the right culture for QI.

There is much recognition that QI initiatives require an open and mutual communication between management and clinical staff.[31 32] Our interviewees emphasised that the benefits of shared dialogue with clinical staff was both to receive input on quality and safety and to engage staff. Indeed, senior managers have been identified as holding a facilitating responsibility,[33 3435] including research from another study on the first phase of the SPI programme showing importance of management involvement and commitment.[19] The present study confirms the earlier conclusions and shows that this entails motivating and empowering staff by providing them with more autonomy, reinforcing SPI

compliant behaviours and attendance at the learning sessions to learn about improvement practices. Such learning is supported by studies that recommend managers to enhance their QI knowledge.[13] CEOs involvement in resource provision is also supported by research proposals that senior managers' activities for safety include granting resources for a comprehensive safety programme and permitting staff time for safety.[36] Although the staff reports did not make many references to this dimension, others suggest that healthcare managers focus on finance for QI.[31] Our findings show that the most common resources authorised by CEOs for the SPI programme were time allowed for SPI work and training, data collection and data analysis support personnel, information technology tools, and an SPI coordinator to oversee the project. However, these were mostly prescribed by IHI, and, while CEOS were happy with their distribution, they otherwise may have chosen different areas to resource.

Finally, a role reported by the CEOs as essential to achieving sustained learning and outcomes involved embedding SPI activity and procedures into existing organisational systems, strategies and processes. However, apart from references to changing Board agendas, staff made no mention of any of these strategies in relation to CEO involvement. This may be because the aspects of CEO involvement is mostly unseen by staff or that CEOs have either communicated their tasks differently or exaggerated their work on this. Recommendations based on these findings are to: modify Board agendas and prioritise safety; integrate programme targets into mission statements and strategic objectives; strengthen lines of accountability and introduce reporting mechanisms associated with programme outcomes; and incorporate programme approaches into other existing initiatives. Change of structures and systems by management has been shown to assist in the sustainability of QI programmes.[10] In other analyses of the SPI programme, its integration within organisational structures and processes featured dominantly within strategies to sustain it.[23] Such tasks arguably fit within the remit of senior management and further support the argument that their activity is relevant to collaborative methods being sustained, even if it may or may have not been in this case study.[11]

Limitations

It is important to highlight that this research does not provide any association between the CEOs' roles and successes/failures of the SPI programme. It instead describes the CEOs' self-reported contribution to the programme. These self-reports may be subject to social desirability bias, especially as the interviewees were involved in the application process to secure implementation and additional programme funding. In a previous research survey of 635 of the SPI participators (including the CEOs), not only did senior management and frontline staff have many divergent views on the programme's strengths, weaknesses and impact, but also the senior managers held overall more positive views than the frontline.[22 24] Equally, the fact that this sample volunteered for this high-profile initiative brings with it a self-selecting bias that is arguably likely to have led to an over-estimation of the involvement that senior managers at this level would typically engage in within most improvement initiatives in their Trusts. However we have tried to lessen this limitation with supplementary analysis with staff views of those involved in SPI. Another note worthy point is that the SPI programme achievements remain unclear. In a large formal evaluation of hospitals involved in the SPI programme, while gains in quality and safety were found, the gains were no larger than in the control hospitals that were not involved in the programme.[37] The difficulty, however, in ascertaining the impact of such programmes has been duly noted.[4 38] In particular, there may have been improvements in specific areas in some hospitals which were not detected by the broader evaluation. The evaluators themselves further noted that large scale effects may take a longer time to surface.[37] As the SPI as a programme did not demonstrate overall improvement or elucidate which organisations performed better than others, it is difficult to link CEO self-perceptions with formal outcomes, and the existing data does not show clear enough trends for this analysis. In the future, the framework presented here could provide the basis for a quantitative assessment of CEO engagement, which might be linked to trends in process and outcome changes in future programmes. Future work could also explore patterns of the types of CEO involvement across successful and unsuccessful sites. Lastly, the sample size is relatively small yet can be judged respectable when considering that the interviewees included all but one of the CEOs in charge of all of the NHS Trusts that participated within SPI across the UK and when considering the low number of CEOs in the wider UK population

compared with other healthcare professionals. Nevertheless, a larger sample that is less homogenous would have strengthened the study and its findings.

Conclusion

This study has attempted to address the call for more research-informed practical guidance on the role of senior management in QI initiatives and specifically identify critical dimensions of CEO involvement within the Safer Patients Initiative. It makes an evidence-based contribution to the quality debate around leadership in healthcare by drawing on original empirical material collected across 19 healthcare settings to present the reports of 17 chief executive officers on how they added to the undertaking of a high-profile organisation-wide QI collaborative. The findings show that the CEOs provided key participation that they considered to significantly contribute towards the SPI programme. The reports reinforce conclusions in change management and the safety literature that have stressed the importance of CEO involvement, and further provide new evidence for specific critical dimensions of CEO involvement. Queries raised are on the tangible benefits of the executives' programme monitoring actions and on practical steps to creating the "right" environment for QI. In providing a case-study illustration of the type of involvement that senior management engage in within an improvement collaborative, and at what stages certain actions took place, the study imparts guidance for other managers at this level opting into a similar intervention.

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CONTRIBUTORS

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ETHICS APPROVAL

Ethical approval was obtained from the NHS National Research Ethics Service Leicestershire, Northamptonshire and Rutland Research Ethics Committee 2. Reference no. 07/H0402/69.

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SPI Aims
• Mortality: 15% reduction
• Adverse events: 30% reduction
• Ventilator-associated pneumonia: 0 or 300 days between
• Central line bloodstream infection: 0 or 300 days between
• Blood sugars within range (intensive care): 80% or more within range
• MRSA bloodstream infection: 50% reduction
• Crash calls: 30% reduction
• Harm from anticoagulation: 50% reduction in adverse events
• Surgical site infections: 50% reduction
Workstreams *(example change elements)*
• Perioperative care *(deep vein thrombosis prophylaxis, beta-blocker use)*
• Medicines management (medicines reconciliation, anticoagulants)
• General ward care *(early warning systems, rapid response team, hand hygiene)*
• Critical care *(ventilator bundle, central line bundle, daily goal sheets)*
• Leadership *(leadership walk-rounds, strategic prioritisation of quality and safety)*
Programme tools and methodology:
• Continuous quality improvement: semi-autonomous teams
• PDSA cycles and small tests of change
• Incremental spread to successively larger work systems
• Process measurement and analysis of run charts to determine effects
• Expert faculty support from IHI (site visits, conference calls, online email support)
• Large-scale learning sessions for multi-disciplinary improvement teams
• Online extranet for uploading and comparing process data with monthly feedback
• Collaborative learning community for networking and sharing best practices

Box 1: The Safer Patients Initiative - A Description

Table 1: Participant demographics

Gender	Clinical/Non-clinical Background	Tenure in Trust	No of SPI Hospitals Overseen by CEO
Male	Non-clinical	6-9 years	1
Male	Non-clinical	0-11 months	1
Female	Clinical	21 or more years	1
Male	Non-clinical	3-5 years	1
Male	Non-clinical	1-2 years	1
Female	Non-clinical	1-2 years	2
Male	Non-clinical	6-9 years	1
Male	Non-clinical	0-11 months	1
Male	Non-clinical	3-5 years	1
Female	Non-clinical	10-20 years	1
Female	Non-clinical	10-20 years	1
Male	Non-clinical	6-9 years	1
Male	Non-clinical	0-11 months	1
Female	Clinical	0-11 months	1
Male	Non-clinical	1-2 years	2
Male	Non-clinical	10-20 years	1
Male	Non-clinical	3-5 years	1

First Order Dimension	Sub-dimension	Dimension Description
1 RESOURCE PROVISION	1.1 Securing funding	This factor refers to the CEO function of securing funding for the SPI programme and allocating financial and human resources to aid the implementation and continuation of the programme.
	1.2 Resource allocation	
2 STAFF MOTIVATION & ENGAGEMENT	2.1 Motivation & empowerment of staff	This factor describes CEOs motivating, involving and engaging clinical staff with the SPI programme through communication, methods of empowerment and reinforcement.
	2.2 Shared dialogue	
	2.3 Reinforcement of staff involvement	
3 COMMITMENT & SUPPORT	3.1 Display of visible commitment	This factor refers to the CEOs' demonstration of their own commitment to the programme along with the CEOs' role of support (not through resources) to clinical staff involved in SPI. This includes "*creating the right environment"* for staff and *"selling"* the programme to them.
	3.2 Creation of right environment/climate	
	3.3 Directing staff & stating purpose	
4 MONITORING PROGRESS	4.1 Reviewing SPI measures	This factor illustrates the CEO activity of monitoring programme outcome measures and regularly requesting and reviewing overall performance on SPI, as well as indirectly generating accountability on progress.
	4.2 Performance management	
5 EMBEDDING	5.1 Strategy & agenda change	This factor comprises of changes made

PROGRAMME ELEMENTS	5.2 Structure change & embedding for sustainability	by the CEOs to strategies, agendas and processes in order to integrate SPI procedures and practices into them, so that they are sustained.

Table 2: Dimensions and sub-dimensions associated with CEO role in SPI

First Order Dimension	Sub-dimension	Example Quotes
1 RESOURCE PROVISION	1.1 Securing funding	*"we would probably take a paper to our Trust executive group shortly after that [the end of IHI involvement in the programme] with a decision…whether to continue on the current method [SPI approach], if so, are we going to internally fund it"* (Interviewee 6) *"We did make a decision to put aside a £200,000 patient safety reserve, a SPI reserve if you like, to fund the consequences of any initiatives that might come out or any requirements that might come out."* (Interviewee 7)
	1.2 Resource allocation	*"we resourced the central office, if you want to call it that, and tried to ensure that people had time, and energy, and the desire to do the right thing there."* (Interviewee 16) *"You have to do it and do it well and do it properly and fully and resource it properly. And I guess the NHS as a whole and to some extent us as well have a history of getting in to projects, not resourcing them properly, and then doing them half heartedly. And then they never work and you wonder why, and the answer's bloody obvious actually. But they won't let you do that with SPI."*(Interviewee 12)
2 STAFF MOTIVATION & EfNGAGEMENT	2.1 Motivation & empowerment of staff	*"I think we created the appetite. Nobody was knocking on our door saying they wanted to do patient safety so we created the appetite. So I guess that was top down."* (Interviewee 9) *"we've slowly over time ..[delegated work].. to try and increase level of autonomy..So I suppose it was part of me trying to free up people's thinking actually..my first couple of meetings saying, well what [is] 8 of those at 300 quid? Well do it you know and they just found that really liberating because that meant they made some really big strides in the middle of the project."* (Interviewee 14)
	2.2 Shared dialogue	*"what I see it [my role] as doing is setting an example that's about having the right dialogue.. And once you've got that engagement, and you've got that dialogue, these issues become central to the debate."* (Interviewee 16)

		"talking to the staff actually and more importantly listening to the staff about what's going on. You always learn such a lot..When did you last have an incident? What was, what caused it? What did you do about it?.. How many opportunities do you get to raise these sorts of issues?" (Interviewee 13) *"They [walkrounds] help the visibility mantra which everybody says about executive teams don't they? They have been an interesting cross check about the things that you think are going on in the organisation"* (Inteviewee 17)
	2.3 Reinforcement of staff involvement	*"clearly if they've [clinical staff] not been following our policies in terms of hand washing and so on, they'll be disciplined. Simple as that..I've got nurses ringing me up saying I've told a doctor off, he hasn't changed his behaviour and we're now following that up..They've been talked to..some of that is about saying, excuse me, but you are doing this actually."* (Interviewee 3) *"what I then used..saying right where are all the surgical CDs who are looking at their shoes, why aren't you doing it? And next time we meet to talk about this I want to know your experiences on how you do it, so you sort of try and create a purpose to it"* (Interviewee 14) *"initially it was more around initial conversation with [director name] and getting him on Board"* (Interviewee 16)
3 COMMITMENT & SUPPORT	3.1 Display of visible commitment	*"If they don't see you believe in it [SPI], why the hell should they struggle?"* (Interviewee 2) *"I think the most important role is to be seen to be committed to it [SPI].. It's all very well being a figurehead, but this doesn't allow you to get away with just turning up for the celebratory glass of wine or whatever it is. You've actually got to be in there and do it"*(Interviewee 12) *"we've puffed our chests up and said we are serious about this and then we have to follow through. But what's interesting now that we are following through, people believe it and there is a visible, noticeable difference in the last two or three weeks out there on the wards in terms of*

		consultants, they're taking their ties off, they're rolling their shirts up, they're washing their hands and people are challenging." (Interviewee 3)
	3.2 Creating the right environment/climate	*"What a Chief Executive has to do is to build a coalition of support to a broad framework within which people work."* (Interviewee 15) *"And it's about creating the right climate..in some respects I created a climate of restraint"* (Interviewee 14)
	3.3 Directing staff & stating purpose	*"one of the things I was keen that we did was to make this something that the whole Board was interested in and not just the acute hospital because some of the learning will run across other parts of our service out in the community. So from day one we put together a very broad communication."* (Interviewee 9) *"we have a five year vision that actually can be brought down to one sheet of paper. Eventually it will be in several vehicles, it will be a glossy document that will be presented to all new staff, that will be brought out at the start of any project meeting...on the one page one, the work SPI appears..So a Chief Executive has to do some top down things, about setting a tone, setting a direction...The first one [task], [is] to adopt it [SPI], to take advice, to accept advice. The second one, then, is to learn enough about it that you can speak authoratively. Chief Executives have to be able to speak about everything for 90 seconds..so a Chief Executive needs to have a 90 second elevator speech..that you can turn to a group of doctors, in the right situation, and say SPI is really the thing because, and then you list whatever"* (Interviewee 15)
4 MONITORING PROGRESS	4.1 Reviewing SPI measures	*"we are seeing well populated Run Charts, we're being able to use and understand the data more effectively, both at a senior level and within the teams."* (Interviewee 9) *"I'm regularly looking at the information that is produced from it [SPI], I wouldn't say I'm looking at the data itself...It's normally a presentation, or patient story, or something like that..so that's changed the Board [agenda] in that you're not straight into finance..But whether we're hugely different to where we were 18 months ago, I don't know really."*(Interviewee 10)

		"at the breakfast meetings..we go through all the [SPI] measures" (Interviewee 7)
	4.2 Performance management	*"we've got a different design for our performance management.. data points that will be demonstrated for assurance purposes at the Board."* (Interviewee 3) *"I think it's [SPI is]in our operational plan, it's a performance measure in there, so therefore, when we meet the divisions on a monthly basis, one of the things we'll be asking them for is their SPI measures."* (Interviewee 10)
5 EMBEDDING PROGRAMME ELEMENTS	5.1 Strategy & agenda change	*"for me, it's, it'll [SPI will]be a way of doing things, integrated into where we are, and it has to be key item on every agenda, the things that's shaping the debate."* (Interviewee 16) *"I had to make some clear statements from the word go about where it [SPI] was on the agenda, so it was, it has been the first item on the Management Board agenda for the last 18 months. The patient SPI, right, where are we, what have we achieved, what are we doing?..we've set, tried to set it in the strategic context of what the Trust is doing. The Trust Board adopted a new mission statement..that there would be three main themes..and one of them was the Safer Patient Initiative and patient safety."* (Interviewee 13)
	5.2 Structure change & embedding for sustainability	*"[we need to] make sure that the elements of SPI that we keep are integrated into our performance management regime."* (Interviewee 4) *"the way we've rolled out SPI..we integrated it into people's directorate objectives, that's why we keep the profile up."* (Interviewee 5) *"that's how you begin..you narrow the gap between the activities of the initiative and disciplines around directorate management and delivery, you narrow that by drawing it together and holding people to account for outcomes"* (Interviewee 14)

Table 3: Dimensions and Sub-dimensions Example Quotes – CEO Self Reports

First Order Dimension	Example Quotes
1 RESOURCE PROVISION	*"Any other support [from Board and CEO] has been around trying to acquire resources, so for instance there's a large infection control component and .. we've had a nurse on this site who's been collecting information around central lines, VAPs and so on and they haven't had that resource on the other site, because we were two separate trusts. So they collected their data on VAPs and other infections in a different way. Because we're one trust now and we're taking this forward, we want to have the same process on all the sites, so that's where the management are essential, so it's that sort of financial and resource support"* (Trust 12, clinical lead, critical care) *"some of the changes that we've needed with IT and that I have pushed up to the leadership because it's not something I've been able to influence really."* (Trust 17, clinical lead, medicines management)
2 STAFF MOTIVATION & ENGAGEMENT	*"they're [executives are] well equipped to give that person the idea of how to put it right themselves. Which really empowers them more and makes them feel an awful lot better, because then they realise that they can actually sort the problem out themselves, and they didn't have to go to somebody quite high up the board to get it sorted. It was something that they could have done themselves."* (Trust 8, clinical lead, critical care) *"we've got leadership rounds, and that's made a big difference to identifying the problems on the wards, but actually some of the problems have been given back to the wards when really we should be saying, this is common across the Trust, let's solve it by the Trust."* (Trust 13, clinical lead, medicines management) *"We had such a problem with infection here, we were just desperate to do something about it and quite a lot of the, my more dapper colleagues, were very reluctant to shed their nice suits and shirts and, or to roll up the sleeves on their shirts because they didn't think it looked professional.. all the problems evaporated when the chief executive sent out an email inviting for a one-to-one interview any clinician who didn't wish to follow this particular policy, and I believe no one took her up on it."* (Trust 16, clinical lead, general wards)

3 COMMITMENT & SUPPORT	*"I certainly know that our Chief Executive has met with all the consultants in small groups..certainly [CEO] has said himself, if you've got problems then you come directly to me. If it's Safer Patient then you get straight access to me, and that has been really encouraging."* (Trust 1, clinical lead, general wards) *"we would feedback the activities from the previous month, our anticipation of what would happen the following month and any issues that we were faced with, that we needed support from the leadership team. And whether that was a resource issue or something about can't get clinicians involved, whatever and that was fine"* (Trust 14, director of nursing)
4 MONITORING PROGRESS	*"there's a quarterly report to the Trust Board.. the chief exec does a section as part of his report each month. And then [name] or I, or both, go and talk about something specific every quarter. So in December, it was the walk rounds and what we'd done there. And in, three months after that, whatever it was, March, February, March, we presented to them he Run Charts. And next time we'll do something different"* (Trust 9, general manager) *"[with CEO and management team] we will go through.. our traffic light measures.. which would show all of our measures then and then where we are with them. Green, we're passing the Run Chart rows, and the amber, where we aren't passing the rows just yet, and then the red is if we haven't got any data points against it.. what we do is pick on, put together a progress report, which is then brought to a trust board.. and generally during the meeting we can raise any concerns we may have about certain, about if there's any measures that we're struggling with"* (Trust 10, programme coordinator)
5 EMBEDDING PROGRAMME ELEMENTS	*"our new chief exec has made sure that safety is put on the agenda first, so she's also a very good driving force for it"* (Trust 8, programme coordinator) *"Go back, ask them to give you the board agendas for about the last 18 months and you tell me where you see clinical governance. It was always down the pecking order.. it's now on the agenda, it's on the agenda as patient, as the SPI thing.. I've got the support of the chief exec"* (Trust 11, managing director)

Table 4: Dimensions Example Quotes – Staff Peer Reports

The self-reported role of chief executive officers in a quality improvement initiative: a qualitative study

ABSTRACT

Objectives: To identify~~explore~~ the ~~role~~ critical dimensions of hospital Chief Executives~~'~~ Officers' (CEOs) involvement in a quality and safety initiative: the Safer Patients Initiative (SPI), and to offer practical guidance to assist CEOs to fulfil their leadership role in quality improvement.~~,~~

Design: Qualitative interview study.

Setting: ~~19~~ 20 organisations participating in the main phase of the SPI programme across the UK.

Participants: 17 Chief Executive Officers overseeing 19 organisations participating in the main phase of the SPI programme~~,~~ and 36 staff (20 workstream leads, 10 coordinators, and six managers) involved in SPI across all 20 participating organisations.

Main outcome measure: Self-reported perceptions of CEOs on their contribution and involvement within the SPI programme~~,~~, supplemented by staff peer-reports.

Results: The CEOs in this study recognised the importance of their part in the SPI programme and gave detailed accounts of the perceived value that their involvement~~y believed to have~~ had brought at all ~~of the different~~ stages of the process: from the initial application of the initiative, through overseeing and encouraging the process, to its sustainability after resources diminish. In exploring the parts played by the CEOs, five ~~primary roles~~ dimensions were identified: 1)resource provision; 2)staff motivation & engagement; 3)commitment & support; 4)monitoring progress; and 5)embedding programme elements. Staff reports confirmed these dimensions, however the weighting of the dimensions differed.

Conclusion: This study has attempted to address the call for more research-informed practical guidance on the role of senior management in QI initiatives and identify ~~critical~~ dimensions of CEO involvement within ~~the Safer Patients Initiative~~PI. It draws on empirical material from ~~19~~ multiple healthcare settings to present ~~the reports of 17 CEOs on how they added to the undertaking of an organisation-wide quality and safety collaborative. The findings suggest show that t~~the CEOs'

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provided key participation within the SPI programme and that they considered to significantly contribute towards the SPIthe programme and further provide new evidence for specific critical dimensions of CEOtheir involvement.their reported actions were ones that were considered significant to their perceived achievements of the programme. Illustration of the type of involvement that these executives engaged in imparts guidance for other managers at this level opting into a similar intervention.

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ARTICLE SUMMARY

Article Focus

- To qualitatively explore identify the self perceived role critical dimensions of hospital Chief Executive Officers (CEOs) involvement in a quality and safety initiative: the Safer Patients Initiative (SPI).

Key Messages

- The findings show that the CEOs provided key participation that they and others considered to significantly contribute towards the SPI programme.The findings suggest that the CEOs provided key participation within the SPI programme and their reported actions are ones that were considered significant to their perceived achievements of the programme.
- Five primary managerial roles within the SPI programme were identified: 1)resource provision; 2)staff motivation & engagement; 3)commitment & support; 4)monitoring progress; and 5)embedding programme elements.
- Queries raised are on the tangible benefits of the executives' changing structures & embedding for sustainability programme monitoring actions and on practical steps to creating the "right" environment for QI.

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Strengths & limitations of this study

- This study addresses the call for more research-informed practical guidance on the role of senior management in QI initiatives. It makes an evidence-based contribution to the quality

debate around leadership in healthcare by drawing on original empirical material collected across ~~19~~ 20 UK healthcare settings ~~to present the reports of 17 chief executives on how they added to the undertaking of a high-profile organisation-wide QI collaborative~~. The findings impart guidance for other managers at this level opting into a similar intervention and outline certain actions pertaining to different stages of the programme.

- The CEOs' self-reports may be subject to social desirability bias. Similarly, self-selecting bias may derive from the fact that the CEOs volunteered for the high-profile initiative, arguably leading to an over-estimation of the involvement that senior managers at this level would typically engage in within most improvement initiatives within their Trusts. However we have tried to lessen this limitation with supplementary analysis with staff views of those involved in SPI.
- No association can be made between the CEOs' ~~roles~~ dimensions and the successes/failures of the SPI programme.

FUNDING

This work was supported by the Health Foundation and the National Institute for Health Research.

COMPETING INTERESTS

There are no competing interests.

INTRODUCTION

The number of quality improvement initiatives in the healthcare sector is growing rapidly. They share in common, a goal to improve processes, structures and systems through continuous quality improvement techniques in order to improve outcomes of care.[1-3] ~~[1-3]~~ Research examining these programmes and larger-scale collaboratives have found some evidence of their impact;[4] ~~[4]~~ their sustainability;[5 6] ~~[5, 6]~~ and economic benefits.[7-9] ~~[7-9]~~

Literature discussing what makes these initiatives effective and sustainable often make mention of the essential contribution of senior management.[10] ~~[10]~~ The type and degree of support from management was one of five areas suggested to affect the effectiveness of a quality collaborative by a collective group of quality improvement experts.[11] ~~[11]~~ This echoes earlier research findings on this subject.[12] ~~[12]~~ In a review of healthcare Board level and senior management behaviours associated with quality improvement outcomes, Øvretveit (2009) identified a plethora of studies that impart the importance of managerial involvement and engagement in quality and safety improvement.[13] ~~[13]~~ Actions frequently referenced as beneficial included displays of senior management commitment and support [14] ~~[14]~~ and creating the right culture.[15] ~~[15]~~ However, Øvretveit concludes that there is little research-based practical guidance to outline the details of the senior management role in leading improvement and calls for more academic research on this topic.[13] ~~[13]~~

This study ~~aims~~ intends to answer this call by exploring the self-reported participation of Chief Executive Officers (CEOs) involved in the second phase of an organisation-wide quality and safety collaborative, the Safer Patients Initiative (SPI), to better understand the role of Board level senior managers within such initiatives.

~~aim to offer rather than opinions on what this should be.~~

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The Safer Patients Initiative and our previous research

Funded by the UK Health Foundation, the Safer Patients Initiative (SPI) was developed by the Institute for Healthcare Improvement (IHI). It was piloted with four UK NHS organisations in its first phase (2004-2006) and applied at a further 20 in its second phase (2006-2008).[16 17] ~~(Taitz, Lee et al. 2012), (Bradley, Holmboe et al. 2003; Øvretveit 2009)~~ ~~[16, 17]~~ Designed to achieve improvements in patient safety, SPI attempted to make changes at an organisational level and in front line care processes within four clinical areas through implementing a number of clinical working practices with continuous quality improvement and process measurement techniques. The main elements of the SPI

programme are outlined below in Box 1. Today, much of the principles of SPI have continued with 18 of the involved organisations opting in to the follow-up initiative 'The Safer Patients Network'.

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In our previous research, we have investigated individual topics concerning the SPI programme, including organisational readiness for SPI, clinicians' engagement with SPI, leadership walkrounds prescribed by SPI, and predictors and perceptions of impact of SPI. In the pilot phase of SPI, survey responses by those involved (clinical leads, coordinators and management) rated senior management support as the highest ranking strength in the implementation of SPI,[18] whilst qualitative analyses revealed manager involvement as a reported facilitator of medical engagement in SPI.[19] This involvement comprised of allocating resources, having good management-doctor relationships, and commitment at executive management level. As a highly focused topic within a smaller sample, it would be useful to find out whether the dimension of medical engagement emerges as an essential aspect of CEO involvement within the programme. Similarly, the broad indication of commitment and support at senior management offer a good starting point to investigate what dimensions potentially contribute to their involvement being rated as a strength of programme implementation. Other interview findings at this phase emerge from examination of the impact of SPI, showing that senior managers helped to remove barriers and empower staff to change processes through events such as leadership walk-rounds.[20] In research on the main phase of SPI, we extracted further perspectives on leadership walkarounds that revealed that they can help executives learn about their organisations and help clinical staff overcome misperceptions of the executives and raise hidden issues and overcome bureaucracy.[21] In light of these findings, it is likely that leadership walkrounds will feature as a critical dimension of CEO involvement in SPI. Our present study intends to find what other dimensions exist and how they are related. In our longitudinal quantitative work, programme implementation factors, including senior management processes, were found to contribute significantly to change in organisational safety climate and capability linked to programme milestones, above and beyond the effects of programme contextual factors and organisational preconditions.[22] However, here we do not learn which senior management processes are perceived to be important. In other examination across two time points, we identified strategies for sustaining SPI

that were reported to require senior management help on financial and human resources for the programme.[23] While not always identified by the coordinators as a senior management function, a few facilitating strategies appeared to be those within the remit of management action or authorisation, such as incorporating elements into induction and training. We need to explore further to find out whether these indeed are senior management activities or not. In addition, the coordinators considered 'management involvement' generally to facilitate continuation of the programme and suggested that it was essential to feedback to senior management to keep SPI aims high on their agendas to improve their understanding and enthusiasm for the programme. Exploring CEO actions may highlight the reasons why this is important, for example whether feedback elicited follow-up actions by the managers. Other generic findings from investigation at the main phase revealed[23] executive management commitment to quality as a strength of the programme according to ratings from both senior management and frontline staff.[24] Similarly to our other studies, what possible acts took place was not within the scope of this quantitative study.

On the whole, our previous research has suggested an importance in managerial involvement and commitment in SPI and identified a few potential dimensions of this involvement. Some of these findings however have grouped different positions of management together and all of them were restricted by a specific subject of analysis. What is missing then is a study to detail the parts played by senior management. Many have offered countless assumptions that senior management should lead quality improvement and proposed suggestions of how to lead,[25] but we intend to offer evidence on the critical dimensions of their actual involvement rather than opinions on what this should be. Our specific research aims are to identify the critical dimensions of hospital CEOs involvement in SPI, and to offer practical guidance and classifications that will assist CEOs to fulfil their leadership role in quality improvement.

~~**The Safer Patients Initiative**~~

~~Funded by the UK Health Foundation, the Safer Patients Initiative (SPI) was developed by the Institute for Healthcare Improvement (IHI). It was piloted with four UK NHS organisations in its first~~

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~~phase (2004-2006) and applied at a further 20 in its second phase (2006-2008).[16, 17] Designed to achieve improvements in patient safety, SPI attempted to make changes at an organisational level and in front line care processes within four clinical areas through implementing a number of clinical working practices with continuous quality improvement and process measurement techniques. The main elements of the SPI programme are outlined below in Box 1. Today, much of the principles of SPI have continued with 18 of the involved organisations opting in to the follow-up initiative 'The Safer Patients Network'.~~

—Box 1—

METHODS

Sample

Setting

Interviews were carried out across all ~~19 of the~~ 20 NHS hospitals participating in the second phase of the SPI programme across four geographical locations in the UK: England, Northern Ireland, Scotland and Wales. The hospitals varied in terms of type (e.g. teaching) and size. The biggest participating Trust[1] had a total of 22,000 staff (not all of their hospitals were involved in SPI) and the smallest had 2,100 staff (est. June 2008). Two Trusts each had two hospitals involved in SPI.

Participants

A purposive sampling strategy across all 20 organisations aimed to include the Chief Executive Officers at all of the participating organisations. These senior managers were often involved in the 'Leadership workstream' that governed the SPI programme across all of the clinical workstreams in which it was implemented. This workstream were advised to walk around the hospital in "Leadership ~~Walkarounds~~Walkrounds" and to have a strategic prioritisation of quality and safety.

[1] *A Trust is a public sector organisations led by a Board that manages one or more hospitals to ensure their quality and financial performance and service developments*

Seventeen interviews were conducted with CEOs representing 19 of the 20 hospitals participating in the SPI programme. There were only 17 participants because one CEO did not participate in the interviews (we have reason to believe this was because s/he was busy in the process of moving on to another Trust), and two of the CEOs managed more than one participating hospital ~~and~~. Specifically, ~~one CEO did not participate in the interviews~~ every Trust was managed by a different CEO and only two Trusts had more than one hospital participating in the SPI programme, therefore two CEOs oversaw two hospitals participating in SPI, while the rest each oversaw one participating hospital. ~~(p~~Please see Table 1 for participant demographics~~).~~.

—Table 1—

Supplementary analysis was carried out on 36 interviews with staff involved in the SPI to verify/challenge the CEO self reports. This comprised 20 workstream clinical leads (five per workstream), 10 programme coordinators, and six management (two directors of nurses, two medical directors, a general manager, and a clinical governance manager), which amounted to two interviewees per CEO, including the CEO not interviewed.

Procedure

The data collection period was between April-August 2008 towards the official end of the SPI programme and comprised of face-to-face interviews lasting approximately between 45-60 minutes. Interviewees were shown a research information sheet, briefed on their anonymity and asked to sign a form consenting to audio recording the interviews for transcription and analysis. A standardised semi-structured interview topic schedule was used by two interviewers (pairings of five different researchers, JB, AP, SB, SI, APo), which addressed the senior managerial role along with a host of issues regarding the programme. This is because, as shown in the introduction, the study investigated a number of issues surrounding SPI of which the senior management role was one topic of

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investigation.~~[21, 23](Berwick 1989; Langley 1996)[18, 19]~~ Example questions directly asking CEOs about their role included: *"What are your main responsibilities?"* and *"how were/are you involved in SPI?"* and for other staff: *"how was/is your senior management/executives involved in SPI?"*

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Data Analysis

The interviews were transcribed by professional transcribers. Qualitative analysis, based on content and grounded theory analysis, was performed with the aid of NVivo 8 software.[26 27]~~[20, 21]~~ The 17 CEO transcripts were divided by ~~The transcripts were initially content analysed by~~ the five researcher interviewers so that three of the researchers content analysed three transcripts each (JB, SB, SI) and two researchers content analysed four transcripts each (AP, APo). ~~-~~This content analysis comprised of identifying any ~~aspects~~text, indirect or direct, pertaining to the executives' ~~work towards~~involvement (actions, work or contributions) within the SPI programme. ~~Each transcript was coded for direct and indirect references to their involvement.~~This resulted in one Nvivo node (code) containing all references to CEOs involvement. ~~-~~Open coding was then carried out by one researcher (AP) on this node as well as on all of the CEO transcripts in order to both compare with the other researchers' inclusions that they identified the text as CEO involvement and to be carry out a thorough analysis in order not to overlook any relevant text. At this stage of analysis, more specific codes were identified in accordance with the aim to draw out the critical dimensions or roles of CEO involvement in SPI. Therefore, ~~-C~~codes related to ~~CEOs'~~ perceptions of ~~the importance of their involvement in the SPI programme, their~~ CEO contributions and actions were identified~~,~~. The importance of their involvement in the SPI programme, and b~~b~~arriers~~/~~ and enablers ~~and activities associated with the programme~~were also coded to provide additional contextual information to the managers' roles. All references coded concerned the managers' actual involvement/contributions and barriers or enablers faced, as opposed to their opinions on what managers in their position should do or would likely face. Next, ~~Axial~~ individual ~~coding~~ codes ~~was~~ were ~~performed to~~ grouped ~~and~~ into related ~~the emerging~~ themes in order to build a model of the main dimensions and their sub dimensions. No previous theory was used to analyse the data, all categories were developed from the data. After iterative

refinement of the relationships, a model was identified that consisted of ~~factors and sub-factors emerged on~~ the ~~role~~ critical dimensions of the CEOs involvement within the SPI programme, based on the CEOs' reports. To ensure reliability of coding and interpretation, a sample of data fragments were checked and resolved through dialogue ~~within~~ with other members of the ~~multi-disciplinary~~ team and the model was considered by external members of the team for their opinion on whether the sub dimensions have face validity under the chosen dimensions. Next, the same analysis (bar the initial content analysis) was carried out on staff transcripts. The dimensions from the staff reports were compared with the model that emerged from the self reports. The sample ~~of one interviewer~~ per Trust did not allow for robust contextual or organisational comparisons. The findings section pertains to the CEO reports, with a supplementary summary of the reports by staff.

FINDINGS

The levels of involvement in the programme varied between the executives, however ~~almost~~ all gave ~~detailed~~ accounts of the value that they believed to have brought at all stages of the process. They considered their involvement ~~,~~ in the initiative as a significant influence on the potential for programme success/failure.

"I went away on leave, came back, and it had just all gone downhill because I wasn't there." (Interviewee 8)

The most reported ~~Barriers~~ barrier to their involvement ~~included~~ was their time constraints to participate within programme efforts, which was often attributed to the demands of manag~~ement of~~ing a large Trust ~~and their limited time~~. Facilitators of their engagement included ~~Whilst~~ early involvement in the process (from helping at the application stage or/and from attending the first learning session~~,~~), learning about the programme (such as the quality improvement techniques, the targets set, the support networks available, and the motivational impetus delivered by IHI) and having other executives and staff engaged with the programme were described as ~~facilitators of their engagement~~. It ~~was~~ became ~~recognised~~ apparent that some ~~in~~ CEOs ~~larger Trusts, CEOs reported a~~

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~~lesser contribution to the SPI programme, referring to~~delegated their Clinical Director or Medical Director ~~as more involved~~to enact ~~in the process~~the critical dimensions mentioned by other CEOs.

> *"the [x] Trust has a turnover of £[x], and therefore directors in the [x] Trust fulfil the role that might in smaller organisations be occupied by Chief Executives. So the Medical Director has really been my deputy, my representative at all those things."* (Interviewee 15)

> *"it's really important the Board is engaged early on in a real way ~~" (Interviewee 3)~~ and that the Board begins to see the data."* (Interviewee 3)

Five primary managerial roles within the SPI programme were identified (presented in Table 2). These ~~factors~~ dimensions are described within this section along with example quotations provided in Table 3. In terms of weighting, the ~~factors~~ dimensions 'commitment & support' and 'monitoring progress' were referred to by almost all CEOs. Most CEOs also discussed 'embedding programme elements' and 'staff motivation & engagement'. Resource provision was mentioned less than the others, but was still referenced by well over more than half of the CEOs and consequently stands firm as a critical dimension of CEO involvement in SPI.~~Resource provision was the theme that was least mentioned, but was still referenced by more than half of the CEOs.~~ Although not discretely, our findings show some indication of the stages in which CEOs most get involved in these dimensions, most notably resource allocation before the start and (to a lesser extent) at the end of the programme, followed by engagement, motivation, commitment and support for staff, and towards the end of the process the CEOs are more likely to engage in decisions and strategies to embed the programme elements in order to sustain it.

—Table 2—

1. RESOURCE PROVISION

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Funding to support the SPI programme was deemed important and many CEOs saw ~~this~~ it as their task to secure and provide it~~.~~ and~~They~~ recognised this as one of their considerable contributions to the programme. This took two forms: their activities to bid and secure funding (both at the application stage of SPI and for its continuation) and their authorisation of resources (both financial and human resources). Each organisation involved in the programme were provided with an allotted sum of money (approx. £270,000 per hospital) and external resources, such as external monitoring by IHI. After the official two year period of implementation, withdrawal of these resources instigated plans to ensure that resources covered by initial funding and support could be continued. The most common resources authorised by CEOs for the SPI programme were: time allowed for SPI work and training; data collection and data support personnel; and an SPI coordinator to oversee the project.

2. STAFF MOTIVATION AND ENGAGEMENT

The CEOs described activities that empowered, motivated and reinforced staff involvement with the SPI programme. In accounts of motivating staff, the CEOs described *"creating an appetite"* and "*free[ing] up peoples thinking",* reporting an aim of changing staff attitudes to improve behaviour towards the programme. Their actions to empower staff included providing autonomy through allowing them more power to authorise resources. Particularly when describing motivating or empowering actions, the CEOs ~~asserted~~ detailed the ~~importance~~ benefits they gained from~~of~~ listening to the frontline to get their input on safety issues. Leadership ~~walkarounds~~walkrounds were considered a particularly useful tool for shared dialogue and as a listening exercise. The walkaround involved speaking with frontline staff across the hospital and was the principal activity of the CEOs position in the 'leadership workstream'. ~~More benefits of the walkarounds in SPI are discussed elsewhere.[22]~~ Communicati~~on~~ng with staff was particularly ~~particularly described as key~~useful ~~to~~in attempting to encourage their engagement ~~staff engagement~~ with the programme, through conversations on issues arising from implementation of programme elements~~. CEOs~~ and reinforcing behaviours ~~included~~ including expressions of vocal encouragement or disapproval of non-compliance. At times the CEOs were called in to deal with resistance to the programme, whereby they would either discuss the situation with the resisters, attempt to instil a sense of purpose, or in the worst case,

threaten disciplinary measures for not adhering to SPI practices. Doctors were singled out as the profession with the most resistors, therefore facilitating doctor engagement was a commonly cited role. Mention was also made of encouraging Board buy-in. The Board is made up of executives (including the CEO) and non-executives and, through regular meetings~~.~~ they collectively oversee, offer direction and are responsible for the financial and quality performance of the hospitals within their Trust. Therefore, they hold crucial control over the activities, culture and quality and safety of their organisations and consequently their engagement is likely to be influential. CEOs engaged the Board through discussions at meetings, those CEOs who attended SPI learning sessions to learn about relevant improvement practices reported that their learning helped when engaging others, as they were more knowledgeable on various aspects of the programme, such as quality improvement techniques and targets set.

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3. COMMITMENT & SUPPORT

All 17 CEOs unanimously agreed on the importance of their~~executive~~ commitment and most believed that, in some way, they acted as~~were~~ a support to ~~frontline~~ staff implementing the programme. Some CEOs described acting as a role model to others and many agreed on the powerful effects ~~of~~ that their visible commitment has had. Demonstrations of commitment included some of their aforementioned actions: attending learning sessions; emphasising the purpose of SPI; attending leadership ~~walkarounds~~walkrounds; integrations of safety into the Board agenda such as safety stories at meetings and prioritising it on the agenda; speaking at sessions to explain the programme; and providing approval for SPI related practices. These were considered demonstrations of commitment to SPI because they required observable effort by the CEOs to prioritise, promote and become involved in the programme. Some made the point that acting as a figurehead is not enough, instead that the outlined acts of commitment need to follow. ~~They~~ A few ~~asserted~~ described the potential for ~~failure~~ loss of momentum if their commitment was absent, illustrated by examples of times CEOs were unavailable to commit. A few of the interviewees recognised their role in creating the right climate and environment for others to undertake the programme work effectively, however they fell short of offering detailed description of what this actually involved. The interviewees reported to further aid

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their staff with statements of purpose and direction. This endeavor has also been referred to as *"selling"* the process. This was done through disseminating the programme aims and targets via workshops to staff and presentations to the Board. The CEOs also increased their involvement when SPI work activity was not heading in the right direction.

4. MONITORING

Monitoring the progress of the initiative was a frequently reported activity. The CEOs monitored progress by reviewing SPI outcome measures at Board meetings. Often in the form of presentations, safety-style dashboards and Run Charts,(23) outcomes were reviewed on a weekly or quarterly basis, depending on the Trust. This took the form of processed information rather than raw data. While regularly reviewed, it was not always analysed or auctioned, ~~hand a couple of CEOs pointed out that it is not really driving change at the Board. H~~however~~,~~ many CEOs agreed that it both raised awareness and flagged safety issues, as well as offering the Board an opportunity to prioritise, openly discuss, understand and address trouble areas. Monitoring of progress was not only to explore challenges, but also as way of ensuring targets were met. It was additionally considered as a method of increasing frontline staff compliance ~~and~~ indirectly ~~generating accountability on programme leads for progress~~ through feedback at Board/project meetings on whether staff were complying with SPI prescribed activities. Accountability was also said to be generated at these meetings through assessment of targets met and actions delivered. The CEOs primary intention to monitor the process and its key indicators was to become familiar with the programme and to keep track of progress rather than ~~due to intentions~~ to improve compliance. Timeframes were set by the workstream leads and coordinators but CEOs would query the programme leads if they were falling behind on self-imposed deadlines and targets. Outside of the meetings, the CEOs did not audit the programme's progress or compliance to it, instead they relied on the implementers of the programme to report back on these, especially if there w~~as~~ere any problems.

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5. EMBEDDING PROGRAMME ELEMENTS

Many CEOs discussed changing system processes and strategies in order to facilitate change

necessary for new SPI activity and procedures. Embedding them into existing systems and processes was considered the most efficient way to sustain practices and the most cited approach used. Changing strategies and agendas, particularly at the Board level, was ~~believed~~ carried out to help integrate the SPI programme, because, through adding SPI objectives (i.e. patient safety) high on the agenda and amending strategies to focus on SPI prescribed activity and aims, it raised the profile of SPI/patient safety targets and created plans to achieve them. Examples included adding SPI targets into mission statements and strategic objectives. Integration of programme elements into existing systems involved amendments to processes, such as changes to performance management systems and strengthening lines of accountability associated with targeted outcomes. Putting reporting mechanisms in place and incorporating SPI elements into other existing initiatives, such as LEAN, were other frequently quoted methods of integration, as was including practices into staff objectives and individual performance management.

—Table 3—

Staff reports of dimensions of CEO involvement in SPI

Overall, the reports from the clinical workstream leads, programme coordinators and other managers involved in the SPI programme suggested that executive involvement in the programme was important. The dimensions of CEO involvement can be closely matched to those that emerged from the self-reports, however, different weightings were placed on the dimensions to those offered by the CEOs' transcripts and a couple of sub-dimensions did not present themselves in the additional analysis. The most referenced dimension in the staff reports was of 'commitment & support', followed by the majority referencing 'monitoring progress', and over half reporting 'staff motivation & engagement', yet 'resource provision' was mentioned by only a quarter of the interviewees almost solely referring to allocation of resources (i.e data collection, IT help and backfill time) rather than securing funding. Even fewer mentioned the action and benefits of the CEOs embedding programme elements, with no mention of their activities to change structures and embed programme elements for

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sustainability, instead mentions were of agenda change alone. No new dimensions emerged from the staff data, only a few activities not mentioned in the self reports. Despite the difference in weighting of the dimensions, the peer reports substantiated the activities reported by the CEOs, such as their work towards the application of the programme, attendance at learning sessions and leadership walkrounds (initially considered apprehensively by many frontline staff but later welcomed). Moreover, the peer reports offered further insight into why CEO involvement was important and what each dimension offered to them. For example, staff feedback and presentation to the CEOs on SPI data measures (in the form of high level data and metrics in Run Charts and traffic light measures) and summaries of progress and future plans (through verbal presentations and written reports), were reported to provide awareness, recognition, solutions and direction from the CEOs. These were considered invaluable, especially the recognition of staff work, and staff conveyed their wish to avoid disappointing the CEO. This suggests that subtle acts of listening to presentations, reading reports, understanding and acknowledging the difficulties faced in implementation and the strides made were all benefits grained from CEOs monitoring data and attending meetings. The CEOs may not realise the strength of such straightforward acts that are often not as tangible as other reported actions, such as putting measures on the Trust Board dashboard. As such, the peer-reports offer an enlightening perspective on the involvement by CEOs that differs from the CEO reports. Whilst most staff agreed that their CEO was engaged in the process and that their described commitment was valuable, they also portrayed the role of the CEO as secondary and supplementary to their own role in SPI. That is, the staff recognised themselves as the true implementers of the programme, while the CEOs were perceived to be best placed to offer assistance in the form of organisation-wide messages (statements of importance of the programme), recognition, direction, and trouble shooting. Although the CEOs did not make references to being involved in the groundwork, nor did they state whether they felt involved adequately, opinions on these emerged clearly from the analysis of the staff interviews with expressions of a preference for more involvement by their CEO on the dimensions outlined or more from this involvement. For example, remarks cited the disappointment at the lack of feedback and actions following the walkrounds and, whilst the walkrounds were conveyed as a mark of commitment and examples supported CEOs claims that they empowered staff at the frontline to

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authorise resources and fix problems themselves, this was not viewed as empowering by all, but rather as CEOs disregarding the opportunity to action organisation-wide changes. Alongside this, some reluctance to ask for help was communicated by the staff. Speculation over why there was less involvement than desired by their CEOs insinuated that they were preoccupied with organizational restructures and foundation status or other higher priorities, that they had superficial reasons for being involved (i.e. funding and profile), and that they were only concerned with a couple of aspects of the whole programme (meetings and walkrounds). Lastly, the peer reports highlighted the following activities and benefits of the CEO involvement that were not emphasised by the CEOs themselves: ensuring the right people are nominated for the programme, acting as a figurehead when IHI visited and meeting with the CEO of their paired SPI organisation (the 20 organisations paired up to share learning), maintaining external links with primary care Trusts, and offering an organisational perspective across all four workstreams. Please see Table 4 for example quotations for each dimension of CEO involvement, further details on the nuances from the peer reports will be reported elsewhere.

—Table 4—

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DISCUSSION

~~Almost a~~All of the CEOs in this study recognised the importance of their part in the SPI programme. The executives gave detailed accounts of their activities and perceived value they brought to all of the different stages of the process: from the initial application to start the initiative, through overseeing and encouraging the process, to its sustainability after resources diminished. This supports proposals that senior management make a significant contribution to quality and safety improvement initiatives in the healthcare setting.[11-13] ~~[11-13] Yet, our findings have also inferred that CEOs in bigger Trusts may have a lesser role to play than in smaller ones, especially if the CEO is in charge of more than one hospital. In these instances, the Medical or Clinical Director may subsume the outlined roles.~~

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~~This theory could be investigated with a more robust sample size.~~ In exploring the parts played by the chief executive officers, five ~~primary roles~~critical dimensions were identified: 1)resource provision; 2)staff motivation & engagement; 3)commitment & support; 4)monitoring progress; and 5)embedding programme elements. Staff views of CEO involvement closely matched the dimensions that emerged from the self-reports by the CEOs, however, the dimensions of embedding for sustainability and resource provision did not surface as markedly and the weighting of the dimensions differed from the CEOs' reports. The findings from both analyses further infer that Medical or Clinical Directors may subsume these outlined critical dimensions and that much of the dimensions of CEO involvement transfer to other Board members.

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Studying the components of the senior management role in a hospital setting in the US, Bradley et al (2003) identified that the following manager-related variables affected their quality improvement (QI) initiative: senior management engagement; management's relationship with clinical staff; the promotion of an organisational culture of QI; support of QI with organisational structures; and procurement of organisational resources for QI.[10] ~~(Schouten, Hulscher et al. 2008)[10]~~ Our findings considerably overlap with theirs, although interestingly our CEOs made more reference to their role as a monitor of the process. This included reviewing SPI measures and ensuring that programme targets were met. ~~This difference in finding may be attributable to the fact that the CEOs most often did not take any actions based on their monitoring behaviour. Dissimilarly to ours, Bradley et al's study interviewed 45 hospital staff, only five of whom were senior managers. Monitoring may then be a function that was seen most by the CEOs alone. R~~While CEOs reported all inward facing benefits for the Board (i.e.~~benefits of the monitoring role of~~ raising awareness of safety issues, trends and providing an opportunity for open discussion~~ were~~), the staff reported different benefits comprising recognition, solutions and direction~~ all inward facing benefits for the Board. Indeed, a couple of managers conceded that direct actions were not taken based on reviews.[27] Yet, performance assessment has been suggested as a significant managerial function in QI initiatives.[27][23]~~ Further

understanding of the benefits and beneficial ways of monitoring ~~are required in order to guide~~could assist managers on how to best carry out this task.

Managerial commitment was an expected finding considering ~~literary~~ literature support for this inside and outside of healthcare.[28 29] ~~[24, 25]~~ We identified manifestations of commitment from: attending SPI learning sessions; leadership ~~walkarounds~~walkrounds; prioritising safety on the Board agenda; talks explaining the programme; stamps of approval for programme practices; and stating its purpose~~, and creating the right climate/environment~~. On the latter, research has implied the relevance of senior managerial influences in building the right culture for improvement.[15] ~~[15]~~ Whilst a few of the interviewees recognised their responsibility in this, neither they nor the staff ~~did not~~ define ~~their~~ these activities. Recent articles offer managerial actions on producing a good patient safety culture,[30] ~~[26]~~ but less is known on creating the right culture for QI.~~[31]~~

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~~The manager-clinician relationship has been referred to as central to successful QI in the NHS,[32] [27] with~~There is much recognition that QI initiatives require an open and mutual communication between management and clinical staff.[31 32] ~~[28, 29]~~ Our interviewees emphasised that the benefits of shared dialogue with clinical staff was both to receive input on quality and safety and to engage staff. Indeed, senior managers have been identified as holding a facilitating responsibility,[33 34] ~~(Weiner, Shortell et al. 1997; Wilkinson, Powell et al. 2011; Taitz, Lee et al. 2012)[23, 30]~~[35] including research from another study on the first phase of the SPI programme showing importance of management involvement and commitment.[19] ~~[31]~~ The present study confirms the earlier conclusions and shows that this entails motivating and empowering staff by providing them with more autonomy, reinforcing SPI compliant behaviours and attendance at the learning sessions to learn about improvement practices. Such learning is supported by studies that recommend managers to enhance their QI knowledge.[13] ~~[13]~~ CEOs involvement in resource provision is also supported by research proposals

that senior managers' activities for safety include granting resources for a comprehensive safety programme and permitting staff time for safety.[36] ~~[32]~~ Although the staff reports did not make many references to this dimension, ~~Others~~ others ~~agree~~ suggest that healthcare managers focus on finance for QI.[31] ~~[28]~~ Our findings show that the most common resources authorised by CEOs for the SPI programme were time allowed for SPI work and training, data collection and data analysis support personnel, information technology tools, and an SPI coordinator to oversee the project. However, these were mostly prescribed by IHI, and, while CEOS were happy with their distribution, they otherwise may have chosen different areas to resource.

Finally, a role reported by the CEOs as essential to achieving sustained learning and outcomes involved embedding SPI activity and procedures into existing organisational systems, strategies and processes. However, apart from references to changing Board agendas, staff made no mention of any of these strategies in relation to CEO involvement. This may be because the aspects of CEO involvement is mostly unseen by staff or that CEOs have either communicated their tasks differently or exaggerated their work on this. Recommendations based on ~~our~~ these findings are to: modify Board agendas and prioritise safety; integrate programme targets into mission statements and strategic objectives; strengthen lines of accountability and introduce reporting mechanisms associated with programme outcomes; and incorporate programme approaches into other existing initiatives. Change of structures and systems by management has been shown to assist in the sustainability of QI programmes.[10] ~~[10]~~ In other analyses of the SPI programme, its integration within organisational structures and processes featured dominantly within strategies to sustain it.[23] ~~[33]~~ Such tasks arguably fit within the remit of senior management and further support the argument that their activity is relevant to collaborative methods being sustained, even if it may or may have not been in this case study.[11] ~~[11]~~

Limitations

It is important to highlight that this research does not provide any association between the CEOs' roles and successes/failures of the SPI programme. It instead describes the CEOs' self-reported contribution to the programme ~~and its self perceived achievements~~. These self-reports may be subject to social desirability bias, especially as the interviewees were involved in the application process to secure implementation and additional ~~supplementary~~ programme funding. In a previous research survey of 635 of the SPI participators (including the CEOs), not only did senior management and frontline staff have many divergent views on the programme's strengths, weaknesses and impact, but also the senior managers held overall more positive views than the frontline.[22 24] Equally, the fact that this sample volunteered for this high-profile initiative brings with it a self-selecting bias that is arguably likely to have led to an over-estimation of the involvement that senior managers at this level would typically engage in within most improvement initiatives in their Trusts. However we have tried to lessen this limitation with supplementary analysis with staff views of those involved in SPI. Another note worthy point is that the SPI programme achievements remain unclear. In a large formal evaluation of hospitals involved in the SPI programme, while gains in quality and safety were found, the gains were no larger than in the control hospitals that were not involved in the programme.[37] ~~[34]~~ The difficulty, however, in ascertaining the impact of such programmes has been duly noted.[4 38] ~~[4, 35]~~ In particular, there may have been improvements in specific areas in some hospitals which were not detected by the broader evaluation. The evaluators themselves further noted that large scale effects may take a longer time to surface.[37] ~~[34]~~ As the SPI as a programme did not demonstrate overall improvement or elucidate which organisations performed better than others, it is difficult to link CEO self-perceptions with formal outcomes, and the existing data does not show clear enough trends for this analysis. In the future, the framework presented here could provide the basis for a quantitative assessment of CEO engagement, which might be linked to trends in process and outcome changes in future programmes. Future work could also explore patterns of the types of CEO involvement across successful and unsuccessful sites. Lastly, the sample size is relatively small yet can be judged respectable when considering that the interviewees included all but one of the CEOs in charge of all of the NHS Trusts that participated within SPI across the UK and when considering the low number

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of CEOs in the wider UK population compared with other healthcare professionals. Nevertheless, a larger sample that is less homogenous would have strengthened the study and its findings.

Conclusion

This study has attempted to address the call for more research-informed practical guidance on the role of senior management in QI initiatives and specifically identify critical dimensions of CEO involvement within the Safer Patients Initiative. It makes an evidence-based contribution to the quality debate around leadership in healthcare by drawing on original empirical material collected across 19 healthcare settings to present the reports of 17 chief executive officers~~s~~ on how they added to the undertaking of a high-profile organisation-wide QI collaborative. ~~The findings suggest that the CEOs provided key participation within the SPI programme and their reported actions are ones that were considered significant to their perceived achievements of the programme.~~ The findings show that the CEOs provided key participation that they considered to significantly contribute towards the SPI programme. The reports reinforce conclusions in change management and the safety literature that have stressed the importance of CEO involvement, ~~as well as~~and further ~~providing~~ provide new evidence for specific ~~roles~~ critical dimensions of CEO ~~performed~~involvement. Queries raised are on the tangible benefits of the executives' programme monitoring actions and on practical steps to creating the "right" environment for QI. In providing a case-study illustration of the type of involvement that senior management engage in within an improvement collaborative, and at what stages certain actions took place,~~,~~ the study imparts guidance for other managers at this level opting into a similar intervention.

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CONTRIBUTORS

All co-authors contributed to the study design and review of drafts of the article. This paper has used data from the research study entitled: 'The Journey to Safety: The Safer Patients Initiative' led by Professor Charles Vincent, Director at the Centre for Patient Safety and Service Quality at Imperial College London. The research team who assisted with data collection and analysis included the author and Susan Burnett (Organisation and Management Research Team Lead), Dr Jonathan Benn (Lecturer in Quality Improvement Healthcare) and Anna Pinto (Research Psychologist) and Sandra Iskander (NHS manager).

ETHICS APPROVAL

Ethical approval was obtained from the NHS National Research Ethics Service Leicestershire, Northamptonshire and Rutland Research Ethics Committee 2. Reference no. 07/H0402/69.

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SPI Aims
• Mortality: 15% reduction
• Adverse events: 30% reduction
• Ventilator-associated pneumonia: 0 or 300 days between
• Central line bloodstream infection: 0 or 300 days between
• Blood sugars within range (intensive care): 80% or more within range
• MRSA bloodstream infection: 50% reduction
• Crash calls: 30% reduction
• Harm from anticoagulation: 50% reduction in adverse events
• Surgical site infections: 50% reduction
Workstreams *(example change elements)*
• Perioperative care *(deep vein thrombosis prophylaxis, beta-blocker use)*
• Medicines management (medicines reconciliation, anticoagulants)
• General ward care *(early warning systems, rapid response team, hand hygiene)*
• Critical care *(ventilator bundle, central line bundle, daily goal sheets)*
• Leadership *(leadership walk-rounds, strategic prioritisation of quality and safety)*
Programme tools and methodology:
• Continuous quality improvement: semi-autonomous teams
• PDSA cycles and small tests of change
• Incremental spread to successively larger work systems
• Process measurement and analysis of run charts to determine effects
• Expert faculty support from IHI (site visits, conference calls, online email support)
• Large-scale learning sessions for multi-disciplinary improvement teams
• Online extranet for uploading and comparing process data with monthly feedback
• Collaborative learning community for networking and sharing best practices

Box 1: The Safer Patients Initiative - A Description

Table 1: Participant demographics

Gender	Clinical/Non-clinical Background	Tenure in Trust	No of SPI Hospitals Overseen by CEO
Male	Non-clinical	6-9 years	1
Male	Non-clinical	0-11 months	1
Female	Clinical	21 or more years	1
Male	Non-clinical	3-5 years	1
Male	Non-clinical	1-2 years	1
Female	Non-clinical	1-2 years	2
Male	Non-clinical	6-9 years	1
Male	Non-clinical	0-11 months	1
Male	Non-clinical	3-5 years	1
Female	Non-clinical	10-20 years	1
Female	Non-clinical	10-20 years	1
Male	Non-clinical	6-9 years	1
Male	Non-clinical	0-11 months	1
Female	Clinical	0-11 months	1
Male	Non-clinical	1-2 years	2
Male	Non-clinical	10-20 years	1
Male	Non-clinical	3-5 years	1

First Order ~~Factor~~Dimension	Sub-~~factor~~dimension	~~Factor~~ Dimension Description
1 RESOURCE PROVISION	1.1 Securing funding	This factor refers to the CEO function of securing funding for the SPI programme and allocating financial and human resources to aid the implementation and continuation of the programme.
	1.2 Resource allocation	
2 STAFF MOTIVATION & ENGAGEMENT	2.1 Motivation & empowerment of staff	This factor describes CEOs motivating, involving and engaging clinical staff with the SPI programme through communication, methods of empowerment and reinforcement.
	2.2 Shared dialogue	
	2.3 Reinforcement of staff involvement	
3 COMMITMENT & SUPPORT	3.1 Display of visible commitment	This factor refers to the CEOs' demonstration of their own commitment to the programme along with the CEOs' role of support (not through resources) to clinical staff involved in SPI. This includes "*creating the right environment"* for staff and *"selling"* the programme to them.
	3.2 Creation of right environment/climate	
	3.3 Directing staff & stating purpose	
4 MONITORING PROGRESS	4.1 Reviewing SPI measures	This factor illustrates the CEO activity of monitoring programme outcome measures and regularly requesting and reviewing overall performance on SPI, as well as indirectly generating accountability on progress.
	4.2 Performance management	

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5 EMBEDDING PROGRAMME ELEMENTS	5.1 Strategy & agenda change	This factor comprises of changes made by the CEOs to strategies, agendas and processes in order to integrate SPI procedures and practices into them, so that they are sustained.
	5.2 Structure change & embedding for sustainability~~Process adjustment~~	

Table 2: ~~Factors~~ Dimensions and sub-~~factors~~ dimensions associated with CEO role in SPI

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First Order ~~Factor~~Dimension	Sub-~~factor~~dimension	Example Quotes
1 RESOURCE PROVISION	1.1 Securing funding	*"we would probably take a ~~[*]~~ paper to our T~~t~~rust executive group shortly after that [*the end of IHI involvement in the programme] with a decision…whether to continue on the current method [SPI approach], if so, are we going to internally fund it"* (Interviewee 6) *"~~obviously once the pilot's ongoing, it's over to us.~~ We did make a decision to put aside a £200,000 patient safety reserve, a SPI reserve if you like, to fund the consequences of any initiatives that might come out or any requirements that might come out."* (Interviewee 7)
	1.2 Resource allocation	*"we resourced the central office, if you want to call it that, and tried to ensure that people had time, and energy, and the desire to do the right thing there."* (Interviewee 16) *"You have to do it and do it well and do it properly and fully and resource it properly. And I guess the NHS as a whole and to some extent us as well have a history of getting in to projects, not resourcing them properly, and then doing them half heartedly. And then they never work and you wonder why, and the answer's bloody obvious actually. But they won't let you do that with SPI."*(Interviewee 12)
2 STAFF MOTIVATION & E[f]NGAGEMENT	2.1 Motivation & empowerment of staff	*"I think we created the appetite. Nobody was knocking on our door saying they wanted to do patient safety so we created the appetite. So I guess that was top down."* (Interviewee 9) *~~"what I'm majoring on is attitude and behaviour"~~* ~~(Interviewee 3)~~ *"~~we changed some of the delegations and then~~ we've slowly over time ~~relaxed those~~ [delegated work] to try and increase level of autonomy..So I suppose it was part of me trying to free up people's thinking actually..my first couple of meetings saying, well what [is] 8 of those at 300 quid? Well do it you know and they just found that really liberating because that meant they made some really big strides in the middle of the project."* (Interviewee 14)

	2.2 Shared dialogue	*"what I see it [my role] as doing is setting an example that's about having the right dialogue.. And once you've got that engagement, and you've got that dialogue, these issues become central to the debate."* (Interviewee 16) *"talking to the staff actually and more importantly listening to the staff about what's going on. You always learn such a lot..When did you last have an incident? What was, what caused it? What did you do about it?.. How many opportunities do you get to raise these sorts of issues?"* (Interviewee 13) *"They [~~walkarounds~~walkrounds] help the visibility mantra which everybody says about executive teams don't they? They have been an interesting cross check about the things that you think are going on in the organisation"* (Inteviewee 17)
	2.3 Reinforcement of staff involvement	*"clearly if they've [clinical staff] not been following our policies in terms of hand washing and so on, they'll be disciplined. Simple as that..I've got nurses ringing me up saying I've told a doctor off, he hasn't changed his behaviour and we're now following that up..They've been talked to..some of that is about saying, excuse me, but you are doing this actually."* (Interviewee 3) *"what I then used..saying right where are all the surgical CDs who are looking at their shoes, why aren't you doing it? And next time we meet to talk about this I want to know your experiences on how you do it, so you sort of try and create a purpose to it"* (Interviewee 14) *"initially it was more around initial conversation with [director name] and getting him on ~~board~~Board"* (Interviewee 16)
3 COMMITMENT & SUPPORT	3.1 Display of visible commitment	*"If they don't see you believe in it [SPI], why the hell should they struggle?"* (Interviewee 2) *"I think the most important role is to be seen to be committed to it [SPI].. It's all very well being a figurehead, but this doesn't allow you to get away with just turning up for the celebratory glass of wine or whatever it is. You've actually got to be in there and do it"*(Interviewee 12)

		"we've puffed our chests up and said we are serious about this and then we have to follow through. But what's interesting now that we are following through, people believe it and there is a visible, noticeable difference in the last two or three weeks out there on the wards in terms of consultants, they're taking their ties off, they're rolling their shirts up, they're washing their hands and people are challenging." (Interviewee 3)
	3.2 Creating the right environment/climate	*"What a Chief Executive has to do is to build a coalition of support to a broad framework within which people work."* (Interviewee 15) *"And it's about creating the right climate..in some respects I created a climate of restraint"* (Interviewee 14)
	3.3 Directing staff & stating purpose	*"~~We're a unified board. And~~ one of the things I was keen that we did was to make this something that the whole ~~board~~ Board was interested in and not just the acute hospital because some of the learning will run across other parts of our service out in the community. So from day one we put together a very broad communication."* (Interviewee 9) *"we have a five year vision that actually can be brought down to one sheet of paper. Eventually it will be in several vehicles, it will be a glossy document that will be presented to all new staff, that will be brought out at the start of any project meeting...on the one page one, the work SPI appears..So a Chief Executive has to do some top down things, about setting a tone, setting a direction...The first one [task], [is] to adopt it [SPI], to take advice, to accept advice. The second one, then, is to learn enough about it that you can speak authoratively. Chief Executives have to be able to speak about everything for 90 seconds..so a Chief Executive needs to have a 90 second elevator speech..that you can turn to a group of doctors, in the right situation, and say SPI is really the thing because, and then you list whatever"* (Interviewee 15)
4 MONITORING PROGRESS	4.1 Reviewing SPI measures	*"we are seeing well populated Run Charts, we're being able to use and understand the data more effectively, both at a senior level and within the teams."* (Interviewee 9)

		"I'm regularly looking at the information that is produced from it [SPI], I wouldn't say I'm looking at the data itself...It's normally a presentation, or patient story, or something like that..so that's changed the Board [agenda] in that you're not straight into finance..But whether we're hugely different to where we were 18 months ago, I don't know really."(Interviewee 10) *"at the breakfast meetings ~~we go through,~~ . we go through all the [SPI] measures"* (Interviewee 7)
	4.2 Performance management	*"we've got a different design for our performance management.. data points that will be demonstrated for assurance purposes at the ~~board~~Board."* (Interviewee 3) *"I think it's [SPI is]in our operational plan, it's a performance measure in there, so therefore, when we meet the divisions on a monthly basis, one of the things we'll be asking them for is their SPI measures."* (Interviewee 10)
5 EMBEDDING PROGRAMME ELEMENTS	5.1 Strategy & agenda change	*"for me, it's, it'll [SPI will*]be a way of doing things, integrated into where we are, and it has to be key item on every agenda, the things that's shaping the debate."* (Interviewee 16) *"I had to make some clear statements from the word go about where it [SPI] was on the agenda, so it was, it has been the first item on the Management Board agenda for the last 18 months. The patient SPI, right, where are we, what have we achieved, what are we doing?..we've set, tried to set it in the strategic context of what the Trust is doing. The Trust Board adopted a new mission statement..that there would be three main themes..and one of them was the Safer Patient Initiative and patient safety."* (Interviewee 13)
	5.2 Structure change & embedding for sustainability	*"[we need to] make sure that the elements of SPI that we keep are integrated into our performance management regime."* (Interviewee 4) *"the way we've rolled out SPI..we integrated it into people's directorate objectives, that's why we keep the profile up."* (Interviewee 5) *"that's how you begin..you narrow the gap between the activities of the initiative and disciplines around directorate management and delivery,*

		you narrow that by drawing it together and holding people to account for outcomes" (Interviewee 14)

Table 3: ~~Factor~~ Dimensions and Sub-dimensions Example Quotes – CEO Self Reports

First Order Dimension	Example Quotes
1 RESOURCE PROVISION	*"Any other support [from Board and CEO] has been around trying to acquire resources, so for instance there's a large infection control component and we've had a nurse on this site who's been collecting information around central lines, VAPs and so on and they haven't had that resource on the other site, because we were two separate trusts. So they collected their data on VAPs and other infections in a different way. Because we're one trust now and we're taking this forward, we want to have the same process on all the sites, so that's where the management are essential, so it's that sort of financial and resource support"* (Trust 12, clinical lead, critical care) *"some of the changes that we've needed with IT and that I have pushed up to the leadership because it's not something I've been able to influence really."* (Trust 17, clinical lead, medicines management)
2 STAFF MOTIVATION & ENGAGEMENT	*"they're [executives are] well equipped to give that person the idea of how to put it right themselves. Which really empowers them more and makes them feel an awful lot better, because then they realise that they can actually sort the problem out themselves, and they didn't have to go to somebody quite high up the board to get it sorted. It was something that they could have done themselves."* (Trust 8, clinical lead, critical care) *"we've got leadership rounds, and that's made a big difference to identifying the problems on the wards, but actually some of the problems have been given back to the wards when really we should be saying, this is common across the Trust, let's solve it by the Trust."* (Trust 13, clinical lead, medicines management) *"We had such a problem with infection here, we were just desperate to do something about it and quite a lot of the, my more dapper colleagues, were very reluctant to shed their nice suits and shirts and, or to roll up the sleeves on their shirts because they didn't think it looked professional.. all the problems evaporated when the chief executive sent out an email inviting for a one-to-one interview any clinician who didn't wish to follow this particular policy, and I believe no one took her up on it."* (Trust 16, clinical lead, general wards)

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3 COMMITMENT & SUPPORT	*"I certainly know that our Chief Executive has met with all the consultants in small groups..certainly [CEO] has said himself, if you've got problems then you come directly to me. If it's Safer Patient then you get straight access to me, and that has been really encouraging."* (Trust 1, clinical lead, general wards) *"we would feedback the activities from the previous month, our anticipation of what would happen the following month and any issues that we were faced with, that we needed support from the leadership team. And whether that was a resource issue or something about can't get clinicians involved, whatever and that was fine"* (Trust 14, director of nursing)
4 MONITORING PROGRESS	*"there's a quarterly report to the Trust Board.. the chief exec does a section as part of his report each month. And then [name] or I, or both, go and walk about something specific every quarter. So in December, it was the walk rounds and what we'd done there. And in, three months after that, whatever it was, March, February, March, we presented to them he Run Charts. And next time we'll do something different"* (Trust 9, general manager) *"[with CEO and management team] we will go through.. our traffic light measures.. which would show all of our measures then and then where we are with them. Green, we're passing the Run Chart rows, and the amber, where we aren't passing the rows just yet, and then the red is if we haven't got any data points against it.. what we do is pick on, put together a progress report, which is then brought to a trust board.. and generally during the meeting we can raise any concerns we may have about certain, about if there's any measures that we're struggling with"* (Trust 10, programme coordinator)
5 EMBEDDING PROGRAMME ELEMENTS	*"our new chief exec has made sure that safety is put on the agenda first, so she's also a very good driving force for it"* (Trust 8, programme coordinator) *"Go back, ask them to give you the board agendas for about the last 18 months and you tell me where you see clinical governance. It was always down the pecking order.. it's now on the agenda, it's on the agenda as patient, as the SPI thing.. I've got the support of the chief exec"* (Trust 11, managing director)

Table 4: Dimensions Example Quotes – Staff Peer Reports

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Dear Mr. Sands and reviewers,

Thank you for your email and thank you very much for these valuable reviews and the time taken to offer such constructive comments. We appreciate all the points made and accept that the original manuscript required more focus and sharpening. We have made considerable efforts to address the concerns and queries raised and we believe that as a result it makes for a much stronger paper. Changes include additional analysis of staff interviews to extract peer views on the dimensions of involvement of CEOs and addition of a summary of our previous research comprising relevant findings on SPI. Please see the table below that details our responses and changes to each of the reviewers' comments.

Table: Author responses and changes

Reviewer Comments	Author responses & changes
Reviewer 1: Joanna Jiang	
1.1. There is no clear description of what the research question was. Therefore, it is difficult to assess whether the overall research design is appropriate and adequate to address the research question.	1.1 We acknowledge that our research question is broad and exploratory and we have re-worded the research question to a more specific and clearer research objective within the introduction and elsewhere, as follows: *"To identify the critical dimensions of hospital Chief Executives Officers' (CEOs) involvement in a quality and safety initiative: the Safer Patients Initiative (SPI)."* We have also added that we aim: *"To offer practical guidance that will assist CEOs to fulfil their leadership role in quality improvement."*
1.2 There is no outcome measure which was alreday acknowledged by the authors in the limitations.	1.2 We entirely agree that associating the CEO remarks with programme outcomes would be invaluable and add a great deal to the strength of this study. Unfortunately, this was not possible with this programme and to demonstrate this point we have added the following paragraph within the limitations section: *"As the SPI as a programme did not demonstrate overall improvement or elucidate which organisations performed better than others, it is difficult to link CEO self-perceptions with formal outcomes, and the existing data does not show clear enough trends for this analysis. In the future, the framework presented here could provide the basis for a quantitative assessment of CEO engagement, which might be linked to trends in process and outcome changes in future programmes. Future work could also explore patterns of the types of CEO involvement across successful and unsuccessful sites'*
1.3 The sample size is relatively small and homogeneous -- CEOs.	1.3 We recognise that we did not mention the limitation of the small sample size in the paper, so we have now included it along with some justification that it is adequate when considering a number of factors. *"Lastly, the sample size is relatively small yet can be judged respectable when considering that the interviewees included all but one of the CEOs in charge of all of the NHS Trusts that participated within SPI across the UK and when considering the low number of CEOs in the wider UK population compared with other healthcare professionals. Nevertheless, a larger sample that is less homogenous would have strengthened the study and its findings."* We have further added some other peer reports to reduce the bias bought with a homogenous sample and to increase the sample size. This is described further in the following response (1.4).
1.4 No other categories of staff members were included (e.g., middle management, front line staff, clinicians).	1.4 We accept that an absence of peer-reports in this study is a limitation and we have therefore carried out additional analysis and included peer-reports from a cross-section of others that were involved in SPI, i.e. the programme coordinators, management and those working within different SPI 'workstreams', which include frontline clinical staff. We add a description of the sample in the methods and

	emphasise that the findings focus on the self-reports by adding the following *"The findings section pertains to the CEO reports, with a supplementary summary of the reports by staff."* and we have added the subtitle to differenciate the findings *"Staff reports of dimensions of CEO involvement in SPI"*. In addition to this, we have added findings from our previous research work on SPI that comprise of many peer views on management involvement within the programme.
1.5 [R]As mentioned above, there is no clear statement of any research question(s) upfront. Therefore, it is not easy to assess whether the results answer the research question.	1.5 Please see answer 1.1 regarding our addition of more explicit aims.
1.6 The whole piece was so descriptive. The interpretation and conclusions seemed to be more informed by literature than by the results.	1.6 We have re-ordered and re-framed the discussion to emphasise the findings rather than the literature. However, we still keep almost all of the literature references in as we believe it helps to show both how our work adds to research on this topic and how research lends supports to our findings. We believe that the study's strengths are in the finding descriptions and accept that because of this, it is very descriptive.
1.7 [R]The interviews capture mainly the self-perception (or self-assession) of the CEO involvement in the PSI. As flawed human beings, we know that there is always huge gap between self-perception and the reality.	1.7 Please see answer 1.4 regarding addition of peer views. In addition to this we have provided evidence to your statement concerning the perception gap from our previous research within SPI, with the following sentence to show that we acknowledge this problem. *"In a previous research survey of 635 of the SPI participators (including the CEOs), not only did senior management and frontline staff have many divergent views on the programme's strengths, weaknesses and impact, but also the senior managers held overall more positive views than the frontline.(Parand et al 2010; Benn et al, 2012)"*
1.8 [r]If the authors could do some cross-validation, such as link to outcome measures of the program or interviews of other staff members, it would help improve the validity of the study results.	1.8 Thank you for these suggestions. Please see answers 1.2 regarding the difficulty to add outcome measures for this particular programme, and 1.4 on our additional analysis of interviews of other staff.
1.9 b) In some places, it is not clear whether the CEO simply talked about his/her own opinion or about something that actually had taken place. There is a fundamental difference between one's thought/view (which may never be materialized) and the actual acitivity.	1.9 The intention of the article was not to describe CEOs opinions on which actions were important, but to describe CEOs reports of their own actions that they deemed important. We have made some changes to remove ambiguity. Firstly we have spelled out the intention to focus on actual involvement rather than opinions in the updated introduction *"we intend to offer evidence on the critical dimensions of their actual involvement rather than opinions on what this should be.",* secondly we have added a sentence on this within the methods section: *"All references coded were in regards to their actual involvement/contributions .. as opposed to their opinions on what CEOs should do."* Thirdly, we have clarified all instances where we can see that there may be ambiguity over whether quotes refer to CEO opinion or actions. For example, changing *"the CEOs asserted the importance of listening to the frontline to get their input on safety issues."* to *"the CEOs conveyed the benefits they gained from listening to the frontline to get their input on safety issues."* Several such changes have been made.
Reviewer 2: Laura J. Damschroder	
2.1 The Study aim appears to be something like this: "Actions frequently referenced as beneficial included displays of senior management commitment and support [14] and creating the right culture...there is little research-based practical guidance to outline the details of the senior management role in leading improvement. This study aims to answer this call by exploring the self-reported participation of Chief Executives (CEOs) involved in the second phase of an organisation-wide quality and safety collaborative…" – the aim is not very straight-forward and results do not actually link back to "displays of senior management commitment and support and creating the right culture" – whatever those might be.	2.1 Thank you for your valuable points. Please see answer 1.1 for the response to your concerns about the study aim and changes to make the aim more explicit. We have also further added to the introduction so that it does not appear that we are investigating 'displays of commitment' or 'safety culture'.

2.2 The first premise in the aim requires some kind of linkage between what CEOs report they did and how their facility actually fared in this improvement initiative. I understand that you cannot infer causality with the data/study design you have but I've interviewed CEOs and senior managers and I have found that a challenge with this level of leader is that most know very well what is "ideal" and many will be rather unclear about what they actually did in concrete terms versus what they know they should be doing (they seem to suffer more than many from a type of social desirability bias).	2.2 Please see answer 1.7 on our acknowledgement of this issue and addition of previous evidence of it within our research on SPI.
2.3 I found myself wanting/needing to know how results from your other published work on this topic/initiative relate to what is presented here. The paper would be greatly strengthened by elaborating more on previous study findings. After a search, I found published findings that seemed to be linked to this initiative based on your citations. At least one paper found "managers involvement" and "resource availability and allocation" affect medical engagement with the SPI program (ref: http://qualitysafety.bmj.com/content/19/5/1.46.short).	2.3 Thank you for this suggestion. In the introduction we have now added a considerable section on our previous research work in SPI drawing out findings related to management in the SPI programme, and link it to our research question. We also now refer back to these more clearly within the discussion.
2.4 Exploring patterns of the types of CEO involvement across successful and unsuccessful sites would help validate the veracity of data collected from CEOs self-report.	2.4. Please see answer 1.2 acknowledging this very valid point along with the difficulties in obtaining such outcomes from this particular programme.
2.5 [R]At a minimum, the paper would be strengthened by integrating CEO data with perceptions from other stakeholders about their senior leader(s) that affirm or dis-affirm these self-reports.	2.5 Please see answer 1.4 regarding addition of peer views to the paper.
2.6 Please define "Trust". It is unclear whether a Trust includes more than one hospital. Only 2 CEOs oversee 2 hospitals while the others oversee only one. Were the study hospitals all in different Trusts or was there more than one hospital in a given trust but with different CEOs (other than the two aforementioned)?	2.6 To clarify we have added the following sentence: *"Specifically, every Trust was managed by a different CEO and only two Trusts had more than one hospital participating in the SPI programme, therefore two CEOs oversaw two hospitals participating in SPI, while the rest each oversaw one participating hospital."* We have also defined Trust in a footnote, as follows: *"A Trust is a public sector organisations led by a Board that manages one or more hospitals to ensure their quality and financial performance and service developments"*
2.7 Picky observation: CEO refers to Chief Executive Officer but you refer to Chief Executive (no Officer).	2.7 Thank you for pointing this out. We have appended the word *'Officer'* to every instance that the term Chief Executive is used, including within the title of the manuscript. Participant quotations remain untouched.
2.8 METHODS Participants – A strength of this paper is that you had such a high level of participation by CEOs. Did the one CEO decline to participate or was there some other reason for not participating?	2.8 We have added the following text in brackets: *"one CEO did not participate in the interviews (we have reason to believe this was because s/he was busy in the process of moving on to another Trust)"*
2.9 Data Analysis - Need more explanation of the coding and analysis methods. Use of qualitative research reporting guidelines would be useful e.g., http://www.equator-network.org/resource-centre/library-of-health-research-reporting/reporting-guidelines/qualitative-research/ . The explanation provided is unclear. For example, "Axial coding was performed to group and relate the emerging themes."	2.9 We have re-written parts of this section to expand and allow for better transparency of the data analysis.
3.0 Last sentence refers to there only being one interviewer per Trust – did you mean to say interviewee?	3.0 Yes, thank you, we meant 'interviewee'.
3.1 FINDINGS L36, P6: It is stated that "almost all gave detailed accounts of the value that they believed to have brought…" – why didn't they all give detailed accounts? Do you mean to imply that some thought they did not have value or that some did not provide sufficient detail?	3.1 We apologise for the confusion. We mean that not all gave in depth information on their value bought. To address confusion we have changed this to *"all gave accounts of the value.."* We identify that this confusion may have been exacerbated by another sentence where we have similarly used the word 'almost' and have removed this also. One of the CEOs did not recognise their importance at the start of the interview but then went on to describe their value. Rather than confuse the

	reader further, we will not include this sentence.
3.2 L46, P6: The example quote about the CEO who was "away on leave" and things having all "gone downhill" is an ambiguous example of the significant influence on success/failure – for things to fall apart when the CEO is away, is an unhealthy sign that the organization is not set up to run without this person's presence. This seems to be an example of "significant [negative] influence" in the larger scheme.	3.2 We agree that insight into the person-dependence of the Trust is a likely indicator of poor project management, yet we believe that this example quotation exemplifies the great extent to which certain CEOs perceived their involvement (or lack of) affects SPI.
3.3 L50, P6: The sentence "Barriers to their involvement included management of a large Trust and their limited time." – is unclear; do you mean to say that SPI was just one small thing they needed to manage in the realm of larger Trust responsibilities?	3.3 We have substituted this unclear statement with the following: *"The most reported barrier to their involvement was their time constraints to participate within programme efforts, which was often attributed to the demands of managing a large Trust."*
3.4 [R]Again, it is unclear at what level these CEOs are operating: at a "Trust" level which has multiple hospitals but only one of which participated in the study or at a hospital level (except for the 2 CEOs listed in Table 1 who oversaw 2 hospitals…)?	3.4 Please see answer 2.6 for insertions to clarify this point.
3.5 L50, P6: This sentence, "Whilst early involvement in the process, learning about the programme and having other executives and staff engaged with the programme were described as facilitators of their engagement." Is an example of the lack of clarity in many of the findings: here, more questions are raised than are answered because of its lack of specificity and subsequent quotes do not do much to elaborate. For example, -what kind of early involvement (e.g., attending meetings? Doing walk-arounds? Setting expectations with key anagers?)…what things did they need to learn about the program…how did they get other executives and staff engaged…and the latter seems circular with getting others engaged which got CEOs engaged.	3.5 We have added further details to this section: *"Whilst early involvement in the process (from helping at the application stage or/and from attending the first learning session), learning about the programme (such as the quality improvement techniques, the targets set, the support networks available, and the motivational impetus delivered by IHI)"* Here, having staff/Board engaged is not referring to CEOs engaging staff. That is separately described under the theme 'commitment and support'.
3.6 It would be more useful to have Table 2 ordered by relative importance.	3.6 Thank you for this suggestion, we did consider ordering the table by relative importance but it was decided to order both the table and the text in the present way because it better reflects the time of the stages that CEOs most get involved in these roles. That is, they start with resource allocation, then motivate and engage and offer support and commitment, followed by monitoring and finally embedding the programme for sustainability. Because these dimensions overlap considerably we are aware that we have not emphasised the reasoning for the presentation of this order. Therefore, we emphasise this with the following sentence: "*Although not discretely, our findings show some indication of the stages in which CEOs most get involved in these dimensions, most notably resource allocation before the start and (to a lesser extent) at the end of the programme, followed by engagement, motivation, commitment and support for staff, and towards the end of the process the CEOs are more likely to engage in decisions and strategies to embed the programme elements in order to sustain it."*
3.7 You start off (Line 28, Page 7) with "Resource provision" but then state it was least mentioned. You go on to say, however (L42, P7) that "they recognized this as one of their considerable contributions." – few mentioned it but yet it was one of their key contributions? On what do you base this statement if only a few mentioned it?	3.7 Sorry for the misunderstanding that only a few mentioned 'Resource Provision'. Each dimension, including 'Resource Provision' was mentioned by the majority of CEOs, that is more than half the interviewees. We have acknowledged this already with the following statement: *"Resource provision was the theme that was least mentioned, but was still referenced by more than half of the CEOs."* We understand that the term 'least mentioned' can be misleading, and because it was actually many more than half that mentioned Resource provision, we have amended the statement in the following way: *"Resource provision was mentioned less than the others, but was still referenced by well over more than half of the CEOs and consequently stands firm as a critical dimension of CEO involvement in SPI."*
3.8 Citation in L25, P8 should be moved to Discussion	3.8 We have moved this sentence to the discussion and amended it slightly.

3.9 L25, P8: Statement, "Communication was particularly described as key to staff engagement with the programme" – is unclear	3.9. We have clarified the sentence as follows: *"Communicating with staff was particularly useful in attempting to encourage their engagement with the programme, through conversations on issues arising from implementation of programme elements and reinforcing behaviours including expressions of vocal encouragement or disapproval of non-compliance."*
4.0 L5, P9: Statement, "…acts of commitment" – is an example of vague statements throughout results; what kinds of acts? Why do they show commitment?	4.0 In the previous paragraph we describe acts of commitment, which is what we are referring to here. To make this clearer for the reader, we have amended the sentence as follows: "*the outlined acts of commitment"*. To explain why these were considered acts of commitment, the following sentence has been added: "*These were considered demonstrations of commitment to SPI because they required observable effort by the CEOs to prioritise, promote and become involved in the programme."*
4.1 L33, P9: "auctioned" – what does this mean?	4.1 Thank you, this typo has been amended to "actioned"
4.2 …"and it is not really driving change at the Board." – mention of the Board here, doesn't seem appropriate – why is change at the board important?	4.2 We agree that this sentence is not entirely relevant to this topic and have therefore deleted this sentence.
4.3 L39+,P9: more information is needed about the role of monitoring. E.g., How does it increase frontline compliance and generate accountability – were CEOs intentional about using monitoring as a tool or mechanism by which to get commitment/engagement? How often did they themselves check up on results? Did their managers know they were going to watch it too? Did CEOs expect x results in y timeframe?	4.3 We have added more information on monitoring that answers your queries. This insertion is as follows: *"It was additionally considered as a method of increasing frontline staff compliance indirectly through feedback at Board/project meetings on whether staff were complying with SPI prescribed activities. Accountability was also said to be generated at these meetings through assessment of targets met and actions delivered. The CEOs primary intention to monitor the process and its key indicators was to become familiar with the programme and to keep track of progress rather than to improve compliance. Timeframes were set by the workstream leads and coordinators but CEOs would query the programme leads if they were falling behind on self-imposed deadlines and targets. Outside of the meetings, the CEOs did not audit the programme's progress or compliance to it, instead they relied on the implementers of the programme to report back on these, especially if there was any problems"* Further information has also been provided through staff insight on what monitoring offers them: *"staff feedback and presentation to the CEOs on SPI data measures (in the form of high level data and metrics in Run Charts and traffic light measures) and summaries of progress and future plans (through verbal presentations and written reports), were reported to provide awareness, recognition, solutions and direction from the CEOs. These were considered invaluable, especially the recognition of staff work, and staff conveyed their wish to avoid disappointing the CEO. This suggests that subtle acts of listening to presentations, reading reports, understanding and acknowledging the difficulties faced in implementation and the strides made were all benefits grained from CEOs monitoring data and attending meetings."*
4.4 L54, P9: How did "changing strategies and agendas…at the board level… help integrate" SPI? Again, vague statements without concrete actions/behaviors that are linked to the organization's processes related to SPI.	4.4 We have added the following explanation: *"because, through adding SPI objectives (i.e. patient safety) high on the agenda and amending strategies to focus on SPI prescribed activity and aims, it raised the profile of SPI/patient safety targets and created plans to achieve them."* This is followed by examples of integration.
4.5 What role does the board have? This is not explained though the board is mentioned a few times in Findings and Discussion.	4.5 We have added a sentence on the role of the Board, as follows: *"The Board is made up of executives (including the CEO) and non-executives and, through regular meetings, they collectively oversee, offer direction and are responsible for the financial and quality performance of the hospitals within their Trust. Therefore, they hold crucial control over the activities, culture and quality and safety of their organisations and consequently their engagement is likely to be influential."*
4.6 [R]In general, your discussion doesn't seem to follow your results well. You seem to conceptualize your findings in multiple different ways in an effort to tie in to	4.6 Please see answer 1.6 on re-framing the discussion to emphasise the findings rather than the literature. Please also see changes below.

the literature and most paragraphs lack a cohesive, coherent idea. Some examples follow:	
4.7 DISCUSSION L25, P10: You state that "executives gave detailed accounts" – and yet your results are rather vague and not actionable as described. An example is L35, P10: "Yet, our findings have also inferred that CEOs in bigger Trusts may have a lesser role to play than in smaller ones, especially if the CEO is in charge of more than one hospital. In these instances, the Medical or Clinical Director may subsume the outlined roles." – on the one hand, it's obvious that CEOs who have more to oversee will be able to pay less attention to a single initiative like SPI and yet it's hard to see where you are able to make such a clear conclusion in your introductory paragraph when only two CEOs have two hospitals and the rest have only one (unless you are talking about large versus smaller hospitals). Secondly, it may be perfectly appropriate for lower level managers to "subsume the outlined roles" (whatever those roles are that you are referring to) but it is stated as a negative strike against these CEOs. The question is whether these CEOs are effective in appropriately delegating responsibilities to these managers and how it is that they do so. On the other hand, if they are ineffective in doing so, then SPI may suffer and that, perhaps, is what you are trying to convey. This statement is one example of the seeming black and white inferences made without full context and without the benefit of managerial theory to help make sense of the data.	4.7 We realise that this statement is too bold and unclear. We did not intend to make a negative strike against those CEOs of larger Trusts that delegate more responsibility to Directors. We therefore reframe the previous sentence in the discussion opening so that it is not tied to Trust size: *"It became apparent that some CEOs delegated their Clinical Director or Medical Director to enact the critical dimensions mentioned by other CEOs."* *"In exploring the parts played by the chief executives, five critical dimensions were identified ... The findings further infer that Medical or Clinical Directors may subsume the outlined the critical dimensions."* *"(i.e. more than one hospital)"* was added to define larger Trust when describing reported barriers.
4.8 L27, P11: "Managerial commitment was an expected finding considering literary support for this inside and outside of healthcare.[24, 25] We identified manifestations of commitment from: attending SPI learning sessions; leadership walkarounds; prioritising safety on the Board agenda; talks explaining the programme; stamps of approval for programme practices; stating its purpose; and creating the right climate/environment." n What is "literary"? n Your list is nice and concise but I didn't see all these actually show up in your findings.	4.8 We have change the term 'literary' to 'literature'. We realise that, whilst creating the right climate/environment was reported by CEOs, that it is more accurate to say that they did not report specific manifestations, therefore we have removed this point from the list in the discussion. We also add 'prioritising safety on the Board agenda' under the theme of 'commitment', as it is was only presented within the theme of 'embedding programme elements'.
4.9 [R]L54, P11: Here you mention an earlier related study, "Indeed, senior managers have been identified as holding a facilitating responsibility,[23, 30] including research from another study on the first phase of the SPI programme.[31]" – it would have been useful to use findings like this from your earlier work to inform this new analysis of CEO data. This would help tie in with a larger body of very relevant findings and make your results much more coherent and actionable.	4.9 Please see answer 2.3 regarding addition of our previous research.
5.0 CONCLUSION L40, P13: "…and their reported actions are ones that were considered significant to their perceived achievements of the programme." – however, earlier you said you didn't have outcomes – even their own self-perceived outcomes. This statement would be wonderful to be able to make but your findings do not seem to support it.	5.0 We refer to self-perceived achievements of the programme, because the reports were actions believed to have contributed to successes of the programme. Yet, we take on board your comment that this might be misleading. Therefore we have amended all similar statements in the following way: *"The findings show that the CEOs provided key participation that they considered to significantly contribute towards the SPI programme" We have deleted references to perceived achievements of the programme.*
5.1 Table 3: many of the quotes are very difficult to interpret, stripped of context as they are. Some explanatory sentences are needed to help place quotes in context, e.g., "…we would probably take a paper to our trust executive group shortly after that with a decision…whether to continue on the current method, if so, are we going to internally fund it." –as an example of	5.1 We have added more explanatory information in brackets in quotations to elucidate the statements being made, and we have removed ambiguous parts of quotes that are redundant.

"1.1 Securing Funding" -- the only part of this I can understand is that they might internally fund the effort. The whole first clause does not have meaning for readers.	
5.2 This paper has potential importance because data based on CEO input is rare in the context of a quality initiatve like SPI.	5.2 Thank you, we agree that there is little on this topic and hope that our research can offer some insight into CEO involvement in such an initiative.

The role of chief executive officers in a quality improvement initiative: a qualitative study

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The role of chief executive officers in a quality improvement initiative: a qualitative study

ABSTRACT

Objectives: To identify the critical dimensions of hospital Chief Executive Officers' (CEOs) involvement in a quality and safety initiative and to offer practical guidance to assist CEOs to fulfill their leadership role in quality improvement.

Design: Qualitative interview study.

Setting: 20 organisations participating in the main phase of the Safer Patients Initiative (SPI) programme across the UK.

Participants: 17 CEOs overseeing 19 organisations participating in the main phase of the SPI programme and 36 staff (20 workstream leads, 10 coordinators, and six managers) involved in SPI across all 20 participating organisations.

Main outcome measure: Self-reported perceptions of CEOs on their contribution and involvement within the SPI programme, supplemented by staff peer-reports.

Results: The CEOs recognised the importance of their part in the SPI programme and gave detailed accounts of the perceived value that their involvement had brought at all stages of the process. In exploring the parts played by the CEOs, five dimensions were identified: 1)resource provision; 2)staff motivation & engagement; 3)commitment & support; 4)monitoring progress; and 5)embedding programme elements. Staff reports confirmed these dimensions, however the weighting of the dimensions differed. The findings stress the importance of particular actions of support and monitoring such as constant communication through leadership walkarounds and reviewing programme progress and its related clinical outcomes at Board meetings.

Conclusion: This study addressed the call for more research-informed practical guidance on the role of senior management in QI initiatives. The findings show that the CEOs provided key participation considered to significantly contribute towards the SPI programme. CEOs and staff identified a number of clear and consistent themes essential to organisation safety improvement. Queries raised

include the tangible benefits of executive involvement in changing structures & embedding for sustainability and the practical steps to creating the "right" environment for QI.

ARTICLE SUMMARY

Article Focus

- To qualitatively identify the perceived critical dimensions of hospital Chief Executive Officers (CEOs) involvement in a quality and safety initiative: the Safer Patients Initiative (SPI).

Key Messages

- The findings show that the CEOs provided key participation that they and others considered to significantly contribute towards the SPI programme.
- Five primary managerial roles within the SPI programme were identified: 1)resource provision; 2)staff motivation & engagement; 3)commitment & support; 4)monitoring progress; and 5)embedding programme elements.
- Queries raised include the tangible benefits of executive involvement in changing structures & embedding for sustainability and the practical steps to creating the "right" environment for QI

Strengths & limitations of this study

- This study addresses the call for more research-informed practical guidance on the role of senior management in QI initiatives. It makes an evidence-based contribution to the quality debate around leadership in healthcare by drawing on original empirical material collected across 20 UK healthcare settings. The findings impart guidance for other managers at this level opting into a similar intervention and outline certain actions pertaining to different stages of the programme.
- The CEOs' self-reports may be subject to social desirability bias. Similarly, self-selecting bias may derive from the fact that the CEOs volunteered for the high-profile initiative, arguably leading to an over-estimation of the involvement that senior managers at this level would

typically engage in within most improvement initiatives within their Trusts. However we have tried to lessen this limitation with supplementary analysis with staff views of those involved in SPI.

- No association can be made between the CEOs' dimensions and the successes/failures of the SPI programme.

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COMPETING INTERESTS

There are no competing interests.

INTRODUCTION

The number of quality improvement initiatives in the healthcare sector is growing rapidly. Their aim is to improve processes, structures and systems through continuous quality improvement techniques in order to improve outcomes of care.[1-3] Research examining these programmes and larger-scale collaboratives have found some evidence of their impact;[4] their sustainability;[5 6] and economic benefits.[7-9]

Effective support from senior managers is believed to be critical to the success of their programmes.[10-12] In a review of healthcare Board level and senior management behaviours associated with quality improvement outcomes, Øvretveit (2009) identified a plethora of studies that impart the importance of managerial involvement and engagement in quality and safety improvement.[13] Actions frequently referenced as beneficial included displays of senior management commitment and support [14] and creating the right culture.[15] However, Øvretveit concluded that there is little research-based practical guidance to outline the details of the senior management role in leading improvement and called for

more academic research on this topic.[13] This study addressed the issue by exploring the self-reported participation of Chief Executive Officers (CEOs) involved in the second phase of an organisation-wide quality and safety collaborative, the Safer Patients Initiative (SPI), to better understand the role of Board level senior managers within such initiatives.

The Safer Patients Initiative and our previous research

Funded by the UK Health Foundation, the Safer Patients Initiative (SPI) was developed by the Institute for Healthcare Improvement (IHI). It was piloted with four UK NHS organisations in its first phase (2004-2006) and applied at a further 20 in its second phase (2006-2008).[16 17] Designed to achieve improvements in patient safety, SPI attempted to make changes at an organisational level and in front line care processes within four clinical areas through implementing a number of clinical working practices with continuous quality improvement and process measurement techniques. The main elements of the SPI programme are outlined below in Box 1. Today, many of the principles of SPI have continued with 18 of the involved organisations opting in to the follow-up initiative 'The Safer Patients Network'.

In our previous research, we have investigated a number of factors affecting the SPI programme. These include organisational readiness for SPI, clinicians' engagement with SPI, leadership walkrounds prescribed by SPI, and predictors and perceptions of impact of SPI. In the pilot phase of SPI, survey responses by those involved (clinical leads, coordinators and management) rated senior management support as the highest ranking strength in the implementation of SPI.[18] Additional qualitative analyses revealed manager involvement as a reported facilitator of medical engagement in SPI.[19] This involvement comprised of allocating resources, having good management-doctor relationships, and commitment at executive management level. Other interview findings showed that senior managers helped to remove barriers and empower staff to change processes through events such as leadership walk-rounds.[20] In research on the main phase of SPI, we extracted further perspectives on leadership walkarounds that revealed that they can help executives learn about their organisations and help clinical staff overcome misperceptions of the executives.[21]

In our longitudinal quantitative work, programme implementation factors, including senior management processes, were found to contribute significantly to change in organisational safety climate and capability linked to programme milestones, above and beyond the effects of programme contextual factors and organisational preconditions.[22] We have not previously identified which senior management behaviours are perceived to be important. In other investigation across two time points, we identified strategies for sustaining SPI that were reported to require senior management help on financial and human resources for the programme,[23] as well as incorporating patient safety into induction and training. In addition, the coordinators considered 'management involvement' generally to facilitate continuation of the programme and suggested that it was essential to feedback to senior management to keep SPI aims high on their agendas to improve their understanding and enthusiasm for the programme. Exploring CEO actions may highlight the reasons why this is important, for example whether feedback elicited follow-up actions by the managers. Other generic findings from investigation at the main phase revealed executive management commitment to quality as a strength of the programme according to ratings from both senior management and frontline staff.[24]

In summary, our previous research has suggested an importance in managerial involvement and commitment in SPI and identified some potential dimensions of this involvement. However these have not been described in detail or confirmed by CEOs directly. Our specific research aims are to identify the critical dimensions of hospital CEOs involvement in SPI, and to offer practical guidance and classifications that will assist CEOs to fulfil their leadership role in quality improvement.

—Box 1—

METHODS

Sample

Setting

Interviews were carried out across all 20 NHS hospitals participating in the second phase of the SPI programme across four geographical locations in the UK: England, Northern Ireland, Scotland and Wales. The hospitals varied in terms of type (e.g. teaching) and size. The biggest participating Trust[1] had a total of 22,000 staff (not all of their hospitals were involved in SPI) and the smallest had 2,100 staff (est. June 2008). Two Trusts each had two hospitals involved in SPI.

Participants

A purposive sampling strategy across all 20 organisations aimed to include the Chief Executive Officers at all of the participating organisations. These senior managers were often involved in the 'Leadership workstream' that governed the SPI programme across all of the clinical workstreams in which it was implemented. This workstream were advised to walk around the hospital in "Leadership Walkrounds" and to have a strategic prioritisation of quality and safety.

Seventeen interviews were conducted with CEOs representing 19 of the 20 hospitals participating in the SPI programme. There were only 17 participants because one CEO did not participate in the interviews (we have reason to believe this was because s/he was busy in the process of moving on to another Trust), and two of the CEOs managed more than one participating hospital. Specifically, every Trust was managed by a different CEO and two Trusts had two hospitals participating in the SPI programme. Please see Table 1 for participant demographics.

—Table 1—

[1] *An NHS Trust is a public sector organisation led by a Board that manages one or more hospitals to ensure their quality and financial performance and service developments*

Supplementary analysis was carried out on 36 interviews with staff involved in the SPI to verify/challenge the CEO self reports. This comprised 20 workstream clinical leads (five per workstream), 10 programme coordinators, and six management (two directors of nurses, two medical directors, a general manager, and a clinical governance manager), which amounted to two interviewees per CEO, including the CEO not interviewed.

Procedure

The data collection period was between April-August 2008 towards the official end of the SPI programme and comprised of face-to-face interviews lasting approximately between 45-60 minutes. Interviewees were shown a research information sheet, briefed on their anonymity and asked to sign a form consenting to audio recording the interviews for transcription and analysis. A standardised semi-structured interview topic schedule was used by two interviewers (pairings of five different researchers, JB, AP, SB, SI, APo), which addressed the senior managerial role along with a host of issues regarding the programme. This is because, as shown in the introduction, the study investigated a number of issues surrounding SPI of which the senior management role was one topic of investigation. Example questions directly asking CEOs about their role included: *"What are your main responsibilities?"* and *"how were/are you involved in SPI?"* Staff were asked *"how was/is your senior management/executives involved in SPI?"*

Data Analysis

The interviews were transcribed by professional transcribers. Qualitative analysis was performed, based on inductive grounded theory analysis techniques of open coding, constant comparative analysis and theory building, with the aid of NVivo 8 software.[25 26] The 17 CEO transcripts were divided and independently coded by the five researcher interviewers (JB, SB, SI, AP, APo). This comprised of identifying any text, indirect or direct, pertaining to the executives' involvement (actions, work or contributions) within the SPI programme. This resulted in one code containing all

references to CEOs involvement. Line-by-line open coding was then performed by one researcher (AP) on all of the CEO transcripts to deconstruct the dataset and draw out singular dimensions. This was also carried out on this node coded by the other researchers to compare inclusions. At this stage of analysis, highly specific codes related to perceptions of CEO contributions and actions were identified. The importance of their involvement in the SPI programme, and barriers and enablers were also coded to provide additional contextual information to the managers' roles. All references coded concerned the managers' actual involvement/contributions and barriers or enablers faced, as opposed to their opinions on what managers in their position should do or would likely face. The constant comparative method was used to compare emerging codes with earlier codes drawn from the dataset and individual codes were grouped into related themes in order to build a model of the main dimensions and their sub dimensions. No previous theory was used to analyse the data, all categories were developed from the data. After iterative refinement of the relationships, a model was identified that consisted of the critical dimensions of the CEOs involvement within the SPI programme, based on the CEOs' reports. To ensure reliability of coding and interpretation, a sample of data fragments were checked and resolved through dialogue with other members of the team by one researcher (AP) identifying differences in coding between the five coders and speaking with the coders in question to arrive at an agreement. The model was considered by external members of the team for their opinion on whether the sub dimensions have face validity under the chosen dimensions. The same analysis was carried out on staff transcripts. The dimensions from the staff reports were compared with the model that emerged from the self reports. The findings section pertains to the CEO reports, with a supplementary summary of the reports by staff.

FINDINGS

The levels of involvement in the programme varied between the executives, however all gave accounts of the value that they believed to have brought at all stages of the process. They considered their involvement in the initiative as a significant influence on the potential for programme success/failure.

> *"I went away on leave, came back, and it had just all gone downhill because I wasn't there."* (Interviewee 8)

The most reported barrier to their involvement was their time constraints to participate within programme efforts, which was often attributed to the demands of managing a large Trust. Facilitators of their engagement included early involvement in the process (from helping at the application stage or/and from attending the first learning session), learning about the programme (such as the quality improvement techniques, the targets set, the support networks available, and the motivational impetus delivered by IHI) and having other executives and staff engaged with the programme were described as.

> *"it's really important the Board is engaged early on in a real way and that the Board begins to see the data."* (Interviewee 3)

Five primary managerial roles within the SPI programme were identified (presented in Table 2). These dimensions are described within this section along with example quotations provided in Table 3. In terms of weighting, the dimensions 'commitment & support' and 'monitoring progress' were referred to by almost all CEOs. Most CEOs also discussed 'embedding programme elements' and 'staff motivation & engagement'. Resource provision was mentioned less than the others, but was still referenced by well over more than half of the CEOs. Although not discrete from one another, our findings show some indication of the stages in which CEOs most get involved in these dimensions, most notably resource allocation before the start and (to a lesser extent) at the end of the programme, followed by engagement, motivation, commitment and support for staff, and towards the end of the process the CEOs are more likely to engage in decisions and strategies to embed the programme elements in order to sustain it.

—Table 2—

1. RESOURCE PROVISION

Funding to support the SPI programme was deemed important and many CEOs recognised this as one of their primary contributions to the programme. This took two forms: their activities to bid and secure funding from outside the Trust (both at the application stage of SPI and for its continuation) and their authorisation of internal Trust resources (both financial and human resources). Each organisation involved in the programme were provided with an allotted sum of money (approx. £270,000 per hospital) and external resources, such as external monitoring by IHI. After the official two year period of implementation, withdrawal of these resources instigated plans to ensure that resources covered by initial funding and support could be continued. The most common resources authorised by CEOs for the SPI programme were: time allowed for SPI work and training; data collection and data support personnel; and an SPI coordinator to oversee the project.

2. STAFF MOTIVATION AND ENGAGEMENT

The CEOs described activities that empowered, motivated and reinforced staff involvement with the SPI programme. In accounts of motivating staff, the CEOs described *"creating an appetite"* and "*free[ing] up peoples thinking",* reporting an aim of changing staff attitudes towards the programme. Their actions to empower staff also included allowing them more power to authorise resources. Leadership walkrounds were considered a particularly useful tool for shared dialogue and as a listening exercise. The walkaround involved speaking with frontline staff across the hospital and was the principal activity of the CEOs position in the 'leadership workstream'. Constant communication with staff was critical to encourage their engagement with the programme. At times the CEOs were called in to deal with resistance to the programme, whereby they would either discuss the situation with the resisters, attempt to instil a sense of purpose, or in the worst case, threaten disciplinary measures for not adhering to SPI practices. Doctors were singled out as the profession with the most resistors, therefore facilitating doctor engagement was a commonly cited role. CEOs who attended

SPI learning sessions to learn about relevant improvement practices reported that their learning helped when engaging staff, as they were more knowledgeable on various aspects of the programme, such as quality improvement techniques and targets set.

Another critical task was encouraging Board buy-in through highlighting the programme strategies and targets. An NHS Board is made up of a chairman, executives, directors, and non-executives and, through regular meetings they jointly oversee, offer direction and are responsible for the financial and quality performance of the hospitals within their Trust. Employed by the Trust, the full-time executives/directors (e.g. CEO, Medical Director) are responsible for the day-to-day oversight of the hospitals and together with the chair and non-executives (recruited externally to the Trust on a part time basis) are all responsible for overall governance, strategy, achieving performance targets and standards. Therefore, collectively they hold influence over the quality and safety of their organisations.

3. COMMITMENT & SUPPORT

All 17 CEOs highlighted the importance of personal commitment and most believed that they acted as a support to staff implementing the programme. Some CEOs described acting as a role model to others and most agreed on the powerful effects that their visible commitment had. Demonstrations of commitment included: attending learning sessions; emphasising the purpose of SPI; attending leadership walkrounds; integrations of safety into the Board agenda such as safety stories at meetings and prioritising it on the agenda; speaking at sessions to explain the programme; and providing approval for SPI related practices. These were considered demonstrations of commitment to SPI because they required observable effort by the CEOs to prioritise, promote and become involved in the programme. Some made the point that acting as a figurehead is not enough, and that visible acts of commitment need to follow. A few described the potential for loss of momentum if their commitment was absent. A few of the interviewees recognised their role in creating the right climate and environment for others to undertake the programme work effectively, however they fell short of offering detailed description of what this actually involved. The interviewees reported to further aid

their staff with statements of purpose and direction. This endeavor was also referred to as *"selling"* the process. This was done through disseminating the programme aims and targets via workshops to staff and presentations to the Board. The CEOs also increased their involvement when SPI work activity was not heading in the right direction.

4. MONITORING

Monitoring the progress of the initiative was a frequently reported activity. The CEOs monitored progress by reviewing SPI outcome measures, reading reports, checking information and asking for information on particular programme actions and challenges at Board meetings. Outcomes were reviewed on a weekly or quarterly basis depending on the Trust, often in the form of presentations, safety-style dashboards and Run Charts.(23) While regularly reviewed, it was not always analysed or actioned, however many CEOs agreed that it both raised awareness and flagged safety issues, as well as offering the Board an opportunity to prioritise, openly discuss, understand and address trouble areas. Monitoring of progress was not only to explore challenges, but also as way of ensuring targets were met. Feedback to senior management at Board/project meetings on whether staff were complying with SPI prescribed activities, was thought to be a powerful influence on staff engagement and accountability. This is because staff were influenced by positive or negative responses from senior management. Accountability was generated at these meetings through assessment of targets met and actions delivered. The CEOs primary intention to monitor the process and its key clinical indicators was to become familiar with the programme and to keep track of progress rather than to improve compliance. Timeframes were set by the workstream leads and coordinators but CEOs would query the programme leads if they were falling behind on self-imposed deadlines and targets. Outside of the meetings, the CEOs did not audit the programme's progress or compliance to it, instead they relied on the implementers of the programme to report back on these, especially if there were any problems.

5. EMBEDDING PROGRAMME ELEMENTS

Many CEOs discussed changing system processes and strategies in order to facilitate change

necessary for new SPI activity and procedures. Embedding them into existing systems and processes was considered the most efficient way to sustain practices and the most cited approach used. The profile of quality and safety targets and plans were raised through adding SPI objectives high on the agenda and amending strategies to focus on SPI prescribed activity and aims. Examples included adding SPI targets into mission statements and strategic objectives. Integration of programme elements into existing systems involved amendments to processes, such as changes to performance management systems and strengthening lines of accountability associated with targeted outcomes. Putting reporting mechanisms in place and incorporating SPI elements into other existing initiatives, such as LEAN, were other frequently quoted methods of integration, as was including practices into staff objectives and individual performance management.

—Table 3—

Staff reports of dimensions of CEO involvement in SPI

Overall, the reports from the clinical workstream leads, programme coordinators and other managers involved in the SPI programme confirmed that executive involvement in the programme was important. The dimensions of CEO involvement can be closely matched to those that emerged from the self-reports (please see Table 4 for example quotations) However, different weightings were placed on the dimensions to those offered by the CEOs' transcripts and two sub-dimensions were not confirmed. The most referenced dimension in the staff reports was of 'commitment & support', followed by the majority referencing 'monitoring progress' and over half reporting 'staff motivation & engagement'. 'Resource provision' was mentioned by only a quarter of the interviewees almost solely referring to allocation of resources (i.e data collection, IT help and backfill time) rather than securing funding. Even fewer mentioned the action and benefits of the CEOs embedding programme elements, with no mention of their activities to change structures and embed programme elements for sustainability, instead mentions were of agenda change alone. No new dimensions emerged from the staff data.

Despite the difference in weighting of the dimensions, the staff reports substantiated the activities reported by the CEOs, such as their work towards the application of the programme, attendance at learning sessions and leadership walkrounds (initially considered apprehensively by many frontline staff but later welcomed). Moreover, the staff reports offered further insight into why CEO involvement was important and what each dimension offered to them. For example, staff feedback and presentation to the CEOs on SPI data measures (in the form of high level data and metrics in Run Charts and traffic light measures) and summaries of progress and future plans (through verbal presentations and written reports), were reported to provide awareness, recognition, solutions and direction from the CEOs. These were considered invaluable, especially the recognition of staff work, and staff conveyed their wish to avoid disappointing the CEO. This suggests benefits gained from subtle acts of listening to presentations, reading reports, understanding and acknowledging the difficulties faced in implementation. The CEOs may not have realised the power of such straightforward intangible acts.

Whilst most staff agreed that their CEO was engaged in the process and that their described commitment was valuable, they also portrayed the role of the CEO as secondary and supplementary to their own role in SPI. The staff saw themselves as the true implementers of the programme, while the CEOs were perceived to be best placed to offer assistance in the form of organisation-wide messages (statements of importance of the programme), recognition, direction, and trouble shooting. Staff expressed a preference for more involvement by their CEO on the dimensions outlined or more from this involvement. For example, remarks cited the disappointment at the lack of feedback and actions following the walkrounds. Whilst examples supported CEOs claims that they empowered staff to fix problems themselves, staff also viewed this as CEOs disregarding the opportunity to make organisation-wide changes. Alongside this, some reluctance to ask for help was communicated by the staff. There was speculation that the CEOs were preoccupied with organizational restructures and foundation status or other higher priorities, that they had superficial reasons for being involved (i.e. funding and profile), and that they were only concerned with a couple of aspects of the whole

programme (meetings and walkrounds).

Lastly, the peer reports highlighted the following activities and benefits of the CEO involvement that were not emphasised by the CEOs themselves: ensuring the right people are nominated for the programme, acting as a figurehead when IHI visited and meeting with the CEO of their paired SPI organisation (the 20 organisations paired up to share learning), maintaining external links with primary care Trusts, and offering an organisational perspective across all four workstreams.

—Table 4—

DISCUSSION

All of the CEOs in this study recognised the importance of their part in the SPI programme. The executives gave detailed accounts of their activities and perceived value they brought to all of the different stages of the process: from the initial application to start the initiative, through overseeing and encouraging the process, to its sustainability after resources diminished. This supports proposals that senior management make a significant contribution to quality and safety improvement initiatives in the healthcare setting.[11-13] In exploring the parts played by the chief executive officers, five critical dimensions were identified: 1)resource provision; 2)staff motivation & engagement; 3)commitment & support; 4)monitoring progress; and 5)embedding programme elements. Staff views of CEO involvement closely matched the dimensions that emerged from the self-reports by the CEOs, however, the dimensions of embedding for sustainability and resource provision did not surface as markedly and the weighting of the dimensions differed from the CEOs' reports.

Managerial commitment was an expected finding considering literature support for this inside and outside of healthcare.[27 28] We identified manifestations of commitment from: attending SPI learning sessions; leadership walkrounds; prioritising safety on the Board agenda; talks explaining the programme; stamps of approval for programme practices; and stating its purpose. On the latter,

research has implied the relevance of senior managerial influences in building the right culture for improvement.[15] Whilst a few of the interviewees recognised their responsibility in this, neither they nor the staff define these activities. Recent articles offer managerial actions on producing a good patient safety culture,[29] but less is known on creating the right culture for QI.

Studying the components of the senior management role in a hospital setting in the US, Bradley et al (2003) identified that the following manager-related variables affected their quality improvement (QI) initiative: senior management engagement; management's relationship with clinical staff; the promotion of an organisational culture of QI; support of QI with organisational structures; and procurement of organisational resources for QI.[10] Our findings are in accord with theirs, although interestingly our CEOs made more reference to their role as a monitor of the process. This included reviewing SPI measures and ensuring that programme targets were met. Due to a divergence of perceived monitoring benefits by CEOs and staff, further understanding of the beneficial ways of monitoring could assist managers in how to best carry out this task.

There is much recognition that QI initiatives require an open and mutual communication between management and clinical staff.[30 31] Our interviewees emphasised that the benefits of shared dialogue with clinical staff was both to receive input on quality and safety and to engage staff. Indeed, senior managers have been identified as holding a facilitating responsibility,[32-34] including research from another study on the first phase of the SPI programme showing importance of management involvement and commitment.[19] The present study confirms the earlier conclusions and shows that this entails motivating and empowering staff by providing them with more autonomy, reinforcing SPI compliant behaviours and attendance at the learning sessions to learn about improvement practices. Such learning is supported by studies that recommend managers to enhance their QI knowledge.[13] CEOs involvement in resource provision is also supported by research proposals that senior managers' activities for safety include granting resources for a comprehensive safety programme and permitting staff time for safety.[35] Our findings show that the most common resources authorised by CEOs for the SPI programme were time allowed for SPI work and training, data collection and data

analysis support personnel, information technology tools, and an SPI coordinator to oversee the project. However, these were mostly prescribed by IHI, and, while CEOS were happy with their distribution, they otherwise may have chosen different areas to resource.

Finally, a role reported by the CEOs as essential to achieving sustained learning and outcomes involved embedding SPI activity and procedures into existing organisational systems, strategies and processes. However, apart from references to changing Board agendas, staff made no mention of any of these strategies in relation to CEO involvement. This may be because this aspect of CEO involvement is mostly unseen by staff or that CEOs have either communicated their tasks differently or exaggerated their work on this. Recommendations based on these findings are to: modify Board agendas and prioritise safety; integrate programme targets into mission statements and strategic objectives; strengthen lines of accountability and introduce reporting mechanisms associated with programme outcomes; and incorporate programme approaches into other existing initiatives. Change of structures and systems by management has been shown to assist in the sustainability of QI programmes.[10] In other analyses of the SPI programme, its integration within organisational structures and processes featured dominantly within strategies to sustain it.[23] Such tasks arguably fit within the remit of senior management and further support the argument that their activity is relevant to collaborative methods being sustained, even if it may or may have not been in this case study.[11]

Limitations

It is important to highlight that this research has not been able to assess any association between the CEOs' roles and successes/failures of the SPI programme. It instead describes the CEOs' self-reported contribution to the programme. These self-reports may be subject to social desirability bias, especially as the interviewees were involved in the application process to secure implementation and additional programme funding. In a previous research survey of 635 of the SPI participators (including the CEOs), not only did senior management and frontline staff have many divergent views on the programme's strengths, weaknesses and impact, but also the senior managers held overall more

positive views than the frontline.[22 24] Equally, the fact that this sample volunteered for this high-profile initiative brings with it a self-selecting bias that is arguably likely to have led to an over-estimation of the involvement that senior managers at this level would typically engage in within most improvement initiatives in their Trusts. However we have tried to lessen this limitation with supplementary analysis with staff views of those involved in SPI.

The SPI programme achievements remain unclear. In a large formal evaluation of hospitals involved in the SPI programme, while gains in quality and safety were found, the gains were no larger than in the control hospitals that were not involved in the programme.[36] In particular, there may have been improvements in specific areas in some hospitals which were not detected by the broader evaluation. The evaluators themselves further noted that large scale effects may take a longer time to surface.[36] As the SPI as a programme did not demonstrate overall improvement or elucidate which organisations performed better than others, it is difficult to link CEO self-perceptions with formal outcomes, and the existing data does not show clear enough trends for this analysis. Lastly, the sample size is relatively small yet can be judged respectable when considering that the interviewees included all but one of the CEOs in charge of all of the NHS Trusts that participated within SPI across the UK and when considering the low number of CEOs in the wider UK population compared with other healthcare professionals. Nevertheless, a larger sample that is less homogenous would have strengthened the study and its findings.

Conclusion

This study addressed the call for more research-informed practical guidance on the role of senior management in QI initiatives and specifically identify critical dimensions of CEO involvement within the Safer Patients Initiative. The findings show that the CEOs provided key participation considered to significantly contribute towards the SPI programme. The reports reinforce conclusions in change management and the safety literature that have stressed the importance of CEO involvement, and further provide new evidence for specific critical dimensions of CEO involvement. Queries raised include the tangible benefits of executive involvement in changing structures & embedding for

sustainability and the practical steps to creating the "right" environment for QI. In providing a case-study illustration of the type of involvement that senior management engage in within an improvement collaborative, and at what stages certain actions took place, the study imparts guidance for other managers at this level opting into a similar intervention. The framework presented here could provide the basis for a quantitative assessment of CEO engagement in QI programmes, which might be linked to trends in process and outcome changes. Future work could also explore patterns of the types of CEO involvement across successful and unsuccessful sites.

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CONTRIBUTORS

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ETHICS APPROVAL

Ethical approval was obtained from the NHS National Research Ethics Service Leicestershire, Northamptonshire and Rutland Research Ethics Committee 2. Reference no. 07/H0402/69.

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SPI Aims
• Mortality: 15% reduction
• Adverse events: 30% reduction
• Ventilator-associated pneumonia: 0 or 300 days between
• Central line bloodstream infection: 0 or 300 days between
• Blood sugars within range (intensive care): 80% or more within range
• MRSA bloodstream infection: 50% reduction
• Crash calls: 30% reduction
• Harm from anticoagulation: 50% reduction in adverse events
• Surgical site infections: 50% reduction
Workstreams *(example change elements)*
• Perioperative care *(deep vein thrombosis prophylaxis, beta-blocker use)*
• Medicines management (medicines reconciliation, anticoagulants)
• General ward care *(early warning systems, rapid response team, hand hygiene)*
• Critical care *(ventilator bundle, central line bundle, daily goal sheets)*
• Leadership *(leadership walk-rounds, strategic prioritisation of quality and safety)*
Programme tools and methodology:
• Continuous quality improvement: semi-autonomous teams
• PDSA cycles and small tests of change
• Incremental spread to successively larger work systems
• Process measurement and analysis of run charts to determine effects
• Expert faculty support from IHI (site visits, conference calls, online email support)
• Large-scale learning sessions for multi-disciplinary improvement teams
• Online extranet for uploading and comparing process data with monthly feedback
• Collaborative learning community for networking and sharing best practices

Box 1: The Safer Patients Initiative - A Description

Table 1: Participant demographics

Gender	Clinical/Non-clinical Background	Tenure in Trust	No of SPI Hospitals Overseen by CEO
Male	Non-clinical	6-9 years	1
Male	Non-clinical	0-11 months	1
Female	Clinical	21 or more years	1
Male	Non-clinical	3-5 years	1
Male	Non-clinical	1-2 years	1
Female	Non-clinical	1-2 years	2
Male	Non-clinical	6-9 years	1
Male	Non-clinical	0-11 months	1
Male	Non-clinical	3-5 years	1
Female	Non-clinical	10-20 years	1
Female	Non-clinical	10-20 years	1
Male	Non-clinical	6-9 years	1
Male	Non-clinical	0-11 months	1
Female	Clinical	0-11 months	1
Male	Non-clinical	1-2 years	2
Male	Non-clinical	10-20 years	1
Male	Non-clinical	3-5 years	1

First Order Dimension	Sub-dimension	Dimension Description
1 RESOURCE PROVISION	1.1 Securing funding	This factor refers to the CEO function of securing funding for the SPI programme and allocating financial and human resources to aid the implementation and continuation of the programme.
	1.2 Resource allocation	
2 STAFF MOTIVATION & ENGAGEMENT	2.1 Motivation & empowerment of staff	This factor describes CEOs motivating, involving and engaging clinical staff with the SPI programme through communication, methods of empowerment and reinforcement.
	2.2 Shared dialogue	
	2.3 Reinforcement of staff involvement	
3 COMMITMENT & SUPPORT	3.1 Display of visible commitment	This factor refers to the CEOs' demonstration of their own commitment to the programme along with the CEOs' role of support (not through resources) to clinical staff involved in SPI. This includes "*creating the right environment"* for staff and *"selling"* the programme to them.
	3.2 Creation of right environment/climate	
	3.3 Directing staff & stating purpose	
4 MONITORING PROGRESS	4.1 Reviewing SPI measures	This factor illustrates the CEO activity of monitoring programme outcome measures and regularly requesting and reviewing overall performance on SPI, as well as indirectly generating accountability on progress.
	4.2 Performance management	
5 EMBEDDING	5.1 Strategy & agenda change	This factor comprises of changes made

PROGRAMME ELEMENTS	5.2 Structure change & embedding for sustainability	by the CEOs to strategies, agendas and processes in order to integrate SPI procedures and practices into them, so that they are sustained.

Table 2: Dimensions and sub-dimensions associated with CEO role in SPI

First Order Dimension	Sub-dimension	Example Quotes
1 RESOURCE PROVISION	1.1 Securing funding	*"we would probably take a paper to our Trust executive group shortly after that [the end of IHI involvement in the programme] with a decision…whether to continue on the current method [SPI approach], if so, are we going to internally fund it"* (Interviewee 6) *"We did make a decision to put aside a £200,000 patient safety reserve, a SPI reserve if you like, to fund the consequences of any initiatives that might come out or any requirements that might come out."* (Interviewee 7)
	1.2 Resource allocation	*"we resourced the central office, if you want to call it that, and tried to ensure that people had time, and energy, and the desire to do the right thing there."* (Interviewee 16) *"You have to do it and do it well and do it properly and fully and resource it properly. And I guess the NHS as a whole and to some extent us as well have a history of getting in to projects, not resourcing them properly, and then doing them half heartedly. And then they never work and you wonder why, and the answer's bloody obvious actually. But they won't let you do that with SPI."*(Interviewee 12)
2 STAFF MOTIVATION & EfNGAGEMENT	2.1 Motivation & empowerment of staff	*"I think we created the appetite. Nobody was knocking on our door saying they wanted to do patient safety so we created the appetite. So I guess that was top down."* (Interviewee 9) *"we've slowly over time ..[delegated work].. to try and increase level of autonomy..So I suppose it was part of me trying to free up people's thinking actually..my first couple of meetings saying, well what [is] 8 of those at 300 quid? Well do it you know and they just found that really liberating because that meant they made some really big strides in the middle of the project."* (Interviewee 14)
	2.2 Shared dialogue	*"what I see it [my role] as doing is setting an example that's about having the right dialogue.. And once you've got that engagement, and you've got that dialogue, these issues become central to the debate."* (Interviewee 16)

		"talking to the staff actually and more importantly listening to the staff about what's going on. You always learn such a lot..When did you last have an incident? What was, what caused it? What did you do about it?.. How many opportunities do you get to raise these sorts of issues?" (Interviewee 13) *"They [walkrounds] help the visibility mantra which everybody says about executive teams don't they? They have been an interesting cross check about the things that you think are going on in the organisation"* (Inteviewee 17)
	2.3 Reinforcement of staff involvement	*"clearly if they've [clinical staff] not been following our policies in terms of hand washing and so on, they'll be disciplined. Simple as that..I've got nurses ringing me up saying I've told a doctor off, he hasn't changed his behaviour and we're now following that up..They've been talked to..some of that is about saying, excuse me, but you are doing this actually."* (Interviewee 3) *"what I then used..saying right where are all the surgical CDs who are looking at their shoes, why aren't you doing it? And next time we meet to talk about this I want to know your experiences on how you do it, so you sort of try and create a purpose to it"* (Interviewee 14) *"initially it was more around initial conversation with [director name] and getting him on Board"* (Interviewee 16)
3 COMMITMENT & SUPPORT	3.1 Display of visible commitment	*"If they don't see you believe in it [SPI], why the hell should they struggle?"* (Interviewee 2) *"I think the most important role is to be seen to be committed to it [SPI].. It's all very well being a figurehead, but this doesn't allow you to get away with just turning up for the celebratory glass of wine or whatever it is. You've actually got to be in there and do it"*(Interviewee 12) *"we've puffed our chests up and said we are serious about this and then we have to follow through. But what's interesting now that we are following through, people believe it and there is a visible, noticeable difference in the last two or three weeks out there on the wards in terms of*

		consultants, they're taking their ties off, they're rolling their shirts up, they're washing their hands and people are challenging." (Interviewee 3)
	3.2 Creating the right environment/climate	*"What a Chief Executive has to do is to build a coalition of support to a broad framework within which people work."* (Interviewee 15) *"And it's about creating the right climate..in some respects I created a climate of restraint"* (Interviewee 14)
	3.3 Directing staff & stating purpose	*"one of the things I was keen that we did was to make this something that the whole Board was interested in and not just the acute hospital because some of the learning will run across other parts of our service out in the community. So from day one we put together a very broad communication."* (Interviewee 9) *"we have a five year vision that actually can be brought down to one sheet of paper. Eventually it will be in several vehicles, it will be a glossy document that will be presented to all new staff, that will be brought out at the start of any project meeting...on the one page one, the work SPI appears..So a Chief Executive has to do some top down things, about setting a tone, setting a direction...The first one [task], [is] to adopt it [SPI], to take advice, to accept advice. The second one, then, is to learn enough about it that you can speak authoratively. Chief Executives have to be able to speak about everything for 90 seconds..so a Chief Executive needs to have a 90 second elevator speech..that you can turn to a group of doctors, in the right situation, and say SPI is really the thing because, and then you list whatever"* (Interviewee 15)
4 MONITORING PROGRESS	4.1 Reviewing SPI measures	*"we are seeing well populated Run Charts, we're being able to use and understand the data more effectively, both at a senior level and within the teams."* (Interviewee 9) *"I'm regularly looking at the information that is produced from it [SPI], I wouldn't say I'm looking at the data itself...It's normally a presentation, or patient story, or something like that..so that's changed the Board [agenda] in that you're not straight into finance..But whether we're hugely different to where we were 18 months ago, I don't know really."*(Interviewee 10)

		"at the breakfast meetings..we go through all the [SPI] measures" (Interviewee 7)
	4.2 Performance management	*"we've got a different design for our performance management.. data points that will be demonstrated for assurance purposes at the Board."* (Interviewee 3) *"I think it's [SPI is]in our operational plan, it's a performance measure in there, so therefore, when we meet the divisions on a monthly basis, one of the things we'll be asking them for is their SPI measures."* (Interviewee 10)
5 EMBEDDING PROGRAMME ELEMENTS	5.1 Strategy & agenda change	*"for me, it's, it'll [SPI will]be a way of doing things, integrated into where we are, and it has to be key item on every agenda, the things that's shaping the debate."* (Interviewee 16) *"I had to make some clear statements from the word go about where it [SPI] was on the agenda, so it was, it has been the first item on the Management Board agenda for the last 18 months. The patient SPI, right, where are we, what have we achieved, what are we doing?..we've set, tried to set it in the strategic context of what the Trust is doing. The Trust Board adopted a new mission statement..that there would be three main themes..and one of them was the Safer Patient Initiative and patient safety."* (Interviewee 13)
	5.2 Structure change & embedding for sustainability	*"[we need to] make sure that the elements of SPI that we keep are integrated into our performance management regime."* (Interviewee 4) *"the way we've rolled out SPI..we integrated it into people's directorate objectives, that's why we keep the profile up."* (Interviewee 5) *"that's how you begin..you narrow the gap between the activities of the initiative and disciplines around directorate management and delivery, you narrow that by drawing it together and holding people to account for outcomes"* (Interviewee 14)

Table 3: Dimensions and Sub-dimensions Example Quotes – CEO Self Reports

First Order Dimension	Example Quotes
1 RESOURCE PROVISION	*"Any other support [from Board and CEO] has been around trying to acquire resources, so for instance there's a large infection control component and .. we've had a nurse on this site who's been collecting information around central lines, VAPs and so on and they haven't had that resource on the other site, because we were two separate trusts. So they collected their data on VAPs and other infections in a different way. Because we're one trust now and we're taking this forward, we want to have the same process on all the sites, so that's where the management are essential, so it's that sort of financial and resource support"* (Trust 12, clinical lead, critical care) *"some of the changes that we've needed with IT and that I have pushed up to the leadership because it's not something I've been able to influence really."* (Trust 17, clinical lead, medicines management)
2 STAFF MOTIVATION & ENGAGEMENT	*"they're [executives are] well equipped to give that person the idea of how to put it right themselves. Which really empowers them more and makes them feel an awful lot better, because then they realise that they can actually sort the problem out themselves, and they didn't have to go to somebody quite high up the board to get it sorted. It was something that they could have done themselves."* (Trust 8, clinical lead, critical care) *"we've got leadership rounds, and that's made a big difference to identifying the problems on the wards, but actually some of the problems have been given back to the wards when really we should be saying, this is common across the Trust, let's solve it by the Trust."* (Trust 13, clinical lead, medicines management) *"We had such a problem with infection here, we were just desperate to do something about it and quite a lot of the, my more dapper colleagues, were very reluctant to shed their nice suits and shirts and, or to roll up the sleeves on their shirts because they didn't think it looked professional.. all the problems evaporated when the chief executive sent out an email inviting for a one-to-one interview any clinician who didn't wish to follow this particular policy, and I believe no one took her up on it."* (Trust 16, clinical lead, general wards)

3 COMMITMENT & SUPPORT	*"I certainly know that our Chief Executive has met with all the consultants in small groups..certainly [CEO] has said himself, if you've got problems then you come directly to me. If it's Safer Patient then you get straight access to me, and that has been really encouraging."* (Trust 1, clinical lead, general wards) *"we would feedback the activities from the previous month, our anticipation of what would happen the following month and any issues that we were faced with, that we needed support from the leadership team. And whether that was a resource issue or something about can't get clinicians involved, whatever and that was fine"* (Trust 14, director of nursing)
4 MONITORING PROGRESS	*"there's a quarterly report to the Trust Board.. the chief exec does a section as part of his report each month. And then [name] or I, or both, go and talk about something specific every quarter. So in December, it was the walk rounds and what we'd done there. And in, three months after that, whatever it was, March, February, March, we presented to them he Run Charts. And next time we'll do something different"* (Trust 9, general manager) *"[with CEO and management team] we will go through.. our traffic light measures.. which would show all of our measures then and then where we are with them. Green, we're passing the Run Chart rows, and the amber, where we aren't passing the rows just yet, and then the red is if we haven't got any data points against it.. what we do is pick on, put together a progress report, which is then brought to a trust board.. and generally during the meeting we can raise any concerns we may have about certain, about if there's any measures that we're struggling with"* (Trust 10, programme coordinator)
5 EMBEDDING PROGRAMME ELEMENTS	*"our new chief exec has made sure that safety is put on the agenda first, so she's also a very good driving force for it"* (Trust 8, programme coordinator) *"Go back, ask them to give you the board agendas for about the last 18 months and you tell me where you see clinical governance. It was always down the pecking order.. it's now on the agenda, it's on the agenda as patient, as the SPI thing.. I've got the support of the chief exec"* (Trust 11, medical director)

Table 4: Dimensions Example Quotes – Staff Peer Reports

The ~~self-reported~~ role of chief executive officers in a quality improvement initiative: a qualitative study

ABSTRACT

Objectives: To identify the critical dimensions of hospital Chief Executive Officers' (CEOs) involvement in a quality and safety initiative~~: the Safer Patients Initiative (SPI),~~ and to offer practical guidance to assist CEOs to ~~fulfil~~ fulfill their leadership role in quality improvement.

Design: Qualitative interview study.

Setting: 20 organisations participating in the main phase of the Safer Patients Initiative (SPI) programme across the UK.

Participants: 17 ~~Chief Executive Officers~~CEOs overseeing 19 organisations participating in the main phase of the SPI programme and 36 staff (20 workstream leads, 10 coordinators, and six managers) involved in SPI across all 20 participating organisations.

Main outcome measure: Self-reported perceptions of CEOs on their contribution and involvement within the SPI programme, supplemented by staff peer-reports.

Results: The CEOs ~~in this study~~ recognised the importance of their part in the SPI programme and gave detailed accounts of the perceived value that their involvement had brought at all stages of the process~~: from the initial application of the initiative, through overseeing and encouraging the process, to its sustainability after resources diminish~~. In exploring the parts played by the CEOs, five dimensions were identified: 1)resource provision; 2)staff motivation & engagement; 3)commitment & support; 4)monitoring progress; and 5)embedding programme elements. Staff reports confirmed these dimensions, however the weighting of the dimensions differed. The findings stress the importance of particular actions of support and monitoring such as constant communication through leadership walkarounds and reviewing programme progress and its related clinical outcomes at Board meetings.

Conclusion: ~~This study has attempted to address the call for more research informed practical guidance on the role of senior management in QI initiatives and identify dimensions of CEO involvement within SPI. It draws on empirical material from multiple healthcare settings to present~~

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~~the CEOs' key participation that they considered to significantly contribute towards the programme and new evidence for specific critical dimensions of their involvement. Illustration of the type of involvement that these executives engaged in imparts guidance for other managers at this level opting into a similar intervention.~~ This study addressed the call for more research-informed practical guidance on the role of senior management in QI initiatives. The findings show that the CEOs provided key participation considered to significantly contribute towards the SPI programme. CEOs and staff identified a number of clear and consistent themes essential to organisation safety improvement. Queries raised include the tangible benefits of executive involvement in changing structures & embedding for sustainability and the practical steps to creating the "right" environment for QI.

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ARTICLE SUMMARY

Article Focus

- To qualitatively identify the perceived critical dimensions of hospital Chief Executive Officers (CEOs) involvement in a quality and safety initiative: the Safer Patients Initiative (SPI).

Key Messages

- The findings show that the CEOs provided key participation that they and others considered to significantly contribute towards the SPI programme.
- Five primary managerial roles within the SPI programme were identified: 1)resource provision; 2)staff motivation & engagement; 3)commitment & support; 4)monitoring progress; and 5)embedding programme elements.
- ~~the executives' changing structures & embedding for sustainability and on~~ Queries raised include the tangible benefits of executive involvement in changing structures & embedding for sustainability and the practical steps to creating the "right" environment for QI

Strengths & limitations of this study

- This study addresses the call for more research-informed practical guidance on the role of senior management in QI initiatives. It makes an evidence-based contribution to the quality debate around leadership in healthcare by drawing on original empirical material collected across 20 UK healthcare settings. The findings impart guidance for other managers at this level opting into a similar intervention and outline certain actions pertaining to different stages of the programme.
- The CEOs' self-reports may be subject to social desirability bias. Similarly, self-selecting bias may derive from the fact that the CEOs volunteered for the high-profile initiative, arguably leading to an over-estimation of the involvement that senior managers at this level would typically engage in within most improvement initiatives within their Trusts. However we have tried to lessen this limitation with supplementary analysis with staff views of those involved in SPI.
- No association can be made between the CEOs' dimensions and the successes/failures of the SPI programme.

FUNDING

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COMPETING INTERESTS

There are no competing interests.

INTRODUCTION

The number of quality improvement initiatives in the healthcare sector is growing rapidly. ~~They share in common,~~Their aim is ~~a goal~~ to improve processes, structures and systems through continuous quality improvement techniques in order to improve outcomes of care.[1-3] Research examining these

programmes and larger-scale collaboratives have found some evidence of their impact;[4] their sustainability;[5 6] and economic benefits.[7-9]

~~Literature discussing what makes these initiatives effective and sustainable often make mention of the essential contribution of senior management~~Effective support from senior managers is believed to be critical to the success of their programmes.[10] ~~The type and degree of support from management was one of five areas suggested to affect the effectiveness of a quality collaborative by a collective group of quality improvement experts.~~[11] ~~This echoes earlier research findings on this subject.~~[12] In a review of healthcare Board level and senior management behaviours associated with quality improvement outcomes, Øvretveit (2009) identified a plethora of studies that impart the importance of managerial involvement and engagement in quality and safety improvement.[13] Actions frequently referenced as beneficial included displays of senior management commitment and support [14] and creating the right culture.[15] However, Øvretveit ~~concludes~~ concluded that there is little research-based practical guidance to outline the details of the senior management role in leading improvement and ~~calls~~ called for more academic research on this topic.[13] This study ~~intends~~ addressed the issue ~~to answer this call~~ by exploring the self-reported participation of Chief Executive Officers (CEOs) involved in the second phase of an organisation-wide quality and safety collaborative, the Safer Patients Initiative (SPI), to better understand the role of Board level senior managers within such initiatives.

The Safer Patients Initiative and our previous research

Funded by the UK Health Foundation, the Safer Patients Initiative (SPI) was developed by the Institute for Healthcare Improvement (IHI). It was piloted with four UK NHS organisations in its first phase (2004-2006) and applied at a further 20 in its second phase (2006-2008).[16 17] Designed to achieve improvements in patient safety, SPI attempted to make changes at an organisational level and in front line care processes within four clinical areas through implementing a number of clinical working practices with continuous quality improvement and process measurement techniques. The main elements of the SPI programme are outlined below in Box 1. Today, ~~much~~ many of the

principles of SPI have continued with 18 of the involved organisations opting in to the follow-up initiative 'The Safer Patients Network'.

In our previous research, we have investigated ~~individual topics~~a number of factors affecting ~~concerning~~ the SPI programme~~,~~. These ~~including~~ include organisational readiness for SPI, clinicians' engagement with SPI, leadership walkrounds prescribed by SPI, and predictors and perceptions of impact of SPI. In the pilot phase of SPI, survey responses by those involved (clinical leads, coordinators and management) rated senior management support as the highest ranking strength in the implementation of SPI~~,~~.[18] Additional ~~whilst~~ qualitative analyses revealed manager involvement as a reported facilitator of medical engagement in SPI.[19] This involvement comprised of allocating resources, having good management-doctor relationships, and commitment at executive management level. ~~As a highly focused topic within a smaller sample, it would be useful to find out whether the dimension of medical engagement emerges as an essential aspect of CEO involvement within the programme. Similarly, the broad indication of commitment and support at senior management offer a good starting point to investigate what dimensions potentially contribute to their involvement being rated as a strength of programme implementation.~~ Other interview findings ~~at this phase emerge from examination of the impact of SPI,~~ show~~inged~~ that senior managers helped to remove barriers and empower staff to change processes through events such as leadership walk-rounds.[20] In research on the main phase of SPI, we extracted further perspectives on leadership walkarounds that revealed that they can help executives learn about their organisations and help clinical staff overcome misperceptions of the executives ~~and raise hidden issues and overcome bureaucracy~~.[21] ~~In light of these findings, it is likely that leadership walkrounds will feature as a critical dimension of CEO involvement in SPI. Our present study intends to find what other dimensions exist and how they are related.~~

In our longitudinal quantitative work, programme implementation factors, including senior management processes, were found to contribute significantly to change in organisational safety climate and capability linked to programme milestones, above and beyond the effects of programme

contextual factors and organisational preconditions.[22] ~~However, here w~~We have~~do~~ not previously identified ~~learn~~ which senior management ~~processes~~ behaviours are perceived to be important. In other ~~examination~~ investigation across two time points, we identified strategies for sustaining SPI that were reported to require senior management help on financial and human resources for the programme.[23] ~~While not always identified by the coordinators as a senior management function, a~~as well as ~~few facilitating strategies appeared to be those within the remit of management action or authorisation, such as~~ incorporating ~~elements~~ patient safety into induction and training. ~~We need to explore further to find out whether these indeed are senior management activities or not.~~ In addition, the coordinators considered 'management involvement' generally to facilitate continuation of the programme and suggested that it was essential to feedback to senior management to keep SPI aims high on their agendas to improve their understanding and enthusiasm for the programme. Exploring CEO actions may highlight the reasons why this is important, for example whether feedback elicited follow-up actions by the managers. Other generic findings from investigation at the main phase revealed executive management commitment to quality as a strength of the programme according to ratings from both senior management and frontline staff.[24] ~~Similarly to our other studies, what possible acts took place was not within the scope of this quantitative study.~~

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~~On the whole~~In summary, our previous research has suggested an importance in managerial involvement and commitment in SPI and identified ~~a few~~some potential dimensions of this involvement. However these have not been described in detail or confirmed by CEOs directly.~~Some of these findings however have grouped different positions of management together and all of them were restricted by a specific subject of analysis. What is missing then is a study to detail the parts played by senior management. Many have offered countless assumptions that senior management should lead quality improvement and proposed suggestions of how to lead,[25] but we intend to offer evidence on the critical dimensions of their actual involvement rather than opinions on what this should be.~~ Our specific research aims are to identify the critical dimensions of hospital CEOs involvement in SPI, and to offer practical guidance and classifications that will assist CEOs to fulfil their leadership role in quality improvement.

—Box 1—

METHODS

Sample

Setting

Interviews were carried out across all 20 NHS hospitals participating in the second phase of the SPI programme across four geographical locations in the UK: England, Northern Ireland, Scotland and Wales. The hospitals varied in terms of type (e.g. teaching) and size. The biggest participating Trust[1] had a total of 22,000 staff (not all of their hospitals were involved in SPI) and the smallest had 2,100 staff (est. June 2008). Two Trusts each had two hospitals involved in SPI.

Participants

A purposive sampling strategy across all 20 organisations aimed to include the Chief Executive Officers at all of the participating organisations. These senior managers were often involved in the 'Leadership workstream' that governed the SPI programme across all of the clinical workstreams in which it was implemented. This workstream were advised to walk around the hospital in "Leadership Walkrounds" and to have a strategic prioritisation of quality and safety.

Seventeen interviews were conducted with CEOs representing 19 of the 20 hospitals participating in the SPI programme. There were only 17 participants because one CEO did not participate in the interviews (we have reason to believe this was because s/he was busy in the process of moving on to another Trust), and two of the CEOs managed more than one participating hospital. Specifically,

[1] *An NHS Trust is a public sector organisation~~s~~ led by a Board that manages one or more hospitals to ensure their quality and financial performance and service developments*

every Trust was managed by a different CEO and ~~only~~ two Trusts had ~~more than one~~two hospitals participating in the SPI programme~~, therefore two CEOs oversaw two hospitals participating in SPI, while the rest each oversaw one participating hospital.~~ Please see Table 1 for participant demographics.

—Table 1—

Supplementary analysis was carried out on 36 interviews with staff involved in the SPI to verify/challenge the CEO self reports. This comprised 20 workstream clinical leads (five per workstream), 10 programme coordinators, and six management (two directors of nurses, two medical directors, a general manager, and a clinical governance manager), which amounted to two interviewees per CEO, including the CEO not interviewed.

Procedure

The data collection period was between April-August 2008 towards the official end of the SPI programme and comprised of face-to-face interviews lasting approximately between 45-60 minutes. Interviewees were shown a research information sheet, briefed on their anonymity and asked to sign a form consenting to audio recording the interviews for transcription and analysis. A standardised semi-structured interview topic schedule was used by two interviewers (pairings of five different researchers, JB, AP, SB, SI, APo), which addressed the senior managerial role along with a host of issues regarding the programme. This is because, as shown in the introduction, the study investigated a number of issues surrounding SPI of which the senior management role was one topic of investigation. Example questions directly asking CEOs about their role included: *"What are your main responsibilities?"* and *"how were/are you involved in SPI?"* ~~and for other s~~Staff were asked~~:~~ *"how was/is your senior management/executives involved in SPI?"*

Data Analysis

The interviews were transcribed by professional transcribers. Qualitative analysis was performed, based on ~~–~~ inductive ~~content and~~ grounded theory analysis techniques of open coding, constant comparative analysis and theory building, ~~was performed~~ with the aid of NVivo 8 software.[~~26~~ 25 ~~27~~ 26] The 17 CEO transcripts were divided and independently coded by the five researcher interviewers ~~so that three of the researchers content analysed three transcripts each~~ (JB, SB, SI~~) and two researchers content analysed four transcripts each (~~, AP, APo). This ~~content analysis~~ comprised of identifying any text, indirect or direct, pertaining to the executives' involvement (actions, work or contributions) within the SPI programme. This resulted in one ~~Nvivo node (~~code~~)~~ containing all references to CEOs involvement. Line-by-line ~~Open~~ open coding was then performed by one researcher (AP) on all of the CEO transcripts to deconstruct the dataset and draw out singular dimensions~~was then carried out by one researcher (AP)~~. This was also carried out on this node coded by the other researchers ~~as well as on all of the CEO transcripts in order~~ to ~~both~~ compare ~~with the other researchers'~~ inclusions. ~~that they identified the text as CEO involvement and to be carry out a thorough analysis in order not to overlook any relevant text.~~ At this stage of analysis, ~~more~~ highly specific codes ~~were identified in accordance with the aim to draw out the critical dimensions or roles of CEO involvement in SPI. Therefore, codes~~ related to perceptions of CEO contributions and actions were identified. The importance of their involvement in the SPI programme, and barriers and enablers were also coded to provide additional contextual information to the managers' roles. All references coded concerned the managers' actual involvement/contributions and barriers or enablers faced, as opposed to their opinions on what managers in their position should do or would likely face. ~~Next,~~ The constant comparative method was used to compare emerging codes with earlier codes drawn from the dataset and individual codes were grouped into related themes in order to build a model of the main dimensions and their sub dimensions. No previous theory was used to analyse the data, all categories were developed from the data. After iterative refinement of the relationships, a model was identified that consisted of the critical dimensions of the CEOs involvement within the SPI programme, based on the CEOs' reports. To ensure reliability of coding and interpretation, a sample of data fragments

were checked and resolved through dialogue with other members of the team by one researcher (AP) identifying differences in coding between the five coders and speaking with the coders in question to arrive at an agreement, ~~and t~~The model was considered by external members of the team for their opinion on whether the sub dimensions have face validity under the chosen dimensions. ~~Next, t~~The same analysis ~~(bar the initial content analysis)~~ was carried out on staff transcripts. The dimensions from the staff reports were compared with the model that emerged from the self reports. ~~The sample per Trust did not allow for robust contextual or organisational comparisons.~~ The findings section pertains to the CEO reports, with a supplementary summary of the reports by staff.

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FINDINGS

The levels of involvement in the programme varied between the executives, however all gave accounts of the value that they believed to have brought at all stages of the process. They considered their involvement in the initiative as a significant influence on the potential for programme success/failure.

"I went away on leave, came back, and it had just all gone downhill because I wasn't there." (Interviewee 8)

The most reported barrier to their involvement was their time constraints to participate within programme efforts, which was often attributed to the demands of managing a large Trust. Facilitators of their engagement included early involvement in the process (from helping at the application stage or/and from attending the first learning session), learning about the programme (such as the quality improvement techniques, the targets set, the support networks available, and the motivational impetus delivered by IHI) and having other executives and staff engaged with the programme were described as.

"it's really important the Board is engaged early on in a real way and that the Board begins to see the data." (Interviewee 3)

~~It became apparent that some CEOs delegated their Clinical Director or Medical Director to enact the critical dimensions mentioned by other CEOs.~~

~~*"the [x] Trust has a turnover of £[x], and therefore directors in the [x] Trust fulfil the role that might in smaller organisations be occupied by Chief Executives. So the Medical Director has really been my deputy, my representative at all those things."* (Interviewee 15)~~

~~*"it's really important the Board is engaged early on in a real way and that the Board begins to see the data."* (Interviewee 3)~~

Five primary managerial roles within the SPI programme were identified (presented in Table 2). These dimensions are described within this section along with example quotations provided in Table 3. In terms of weighting, the dimensions 'commitment & support' and 'monitoring progress' were referred to by almost all CEOs. Most CEOs also discussed 'embedding programme elements' and 'staff motivation & engagement'. Resource provision was mentioned less than the others, but was still referenced by well over more than half of the CEOs ~~and consequently stands firm as a critical dimension of CEO involvement in SPI~~. Although not ~~discretely~~discrete from one another, our findings show some indication of the stages in which CEOs most get involved in these dimensions, most notably resource allocation before the start and (to a lesser extent) at the end of the programme, followed by engagement, motivation, commitment and support for staff, and towards the end of the process the CEOs are more likely to engage in decisions and strategies to embed the programme elements in order to sustain it.

—Table 2—

1. RESOURCE PROVISION

Funding to support the SPI programme was deemed important and many CEOs ~~saw it as their task to secure and provide it and~~ recognised this as one of their ~~considerable~~ primary contributions to the programme. This took two forms: their activities to bid and secure funding from outside the Trust (both at the application stage of SPI and for its continuation) and their authorisation of internal Trust resources (both financial and human resources). Each organisation involved in the programme were provided with an allotted sum of money (approx. £270,000 per hospital) and external resources, such as external monitoring by IHI. After the official two year period of implementation, withdrawal of these resources instigated plans to ensure that resources covered by initial funding and support could be continued. The most common resources authorised by CEOs for the SPI programme were: time allowed for SPI work and training; data collection and data support personnel; and an SPI coordinator to oversee the project.

2. STAFF MOTIVATION AND ENGAGEMENT

The CEOs described activities that empowered, motivated and reinforced staff involvement with the SPI programme. In accounts of motivating staff, the CEOs described *"creating an appetite"* and "*free[ing] up peoples thinking",* reporting an aim of changing staff attitudes ~~to improve behaviour~~ towards the programme. Their actions to empower staff also included ~~providing autonomy through~~ allowing them more power to authorise resources. ~~Particularly when describing motivating or empowering actions, the CEOs detailed the benefits they gained from listening to the frontline to get their input on safety issues.~~ Leadership walkrounds were considered a particularly useful tool for shared dialogue and as a listening exercise. The walkaround involved speaking with frontline staff across the hospital and was the principal activity of the CEOs position in the 'leadership workstream'. Constant ~~mmunicating~~ communication with staff was ~~particularly useful in attempting~~critical to encourage their engagement with the programme~~, through conversations on issues arising from implementation of programme elements and reinforcing behaviours including expressions of vocal encouragement or disapproval of non-compliance~~. At times the CEOs were called in to deal with resistance to the programme, whereby they would either discuss the situation with the resisters, attempt to instil a sense of purpose, or in the worst case, threaten disciplinary measures for not

adhering to SPI practices. Doctors were singled out as the profession with the most resistors, therefore facilitating doctor engagement was a commonly cited role. CEOs who attended SPI learning sessions to learn about relevant improvement practices reported that their learning helped when engaging staff, as they were more knowledgeable on various aspects of the programme, such as quality improvement techniques and targets set.

~~Mention was also made~~Another critical task was ~~of~~ encouraging Board buy-in through highlighting the programme strategies and targets. ~~The~~ An NHS Board is made up of a chairman, executives, directors, ~~(including the CEO)~~ and non-executives ~~–~~and, through regular meetings they jointly ~~collectively~~ oversee, offer direction and are responsible for the financial and quality performance of the hospitals within their Trust. Employed by the Trust, the full-time executives/directors (e.g. CEO, Medical Director) are responsible for the day-to-day oversight of the hospitals and together with the chair and non-executives (recruited externally to the Trust on a part time basis) are all responsible for overall governance, strategy, achieving performance targets and~~Therefore, they~~ standards. Therefore, collectively they hold ~~crucial control~~influence over the ~~activities, culture and~~ quality and safety of their organisations ~~and consequently their engagement is likely to be influential~~. CEOs engaged the Board through discussions at meetings, those CEOs who attended SPI learning sessions to learn about relevant improvement practices reported that their learning helped when engaging others, as they were more knowledgeable on various aspects of the programme, such as quality improvement techniques and targets set.

3. COMMITMENT & SUPPORT

All 17 CEOs ~~unanimously agreed~~highlighted ~~on~~ the importance of ~~their~~ personal commitment and most believed that~~, in some way,~~ they acted as a support to staff implementing the programme. Some CEOs described acting as a role model to others and ~~many~~ most agreed on the powerful effects that their visible commitment ~~has~~ had. Demonstrations of commitment included ~~some of their aforementioned actions~~: attending learning sessions; emphasising the purpose of SPI; attending leadership walkrounds; integrations of safety into the Board agenda such as safety stories at meetings

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and prioritising it on the agenda; speaking at sessions to explain the programme; and providing approval for SPI related practices. These were considered demonstrations of commitment to SPI because they required observable effort by the CEOs to prioritise, promote and become involved in the programme. Some made the point that acting as a figurehead is not enough, ~~instead~~ and that ~~the outlined~~ visible acts of commitment need to follow. A few described the potential for loss of momentum if their commitment was absent~~, illustrated by examples of times CEOs were unavailable to commit~~. A few of the interviewees recognised their role in creating the right climate and environment for others to undertake the programme work effectively, however they fell short of offering detailed description of what this actually involved. The interviewees reported to further aid their staff with statements of purpose and direction. This endeavor ~~has~~ was also ~~been~~ referred to as *"selling"* the process. This was done through disseminating the programme aims and targets via workshops to staff and presentations to the Board. The CEOs also increased their involvement when SPI work activity was not heading in the right direction.

4. MONITORING

Monitoring the progress of the initiative was a frequently reported activity. The CEOs monitored progress by reviewing SPI outcome measures, reading reports, checking information and asking for information on particular programme actions and challenges at Board meetings. Outcomes were reviewed on a weekly or quarterly basis depending on the Trust, ~~Often~~ often in the form of presentations, safety-style dashboards and Run Charts~~.~~(.(23) ~~outcomes were reviewed on a weekly or quarterly basis, depending on the Trust. This took the form of processed information rather than raw data.~~ While regularly reviewed, it was not always analysed or actioned, however many CEOs agreed that it both raised awareness and flagged safety issues, as well as offering the Board an opportunity to prioritise, openly discuss, understand and address trouble areas. Monitoring of progress was not only to explore challenges, but also as way of ensuring targets were met. ~~It was additionally considered as a method of increasing frontline staff compliance indirectly through f~~Feedback to senior management at Board/project meetings on whether staff were complying with SPI prescribed activities, was thought to be a powerful influence on staff engagement and accountability. This is because staff were

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influenced by positive or negative responses from senior management. A~~Accountability~~ ccountability was ~~also said to be~~ generated at these meetings through assessment of targets met and actions delivered. The CEOs primary intention to monitor the process and its key clinical indicators was to become familiar with the programme and to keep track of progress rather than to improve compliance. Timeframes were set by the workstream leads and coordinators but CEOs would query the programme leads if they were falling behind on self-imposed deadlines and targets. Outside of the meetings, the CEOs did not audit the programme's progress or compliance to it, instead they relied on the implementers of the programme to report back on these, especially if there were any problems.

5. EMBEDDING PROGRAMME ELEMENTS

Many CEOs discussed changing system processes and strategies in order to facilitate change necessary for new SPI activity and procedures. Embedding them into existing systems and processes was considered the most efficient way to sustain practices and the most cited approach used. The profile of quality and safety targets and plans were raised ~~Changing strategies and agendas, particularly at the Board level, was carried out to help integrate the SPI programme, because, t~~through adding SPI objectives ~~(i.e. patient safety)~~ high on the agenda and amending strategies to focus on SPI prescribed activity and aims~~, it raised the profile of SPI/patient safety targets and created plans to achieve them.~~ Examples included adding SPI targets into mission statements and strategic objectives. Integration of programme elements into existing systems involved amendments to processes, such as changes to performance management systems and strengthening lines of accountability associated with targeted outcomes. Putting reporting mechanisms in place and incorporating SPI elements into other existing initiatives, such as LEAN, were other frequently quoted methods of integration, as was including practices into staff objectives and individual performance management.

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—Table 3—

Staff reports of dimensions of CEO involvement in SPI

Overall, the reports from the clinical workstream leads, programme coordinators and other managers involved in the SPI programme ~~suggested~~ confirmed that executive involvement in the programme was important. The dimensions of CEO involvement can be closely matched to those that emerged from the self-reports~~,~~ (please see Table 4 for example quotations) ~~however~~However, different weightings were placed on the dimensions to those offered by the CEOs' transcripts and ~~a couple~~two ~~of~~ sub-dimensions ~~did not present themselves in the additional analysis~~were not confirmed. The most referenced dimension in the staff reports was of 'commitment & support', followed by the majority referencing 'monitoring progress' and over half reporting 'staff motivation & engagement'~~,~~. ~~yet~~ '~~resource~~ Resource provision' was mentioned by only a quarter of the interviewees almost solely referring to allocation of resources (i.e data collection, IT help and backfill time) rather than securing funding. Even fewer mentioned the action and benefits of the CEOs embedding programme elements, with no mention of their activities to change structures and embed programme elements for sustainability, instead mentions were of agenda change alone. No new dimensions emerged from the staff data~~, only a few activities not mentioned in the self reports~~.

Despite the difference in weighting of the dimensions, the ~~peer~~ staff reports substantiated the activities reported by the CEOs, such as their work towards the application of the programme, attendance at learning sessions and leadership walkrounds (initially considered apprehensively by many frontline staff but later welcomed). Moreover, the ~~peer~~ staff reports offered further insight into why CEO involvement was important and what each dimension offered to them. For example, staff feedback and presentation to the CEOs on SPI data measures (in the form of high level data and metrics in Run Charts and traffic light measures) and summaries of progress and future plans (through verbal presentations and written reports), were reported to provide awareness, recognition, solutions and direction from the CEOs. These were considered invaluable, especially the recognition of staff work, and staff conveyed their wish to avoid disappointing the CEO. This suggests benefits gained from ~~that~~

subtle acts of listening to presentations, reading reports, understanding and acknowledging the difficulties faced in implementation ~~and the strides made were all benefits grained from CEOs monitoring data and attending meetings~~. The CEOs may not have realised the ~~strength~~ power of such straightforward intangible acts. ~~that are often not as tangible as other reported actions, such as putting measures on the Trust Board dashboard. As such, the peer reports offer an enlightening perspective on the involvement by CEOs that differs from the CEO reports.~~

Whilst most staff agreed that their CEO was engaged in the process and that their described commitment was valuable, they also portrayed the role of the CEO as secondary and supplementary to their own role in SPI. ~~That is, t~~The staff ~~recognised~~ saw themselves as the true implementers of the programme, while the CEOs were perceived to be best placed to offer assistance in the form of organisation-wide messages (statements of importance of the programme), recognition, direction, and trouble shooting. ~~Although the CEOs did not make references to being involved in the groundwork, nor did they state whether they felt involved adequately, opinions on these emerged clearly from the analysis of the s~~Staff ~~interviews with~~ expressionsed ~~of~~ a preference for more involvement by their CEO on the dimensions outlined or more from this involvement. For example, remarks cited the disappointment at the lack of feedback and actions following the walkrounds ~~and, w~~. Whilst ~~the walkrounds were conveyed as a mark of commitment and~~ examples supported CEOs claims that they empowered staff ~~at the frontline~~ to ~~authorise resources and~~ fix problems themselves, ~~this was not viewed as empowering by all~~ staff also viewed this ~~but rather~~ as CEOs disregarding the opportunity to ~~action~~ make organisation-wide changes. Alongside this, some reluctance to ask for help was communicated by the staff. ~~Speculation over why t~~There was ~~less involvement than desired by their~~speculation that the CEOs ~~insinuated that they~~ were preoccupied with organizational restructures and foundation status or other higher priorities, that they had superficial reasons for being involved (i.e. funding and profile), and that they were only concerned with a couple of aspects of the whole programme (meetings and walkrounds).

Lastly, the peer reports highlighted the following activities and benefits of the CEO involvement that

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were not emphasised by the CEOs themselves: ensuring the right people are nominated for the programme, acting as a figurehead when IHI visited and meeting with the CEO of their paired SPI organisation (the 20 organisations paired up to share learning), maintaining external links with primary care Trusts, and offering an organisational perspective across all four workstreams. ~~Please see Table 4 for example quotations for each dimension of CEO involvement, further details on the nuances from the peer reports will be reported elsewhere.~~

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—Table 4—

DISCUSSION

All of the CEOs in this study recognised the importance of their part in the SPI programme. The executives gave detailed accounts of their activities and perceived value they brought to all of the different stages of the process: from the initial application to start the initiative, through overseeing and encouraging the process, to its sustainability after resources diminished. This supports proposals that senior management make a significant contribution to quality and safety improvement initiatives in the healthcare setting.[11-13] In exploring the parts played by the chief executive officers, five critical dimensions were identified: 1)resource provision; 2)staff motivation & engagement; 3)commitment & support; 4)monitoring progress; and 5)embedding programme elements. Staff views of CEO involvement closely matched the dimensions that emerged from the self-reports by the CEOs, however, the dimensions of embedding for sustainability and resource provision did not surface as markedly and the weighting of the dimensions differed from the CEOs' reports. ~~The findings from both analyses further infer that Medical or Clinical Directors may subsume these outlined critical dimensions and that much of the dimensions of CEO involvement transfer to other Board members.~~

~~Studying the components of the senior management role in a hospital setting in the US, Bradley et al (2003) identified that the following manager-related variables affected their quality improvement (QI) initiative: senior management engagement; management's relationship with clinical staff; the promotion of an organisational culture of QI; support of QI with organisational structures; and procurement of organisational resources for QI.[10] Our findings considerably overlap with theirs, although interestingly our CEOs made more reference to their role as a monitor of the process. This included reviewing SPI measures and ensuring that programme targets were met. While CEOs reported all inward facing benefits for the Board (i.e. raising awareness of safety issues, trends and providing an opportunity for open discussion), the staff reported different benefits comprising recognition, solutions and direction. Further understanding of the benefits and beneficial ways of monitoring could assist managers on how to best carry out this task.~~

Managerial commitment was an expected finding considering literature support for this inside and outside of healthcare.[~~28~~ 27 ~~29~~ 28] We identified manifestations of commitment from: attending SPI learning sessions; leadership walkrounds; prioritising safety on the Board agenda; talks explaining the programme; stamps of approval for programme practices; and stating its purpose. On the latter, research has implied the relevance of senior managerial influences in building the right culture for improvement.[15] Whilst a few of the interviewees recognised their responsibility in this, neither they nor the staff define these activities. Recent articles offer managerial actions on producing a good patient safety culture,[~~30~~ 29] but less is known on creating the right culture for QI.

Studying the components of the senior management role in a hospital setting in the US, Bradley et al (2003) identified that the following manager-related variables affected their quality improvement (QI) initiative: senior management engagement; management's relationship with clinical staff; the promotion of an organisational culture of QI; support of QI with organisational structures; and procurement of organisational resources for QI.[10] Our findings are in accord with theirs, although interestingly our CEOs made more reference to their role as a monitor of the process. This included

reviewing SPI measures and ensuring that programme targets were met. Due to a divergence of perceived monitoring benefits by CEOs and staff, further understanding of the beneficial ways of monitoring could assist managers in how to best carry out this task.

There is much recognition that QI initiatives require an open and mutual communication between management and clinical staff.[31 30 32 31] Our interviewees emphasised that the benefits of shared dialogue with clinical staff was both to receive input on quality and safety and to engage staff. Indeed, senior managers have been identified as holding a facilitating responsibility,[33 32 34 35 4] including research from another study on the first phase of the SPI programme showing importance of management involvement and commitment.[19] The present study confirms the earlier conclusions and shows that this entails motivating and empowering staff by providing them with more autonomy, reinforcing SPI compliant behaviours and attendance at the learning sessions to learn about improvement practices. Such learning is supported by studies that recommend managers to enhance their QI knowledge.[13] CEOs involvement in resource provision is also supported by research proposals that senior managers' activities for safety include granting resources for a comprehensive safety programme and permitting staff time for safety.[36 35] ~~Although the staff reports did not make many references to this dimension, others suggest that healthcare managers focus on finance for QI.[31]~~ Our findings show that the most common resources authorised by CEOs for the SPI programme were time allowed for SPI work and training, data collection and data analysis support personnel, information technology tools, and an SPI coordinator to oversee the project. However, these were mostly prescribed by IHI, and, while CEOS were happy with their distribution, they otherwise may have chosen different areas to resource.

Finally, a role reported by the CEOs as essential to achieving sustained learning and outcomes involved embedding SPI activity and procedures into existing organisational systems, strategies and processes. However, apart from references to changing Board agendas, staff made no mention of any of these strategies in relation to CEO involvement. This may be because ~~the~~ this aspect~~s~~ of CEO

involvement is mostly unseen by staff or that CEOs have either communicated their tasks differently or exaggerated their work on this. Recommendations based on these findings are to: modify Board agendas and prioritise safety; integrate programme targets into mission statements and strategic objectives; strengthen lines of accountability and introduce reporting mechanisms associated with programme outcomes; and incorporate programme approaches into other existing initiatives. Change of structures and systems by management has been shown to assist in the sustainability of QI programmes.[10] In other analyses of the SPI programme, its integration within organisational structures and processes featured dominantly within strategies to sustain it.[23] Such tasks arguably fit within the remit of senior management and further support the argument that their activity is relevant to collaborative methods being sustained, even if it may or may have not been in this case study.[11]

Limitations

It is important to highlight that this research ~~does not provide~~has not been able to assess any association between the CEOs' roles and successes/failures of the SPI programme. It instead describes the CEOs' self-reported contribution to the programme. These self-reports may be subject to social desirability bias, especially as the interviewees were involved in the application process to secure implementation and additional programme funding. In a previous research survey of 635 of the SPI participators (including the CEOs), not only did senior management and frontline staff have many divergent views on the programme's strengths, weaknesses and impact, but also the senior managers held overall more positive views than the frontline.[22 24] Equally, the fact that this sample volunteered for this high-profile initiative brings with it a self-selecting bias that is arguably likely to have led to an over-estimation of the involvement that senior managers at this level would typically engage in within most improvement initiatives in their Trusts. However we have tried to lessen this limitation with supplementary analysis with staff views of those involved in SPI.

~~Another note worthy point is that t~~The SPI programme achievements remain unclear. In a large formal evaluation of hospitals involved in the SPI programme, while gains in quality and safety were

found, the gains were no larger than in the control hospitals that were not involved in the programme.[36,37] ~~The difficulty, however, in ascertaining the impact of such programmes has been duly noted.[4,38]~~ In particular, there may have been improvements in specific areas in some hospitals which were not detected by the broader evaluation. The evaluators themselves further noted that large scale effects may take a longer time to surface.[37,36] As the SPI as a programme did not demonstrate overall improvement or elucidate which organisations performed better than others, it is difficult to link CEO self-perceptions with formal outcomes, and the existing data does not show clear enough trends for this analysis. ~~In the future, the framework presented here could provide the basis for a quantitative assessment of CEO engagement, which might be linked to trends in process and outcome changes in future programmes. Future work could also explore patterns of the types of CEO involvement across successful and unsuccessful sites.~~ Lastly, the sample size is relatively small yet can be judged respectable when considering that the interviewees included all but one of the CEOs in charge of all of the NHS Trusts that participated within SPI across the UK and when considering the low number of CEOs in the wider UK population compared with other healthcare professionals. Nevertheless, a larger sample that is less homogenous would have strengthened the study and its findings.

Conclusion

This study ~~has attempted to~~ addressed the call for more research-informed practical guidance on the role of senior management in QI initiatives and specifically identify critical dimensions of CEO involvement within the Safer Patients Initiative. ~~It makes an evidence-based contribution to the quality debate around leadership in healthcare by drawing on original empirical material collected across 19 healthcare settings to present the reports of 17 chief executive officers on how they added to the undertaking of a high-profile organisation-wide QI collaborative.~~ The findings show that the CEOs provided key participation ~~that they~~ considered to significantly contribute towards the SPI programme. The reports reinforce conclusions in change management and the safety literature that have stressed the importance of CEO involvement, and further provide new evidence for specific critical dimensions of CEO involvement. Queries raised include the tangible benefits of executive involvement in changing structures & embedding for sustainability and the practical steps to creating

the "right" environment for QI.~~Queries raised are on the tangible benefits of the executives' programme monitoring actions and on practical steps to creating the "right" environment for QI.~~ In providing a case-study illustration of the type of involvement that senior management engage in within an improvement collaborative, and at what stages certain actions took place, the study imparts guidance for other managers at this level opting into a similar intervention. T~~In the future, the~~ framework presented here could provide the basis for a quantitative assessment of CEO engagement in QI programmes, which might be linked to trends in process and outcome changes~~ in future programmes~~. Future work could also explore patterns of the types of CEO involvement across successful and unsuccessful sites.

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CONTRIBUTORS

All co-authors contributed to the study design and review of drafts of the article. This paper has used data from the research study entitled: 'The Journey to Safety: The Safer Patients Initiative' led by Professor Charles Vincent, Director at the Centre for Patient Safety and Service Quality at Imperial College London. The research team who assisted with data collection and analysis included the author and Susan Burnett (Organisation and Management Research Team Lead), Dr Jonathan Benn (Lecturer in Quality Improvement Healthcare) and Anna Pinto (Research Psychologist) and Sandra Iskander (NHS manager).

ETHICS APPROVAL

Ethical approval was obtained from the NHS National Research Ethics Service Leicestershire, Northamptonshire and Rutland Research Ethics Committee 2. Reference no. 07/H0402/69.

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SPI Aims
• Mortality: 15% reduction
• Adverse events: 30% reduction
• Ventilator-associated pneumonia: 0 or 300 days between
• Central line bloodstream infection: 0 or 300 days between
• Blood sugars within range (intensive care): 80% or more within range
• MRSA bloodstream infection: 50% reduction
• Crash calls: 30% reduction
• Harm from anticoagulation: 50% reduction in adverse events
• Surgical site infections: 50% reduction
Workstreams *(example change elements)*
• Perioperative care *(deep vein thrombosis prophylaxis, beta-blocker use)*
• Medicines management (medicines reconciliation, anticoagulants)
• General ward care *(early warning systems, rapid response team, hand hygiene)*
• Critical care *(ventilator bundle, central line bundle, daily goal sheets)*
• Leadership *(leadership walk-rounds, strategic prioritisation of quality and safety)*
Programme tools and methodology:
• Continuous quality improvement: semi-autonomous teams
• PDSA cycles and small tests of change
• Incremental spread to successively larger work systems
• Process measurement and analysis of run charts to determine effects
• Expert faculty support from IHI (site visits, conference calls, online email support)
• Large-scale learning sessions for multi-disciplinary improvement teams
• Online extranet for uploading and comparing process data with monthly feedback
• Collaborative learning community for networking and sharing best practices

Box 1: The Safer Patients Initiative - A Description

Table 1: Participant demographics

Gender	Clinical/Non-clinical Background	Tenure in Trust	No of SPI Hospitals Overseen by CEO
Male	Non-clinical	6-9 years	1
Male	Non-clinical	0-11 months	1
Female	Clinical	21 or more years	1
Male	Non-clinical	3-5 years	1
Male	Non-clinical	1-2 years	1
Female	Non-clinical	1-2 years	2
Male	Non-clinical	6-9 years	1
Male	Non-clinical	0-11 months	1
Male	Non-clinical	3-5 years	1
Female	Non-clinical	10-20 years	1
Female	Non-clinical	10-20 years	1
Male	Non-clinical	6-9 years	1
Male	Non-clinical	0-11 months	1
Female	Clinical	0-11 months	1
Male	Non-clinical	1-2 years	2
Male	Non-clinical	10-20 years	1
Male	Non-clinical	3-5 years	1

First Order Dimension	Sub-dimension	Dimension Description
1 RESOURCE PROVISION	1.1 Securing funding	This factor refers to the CEO function of securing funding for the SPI programme and allocating financial and human resources to aid the implementation and continuation of the programme.
	1.2 Resource allocation	
2 STAFF MOTIVATION & ENGAGEMENT	2.1 Motivation & empowerment of staff	This factor describes CEOs motivating, involving and engaging clinical staff with the SPI programme through communication, methods of empowerment and reinforcement.
	2.2 Shared dialogue	
	2.3 Reinforcement of staff involvement	
3 COMMITMENT & SUPPORT	3.1 Display of visible commitment	This factor refers to the CEOs' demonstration of their own commitment to the programme along with the CEOs' role of support (not through resources) to clinical staff involved in SPI. This includes "*creating the right environment"* for staff and *"selling"* the programme to them.
	3.2 Creation of right environment/climate	
	3.3 Directing staff & stating purpose	
4 MONITORING PROGRESS	4.1 Reviewing SPI measures	This factor illustrates the CEO activity of monitoring programme outcome measures and regularly requesting and reviewing overall performance on SPI, as well as indirectly generating accountability on progress.
	4.2 Performance management	
5 EMBEDDING	5.1 Strategy & agenda change	This factor comprises of changes made

PROGRAMME ELEMENTS	5.2 Structure change & embedding for sustainability	by the CEOs to strategies, agendas and processes in order to integrate SPI procedures and practices into them, so that they are sustained.

Table 2: Dimensions and sub-dimensions associated with CEO role in SPI

First Order Dimension	Sub-dimension	Example Quotes
1 RESOURCE PROVISION	1.1 Securing funding	*"we would probably take a paper to our Trust executive group shortly after that [the end of IHI involvement in the programme] with a decision…whether to continue on the current method [SPI approach], if so, are we going to internally fund it"* (Interviewee 6) *"We did make a decision to put aside a £200,000 patient safety reserve, a SPI reserve if you like, to fund the consequences of any initiatives that might come out or any requirements that might come out."* (Interviewee 7)
	1.2 Resource allocation	*"we resourced the central office, if you want to call it that, and tried to ensure that people had time, and energy, and the desire to do the right thing there."* (Interviewee 16) *"You have to do it and do it well and do it properly and fully and resource it properly. And I guess the NHS as a whole and to some extent us as well have a history of getting in to projects, not resourcing them properly, and then doing them half heartedly. And then they never work and you wonder why, and the answer's bloody obvious actually. But they won't let you do that with SPI."*(Interviewee 12)
2 STAFF MOTIVATION & EfNGAGEMENT	2.1 Motivation & empowerment of staff	*"I think we created the appetite. Nobody was knocking on our door saying they wanted to do patient safety so we created the appetite. So I guess that was top down."* (Interviewee 9) *"we've slowly over time ..[delegated work].. to try and increase level of autonomy..So I suppose it was part of me trying to free up people's thinking actually..my first couple of meetings saying, well what [is] 8 of those at 300 quid? Well do it you know and they just found that really liberating because that meant they made some really big strides in the middle of the project."* (Interviewee 14)
	2.2 Shared dialogue	*"what I see it [my role] as doing is setting an example that's about having the right dialogue.. And once you've got that engagement, and you've got that dialogue, these issues become central to the debate."* (Interviewee 16)

		"talking to the staff actually and more importantly listening to the staff about what's going on. You always learn such a lot..When did you last have an incident? What was, what caused it? What did you do about it?.. How many opportunities do you get to raise these sorts of issues?" (Interviewee 13) *"They [walkrounds] help the visibility mantra which everybody says about executive teams don't they? They have been an interesting cross check about the things that you think are going on in the organisation"* (Inteviewee 17)
	2.3 Reinforcement of staff involvement	*"clearly if they've [clinical staff] not been following our policies in terms of hand washing and so on, they'll be disciplined. Simple as that..I've got nurses ringing me up saying I've told a doctor off, he hasn't changed his behaviour and we're now following that up..They've been talked to..some of that is about saying, excuse me, but you are doing this actually."* (Interviewee 3) *"what I then used..saying right where are all the surgical CDs who are looking at their shoes, why aren't you doing it? And next time we meet to talk about this I want to know your experiences on how you do it, so you sort of try and create a purpose to it"* (Interviewee 14) *"initially it was more around initial conversation with [director name] and getting him on Board"* (Interviewee 16)
3 COMMITMENT & SUPPORT	3.1 Display of visible commitment	*"If they don't see you believe in it [SPI], why the hell should they struggle?"* (Interviewee 2) *"I think the most important role is to be seen to be committed to it [SPI].. It's all very well being a figurehead, but this doesn't allow you to get away with just turning up for the celebratory glass of wine or whatever it is. You've actually got to be in there and do it"*(Interviewee 12) *"we've puffed our chests up and said we are serious about this and then we have to follow through. But what's interesting now that we are following through, people believe it and there is a visible, noticeable difference in the last two or three weeks out there on the wards in terms of*

		consultants, they're taking their ties off, they're rolling their shirts up, they're washing their hands and people are challenging." (Interviewee 3)
	3.2 Creating the right environment/climate	*"What a Chief Executive has to do is to build a coalition of support to a broad framework within which people work."* (Interviewee 15) *"And it's about creating the right climate..in some respects I created a climate of restraint"* (Interviewee 14)
	3.3 Directing staff & stating purpose	*"one of the things I was keen that we did was to make this something that the whole Board was interested in and not just the acute hospital because some of the learning will run across other parts of our service out in the community. So from day one we put together a very broad communication."* (Interviewee 9) *"we have a five year vision that actually can be brought down to one sheet of paper. Eventually it will be in several vehicles, it will be a glossy document that will be presented to all new staff, that will be brought out at the start of any project meeting...on the one page one, the work SPI appears..So a Chief Executive has to do some top down things, about setting a tone, setting a direction...The first one [task], [is] to adopt it [SPI], to take advice, to accept advice. The second one, then, is to learn enough about it that you can speak authoratively. Chief Executives have to be able to speak about everything for 90 seconds..so a Chief Executive needs to have a 90 second elevator speech..that you can turn to a group of doctors, in the right situation, and say SPI is really the thing because, and then you list whatever"* (Interviewee 15)
4 MONITORING PROGRESS	4.1 Reviewing SPI measures	*"we are seeing well populated Run Charts, we're being able to use and understand the data more effectively, both at a senior level and within the teams."* (Interviewee 9) *"I'm regularly looking at the information that is produced from it [SPI], I wouldn't say I'm looking at the data itself...It's normally a presentation, or patient story, or something like that..so that's changed the Board [agenda] in that you're not straight into finance..But whether we're hugely different to where we were 18 months ago, I don't know really."*(Interviewee 10)

		"at the breakfast meetings..we go through all the [SPI] measures" (Interviewee 7)
	4.2 Performance management	*"we've got a different design for our performance management.. data points that will be demonstrated for assurance purposes at the Board."* (Interviewee 3) *"I think it's [SPI is]in our operational plan, it's a performance measure in there, so therefore, when we meet the divisions on a monthly basis, one of the things we'll be asking them for is their SPI measures."* (Interviewee 10)
5 EMBEDDING PROGRAMME ELEMENTS	5.1 Strategy & agenda change	*"for me, it's, it'll [SPI will]be a way of doing things, integrated into where we are, and it has to be key item on every agenda, the things that's shaping the debate."* (Interviewee 16) *"I had to make some clear statements from the word go about where it [SPI] was on the agenda, so it was, it has been the first item on the Management Board agenda for the last 18 months. The patient SPI, right, where are we, what have we achieved, what are we doing?..we've set, tried to set it in the strategic context of what the Trust is doing. The Trust Board adopted a new mission statement..that there would be three main themes..and one of them was the Safer Patient Initiative and patient safety."* (Interviewee 13)
	5.2 Structure change & embedding for sustainability	*"[we need to] make sure that the elements of SPI that we keep are integrated into our performance management regime."* (Interviewee 4) *"the way we've rolled out SPI..we integrated it into people's directorate objectives, that's why we keep the profile up."* (Interviewee 5) *"that's how you begin..you narrow the gap between the activities of the initiative and disciplines around directorate management and delivery, you narrow that by drawing it together and holding people to account for outcomes"* (Interviewee 14)

Table 3: Dimensions and Sub-dimensions Example Quotes – CEO Self Reports

First Order Dimension	Example Quotes
1 RESOURCE PROVISION	*"Any other support [from Board and CEO] has been around trying to acquire resources, so for instance there's a large infection control component and .. we've had a nurse on this site who's been collecting information around central lines, VAPs and so on and they haven't had that resource on the other site, because we were two separate trusts. So they collected their data on VAPs and other infections in a different way. Because we're one trust now and we're taking this forward, we want to have the same process on all the sites, so that's where the management are essential, so it's that sort of financial and resource support"* (Trust 12, clinical lead, critical care) *"some of the changes that we've needed with IT and that I have pushed up to the leadership because it's not something I've been able to influence really."* (Trust 17, clinical lead, medicines management)
2 STAFF MOTIVATION & ENGAGEMENT	*"they're [executives are] well equipped to give that person the idea of how to put it right themselves. Which really empowers them more and makes them feel an awful lot better, because then they realise that they can actually sort the problem out themselves, and they didn't have to go to somebody quite high up the board to get it sorted. It was something that they could have done themselves."* (Trust 8, clinical lead, critical care) *"we've got leadership rounds, and that's made a big difference to identifying the problems on the wards, but actually some of the problems have been given back to the wards when really we should be saying, this is common across the Trust, let's solve it by the Trust."* (Trust 13, clinical lead, medicines management) *"We had such a problem with infection here, we were just desperate to do something about it and quite a lot of the, my more dapper colleagues, were very reluctant to shed their nice suits and shirts and, or to roll up the sleeves on their shirts because they didn't think it looked professional.. all the problems evaporated when the chief executive sent out an email inviting for a one-to-one interview any clinician who didn't wish to follow this particular policy, and I believe no one took her up on it."* (Trust 16, clinical lead, general wards)

3 COMMITMENT & SUPPORT	*"I certainly know that our Chief Executive has met with all the consultants in small groups..certainly [CEO] has said himself, if you've got problems then you come directly to me. If it's Safer Patient then you get straight access to me, and that has been really encouraging."* (Trust 1, clinical lead, general wards) *"we would feedback the activities from the previous month, our anticipation of what would happen the following month and any issues that we were faced with, that we needed support from the leadership team. And whether that was a resource issue or something about can't get clinicians involved, whatever and that was fine"* (Trust 14, director of nursing)
4 MONITORING PROGRESS	*"there's a quarterly report to the Trust Board.. the chief exec does a section as part of his report each month. And then [name] or I, or both, go and talk about something specific every quarter. So in December, it was the walk rounds and what we'd done there. And in, three months after that, whatever it was, March, February, March, we presented to them he Run Charts. And next time we'll do something different"* (Trust 9, general manager) *"[with CEO and management team] we will go through.. our traffic light measures.. which would show all of our measures then and then where we are with them. Green, we're passing the Run Chart rows, and the amber, where we aren't passing the rows just yet, and then the red is if we haven't got any data points against it.. what we do is pick on, put together a progress report, which is then brought to a trust board.. and generally during the meeting we can raise any concerns we may have about certain, about if there's any measures that we're struggling with"* (Trust 10, programme coordinator)
5 EMBEDDING PROGRAMME ELEMENTS	*"our new chief exec has made sure that safety is put on the agenda first, so she's also a very good driving force for it"* (Trust 8, programme coordinator) *"Go back, ask them to give you the board agendas for about the last 18 months and you tell me where you see clinical governance. It was always down the pecking order.. it's now on the agenda, it's on the agenda as patient, as the SPI thing.. I've got the support of the chief exec"* (Trust 11, ~~managing~~ medical director)

Table 4: Dimensions Example Quotes – Staff Peer Reports

Dear Mr. Sands and Ms Damschroder,

Thank you very much for your meticulous review of our manuscript. We are grateful for your specific suggestions for improvement. We believe that we have addressed each of your suggestions. We have carefully gone through the article and edited it to make it easier to read. This has resulted in a substantial number of amendments and a sizeable reduction in word length. Please see the table below that details our responses and changes to each comment.

Table: Author responses and changes

Reviewer Comments	**Author responses & changes**
Reviewer 2: Laura J. Damschroder	
DATA ANALYSIS: this section needs further improvement. You offer unnecessary detail (e.g., "The 17 CEO transcripts were divided by the five researcher interviewers so that three of the researchers content analysed three transcripts each (JB, SB, SI) and two researchers content analysed four transcripts each (AP, APo) " without information about what method guided your analyses – e.g., did you use content analaysis techniques? Grounded theory? Constant comparison? Did analysts independently code or did multiple analysts code the same transcript and then compare? How were differences resolved? Reference to NVivo terminology is unnecessary (e.g., node versus code). Look up other qualitative articles for examples of short but useful descriptions of qualitative methods.	We have deleted the unnecessary detail including *"NVivo node"* and the number of transcripts analysed per researcher. We have added the clarification that the transcripts were *"independently coded"*. In addition to the existing sentence *"a sample of data fragments were checked and resolved through dialogue with other members of the team"* we add *"by one researcher's (AP) identifying differences in coding between the five coders and speaking with the coders in question to arrive at an agreement"*. Because the initial coders coded any references related to the work of CEOs, we initially used the term *'content analysed'*, however this may be misleading because the content was large pieces of text and was not counted, therefore we have removed the words *'content analysed'*. Instead we highlight that selected ground theory approaches were used: *"Qualitative analysis was performed, based on inductive grounded theory analysis techniques of open coding, constant comparative analysis and theory building"* We add words and sentences to explain these more fully, such as *"The constant comparative method was used to compare emerging codes with earlier codes drawn from the dataset"*
The manuscript still suffers from very obscure language and run-on sentences throughout: 1. MESSAGES: "Queries raised are on the tangible benefits of the executives' changing structures & embedding for sustainability and on practical steps to creating the "right" environment for QI."	We have re-read the article with the specific aim to remove the unclear language and run-on sentences. As a result we have made a substantial number of amendments. From your specific example, we amend the text to the following: *"Queries raised include the tangible benefits of executive involvement in changing structures & embedding for sustainability and the practical steps to creating the "right" environment for QI"*
2. Page 5, Line 36+: "…within the remit of management action or authorization, such as incorporating elements into induction and training…"	We have amended the sentence to *"..within their remit, for example incorporating elements into induction and training."*
3. Page 15, Lin 40+: "For example, remarks cited the disappointment at the lack of feedback and actions following the walkrounds and, whilst the walkrounds were conveyed as a mark of commitment and examples supported CEOs claims that they empowered staff at the frontline to authorise resources and fix problems themselves, this was not viewed as empowering by all, but rather as CEOs disregarding the opportunity to action organisation-wide changes."	We have amended the sentence to *"For example, remarks cited the disappointment at the lack of feedback and actions following the walkrounds. Whilst examples supported CEOs claims that they empowered staff to fix problems themselves, staff also viewed this as CEOs disregarding the opportunity to make organisation-wide changes."*
Page 4: Paragraph starting at the bottom of the page is quite long and would benefit by breaking into smaller chunks. One suggestion is a paragraph break at the end of the first line on page 5 starting with "Other…"	We have inserted the recommended paragraph break and we have also broken up other similarly long paragraphs e.g. the paragraph on staff reports.
Page 5, Line 15 states, "…it is likely that leadership walkrounds will feature as a critical dimension of CEO involvement…" – is this appropriate here? This sounds more like a hypothesis that might guide your current	We have deleted this sentence so that it is not taken as a hypothesis and does not mislead that it is a finding from earlier research.

study – but it doesn't sound like this is an actual finding from your earlier studies.	
Page 9-10, Line 50+. The quote, "It is very important the Board is engaged early on in a real way and that the Board begins to see the data…" should be moved up with the statement about early involvement.	We have moved this quote up closer to its associated statement.
Is the Clinical Director or Medical Director from the Board? If not, why is this in the paragraph about getting early engagement by the Board?	Yes the Medical Director does sit on the Board. Because the Clinical Director was also reported to subsume responsibilities, they were mentioned here. We have decided to delete this point to avoid confusion.
The relationship between the Board and hospital continues to be unclear. In the US, the Board comprises leaders from other entities who help to advise the, in the case, hospital or Trust. You say the Board is "made up of executives (including the CEO) and non-executives…" … this information is vague and does not indicate whether these members are employed by the Trust/hospital or are from other entities. Thus, I question whether the Board would actually see themselves as holding "crucial control over...culture and quality and safety.." – they would have role only from a strategic perspective, not day-to-day oversight. They are typically not present in the organization and so would be hard-pressed to influence culture, per se; is this a finding or speculation? The paper would be helped by specifying activities related to "managing upward" (assuming the Board is "up" in the hierarchy for the CEO (though they are a member) versus "managing down" ie., managing staff employed by the Trust/hospital. This causes problems in Sections 2 & 3 in particular. The activities related to the Board and staff appear to be conflated and in some cases do not make logical sense. For example, what is meant by saying, "CEOs engaged the Board through discussions at meetings, those CEOs who attended SPI learning sessions to learn about relevant improvement practices reported that their learning helped when engaging others, as they were more knowledgeable on various aspects of the programme, such as quality improvement techniques." – this sentience seems to link together two very different ideas.	We apologise if we did not address this original point fully and appreciate that the UK and US systems vary. We remove the statement of influence on culture specifically and the assertion of *"crucial control"* . However, we maintain that the Board's members do have relevant influence over the organisation and believe it is important to reflect the CEO reports that comprise of examples of their role to engage those at the Board. We add further explanation by amendment of the original text to the following: *"An NHS Board is made up of a chairman, executives, directors, and non-executives and, through regular meetings they jointly oversee, offer direction and are responsible for the financial and quality performance of the hospitals within their Trust. Employed by the Trust, the full-time executives/directors (e.g. CEO, Medical Director) are responsible for the day-to-day oversight of the hospitals and together with the chair and non-executives (recruited externally to the Trust on a part time basis) are all responsible for overall governance, strategy, achieving performance targets and standards. Therefore, collectively they hold influence over the quality and safety of their organisations.* Regarding conflation, we see how this text would cause confusion and we have corrected the text and separated engagement at the Board and engagement with staff. We have checked other possible conflations between CEO activities with the Board and with the staff.
Continuing with this lack of clarity, in Section 4 (monitoring), you say, "The CEOs monitored progress by reviewing SPI outcome measures at Board meetings." By definition, monitoring does not happen simply by reporting outcomes at Board meetings. Or did the Board provide outcomes to the CEO? How did the Board's attention to feedback indirectly affect staff compliance?	Those involved in SPI would offer reports, presentations and present outcomes to the CEO at Board meetings. The CEOs would then monitor progress by checking this information and asking for information on particular programme actions, issues, etc. We add the following text: "The CEOs monitored progress by reviewing SPI outcome measures, reading reports, checking information and asking for information on particular programme actions and challenges at Board meetings." We add the following sentence to emphasise why Board attention to feedback indirectly helps staff compliance: *"This is because staff were influenced by positive or negative responses from senior management"*.
Also, there is this sentence on page 16 (line 53), "The findings from both analyses further infer that Medical or Clinical Directors may subsume these outlined critical dimensions and that much of the dimensions of CEO involvement transfer to other Board members." – this is saying that CEO's behaviors didn't factor into the change effort? Are Medical or Clinical director part of the Board?	In these instances, the CEOs are involved less in the critical dimensions outlined. We have deleted this point to avoid confusion and is not necessary for this article.
Consider integrating the staff reports into each of the sections rather than relegating to its own set of sections.	Thank you for this suggestion. We did consider to integrate the staff reports with the CEO reports, however we decided that it

	would be less muddling for the reader if the sections remained separate. This also positions the CEO reports as the primary analysis, presenting the staff views as supplementary.
MINOR ESSENTIAL REVISIONS 1. Page 3, Line 29: "much" should be many	Thank you very much for pointing these errors out. This has been amended.
2. Page 5, Line 29: fix "…other examination…"	We have changed *"examination"* to *"investigation"*
3. Page 5, Line 55-56: "Similarly to our other studies, what possible acts 4. took place was not within the scope of this quantitative study." – awkward and needs to be edited	We have deleted this sentence.
5. Page 6, Line 11: "…countless…" is rather hyperbolic –this is saying that many studies have offered countless assumptions which is impossible	We have deleted the word *"countless"*
6. Page 7, Line 24+: Shorten sentence beginning with "Specifically,…" to "Specifically, 7. every Trust was managed by a different CEO and two Trusts had two hospitals (is this true?) participating in the SPI programme.	Yes thank you, that is correct and more concise. We have amended this sentence to *"Specifically, every Trust was managed by a different CEO and two Trusts had two hospitals participating in the SPI programme."*
8. Page 9, line 22-23: The sentence starting with, "The sample per Trust…" is not necessary.	We have deleted this sentence
9. Page 10, Line 34: delete remainder of sentence starting with, "…and consequently stands firm…"	We have deleted this sentence
10. Page 10, Line 16: what is "…discretely…"?	We mean that the stages overlap and they are not disconnected or discrete from one another. To clarify, we have amended *"discretely"* to *"discrete from one another"*
11. Page 10, line 54-56: delete "…saw it as their task to secure and provide it and…"	We have deleted this sentence
12. Page 11, line 3-5: you are talking about resources within the hospital/Trust? This needs to be indicated because procuring funding is implied to be from outside sources but authorizing funding applies to making internal resources available.	We have clarified this point by amending this sentence to the following *"This took two forms: their activities to bid and secure funding from outside the Trust (both at the application stage of SPI and for its continuation) and their authorisation of internal Trust resources (both financial and human resources)"*
13. Page 11, Line 27: "improve behavior…" do you mean improve "attitude"? If not, then what behaviors are you referring to?	We have deleted the words *"to improve behaviour"*, as it was referring to compliance/proactive behaviour which is already inferred by staff attitudes.