NIHR | Collaboration for Leadership in Applied Health Research and Care West Midlands

SPACE Safer Provision and Caring Excellence

Improving Safety in Care Homes: Evaluation of the Safer Provision and Caring Excellence (SPACE) Programme

FINAL EVALUATION REPORT

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EXECUTIVE SUMMARY

BACKGROUND

Quality and safety in care homes is an issue of increasing concern for adult social care. Care home residents have increasingly complex needs, and there is a significant risk of adverse outcomes such as falls in this population. The care home sector is also characterised by high workloads, high staff turnover rates, and difficulties in recruiting and retaining skilled staff which pose challenges for quality improvements and positive safety practices to become embedded within staff and organisational culture. The Safer Provision and Caring Excellence (SPACE) programme was implemented in 29 care homes in Walsall and Wolverhampton between October 2016 and the end of September 2018. The programme aimed to improve safety in participating care homes by providing skills training to managers and staff about how they could apply quality improvement (QI) techniques to their working practices. Specific objectives were to identify if upskilling staff in QI techniques and supporting care homes to use QI tools to track changes in adverse events over time were associated with reduced rates of avoidable harms (e.g. falls, pressure ulcers) and hospital admissions. SPACE also aimed to develop a culture of continuous improvement and a community of best practice and information sharing across participating care homes.

THIS REPORT

SPACE was supported by the West Midlands Patient Safety Collaborative (PSC), who funded the West Midlands Collaboration for Leadership in Applied Health Research and Care (CLAHRC-WM) to undertake an independent, mixed methods evaluation of the impacts of the programme and to assess the extent to which it was successful in achieving its objectives. The evaluation assessed a series of outcome measures at different time points, and compared pre- and post-SPACE data to understand the changes that were made as a result of the programme. Key outcomes of interest were changes to care home safety climate, changes in rates of harms such as falls and pressure ulcers within participating care homes, and changes to rates of hospital admission for care home residents. This report summarises programme activity and outlines the final findings from the programme evaluation, combining baseline data that captures the pre-SPACE period, with 24 months of post-SPACE data collection. The challenges and success factors for programme implementation and delivery are also discussed, along with a consideration of the likelihood that positive change can be sustained in the longer-term in participating care homes.

EVALUATION OBJECTIVES

The objectives of the evaluation were to:

1. Describe SPACE implementation over time
2. Assess how staff experienced the programme
3. Understand staff learning about QI and safety as a result of programme participation
4. Identify changes staff and care homes made to their practice and the effectiveness of these
5. Assess the enablers and barriers of changes to care home and staff practice
6. Analyse programme impact on key outcomes (e.g. safety climate, adverse events, hospital admissions)
7. Identify associations between care home features (e.g. size, quality ratings) and changes in outcomes
8. Identify any unintended consequences of SPACE
9. Compare care homes that changed the most with those that changed the least, in order to identify the contexts and circumstances in which the programme was more or less likely to be effective.

METHODS AND DATA COLLECTION

The evaluation combined quantitative and qualitative data. Quantitative data came from surveys of care home managers and staff; analysis of changes in rates of avoidable harms such as falls and pressure ulcers in participating care homes, and analysis of changes in rates of ambulance conveyances and hospital admissions from participating care homes. Qualitative data comprised semi-structured interviews with Clinical Commissioning Group (CCG) managers and programme facilitators (n=18), interviews with managers and staff at four care homes selected for in-depth case study analysis (n=49), and 184 hours of evaluation team observation of training sessions and attendance at key programme meetings.

Care home manager and staff surveys

Surveys were carried out at baseline, 12 and 24 months and were designed to obtain data from care home managers and staff for the evaluation's primary outcome measure – the change in mean score in the safety climate domain of the Safety Attitudes Questionnaire (SAQ) between baseline and programme end. The SAQ measures six domains: teamwork climate, job satisfaction, perception of management, working conditions, safety climate and stress recognition through 30 questions that elicit attitudes on a five-point Likert scale. Surveys also collected data on the features and characteristics of the care home (size, quality ratings, registration type), roles, length of time working at the care home, shift patterns, staff age, gender and qualifications, and previous experience of initiatives to improve care home quality and safety.

Avoidable harms and hospital use

Changes over time in the incidence of avoidable harms (falls, pressure ulcers, urinary tract infections) were measured by analysing routinely collected data that each care home provides to their Clinical Commissioning Group (CCG). Rates were compared between the six months pre-SPACE and the 24 months of active SPACE implementation. Routinely collected data were also analysed to see if significant reductions were observed in rates of ambulance conveyances and hospital admissions from participating care homes when pre- and post-SPACE data were compared.

Programme manager and facilitator interviews

These were undertaken at baseline, 12 and 24 months and were designed to explore CCG manager and programme facilitators' experience of delivering SPACE; perceived barriers to QI in care homes; what had worked well, and any barriers to effective programme implementation.

Care home manager and staff interviews

Four contrasting care homes (based on size and quality ratings) were selected as in-depth case study sites (two in Walsall, two in Wolverhampton), and interviews were undertaken with managers and staff at these care homes (months 12 and 24). Interviews aimed to collect data about involvement in SPACE and focused on: experiences of external or care home-based training; examples of QI within the care home and impacts on safety perceptions; shared learning; perceptions of impacts on residents and care home safety culture; barriers to making changes, and thoughts about the sustainability of the programme.

Observation of events and training

Observations of centrally-run training events and a selection of training sessions conducted in individual care homes were undertaken, along with attendance at as many SPACE-related meetings as possible. These allowed the evaluation team to gain a detailed overview of the content and delivery of SPACE in both areas; to identify commonalities and differences in each CCG's approach to training provision, and to identify issues to explore further with case study care homes.

RESULTS

Overall, SPACE was successful: care home managers and staff reported numerous benefits, quality improvements and changes to their day-to-day practice, and there was clear evidence of widespread change to safety processes and safety climate in participating care homes. There were some differences over time in Walsall and Wolverhampton's respective approaches to programme delivery, but high levels of engagement with programme activities were observed in both areas. The pragmatic, flexible approach taken by programme facilitators in both areas was a key strength of the programme, which resulted in over 1000 staff across both boroughs receiving training in various aspects of QI methodology and its practical application.

Safety processes

There was strong engagement from most care homes in their uptake of **risk monitoring tools** such as safety crosses, and numerous examples of **generic tools being adapted** by managers and staff to monitor specific areas of quality within their own care home. Care homes increasingly saw the collection and interpretation of their own data as a means of facilitating QI and monitoring their effects, and tools were used to **improve communication** between care home staff and outside agencies such as the West Midlands Ambulance Service. There was positive **engagement with QI techniques** such as Plan-Do-Study-Act (PDSA) cycles, Learning from Excellence, and Appreciative Inquiry. The **co-design** of initiatives between programme facilitators and care homes **empowered** managers and staff to take **ownership of QI** at the care home level. There was widespread involvement in external and care home-based training, and evidence from both the surveys and qualitative work that the learning from skills training had been directly translated into specific **improvements to multiple areas of safety** within participating care homes. There were also reports of improvements to **teamwork, communication and sharing of best practice**, both within individual care homes and across the wider network of SPACE care homes.

Safety climate

There was strong evidence that SPACE was associated with changes to safety climate within participating care homes which included:

- Engaging staff in all job roles and at all levels of seniority within the care home in QI initiatives
- Staff feeling empowered to suggest ideas and having autonomy to implement changes
- Improved use of data to support QI
- A growing culture of information sharing within care homes e.g. staff attending training cascading learning to others
- A developing culture of information sharing and mutual support between care homes
- A commitment to continue using QI tools after active facilitation of SPACE concluded
- Increasing recognition by regulatory bodies that the changes introduced following SPACE had made a material improvement to quality in a number of care homes
- Increasing confidence when liaising with external agencies like tissue viability teams

Programme manager and facilitator perceptions of the programme

SPACE was viewed as a successful programme by CCG managers and programme facilitators, who emphasised the importance of delivering training that was flexible and adapted to the needs and differing learning styles of the staff groups involved. Ensuring that changes were small in scale and driven by the care home managers and staff in a 'bottom up' rather than 'top down' manner was seen as an effective approach, with facilitators playing a supportive role in empowering managers and staff to make changes and apply QI methodologies to their working practices. Some care homes were more resistant to change than others, and intensive efforts were required to facilitate engagement from these care homes, using varied engagement

techniques and modifying the degree and type of support offered. Encouraging the wider sharing of knowledge and running events to promote good practice – including organising awards for care homes that performed well in the programme – were seen as effective ways for managers and staff to 'celebrate success', which had a positive impact on care homes in both areas. There was a strong perception that SPACE had become embedded within the organisational culture for most participating care homes, and there was some encouraging evidence that the programme could be sustainable in the longer-term.

Care home manager and staff perceptions of the programme

Interviews with managers and staff in the case study care homes revealed almost universally positive attitudes towards SPACE, and a feeling that the programme had made a demonstrable improvement to quality and safety within participating care homes. Participants were enthusiastic about the programme and their experience of training, and interviewees reported positive perceptions of improvements in staff autonomy, confidence and empowerment to make effective change. Numerous examples of changes to practice were cited, with sharing of learning and best practice being widespread, along with substantial improvements to teamwork and collaboration. There was a strong sense of optimism about the potential legacy of SPACE, although there were some concerns about programme sustainability after active facilitation ceased.

Safety Attitudes Questionnaire

Scores on the SAQ increased for all domains between baseline and the end of SPACE, ranging from a 1.4 point improvement in safety climate, increases of 4.7 and 4.8 points in the perception of management and job satisfaction domains, and an increase of 6.3 points in the domain related to stress recognition. Staff in Walsall and Wolverhampton reported very similar scores, although staff in Walsall had significantly higher overall safety scores than those in Wolverhampton. Positive safety climate scores were associated with being a full time member of staff, being more qualitied, and attending SPACE training. Scores were also significantly more positive for smaller vs. larger care homes, those with lower than average rates of staff turnover, and care homes with higher quality ratings.

Rates of avoidable harms

There were encouraging trends in both areas towards reductions in a number of avoidable harms when pre- and post-SPACE data were compared, although there was a high degree of variability in harm rates at the individual care home level. Rates of falls reduced significantly in both areas, and UTI rates also reduced over time, with a statistically significant reduction in Walsall. Care homes in both CCGs saw a non-significant increase in pressure ulcers of any grade, and there was a non-significant increase in grade 2 pressure ulcers in Walsall, but data from both areas showed a reduction in both grade 3 and 4 pressure ulcers, the latter a significant reduction in Walsall. Combining data across both CCGs showed a significant reduction in falls, UTIs, grade 4 pressure ulcers, and in the incidence of 'any events'.

Rates of ambulance conveyances and hospital admissions

Ambulance conveyance data showed a slight increase in monthly rates over time in Walsall and a significant reduction over time in Wolverhampton. For both CCGs, rates of hospital admissions showed a non-significant increase between baseline and the end of the programme, although it may be unlikely that a programme based on upskilling care home managers and staff would have a significant impact on 'hard' outcomes like hospital admissions within just two years. The nature of the care home resident population also means that a certain proportion of A&E attendances and hospital admissions will always be unavoidable.

Challenges to programme implementation

There were a number of challenges to programme implementation which were addressed through flexible delivery and adaptation of the programme as it developed:

1. There was an element of **suspicion and mistrust** from some care home managers and staff when the programme began, with a perception that SPACE would entail increased workloads and bureaucracy. However, the facilitators worked to build relationships between themselves and the individual care homes and this issue was overcome relatively early in the programme.

2. Whether or not the training and support provided within SPACE was translated into effective QI was often heavily dependent on the **leadership** provided by the care home managers. There was a high turnover of managers in some participating care homes, which was problematic for maintaining change and engagement, as facilitators were frequently required to develop new relationships with new managers so that the momentum in programme implementation was not lost.

3. Rates of **staff turnover** were high, averaging over 30% in each year of the programme. This may have affected the extent to which positive changes and the learning from skills training could become embedded within the culture of participating care homes. However, the flexibility of the facilitators' approach to training, and the emphasis within the programme on the co-design of interventions mitigated some of the negative effects that could have arisen as a result of staff turnover. Workforce development and promoting opportunities for staff career advancement were given a high priority in both areas as the programme developed.

4. There was **differential engagement** from care homes that signed up to SPACE which may have had an impact on the extent to which the programme was fully adopted. At one end of the spectrum were care homes that were fully engaged with all aspects of SPACE and where positive changes became largely self-sustaining. At the other end of the spectrum was a small number of care homes that had minimal engagement with the programme. A further group of care homes were engaged, but needed substantial amounts of ongoing support to facilitate their engagement. The facilitators addressed these issues by changing the approach to programme implementation over time. Whereas the first year of SPACE was concerned with building relationships, delivering training and supporting care homes to adopt QI methodologies, the second year became more about consolidation, and significant programme resources were put into engagement with SPACE care homes that had not been fully involved in Year 1. This approach was largely successful and improved care home engagement substantially.

Implications for sustainability and wider adoption of SPACE

Although many of the managers and staff interviewed at the case study care homes were confident that SPACE had become embedded in their day-to-day working practices, some worried that the momentum could be lost when active provision of SPACE training stopped. For change to be sustained, it is important that the improvements brought about as a result of participation in SPACE have become embedded within the culture of participating care homes. Consequently, ensuring the longer-term sustainability of programme learning became a key focus during Year 2 and both areas made efforts to build QI capability across their respective boroughs and to spread QI skills widely within teams that supported care homes, such as the CCG and Local Authority. In Wolverhampton, support for care homes was formally linked to the integrated care alliance and planning at STP (Sustainability and Transformation Partnership) level, and the pre-existing role of Quality Assurance and Compliance Officer (QACO) in Wolverhampton was enhanced to replicate many of the responsibilities and support functions formerly carried out by the SPACE facilitator.

There were also commitments to maintain ongoing relationships between care homes and specialist teams (e.g. tissue viability, falls, rapid response, continence services) so that care homes could continue to have access to supportive services in the wider health economy, and the regular manager forums, newsletters and annual awards are planned to continue.

There was also much regional and national interest in the work that was done through SPACE, and there is scope to make the programme available to the residential care sector in Walsall and Wolverhampton, across the Black Country via the regional STP, and to care homes in other parts of the West Midlands/England. Nevertheless, whilst the 'building blocks' of a programme like SPACE may be transferable to other settings and geographical areas, the programme would need to be extensively adapted if it was to work effectively elsewhere, and change may be slower to develop in other areas. Continuing to disseminate the positive messages from the programme at regional and national events is one means of maintaining wider interest in the programme and increasing its potential for adoption in other geographical areas and/or settings.

Success factors

Despite the complexity of the care home sector and the challenges associated with embedding quality improvements in this setting, providing bespoke and flexible training in QI and intensive facilitator support to participating care homes combined to create an effective and well-received programme that had a real impact on managers and staff, on care home working practices, and on care homes' collaborations with each other and with service providers in the wider health economy. There were encouraging trends towards meaningful reductions in the incidence of avoidable harms in a number of areas, suggesting that change had become embedded within participating care homes despite high rates of staff turnover and the inherent challenges associated with the complex health and care needs of the resident population. When all findings from the evaluation were considered together, a number of key success factors emerged that contributed to the effectiveness of the programme:

1. Having passionate facilitators who developed a deep understanding of issues within the care home sector and who tailored the programme and support provided accordingly
2. Developing ways to engage and empower a wider range of staff than just managers or senior nursing staff
3. Providing highly intensive, 'hands-on' facilitation where participating care homes received multiple facilitator visits over the course of the programme, and could contact the facilitators about any issue, at any time
4. Focusing on the co-creation of quality improvements with the care homes rather than standardised tools or approaches being implemented in a top-down manner
5. Having the flexibility to use language and examples relevant to care homes, and delivering tailored training that combined theory with practical application
6. Focusing on the use of simple rather than complex tools for facilitating QI in participating care homes
7. Building strong relationships with care home managers who helped to foster positive relationships within the care homes and supported staff to see that the programme was worthwhile and important
8. Supporting the care homes to collect and interpret their own data for quality improvement and for tracking trends over time
9. Providing ideas, encouragement, resources and ongoing support
10. Providing regular feedback on progress and encouraging care home managers and staff to develop a sense of ownership of change
11. Providing opportunities for care homes to share ideas, best practice and to learn from each other
12. Supporting care homes in their liaison with external organisations to make them feel that they were a valuable part of the wider health economy.

1. INTRODUCTION AND OVERVIEW

1.1 BACKGROUND

Over the past 15 to 20 years, developing a positive patient safety culture has been a key goal for health services across many settings. Safety culture refers to the way that patient safety is considered within an organisation and the structures and processes put in place to support it.[1] It is commonly believed that introducing and maintaining a positive safety culture in healthcare organisations is associated with a beneficial impact on outcomes and a lower incidence of clinical and other errors that may result in patient harm. Safety culture recognises the fact that most adverse events can be traced to problems at the systems level, so this culture of patient safety tends to de-emphasise blaming individual staff for adverse events, focusing instead on how quality, systems and processes can be improved to prevent future errors.[2] A number of factors have been identified which contribute to a positive safety culture, including staffing levels; staff awareness of safety and training; staff willingness to improve safety and beliefs in their own ability to do so; systems for monitoring risk, and systems for reporting adverse events.

Most research into safety and quality improvement (QI) has focused on hospitals, and the study of organisational safety culture is a relatively recently emerging concept in other areas of health and social care such as the care home sector.[3] This is surprising given the complex needs of care home residents who are increasingly frail and elderly, and who often have multiple physical, cognitive and sensory impairments.[4] A care home census in the UK in 2012 reported that 87% of residents have high support needs, defined as having one or more of dementia, confusion, challenging behaviour, dual incontinence, severe hearing or visual impairment or dependence in mobility.[5] In this population, adverse events can quickly escalate and lead to hospital attendance or admission.[6] Alongside the complex needs of care home residents, the care home sector is known to be characterised by high workloads and high rates of staff turnover, and difficulty in recruiting and retaining new, competent staff.[3] These factors pose challenges for quality improvements and positive safety practices to be cascaded to staff and to become embedded within organisational culture.

The nature of the care home population, coupled with known workforce issues within the sector, means that there is a significant risk of adverse outcomes, and quality and safety in care homes is of increasing concern for adult social care. Despite this, relatively few safety improvement initiatives have been undertaken in care homes, and those that have been undertaken have often reported varying levels of success, with challenges in implementation being particularly common.[7-9] The most common adverse safety events in care homes are accidental injuries involving residents and staff, pressure ulcers, and falls.[9,10] Research on the prevention of pressure ulcers has tended to show that prevention is associated with staffing levels.[11] A relationship has also been noted between the incidence of pressure ulcers and the education and knowledge levels of staff.[12] One study found that combining education with a multidisciplinary approach to prevention and the use of systematic recording, achieved a 62% drop in the incidence of pressure ulcers.[13] Similarly, research into ways of reducing falls in care homes has found that improving awareness of falls and providing training in falls reduction can significantly reduce falls incidence. One large study in 6000 care homes in the USA found that a 10% increase in staff scores on a validated patient safety culture measure were associated with reductions of 1 to 2 falls in an average size care home.[6] More recently, a large quality improvement programme undertaken with 118 care homes in Essex in which staff received training about QI methods and signposting to key resources found that knowledge and awareness of resident safety improved amongst staff, and there were tangible reductions in specific harms in some participating homes. This included statistically significant reductions in the incidence of falls and pressure ulcers when pre- and post-programme rates were compared.[14]

1.2 THE SPACE PROGRAMME AND EVALUATION

The Safer Provision and Caring Excellence (SPACE) programme was implemented in 29 care homes in Walsall and Wolverhampton over a 24 month period between October 2016 and the end of September 2018. The programme was designed and implemented by Walsall and Wolverhampton Clinical Commissioning Groups and funded by the West Midlands Patient Safety Collaborative (PSC). It aimed to improve safety in participating care homes by providing skills training to managers and staff about how they could apply QI techniques to their working practices. The specific objectives of SPACE were to identify if upskilling staff in QI techniques and supporting care homes to use QI tools to track changes in adverse events over time were associated with reduced rates of avoidable harms (e.g. falls, pressure ulcers). SPACE also aimed to develop a culture of continuous improvement and a community of best practice and information sharing across participating care homes.

The West Midlands Collaboration for Leadership in Applied Health Research and Care (CLAHRCWM) at University of Birmingham carried out a pragmatic, mixed methods evaluation with a before and after design, to document the impacts of the SPACE programme and assess the extent to which it was successful in achieving its objectives. The evaluation was based on assessing a series of outcome measures at different time points and comparing pre- and post-SPACE data to understand the changes that were made as a result of the programme. Key outcomes of interest for the evaluation were changes to care home safety climate, changes in rates of harms such as falls and pressure ulcers within participating care homes, and changes to rates of hospital admission of care home residents.

1.3 PURPOSE OF REPORT

This report provides an overview of the findings from the programme evaluation, combining baseline data that captures the pre-SPACE period, with 24 months of post-SPACE data collection. For the purposes of the evaluation and associated reporting, the programme is formally taken as beginning in October 2016 and running until the end of September 2018. However, the facilitators recruited to work with participating care homes and to deliver staff training were not in post until January 2017, and active implementation of the programme continued until the end of December 2018.

Data collection

The report includes the findings from qualitative data covering:

- Three sets of interviews with CCG managers and facilitators involved with managing and administering the SPACE programme (at months 6, 12 and 24; n=18 in total)
- Data from semi-structured interviews undertaken with managers and staff at four care homes selected for in-depth case study analysis (at months 12 and 24; n=49 in total)
- A focus group undertaken with staff who had attended SPACE-related training in Year 1 of the programme
- Observation of training and attendance at key programme meetings over the 24 months of SPACE (n=123 hours in Year 1; n=61 hours in Year 2)

It also includes an analysis of quantitative data covering:

- A survey of care home managers and staff undertaken at programme baseline, end of Year 1 and end of Year 2
- Analysis of changes in rates of avoidable harms (e.g. falls, pressure ulcers) at participating care homes for the 6 months preceding SPACE compared with the 24 months after programme launch
- Analysis of changes in rates of hospital admissions from participating care homes (12 months preceding SPACE compared with 24 months after programme launch).

Evaluation objectives

The evaluation had a number of objectives, which were each addressed using multiple methods (Table 1.1):

Table 1.1: Mapping of evaluation objectives against methods used

Evaluation objective	Methods used to address objective
Describe how the programme is implemented over time and in multiple care homes	• Programme observations • Interviews with CCG managers/facilitators • Interviews in case study care homes • Care home manager and staff surveys
Assess how staff experience the programme	• Interviews in case study care homes • Care home manager and staff surveys
Identify what staff learn about safety and QI as a result of the programme	• Programme observations • Interviews in case study care homes • Care home manager and staff surveys
Identify the QI changes that staff and care homes make, and the effectiveness of these	• Interviews with CCG managers/facilitators • Interviews in case study care homes • Analysis of adverse event rates over time
Assess the enablers and barriers that staff experience when applying learning to their practice	• Interviews with CCG managers/facilitators • Interviews in case study care homes
Analyse programme impact on key outcomes (safety climate, adverse events)	• Care home manager and staff surveys • Analysis of adverse event rates over time
Identify associations between features of care homes and changes in outcomes	• Care home manager and staff surveys • Analysis of adverse event rates over time
Identify any unintended consequences of the programme	• Interviews with CCG managers/facilitators • Interviews in case study care homes
Compare care homes that change the most with those that change the least, in order to identify the contexts and circumstances in which the programme is more or less likely to be effective	• Interviews with CCG managers/facilitators • Interviews in case study care homes • Care home manager and staff surveys • Analysis of adverse event rates over time

Feedback on interim evaluation findings was provided to the PSC Programme Board around 6 months after programme launch (April 2017), and a Year 1 report (April 2018) summarised the findings from data collected in the first 12 months of the programme. These reports allowed iterative adjustments to be made to programme implementation and/or the approach to programme evaluation while SPACE was still underway, thus maximising the responsiveness of both the programme and the evaluation to positive findings and key challenges in the participating care homes.

1.4 EVALUATION ACTIVITY

1.4.1 Overview

Before the programme officially launched in October 2016, the evaluation team finalised the research protocol, obtained ethical and research governance approvals, and recruited care homes participating in SPACE to the evaluation.

Baseline data collection was undertaken between October to December 2016 (months 0 to 3), consisting of:

- Baseline survey with care home managers and staff at participating care homes in order to assess pre-SPACE safety climate and participation in quality improvement activities
- Analysis of data on rates of key adverse events in participating care homes for the 6 months prior to programme launch (April to September 2016).

Qualitative data collection began in month 6 (interviews with programme managers and facilitators). Findings from this initial phase of data collection were reported in the interim report to the PSC Programme Board in April 2017. The next substantial period of data collection took place between October to December 2017 (month 12). This included:

- Year 1 survey with care home managers and staff to assess changes in safety climate and involvement in quality improvements since baseline
- Analysis of adverse event rates in the 12 months since programme launch
- Focus groups with care home staff participating in SPACE-related training
- Interviews with staff at four care homes selected to be in-depth case study sites
- Follow-up interviews with programme managers and facilitators

The final phase of data collection covered months 12 to 24 of the programme and consisted of:

- Year 2 survey with care home managers and staff
- Analysis of adverse event rates in months 12 to 24
- Interviews with staff at each of the case study care homes
- Final phase of follow-up interviews with programme managers and facilitators

Evaluation team observations of SPACE training and other key meetings took place throughout the entire 24 months of the programme.

1.4.2 Evaluation team

The evaluation team consisted of Dr Gill Combes (chief investigator), and research fellows Dr Sarah Damery (day-to-day project management and quantitative lead), Dr Sarah Flanagan (qualitative lead), Ms Janet Jones (qualitative data), and Mrs Pamela Nayyar (project support). The evaluation team met at least monthly throughout the duration of the evaluation in order to review progress, resolve issues, discuss the data collected, and ensure adherence to project timescales.

1.4.3 Evaluation protocol, ethics and research governance approvals

Before starting data collection, the protocol for the evaluation was finalised and published.[15] Ethical approval was obtained from the University of Birmingham Research Ethics Committee on 8th August 2016 (Ref: ERN_16-0868S). Research governance approvals were obtained from Walsall and Wolverhampton CCGs (7th and 20th September 2016 respectively), and local authority research governance approvals were obtained from Walsall Council (5/10/2016) and City of Wolverhampton Council (22/8/2016).

1.4.4 Care home recruitment to evaluation

Care homes were recruited to the evaluation following face-to-face visits between a member of the evaluation team and each care home owner or manager. The purpose of the evaluation was explained, and each care home was provided with a participant information sheet and consent form. Care home owners/managers were asked to indicate whether or not they were interested in taking part in the evaluation within two weeks of this initial visit by signing and returning their consent form to the evaluation team. Non-

responders were re-visited 2-3 weeks after the initial approach to ensure that the evaluation could include as many care homes participating in SPACE as possible.

1.4.5 Care home manager and staff surveys

Survey purpose and content

Surveys were carried out at baseline, end of Year 1 and end of Year 2. They were designed to obtain data from care home managers and staff for the evaluation's primary outcome measure – the change in mean score in the safety climate domain of the Safety Attitudes Questionnaire (SAQ) between baseline and the end of programme implementation.

The SAQ is commonly used for measuring safety climate in healthcare and has been validated for use in the nursing and residential care home setting.[16,17] The SAQ measures six domains: teamwork climate, job satisfaction, perception of management, safety climate, working conditions and stress recognition through 30 questions that elicit attitudes using a five point Likert scale. Each domain is calculated as the mean score of its component items, with each scale ranging from 0 to 100. Higher scores denote a more positive attitude. Although the main SAQ domain of interest to the evaluation was safety climate, results are presented for all six domains. In addition to the SAQ, surveys also collected data on the following:

For care home managers:

- Features and characteristics of the care home (size, CQC ratings, registration type, number of staff)
- Length of time in care home management, age, qualifications
- Previous experience of care home safety and QI initiatives

For non-manager care home staff:

- Role, length of time working at the care home, shift patterns, age, qualifications
- Previous experience of care home safety and QI initiatives

Surveys were designed to include the same questions (where possible) at each time point at which they were administered, in order to maximise the extent to which pre- and post-SPACE responses could be compared.

Survey administration

At baseline, lists of staff names were provided by the care home manager at the initial face-to-face visit, via email or were posted to the evaluation team with the consent form. For the two subsequent surveys, staff lists were obtained following email or telephone contact with managers. The names were used to label envelopes and address survey letters to staff members working at each participating care home, but all survey returns were anonymous – only the staff members' care home was identifiable via a barcode on the front page of each survey. Surveys were hand-delivered to each care home by the evaluation team at a convenient time and surveys were distributed to staff internally by the care home manager or administrator.

Several strategies were used to maximise survey response rates at each time point:

- Reminder surveys were sent to each care home 4 to 6 weeks after the initial mailing
- Programme facilitators in Walsall and Wolverhampton encouraged managers and staff to return a survey. This strategy was particularly effective in Year 2
- Telephone calls were made to managers at care homes with response rates lower than 20% to ask them to remind their staff to send surveys back

- Anonymised graphs were emailed to managers fortnightly during the survey period. Graphs summarised the number of survey returns from each care home compared to others in their area

For all three surveys, data were collected over a 12 week period to ensure that all staff had ample opportunity to return a survey. These strategies combined to facilitate higher than expected response rates.

1.4.6 Adverse event data

A key component of the evaluation was to measure change over time in the incidence of adverse events (e.g. falls, pressure ulcers, urinary tract infections (UTIs)) occurring at each care home in order to see if significant reductions were observed that may be attributable to participation in SPACE. Changes over time were measured by analysing data that each care home routinely provided to their respective CCG and comparing rates for 6 or 12 months pre-SPACE (depending on data availability) against the 24 months in which active implementation of SPACE took place. Each CCG has historically collected slightly different data from the care homes within its jurisdiction – in terms of the specific data items obtained, the frequency of data collection and the way that the events of interest are measured. Although differences in routine data collection for the period before SPACE could not be overcome, meetings between the evaluation team, programme managers and the quality assurance teams from Walsall and Wolverhampton CCGs were held early in the evaluation work. These discussions allowed standardisation of wording and definitions for each area's routine care home data collection tool so that directly comparable data on the key outcome measures could be collected from October 2016 onwards.

1.4.7 Hospital activity data

Another key outcome measure was the change after baseline in rates of hospital admissions for residents at SPACE care homes. It had been anticipated that we would be able to use an algorithm developed by colleagues at Nottingham University that would extract data on hospital admissions from participating care homes directly from the hospital information systems at Walsall Healthcare NHS Trust and the Royal Wolverhampton Trust, and from a series of matched control care homes in a separate Trust elsewhere in the West Midlands. This would have allowed a comparison both over time and across geographical areas to see if observed trends were occurring independently of SPACE or could be attributed directly to the programme. However, obtaining research governance permissions to allow access to data directly from hospital trusts was challenging and could not be completed within the timeframe of the evaluation. Instead, the trends in hospital admission rates presented in this report were measured using routinely collected data from each of the participating CCGs for the 12 months before SPACE (October 2015 to end of September 2016) and the 24 months of active SPACE implementation (October 2016 to end of September 2018).

1.4.8 Qualitative data collection

In addition to semi-structured interviews with programme managers and facilitators undertaken at months 6, 12 and 24, the evaluation was designed to collect qualitative data via interviews with care home managers and staff at four case study care homes in months 12 and 24, and via focus groups with care home staff attending SPACE training in months 6, 12 and 18. However, as programme facilitators for each CCG were not in post until January 2017 (evaluation month 4), it was agreed following the interim evaluation report that the schedule for focus groups should be changed to take place in months 12 and 24 only. Further to this, it was only possible to recruit care home staff to a single focus group in month 12, and it was decided that this form of data collection was not effective for care home staff: it was difficult for care home managers to release multiple staff from shift at the same time to attend a focus group, and staff were reluctant to participate in group work. As a result, no further attempts to undertake focus groups were made after month

12, and the target number of interviews at the case study care homes was increased to compensate for the potential loss of qualitative data associated with the removal of focus groups from the evaluation plan.

1.4.9 Observation of events and training connected with SPACE

To complement the other forms of data being collected, it was planned that the evaluation team would observe centrally-run training events and a selection of training sessions conducted in individual care homes, along with attendance at as many SPACE-related meetings as possible (e.g. manager forums in Walsall and Wolverhampton). These observations allowed us to gain a detailed overview of the content and delivery of SPACE in both CCG areas; to identify commonalities and differences in the respective approaches of each CCG towards training design and implementation, and to identify issues which were explored further in the case study care home interviews. It also allowed us to develop close relationships with the programme managers and the facilitators delivering SPACE in each area.

1.4.10 Monitoring of programme activities

As well as following social media posts about SPACE by those involved in programme design and delivery, we analysed any documents produced about the programme, including those related to the identification and dissemination of good practice and programme success such as regular CCG and PSC newsletters.

1.4.11 Meetings

In addition to regular evaluation team meetings, we attended all meetings of the Programme Steering Group. We also attended – where possible - meetings of the operations group which was formed in January 2017 to oversee the ongoing development and implementation of the programme.

1.5 REPORT STRUCTURE

For the majority of the outcomes of interest - such as those measured in the care home manager and staff survey data - this report compares baseline information with the end of Year 2 of SPACE, allowing the pre- and post-programme comparison that was the primary objective of the evaluation. In the case of the Year 1 manager and staff survey, these data have already been discussed at length in the Year 1 report, so the Year 1 findings are not repeated here. However, there are some instances in which it was appropriate to compare baseline data with Year 1 and Year 2 data (such as in the qualitative work with care home staff), since it was important to capture staff views about their participation in SPACE as a whole. The time periods being covered in each chapter are made clear within the chapter text.

In the remainder of this report, Chapter 2 gives a brief overview of key elements of the SPACE programme as delivered in Walsall and Wolverhampton. Chapter 3 summarises the quantitative data from the care home manager and staff surveys, with the primary comparison being changes between baseline and end of Year 2. Chapter 4 reports the findings of the avoidable harms and hospital activity analysis, comparing event rates during the 6 months before SPACE (12 months for hospital admissions) with the entire period that SPACE was implemented. Chapter 5 reports the qualitative findings, focusing on data from the programme manager/facilitator interviews, the focus group undertaken in month 12, and the case study interviews undertaken in months 12 and 24. Finally, Chapter 6 discusses the findings and outlines key issues relating to the success factors for programme implementation and evaluation; challenges associated with programme delivery; issues of longer-term sustainability, scale-up and spread of the changes brought about by SPACE, and the overall key lessons for care homes, localities and the wider adult social care system.

2. THE SPACE PROGRAMME

2.1 INTRODUCTION

The SPACE programme was implemented in 11 care homes in Walsall and 18 in Wolverhampton. At the start of the programme, each CCG appointed programme facilitators to deliver the programme in participating care homes. The facilitators played a fundamental role in shaping the programme, and in adapting it over time, and their role expanded as the project progressed.

Please note: although the facilitators have undertaken a substantial amount of work, this Chapter aims to give an overview of key programme elements rather than an exhaustive account capturing the fine detail of everything that has been done in each CCG area.

2.1.1 Sources used to inform SPACE overview

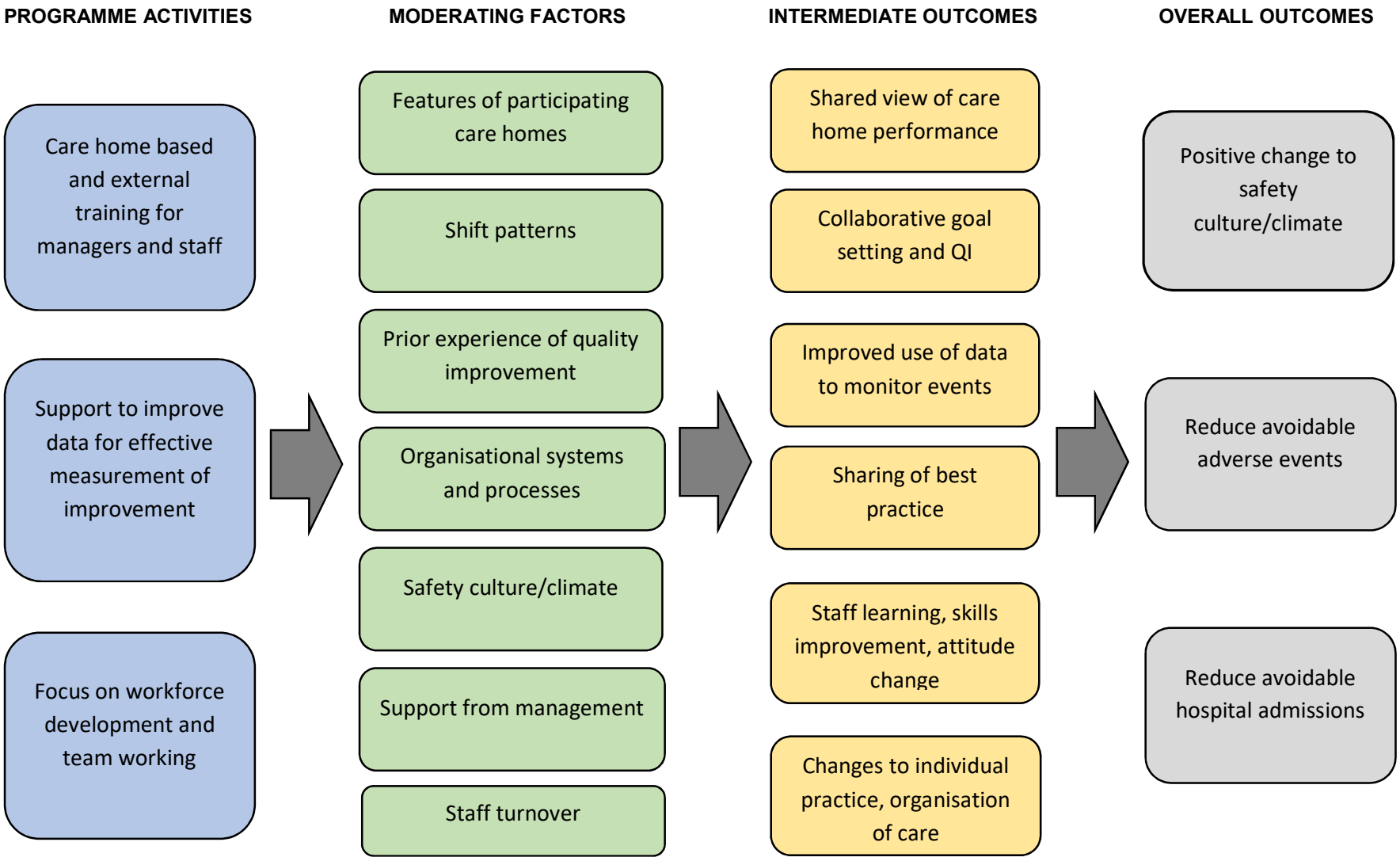
This chapter draws on a range of information gathered by the evaluation team over the 24 months of the SPACE programme. This information has been used to develop a picture of how the programme has been designed and implemented, and in doing so, supplements the data gathered via the survey and qualitative work and provides an additional 'lens' through which to evaluate the programme. In broad terms, the primary data sources were: a) documents about SPACE or written by those involved in delivering the programme, and b) the findings from evaluation team observations of manager/staff training and attendance at other meetings connected with SPACE. The latter covers a total of 81.5 hours of attendance at SPACE-related meetings and conferences, 48 hours of attendance at care home manager forums and 56 hours of direct observation of SPACE training delivered by programme facilitators in Walsall and Wolverhampton. The documents and observations used for this chapter are summarised in Appendices 1 and 2.

2.1.2 Ethos underpinning the SPACE programme

The approach to SPACE fits within the Institute for Healthcare Improvement (IHI) Model for Improvement, and was guided by a broad framework focusing on the role of safety culture in driving continuous learning and improvement. Improvement projects often fail because of a lack of understanding of the behavioural and cultural changes needed to support improvement.[4] In recognition of this, SPACE focused on creating positive changes to safety culture by applying approaches that emphasised the role of leadership, capacity building, adoption and spread of improvements, and the promotion of innovation.

Two key techniques informed the organisation and delivery of SPACE at the macro level. First, a recognition of human factors i.e. the environmental, organisational and individual characteristics influencing behaviour, and second, Learning from Excellence (LfE), which is one example of a strategy that encapsulates 'Safety II' approaches towards quality improvement.[16] These approaches typically focus on how things go right, and recognise that the same behaviours produce good care as produce poor care. Thus, attention is paid to the conditions under which people succeed rather than fail, placing emphasis on learning from episodes of excellence in order to avoid harms. These approaches drove SPACE at a practical level through improvements that: a) gave care home staff the tools and ability to measure and understand safety culture in their care home, b) allowed co-design of improvements between facilitators and care home managers/staff, c) used data to measure improvements, and d) explicitly linked an understanding of risk factors around harms to the implementation of improvement interventions. The broad theory of change driving SPACE is shown in Figure 2.1. This was not formally used to underpin SPACE, but was developed following the evaluation team's review of SPACE-related documents and programme observations.

Figure 2.1: Theory of change underpinning the SPACE programme



2.2 ROLE OF THE FACILITATORS

Early in the programme, the facilitators in each CCG area worked closely with managers and clinical leads at each participating care home to identify one or more areas of safety that they would like to improve. In Walsall, this was done using the NHS 'readiness to change' model. In Wolverhampton, areas for improvement were identified through a series of brainstorming sessions with managers and key staff and identification of a series of 'champions' who would act as liaisons in relation to a specific area of quality improvement (such as nutrition/hydration or falls management) and take the lead in putting learning from training into practice within their care home. This approach recognised that developing QI solutions in collaboration with care homes has been found to increase the likelihood of uptake and effective change than strategies that rely on imposing externally-developed, top-down solutions.[5,17]

Facilitator engagement with individual care homes evolved over the course of the programme. Initially, the primary focus was on providing QI training to address harms such as falls and pressure ulcers. Training was delivered via both care home-based sessions and centrally-organised training sessions that took place external to the care home setting, in order to make training accessible to all staff within a care home regardless of their job role and level of seniority. Whilst the provision of training was central to the facilitators' role throughout the programme, they also provided a crucial link to the care homes in supporting them to implement changes and improvements, to review the effectiveness of these, and to modify them accordingly until the right solution was found for each specific care home. Support was given in a number of ways, such as guiding care home managers and staff in carrying out internal audits of procedures (e.g. fluid balance documentation) and providing each care home with detailed feedback about what was working well and areas requiring ongoing improvement. Facilitators and managers collaborated in designing action plans for quality improvement and support was provided to put these plans into action.

As the programme progressed, facilitators reported an improvement in communications between themselves and the care homes, with managers actively seeking their advice and support after the programme had been running for around six months and onwards. Encouragement from the facilitators for homes to sustain the use and documentation of Plan-Do-Study-Act (PDSA) cycles as evidence of continued improvement was effective, as was the associated use of 'driver diagrams' which helped care home managers and staff to break down higher level QI goals into smaller, actionable processes and projects by showing the links between the different elements of a given problem and how changes to one area could have a positive impact on another. Many of the care homes regularly used PDSA cycles to evaluate how quality improvements were working in the context of their care home. This approach was also important as a means of empowering care homes to collect and analyse their own data: although care homes are typically required to collect data for regulatory purposes, there has historically been less of a focus on collecting and interpreting data to support quality improvement.[14]

Each facilitator also led a bi-monthly care home manager forum in their respective CCG area. These forums provided a relaxed environment for managers to discuss what was going well or not, with the aim that the learning from these forums would be cascaded back to the care home staff and that the forums would become a means for managers to share good practice and learning with each other.

2.2.1 Differences between Year 1 and Year 2

During Year 1, the facilitators focused on building relationships with the participating care homes, identifying areas within each care home that should be targeted for QI, developing and implementing resources to help care homes and staff make changes to their practice, and delivering training on safety-related issues such as falls. Developing relationships with the participating care homes was particularly important at the start of the

programme, as there was some initial suspicion from care home managers and staff about the facilitators' motives and fears that participation in SPACE would entail increased workloads in an already resource-limited sector.

Whilst the delivery of training and resource development continued throughout Year 2, the second year of the programme became more about consolidating the work that had been done in Year 1, with facilitators providing ongoing support to participating care homes on a regular basis. The exception to this was a focus on oral care and chest infection prevention which was a new area of training and QI introduced in Walsall and Wolverhampton during the second year of the programme. There was also a concerted effort in Walsall in particular to put programme resources into engaging SPACE care homes who had not engaged well with the programme during Year 1, which proved fairly successful. Much of the work in Year 2 also focused on how the positive elements of SPACE could be sustained beyond the lifetime of the programme, celebrating the achievements that had been made, and disseminating the learning from SPACE more widely, both within and outside of the region. In both Walsall and Wolverhampton, the work done in the last three months of SPACE focused on improving the recognition and management of deteriorating/dying care home residents through use of the STOP and WATCH tool for identifying the soft signs of deterioration. In Walsall, this laid the groundwork for a new project incorporating a pilot of the revised National Early Warning Score (NEWS2) in local care homes and across the acute Trust and West Midlands Ambulance Service.

2.3 SPACE INTERVENTIONS

This section outlines the key components of the interventions used by the facilitators in SPACE, organised around the three main areas of training provision and support to improve data; efforts to develop the care home workforce and foster information sharing, and activities to celebrate the success of the programme.

2.3.1 Care home manager and staff training

Throughout the programme, the facilitators organised a series of training sessions for care home managers and staff. Some training was delivered by outside agencies external to the care homes, and some delivered by the facilitators themselves in care home-based sessions. The manner in which such training was delivered was adapted to the context of the participating care homes, which is recognised as an important factor in allowing care homes to engage successfully with QI interventions.[17] For example, staffing pressures meant that managers were often unable to release staff to attend multiple training sessions on different dates. As a result, the facilitators found that delivering centralised training sessions covering multiple topics in a day and linking them with QI methodology was an effective way to engage staff and ensure high training attendance rates. Tailored training provided directly to staff in individual care homes also proved effective. These training sessions were flexibly organised and delivered, combining training on QI methods alongside their practical application to a range of areas such as pressure ulcers and falls using examples relevant to the care homes themselves.

The evaluation team attended a number of training sessions over the course of SPACE to observe how training was delivered. Overall, sessions were well attended by staff in a wide range of job roles and training was very well received by attendees. Sessions were designed to be flexible, allowing the trainer to tailor them to each audience for maximum impact. Most sessions involved a practical hands-on approach rather than following a lecture-style format which resonated with the attendees because they provided the opportunity for staff to think about issues in their specific care homes and to visualise how improvements could be implemented.

2.3.1.1 Appreciative inquiry

Appreciative inquiry (AI) encourages individuals and teams to look at their practices from a positive viewpoint by emphasing good practice when negative events happen. It represents an attempt to shift the culture of improvement from a punitive 'blame' culture towards a more positive lens through which to view strengths and weaknesses. In both Walsall and Wolverhampton, feedback and training sessions were often framed by the facilitators within the overall framework of AI by emphasising what was going well and learning from the positives. AI approaches were well-liked and widely adopted. For example, one care home in Wolverhampton used AI principles to implement a recognition system to appreciate staff and relatives' contributions to care. Another introduced AI into their staff meetings and one-to-one meetings as a means of reframing the way in which such meetings were conducted. In Walsall, AI approaches were found to be particularly useful as a means of preparing for future CQC inspections, as it provided an opportunity to reflect on the range of QI activities undertaken in the care home and how they related to CQC inspection domains and organisational values.

By the end of the programme, the facilitators estimated that around 1000 staff across both boroughs had received training on QI methods (400+ in Walsall; 500+ in Wolverhampton), and over 200 had been trained in AI in Walsall. Training topics were varied and covered all areas of care home practice. Examples included AI and QI methods, continence care, falls prevention, pressure ulcer management/tissue viability, nutrition and hydration, oral health promotion and chest infection prevention, dementia awareness, and how to spot the signs of deterioration in a resident.

2.3.2 Tools and resources for data collection and effective management of improvement

A key element of the facilitators' engagement with participating care homes was to provide them with tools and resources to monitor risks and to collect data on various avoidable harms. Some tools could be considered generic and applicable to a number of areas of care home practice rather than specific areas of QI, whereas others were tied more closely to managing improvements in relation to particular issues such as falls or pressure ulcers. Being empowered to collect and interpret data themselves became a cornerstone of measuring improvement for the vast majority of care homes within SPACE. Analysis of their own data (supported by the facilitators) allowed rapid assessment and PDSA of the impact of quality improvements made within the home so that approaches could be modified if necessary.

2.3.2.1 Generic tools

Safety crosses

The most effective and widely-used tools in SPACE care homes were safety crosses, which were implemented by 100% of care homes and were reported to have become fully embedded into routine practice across both Walsall and Wolverhampton. Safety crosses are visual tools that allow staff to monitor risks and adverse events over time. This helps them to identify any trends over time in the frequency or timing of adverse events. This information can then be used by staff to identify suitable changes to their working practices to address the issue. Safety crosses were initially introduced within SPACE as a tool to monitor falls. However, they were widely adapted by participating care homes to cover a wide range of additional areas of quality improvement. Examples included safety crosses for monitoring challenging behaviour incidents, resident attainment of weight/fluid targets, completion of documentation, hospital admissions, chest infections and medicine round interruptions. Evaluation team observation of training sessions and shadowing of facilitators on visits to specific care homes suggested that the use of safety crosses was seen as universally positive by managers and staff – they were easy to implement, could be applied to a range of areas, and could be interpreted by staff at a glance.

SBAR

The SBAR tool ('Situation, Background, Assessment, Recommendation) was introduced in participating care homes during 2017. SBAR is a structured tool which aims to improve communication between staff and external providers such as the ambulance service, primary care or rapid response teams by helping care home staff to give the most important information that these external providers need to have in order to escalate concerns about specific care home residents. Videos, stickers, posters and examples of SBAR use were circulated to SPACE care homes to increase awareness of the tool, and staff training on effective SBAR use was offered. After a slow start, the tool became widely used across both areas.

Tools to improve staff communication

The nature of handover between staff at times of shift change was highlighted early on during SPACE as an important component of identifying and addressing risk in participating care homes. The SPACE programme saw a substantial improvement in how, when and where handovers were carried out. In large part, this was achieved by the introduction of and/or redesign of handover boards, which were used widely in both areas. These boards collated the information most relevant to each care home's residents – such as whether someone had had a fall, whether they were exhibiting signs of a pressure ulcer, incidents of challenging behaviour, issues with nutrition and hydration, and provided staff with each resident's 'status at a glance'. The boards were used as a focus for staff during shift changes to make those beginning their shift aware of any issues with specific residents that had arisen in the previous shift which required follow-up.

In Wolverhampton, an associated improvement was the introduction of 'safety huddles' in several care homes. These are short, structured briefings designed to give care home staff important information about what is happening with key residents, and to anticipate future risks to improve the quality of care for those residents. Communication stations and education boards were also widely implemented as a means of helping care homes to cascade key information to staff. The use of safety huddles, communication stations and education boards were reported to have contributed to an environment where staff regularly communicated and felt able to raise concerns about resident safety, with an impact on safety culture whereby new staff were helped to see that 'this is the way things are done here'.

General quality monitoring

Facilitators in both areas were proactive in encouraging care homes to submit reliable monthly monitoring data, which at the start of SPACE was often not submitted by care homes as reports were only mandatory (in Wolverhampton) for care homes with an AQP (Any Qualified Provider) contract. Whilst data submission from a number of care homes remained variable throughout SPACE, the consistency and quality of data did improve over time. This was particularly evident in Walsall, where there was 100% submission of monthly quality data from April 2018 onwards. The data were often used by the facilitators as a tool to provide care home managers with monthly adverse event trends so that these could be reviewed and used as a basis for planning new QI projects. This approach was particularly effective in Walsall and care home managers/staff noted the value of using their own data to perform internal audits, plan improvements, and track trends over time.

2.3.2.2 Tools related to specific harms

Facilitators in both areas produced a range of QI toolkits to supplement training in specific areas of avoidable harm (such as falls, nutrition/hydration, pressure ulcers, medication safety and oral care). The toolkits contained a range of resources including diagnostic/audit tools to enable staff to gather baseline data to scope or identify problems or gaps in care processes, and educational resources to aid QI. This approach allowed care home staff to develop and implement their own QI projects rather than these being imposed upon them, and helped to cascade knowledge and information to staff who had not attended SPACE

training. A number of care homes also developed posters and pocket-sized prompt cards for staff that linked improvement initiatives to the CQC inspection domains.

Falls

Reducing avoidable falls was a key focus for many care homes in SPACE, and falls prevention training was well attended by staff from all participating care homes. Falls training was structured but flexible, allowing the facilitators to adapt training content and mode of delivery to suit the needs of the attendees. Discussions were included on the factors which may contribute to falls such as hydration, medication management, UTIs, and the influence of eyesight and inappropriate footwear. Training was also interactive, with participants invited to pick an item from a 'mystery bag' and discuss the link between that item and falls risk. Items included medication packets, light bulbs, a Zimmer frame with a worn rubber end, and a slipper with no back. This exercise prompted the identification of areas within the care home where interventions could be put in place. In Wolverhampton, falls training also incorporated an experiential 'in your shoes' component, in which staff simulated having problems and hindrances to mobility to understand what this was like for residents at risk of falls. Following the training, a number of care homes implemented footwear and vision checks, improved hydration, colour coded Zimmer frames using a traffic light system to identify residents at risk of falls, and introduced improved signage. The falls toolkit included tools such as the TUMBLES checklist in Walsall (NO STUMBLES in Wolverhampton), red socks, SBAR and post-fall questionnaires for incident review and analysis.

Pressure ulcers

With the facilitators' support, a number of care homes carried out detailed mapping of pressure ulcers and their development, and identified changes to processes to improve outcomes using QI techniques. Changes include analysis and review with a tissue viability nurse advisor, baseline assessment using the SSKIN (Walsall) or ASSKINE (Wolverhampton) tools, daily measurement using safety crosses, Waterlow scores, review of care plans, repositioning frequency and documentation. Feedback about training was positive, and staff reported the implementation of a range of improvement techniques such as the 30-degree tilt and use of the apple analogy which relates the scale of bruising on an apple to the grading of a pressure ulcer. Turn clocks were tested in several care homes, and in Wolverhampton, the tissue viability team set a 'red dot challenge' to raise the profile of pressure points and pressure ulcers as part of the national 'Stop the Pressure' day. One Walsall care home trialled the use of a SEM scanner - a handheld, portable device for sensing pressure-induced tissue damage before it becomes visible at the skin's surface – for the early detection of pressure ulcers.

Nutrition, hydration and UTIs

The facilitators delivered training highlighting the importance of good resident nutrition and hydration, and the links between poor hydration and harms such as UTIs, pressure ulcers and falls. This training was particularly effective for non-clinical staff such as kitchen workers, who were involved at several care homes in using food moulds that moulded pureed foods back into their original shape in order to make them more palatable to residents on dysphagia diets. Kitchen staff were also central to work that measured the fluid volume in standard food portions (e.g. gravy, custard) as a way of monitoring residents' fluid intake. Fluid balance audits were carried out in a number of care homes, identifying areas for QI projects to address issues such as unclear authorisation processes for starting or stopping fluid intake monitoring for specific residents.

Hydration monitoring charts were introduced in several care homes, and 'healthy pee' charts, hydration toolkits and posters were circulated to all SPACE care homes. Most care homes introduced improved menus, and led regular events like 'Fruity Fridays' and 'Smoothie Sundays' as a way to involve residents and

their families in attempts to improve hydration. Care homes were creative in the way that they focused on nutrition and hydration issues – activity co-ordinators in Wolverhampton adapted popular games and activities (e.g. 'Twister with a twist' and a ping-pong game) to increase residents' fluid intake in an entertaining way. Other care homes introduced colour-coded drinks coasters to identify residents that required encouragement to take fluids. Care homes where English was the second language for many staff reported at manager forum meetings that fluid charts based on visual representations were particularly effective. There was also evidence of information sharing between care homes, with a UTI flowchart and information booklet produced by one care home in Wolverhampton being sent to other homes for them to adapt for their own use. This reportedly had an impact on UTI prevention and early identification in care homes where it was used.

Medication safety

Reducing medication errors was a particular focus in Walsall, and a number of care homes undertook an audit of medicine round interruptions so that the main reasons for interruptions could be understood and QI projects developed to address these. Several care homes in Walsall and Wolverhampton adopted the use of red tabards, whereby a red apron was worn by staff dispensing medicines to make it clear that a medicine round was underway and that other staff should refrain from making interruptions. Results from internal audits showed that the number of medicine round interruptions substantially reduced following the introduction of the red tabard system.

Oral care and chest infections

Oral care training was introduced in Year 2 of SPACE, with staff trained about the links between oral care and chest infections in both Walsall and Wolverhampton. The training was developed collaboratively with colleagues from Public Health and used NHS England resources. Audits of chest infection rates in a number of care homes were undertaken by facilitators as part of training development, and were used as tools during the training to show the value of data collection and trend analysis. The training was interactive, combining practical demonstrations of how tooth brushing should be done for best results; a pre- and post-training quiz to test changes in staff knowledge as a result of the session; visual tools to train staff in performing oral care assessments; examples of the right brushes and toothpaste to clean dentures, and a chest infection safety cross for use in participating care homes. The training was well received by staff, and there have been encouraging downward trends in chest infection rates in SPACE care homes since the training and subsequent QI projects were implemented. As a result of the training and its role in elucidating the links between oral care and chest infections, NHS England regional commissioners agreed to reinstate the domiciliary dental service in Walsall borough, which had been withdrawn several years ago.

Other harms

One care home in Walsall which had a particular issue with challenging behaviour from some residents introduced behaviour safety crosses and trialled a number of initiatives in an attempt to combat behavioural issues. These included: the introduction of pet therapy, a nap after lunch, cohorting residents with behavioural issues together so that they could be monitored closely by a designated member of care staff, and a lavender project. The lavender project was introduced to address sun-downing i.e. behaviour changes occurring during the late afternoon or early evening as natural daylight fades, by using interventions like lavender diffusers in the resident lounge to calm residents exhibiting sun-downing behaviour. The care home manager reported a significant reduction in the number of days with multiple challenging behaviour incidents following the use of lavender products. In Wolverhampton, safety crosses were used in several care homes to monitor self-harm in residents with behavioural issues, and these were frequently used in clinical reviews.

During Year 2 of the programme, care homes in Walsall were supported to encourage staff to have influenza vaccinations, which typically had low annual uptake rates. A target of 75% staff uptake was set within the acute Trust, with the intention that this rate would be mirrored in the borough's care homes. A number of SPACE care homes ran internal awareness and information campaigns to encourage uptake and to make staff aware of the links between flu vaccination and resident safety. As a result, the uptake of flu vaccinations in participating care homes increased substantially in 2018. In 2017, uptake rates by care home had ranged from 5% to 49%. In 2018, this had increased in all care homes for which data were available, with five care homes exceeding the 75% target, and two of these exceeding 90% uptake for staff vaccinations. This suggests a real shift in safety culture within the Walsall care homes.

Other tools

A visitor leaflet was developed in Walsall to promote wider engagement with developing harm free care to care home visitors and residents' families. The leaflet was produced using a collaborative process across SPACE care homes, and informed visitors and family members about ways that they could contribute to care home safety and quality improvement. The leaflet prompted interest from Walsall's lead for adult social care regarding the potential for producing similar resources for the residential home sector.

2.3.3 Workforce development, team working and information sharing

A key theme of the SPACE programme was promoting workforce development, team working and information sharing between care homes and across the two areas. This was largely in recognition of the need for cultural change in order for good practice to become embedded within participating care homes, and in response to the difficulties that the care home sector has in attracting and retaining good quality staff. Interventions included efforts to provide care homes with opportunities to develop existing staff and attract new staff; manager forums to facilitate information sharing and strengthen care homes' links with other providers in the wider health economy, and numerous events to 'celebrate success' from SPACE.

2.3.3.1 Workforce development

Given the high rates of manager and staff turnover in both Walsall and Wolverhampton, developing the workforce – both in terms of promoting high quality care and embedding ongoing engagement with QI - was given high priority within SPACE activities in each area. In Walsall, the possibility of care home managers being offered places in the QI academy (a training course run through Walsall Healthcare Trust with modules on QI and human factors) was discussed. There was also work in Walsall to promote care homes as an attractive setting for pre-registered nurse training placements, with a view towards reducing pressure on clinical staff within care homes, and increasing the likelihood that – once registered – newly qualified nurses would choose to work in care homes. For existing care home staff, there was increased uptake of training for the nurse associate role, promoting development of care home assistants to undertake clinical training to become nurse associates, and care homes with registered nurses were given access to all clinical training at Walsall Healthcare Trust.

In Wolverhampton, care home staff were given access to competency training run by Wolverhampton College, and Wolverhampton CCG also worked closely with the University of Wolverhampton and the Black Country Partners nursing associate test site to promote nursing associate and registered nurse apprenticeships to care homes, covering a large proportion of the training fees. As in Walsall, this initiative offered the opportunity for health care assistants to advance their careers by becoming registered nurses. Wolverhampton CCG also ran regular care home management development events (2/3 times per year) as a means of promoting shared learning and best practice in the care home community.

2.3.3.2 Manager and other forums

Bi-monthly manager forums were introduced in both Walsall and Wolverhampton, led by each area's respective facilitators. These forums were open to managers from care homes within and outside SPACE, and typically featured external speakers from health and social care providers and regulators in the wider health economy e.g. Public Health, CCG, CQC, infection control, tissue viability, continence services, dieticians, to present new guidelines and tools and to ensure that care homes had access to the full range of health and social care services. Forums also provided managers with regular opportunities to share information and good practice with each other, and for managers outside of SPACE to learn useful information that they could apply in their own care homes. Evidence from our observations of care home manager forums and the way these evolved over time suggests that they actively encouraged a culture of idea sharing and communication between care homes, and demonstrated to managers that care homes are fundamentally important to the wider health economy.

In Wolverhampton, the activity co-ordinators within each of the participating care homes also started their own quarterly meetings, at which they discussed how harm free care could be promoted by a range of activities in specific care homes.

2.3.3.3 Celebrating success

A number of initiatives and meetings were developed over the course of SPACE to recognise individual and group achievements. This was an important way to celebrate success and maintain the drive towards effective improvements in participating care homes.

Kitchen tables

Kitchen Table events led by SPACE facilitators took place in the majority of care homes at regular intervals during the programme. These events aimed to celebrate what was going well in a particular QI area and generate ideas for further improvements. The format of kitchen table events was often underpinned by AI methodology in order to help staff to articulate positive features of their care home and of their participation in SPACE.

Celebrating success events

Both Walsall and Wolverhampton CCGs hosted 'celebrating success' events to showcase the achievements from SPACE. Events were attended by managers and staff from the SPACE care homes and other key stakeholders, and were a combination of presentations from external speakers and representatives from the care homes themselves, to describe key aspects of their 'SPACE journey'. The latter presentations were often very powerful and emotive, and provided an excellent showcase of the achievements made by participants in SPACE. The celebrating success events also provided an opportunity for attendees from the care homes to network and share best practice. These events were well received and garnered excellent feedback from attendees, playing an important role in supporting the longer-term sustainability of the learning from SPACE and the spread of good practice across both areas.

Awards

Both CCGs held annual SPACE awards ceremonies to recognise the achievements of participating care homes. Care homes and managers were nominated for award categories (including most improved care home, most innovative improvement to clinical care, most innovative environmental improvement, manager of the year, care home of the year, most improved safety culture, and – in Wolverhampton – a special recognition award for the care home with consistently harm free care). Care home managers were able to nominate their peers in some categories, and the award winners were decided by an independent panel that considered the nominations in the light of supporting data and other information. In Wolverhampton, there

are plans for the annual awards to continue despite SPACE coming to an end, as the contribution of care homes and the positive changes made within the area are highly valued by the CCG and by the care homes themselves. A number of care homes also introduced their own internal reward schemes to recognise good practice by care home staff members and teams. These included awards for 'champion of the month' and certificates in various areas such as pressure awareness or innovative clinical/non-clinical practice.

2.4 DISSEMINATION OF PROGRAMME LEARNING AND ACHIEVEMENTS

Newsletters and social media

Both Walsall and Wolverhampton developed bi-monthly newsletters that collated information and showcased achievements from SPACE, advertised training and included key tools and resources to support QI in care homes. Walsall also used social media platforms like Twitter to engage care home managers and staff and to inform others about the programme. The Patient Safety Collaborative (PSC) disseminate their own monthly newsletter, in which SPACE was often featured prominently. The facilitator from Walsall was invited in 2017 to produce a blog on the use of AI in care homes by the National NHS 'Sign up to Safety' initiative.

Conferences and events

Facilitators from both areas were proactive throughout SPACE in taking opportunities to present SPACE at various events and conferences. Selected examples are a poster presentation about SPACE at the ENRICH ('Enhancing Research in Care Homes') forum in October 2017 which won the best poster prize; presentations at the Patient First Conference and National Patient Safety Congress in 2017, and a poster presentation to the ENRICH conference in 2019 about Walsall's oral care QI programme, which also won the prize for best poster. At all events, the posters/presentations were well received and provoked great interest.

2.5 WIDER INTEREST IN SPACE

Dissemination activities gained interest from a wide range of regional and national stakeholders.

Regional interest

The Walsall facilitator has presented SPACE to Dudley and Stafford, Birmingham and Solihull CCGs, where there has been interest in implementing a similar programme, and there has been engagement in both Walsall and Wolverhampton with the local residential care sector to roll out some of the SPACE interventions to those care homes, and for resource toolkits to be made available to residential care homes.

National interest and adoption

Key examples of national-level interest in the interventions and learning from SPACE are summarised below:

- A video on safety culture from a care home in Walsall (taken from a care home manager's presentation to the audience at the 'celebrating success' event in March 2018) has been promoted as an example of good practice by the National Sign up to Safety campaign
- The Patient Safety Collaborative was approached by the editor of Care Home Management magazine to compile an article profiling a care home from the SPACE programme for the magazine
- The QI elements from SPACE are being integrated into the national *My Home Life* care home manager's leadership programme
- SPACE resources relating to falls QI interventions have been shared with Lewisham and Greenwich NHS Trust
- The Deputy Chief Dental Officer for England noted the good practice showcased by the Walsall QI and oral health training, and is considering including this example in new commissioning guidance currently being compiled

- The East Midlands AHSN has expressed an interest in the results of using tools like STOP and Watch in relation to resident deterioration
- Facilitators were invited to present SPACE at the West Midlands Quality Network group meeting and at the NHS England Care Home Conference (both in March 2019).

2.6 CONCLUSIONS

In general, the facilitators' implementation of the SPACE programme was effective, with the majority of care homes developing QI projects to address multiple areas of avoidable harm. The most widely-used interventions were safety crosses, which were adapted by individual care homes for use in diverse areas. Training in AI techniques was popular and motivational for staff, and many care homes incorporated AI into the daily running of their home including the way that team meetings and one-to-one meetings were structured. The facilitators played a major role in the success of the programme, through providing training, developing resource toolkits, offering advice and encouragement to care home managers and staff, and supporting care homes to collect data to monitor avoidable harms. They were also instrumental in helping to develop a culture of information sharing and mutual learning across participating care homes, and played a key role in disseminating the learning from SPACE both regionally and nationally. Indeed, the facilitators reported a number of key learning points for successful design and delivery of a programme like SPACE: focusing on the importance of building relationships and trust; ensuring partnership working and collaboration; developing resources and toolkits; using flexibility in training development and delivery; using QI methodology adaptably and with practical application to specific harms, and celebrating achievements, however small.

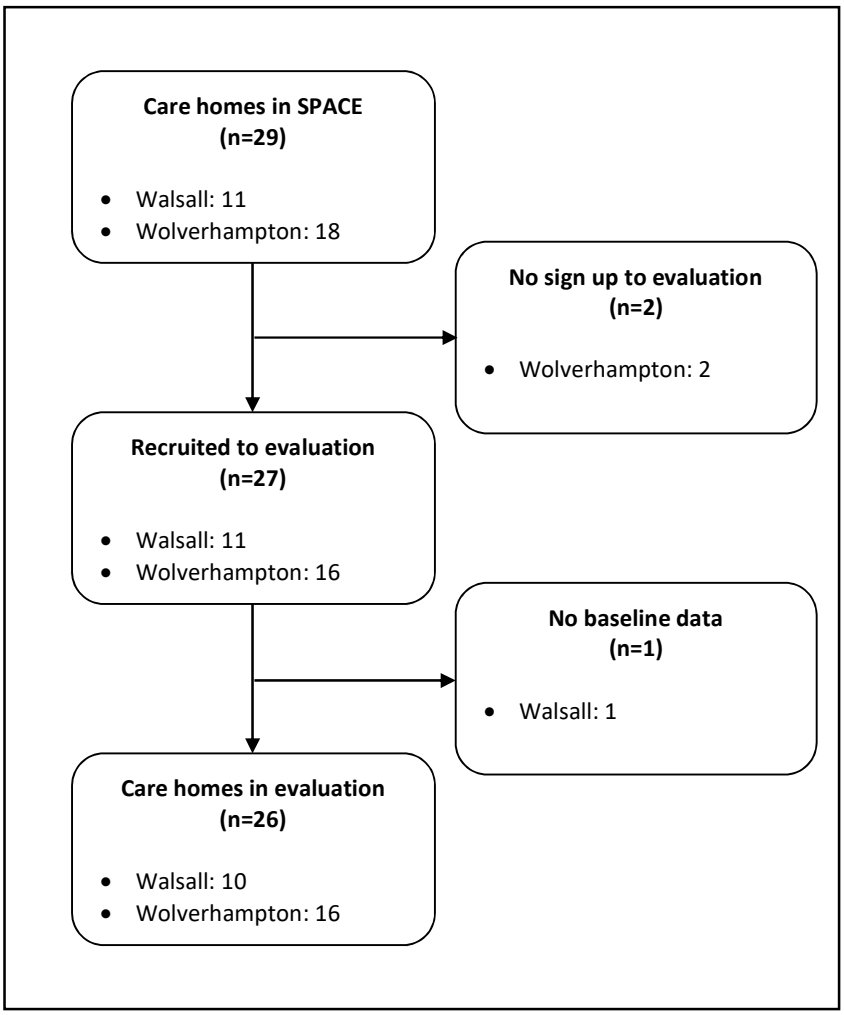
3. RESULTS: CARE HOME MANAGER AND STAFF SURVEY

The results presented in this Chapter focus on recruitment to the evaluation and analysis of the Year 2 care home manager and staff surveys, with comparison to baseline and/or Year 1 data where relevant. Please note that although 29 care homes participated in the programme, results are presented here only for the 26 care homes participating in the evaluation. No care homes are identified by name, as anonymity in reporting was a condition of the ethical and research governance approvals guiding the evaluation. Where individual care homes are referred to, only randomly allocated identifiers are used.

3.1 CARE HOME RECRUITMENT TO THE EVALUATION

Care home recruitment to participate in the evaluation is summarised in Figure 3.1. Of the 29 care homes participating in SPACE (18 in Wolverhampton, 11 in Walsall), two care home owners/managers in Wolverhampton declined to sign up to the evaluation at baseline. The remaining 27 care homes signed up to participate in the evaluation but one care home in Walsall did not supply any baseline survey data so could not be taken any further in the evaluation. Therefore, a total of 26 care homes (89.7%) signed up to the evaluation and provided baseline survey data; 10/11 in Walsall (90.9%) and 16/18 in Wolverhampton (89%).

Figure 3.1: Care home recruitment to the evaluation



3.1.1 Characteristics of care homes participating in the evaluation

Using the criteria recommended by the Personal Social Services Research Unit (PSSRU),[18] each care home was categorised as small (30 beds or fewer), medium (31 to 70 beds) or large (71+ beds). Overall, 5/26 care homes were categorised as small (19.2%) – all of which were in Wolverhampton; 15/26 were medium (57.7%) – 10 in Walsall and 5 in Wolverhampton, and 6/26 (23.1%) were large – all in Wolverhampton. The total number of beds in each care home ranged from 12 to 84. The average number of beds in Walsall care homes was 49, compared to an average of 53 for Wolverhampton. Three care homes were registered as residential only, with the remainder registered to provide both residential and nursing care.

3.1.2 Care Quality Commission ratings from baseline to end of Year 2

At their most recent Care Quality Commission (CQC) inspection prior to baseline (October 2016), most care homes participating in the evaluation were rated 'good' or 'requires improvement' overall (Table 3.1). Four care homes were inspected more than once during the 24 months since SPACE began and their ratings on one or more domains may have temporarily fluctuated above or below the ratings they achieved by the end of SPACE. This section captures only the ratings received in their most recent CQC inspection.

Table 3.1: Comparison of CQC ratings by CCG area at baseline and end of Year 2

	Baseline (number, %)			End of Year 2 (number, %)		
CQC domain	**G***	**RI**	**I**	**G**	**RI**	**I**
Walsall						
Overall	7 (70)	3 (30)	0 (0)	5 (50)	5 (50)	0 (0)
Safe	5 (50)	5 (50)	0 (0)	6 (60)	4 (40)	0 (0)
Effective	7 (70)	3 (30)	0 (0)	8 (80)	2 (20)	0 (0)
Caring	8 (80)	2 (20)	0 (0)	7 (70)	3 (30)	0 (0)
Responsive	8 (80)	2 (20)	0 (0)	7 (70)	3 (30)	0 (0)
Well-led	4 (40)	6 (60)	0 (0)	5 (50)	5 (50)	0 (0)
Wolverhampton						
Overall	7 (44)	8 (50)	1 (6)	11 (69)	5 (31)	0 (0)
Safe	6 (38)	9 (56)	1 (6)	11 (69)	5 (31)	0 (0)
Effective	11 (69)	4 (25)	1 (6)	11 (69)	5 (31)	0 (0)
Caring	10 (63)	6 (38)	0 (0)	12 (75)	4 (25)	0 (0)
Responsive	9 (56)	7 (44)	0 (0)	12 (75)	4 (25)	0 (0)
Well-led	7 (44)	8 (50)	1 (6)	9 (56)	7 (44)	0 (0)

* G = Good; RI = Requires Improvement; I = Inadequate

At baseline, care homes in Walsall had higher CQC ratings than those in Wolverhampton for all domains except for 'well-led'. In Walsall, 80% of care homes scored 'good' in the 'caring' and 'responsive' domains. The lowest proportion of care homes scoring 'good' was in the 'well-led' and 'safe' domains (40% and 50% respectively). None of the Walsall care homes were rated 'inadequate' for any CQC domain at baseline. Nine of the Walsall care homes were inspected by the CQC during the 24 months of the SPACE evaluation, with a worsening of ratings for the 'overall' (70% to 50%), 'caring' (80% to 70%) and 'responsive' (80% to 70%) domains, and an improvement in ratings for the 'safe' (50% to 60%), 'effective' (70% to 80%) and 'well-led' (40% to 50%) domains.

Table 3.2 shows the number rating changes for each CQC reporting domain between baseline and the end of Year 2 for care homes in Walsall. Ratings reduced in four domains, although there were positive instances of one or more care homes improving from 'requires improvement' to 'good' in the 'overall', 'well-led', 'caring' and 'responsive' domains during SPACE.

Table 3.2: Changes in CQC ratings by domain for Walsall care homes

Changes (number)		Overall	Well-led	Caring	Safe	Effective	Responsive
Improved	RI to G	1	1	1	0	0	3
	I to RI	0	0	0	0	0	0
Worse	G to RI	3	0	0	1	1	2
	RI to I	0	0	0	0	0	0

* I = 'inadequate'; RI = 'Requires Improvement'; G = 'Good'

For Wolverhampton at baseline, the greatest proportion of care homes rated 'good' were in the 'caring' and 'effective' categories (63% and 69% respectively). As in Walsall, care homes in Wolverhampton were least likely to score 'good' in the 'well-led' and 'safe' categories (44% and 38% respectively). One care home was rated as 'inadequate' both overall and for three of the other CQC domains.

Thirteen care homes in Wolverhampton were inspected by the CQC during SPACE. There was an improvement in all domains for Wolverhampton care homes, with 69% currently rated 'good' overall; improvements in the proportion of care homes scoring 'good' for the 'well-led' and 'safe' domains (now 56% and 69% respectively) and further improvements in the remaining domains (75% good for 'caring', 69% good for 'effective' and 75% good for the 'responsive' domain). Table 3.3 shows the number of rating changes for each CQC reporting domain between baseline and the end of Year 2 for care homes in Wolverhampton. All domains show some degree of improvement from a lower to a higher rated score, with a large proportion of care homes improving from 'requires improvement' to 'good' in 5 of the 6 domains, and one care home having improved from 'inadequate' pre-SPACE to 'good' in all domains post-SPACE.

Table 3.3 Changes in CQC ratings by domain for Wolverhampton care homes

Changes (number)		Overall	Safe	Effective	Caring	Responsive	Well-led
Improved	RI to G	5	5	1	4	6	4
	I to RI	0	0	0	0	0	0
	I to G	1	1	1	0	0	1
Worse	G to RI	2	1	2	2	3	3
	RI to I	0	0	0	0	0	0

* I = 'inadequate'; RI = 'Requires Improvement'; G = 'Good'

Of course, the CQC rates care homes using multiple data sources assessed during care home inspections, and we would by no means expect participation in SPACE to be a major factor affecting CQC ratings in individual care homes. Four of the care homes participating in the evaluation (15.4%) were not inspected by the CQC during SPACE, so any positive (or negative) changes at these care homes during the programme are not captured in the data above. Nevertheless, it could be argued that care homes in which quality improvements have become embedded into working practices are more likely to see those changes reflected in positive CQC inspections. Indeed, it is notable that for a number of care homes in both Walsall and Wolverhampton, their CQC reports have explicitly mentioned the improvements implemented as part of

SPACE as factors that have contributed to positive ratings, such as the use of safety crosses and safety boards, participation in SPACE training, and winning SPACE awards.

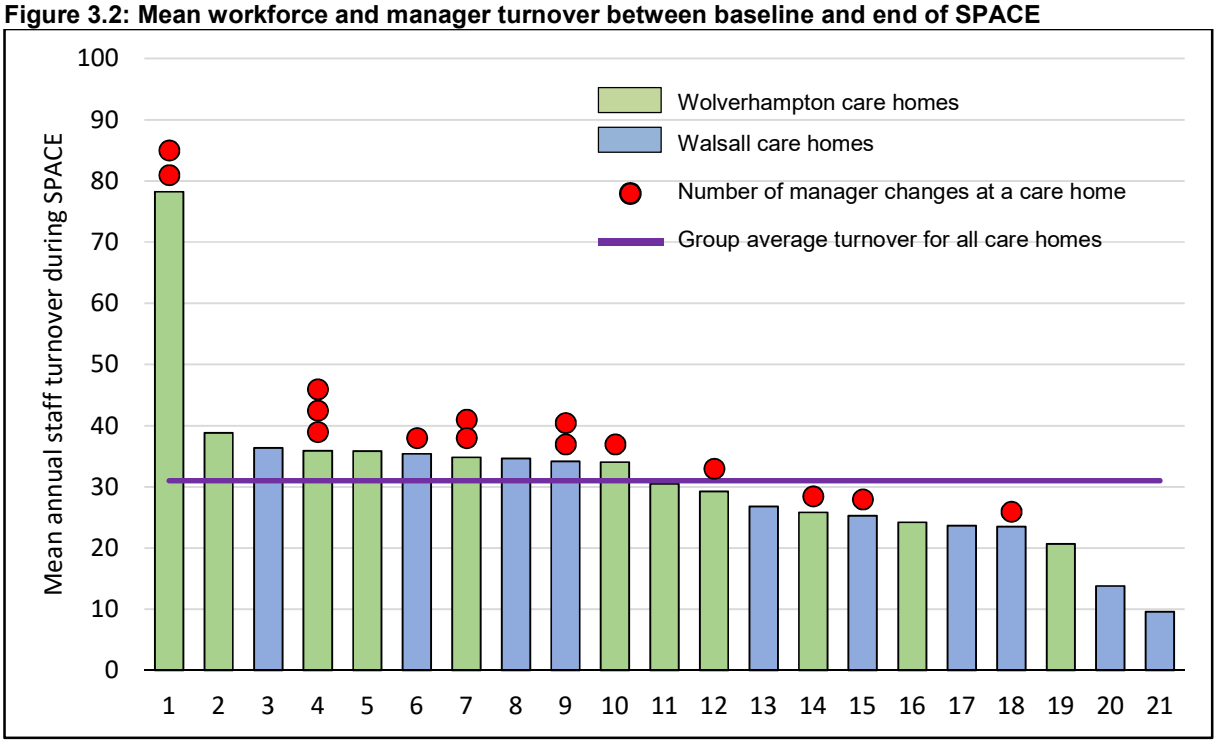
3.2 CARE HOME PARTICIPATION IN YEAR 2 SURVEY

All 26 care homes that signed up to participate in the evaluation and which provided baseline survey data also participated in the end of study survey in Year 2.

3.3 WORKFORCE TURNOVER OVER TIME BY CARE HOME

Rates of staff and management turnover are important to a quality improvement programme such as SPACE which involves training provision to improve staff skills and awareness of quality improvement. The care home sector is known to have high turnover rates,[19] and turnover of staff and managers is a significant potential barrier to the sustainability of quality improvements. Managers also have a key role in facilitating and driving quality improvements, and managerial changes can have a substantial effect on quality improvements at the care home level. Lists of staff names provided by participating care homes to facilitate survey mailings were compared over time (baseline vs. Year 1, and Year 1 vs. Year 2) in order to assess mean annual rates of staff turnover and the number of changes to the registered manager at each care home. This analysis was possible for 21/26 care homes, as five care homes did not participate in the Year 1 survey and thus annual staff turnover could not be calculated (Figure 3.2).

Figure 3.2: Mean workforce and manager turnover between baseline and end of SPACE



Across the 21 care homes for which staffing information was available, staff turnover between baseline and the end of Year 1 ranged from 3% to 60%, with a group average of 31.2%. Staff turnover between Year 1 and Year 2 ranged from 13.8% to 97.0%, with a group average of 30.8% overall. Thus, mean annual turnover of care home staff over the entire SPACE period for both areas combined was 31.0% (range 9.6% to 78.3%). Mean annual turnover for the 24 months after baseline in Wolverhampton was 35.3% (range 20.7% to 78.3%). Mean annual turnover over the same period in Walsall was substantially lower, at 26.3%

(range 9.6% to 36.4%). National data on staff turnover specific to the care home sector are not available, but average annual staff turnover across adult social care in England currently stands at 30.7%.[20]

Ten care homes had at least one change in registered manager during the 24 months of the evaluation (six in Wolverhampton; four in Walsall). Six care homes changed manager once; three care homes had two manager changes, and one changed manager three times.

3.4 YEAR 2 SURVEY RESPONSE RATES

At the end of Year 2, surveys were sent to 1495 staff and 26 managers across both CCG areas combined. A total of 546 staff surveys (36.5%), and 19 manager surveys (73.1%) were returned. Across the entire evaluation period, staff survey response rates remained fairly consistent from year to year, ranging from 33.9% in Year 1 to 37.9% at baseline. At both baseline and Year 1, survey response rates were considerably higher from care homes in Wolverhampton compared to Walsall (45.6% vs. 26.2% at baseline; 45.9% vs. 20.7% in Year 1). For the Year 2 survey, response rates from each CCG area were similar, with 36.2% of staff in Wolverhampton returning a survey (n=341) compared with 37.0% of staff in Walsall (n=205). In Year 2, response rates from individual care homes in Wolverhampton ranged from 3.7% to 91.7%. In Walsall, care home response rates from individual care homes ranged from 8.6% to 70.3% (Table 3.4).

Table 3.4: Comparison of survey response rates at each time point during the evaluation

Survey responses	Baseline (%)	Year 1 (%)	Year 2 (%)
Care home staff			
Walsall staff response rate	26.2	20.7	37.0
Wolverhampton staff response rate	45.6	45.9	36.2
ALL STAFF	**37.9**	**33.9**	**36.5**
Walsall range by care home	10.4 to 76.5	4.2 to 75.5	8.6 to 70.3
Wolverhampton range by care home	13.6 to 100	1.2 to 93.7	3.7 to 91.7
Care home managers			
Walsall manager response rate	58.3	60.0	80.0
Wolverhampton manager response rate	87.5	61.5	68.8
ALL MANAGERS	**80.8**	**60.9**	**73.1**

Response rates from individual care homes typically fluctuated at each data collection point between baseline, Year 1 and Year 2, which may reflect the impact of workload pressures on care home managers and staff over the course of survey data collection. In Walsall, seven care homes had higher response rates to the Year 2 survey compared with baseline and three responded in lower numbers (Appendix 3.1). In Wolverhampton, six care homes had higher staff survey response rates in Year 2 compared with baseline, and 10 had lower response rates (Appendix 3.2).

3.5 CARE HOME MANAGERS

Nineteen care home managers returned a survey in Year 2: 11 from Wolverhampton and 8 from Walsall (Table 3.5). Key elements of the manager survey responses are summarised below. The majority of care home managers were in the 45 to 54 year age group (n=7; 36.8%). All who returned a survey were female. Fifteen described their ethnic group as white (78.9%), with a further four managers reporting their ethnic group as Asian/Asian British (21.1%). Only one manager (5.3%) reported having a first language other than

English. The demographic and work/qualification features of managers responding to the survey were consistent with the most recent figures on the characteristics of care home managers in England.[21]

Table 3.5: Demographic characteristics, care home managers

Characteristic	Grouping	Number (%)
Age	18 to 24	0 (0.0)
	25 to 34	0 (0.0)
	35 to 44	3 (15.8)
	45 to 54	7 (36.8)
	55 to 59	6 (31.6)
	60+	3 (15.8)
Gender	Male	0 (0.0)
	Female	19 (100.0)
Ethnic group	White	15 (78.9)
	Asian/Asian British	4 (21.1)
First language	English	18 (94.7)
	Language other than English	1 (5.3)

Table 3.6 shows the work-related characteristics of responding care home managers.

Table 3.6: Work and qualifications, care home managers

Characteristic	Grouping	Number (%)
Length of time working in care home management (current care home)	Less than 6 months	2 (10.5)
	6 to 12 months	3 (15.8)
	1 to 2 years	3 (15.8)
	3 to 5 years	3 (15.8)
	6 to 10 years	3 (15.8)
	11 to 15 years	3 (15.8)
	15+ years	1 (5.3)
Highest level of qualification	Degree level or equivalent	14 (73.7)
	Nursing qualification or equivalent	2 (10.5)
	Other professional qualification	3 (15.8)

Just over 10% of managers responding to the Year 2 survey reported managing their current care home for less than 12 months (n=2) and one manager had managed their current care home for 15 or more years. The remainder of manager respondents were equally split across the other time categories. In terms of qualifications, the majority of managers had degree level qualifications (n=14; 73.7%).

3.5.1 Manager attendance at SPACE training

Managers were asked to indicate their attendance at any centrally-organised training and/or care home-based sessions during the previous 12 months (i.e. the second year of the SPACE programme). Of the 19 managers who responded to the survey, 18 (94.7%) reported attending centrally-organised training (external to the care home), and 16 (84.2%) reported attending care home-based training sessions. Only one manager reported that they had attended no SPACE training at all; two had attended either centrally-

organised *or* care home-based training, and the remaining 16 (84.2%) reported attending both types of training offered as part of SPACE. Managers were asked to rate training session quality on a Likert scale (0=poor; 10=excellent). Ratings were uniformly high – the mean satisfaction score was 9.3 out of 10 for centrally-organised sessions and 9.5 out of 10 for care home-based sessions.

3.5.2 Manager implementation of safety improvements in previous 12 months

Care home managers were asked whether any changes had been introduced at their care home in the previous 12 months, covering nine different aspects of service improvement. Table 3.7 outlines the responses. Half of the care home managers who returned a survey reported changes to at least one of the listed areas of quality improvement during Year 2 of SPACE; the remaining nine managers reported no specific improvements, although it must be borne in mind that managers were asked to consider only the previous 12 months and not the entire period over which SPACE had been implemented – thus service improvements implemented during Year 1 would not be included in their responses. Only one manager (in Walsall) reported changes to all nine of the listed areas of safety or service provision.

Taking the group as a whole, changes were most likely to have been made in relation to UTIs and ulcers/wound management, with 5 managers (26.3%) reporting these changes in their care home. Service improvements were least likely to have been made in relation to the implementation of systems to monitor risk (n=1; 5.3%), although it is likely that for most care homes, such systems (such as safety crosses and safety boards) had already been put in place by most care homes during Year 1 of SPACE.

Considering each CCG area separately, managers in Walsall were most likely to report having made changes in relation to ulcers/wound management, and in the implementation of systems for reporting adverse events (n=3; 37.5%). In Wolverhampton, the most frequently addressed area was that of UTIs, with 3/11 managers reporting service improvements in this area (27.3%).

Table 3.7: Implementation of service improvements in previous 12 months

Area	Number of managers (%)	Walsall (%)	Wolverhampton (%)
Infection prevention or control	2 (10.5)	1 (12.5)	1 (9.1)
Nutrition, diet and hydration	2 (10.5)	2 (25.0)	0 (0.0)
Medication management	2 (10.5)	1 (12.5)	1 (9.1)
Ulcers / wound management	5 (26.3)	3 (37.5)	2 (18.2)
Systems for monitoring risk	1 (5.3)	1 (12.5)	0 (0.0)
Oral care	3 (15.8)	1 (12.5)	2 (18.2)
Falls management	3 (15.8)	2 (25.0)	1 (9.1)
Systems for reporting events	4 (21.1)	3 (37.5)	1 (9.1)
Urinary Tract Infections	5 (26.3)	2 (25.0)	3 (27.3)

3.6 CARE HOME STAFF

Surveys were returned by 546 non-manager care home staff. (Graphs of staff responses by age, ethnic group, job role, qualifications and length of time working in their current care home can be found in Appendices 3.3 to 3.7). The vast majority of the sample were female (n=481; 88.1%). All age groups were well represented, with the 35 to 44 age group comprising 26.2% of the total (n=143). Staff of white ethnic origin were the most numerous (n=321; 58.8%). Staff of Asian/Asian British ethnicity comprised 24.9% of the sample (n=136), followed by Black African/Caribbean/Black British staff (12.1%; n=66). English was the first

language for 401 staff (73.4%), whereas 20.7% reported a first language other than English (n=113). In total, 31 different languages (including English) were spoken by care home staff, with Punjabi the most commonly spoken language after English (n=67; 12.3%).

In terms of job role, the vast majority of survey responses came from care assistants (n=275; 50.4%), followed by domestic staff (n=64; 11.7) and qualified nursing staff (n=62; 11.4%). A further 17 staff reported having some degree of managerial responsibility (usually unit managers or kitchen managers). Around 45% of all respondents had worked at their current care home for two years or less, perhaps reflecting the high degree of turnover in the care home staff workforce. Nevertheless, 8.8% of staff (n=48) had worked at the same care home for 11 to 15 years, and a further 9.0% (n=49) had worked there for 15 or more years. In terms of qualifications, the majority of staff reported having qualifications equivalent to NVQ Levels 2 or 3 (n=335; 61.4%), which might be expected given the large number of care assistants who responded to the survey. Forty-one staff reporting having no qualifications (7.5%); 14.1% had a nursing qualification or other professional equivalent (n=77), and 20 staff reported degree level qualifications (3.5%).

With regard to working time, 434 care home staff reported their usual working hours (112 did not provide a response). Amongst these respondents, 37.6% worked full time (35+ hours per week; n=163), and 62.4% (n=271) reported working part time hours (fewer than 35 hours per week). The number of hours worked in a typical week (for non-bank staff) ranged from 7 to 77 hours. Staff were also asked about their typical shift patterns, and these were grouped for analysis to distinguish between staff who only worked evening or night shifts and those who worked during the day or in mixed day/night shifts. Shift patterns may have an impact on the timing of adverse events like falls, or may affect staff opportunities to undertake skills training. A total of 111 staff (20.3%) reported working night shifts only. The remaining 435 respondents reported working either day only (n=242; 44.3%) or mixed day/night shifts (n=193; 35.3%).

All staff responses were anonymous and it is not known how many of the same individuals responded to both the baseline, Year 1 or Year 2 surveys. The high rate of staff turnover observed from baseline to end of Year 1 and again from Year 1 to Year 2, and the variability in response rates from individual care homes at the three time points that the evaluation survey was administered would suggest that a high proportion of respondents to each survey were different individuals. Despite this, a comparison of the sociodemographic and work-related characteristics of survey respondents across all three surveys did not show any significant differences, which suggests that the evaluation survey populations are directly comparable over time according to key workforce and sociodemographic characteristics. The wider published evidence on the characteristics of staff within the care home sector in England shows a similar profile to our respondents, suggesting that care home staff returning a survey were representative of the wider population.[20]

3.6.1 Staff attendance at SPACE training

Staff were asked whether they had attended centrally-organised training events and/or training sessions delivered at their care home (Table 3.8). Taking all staff together, 194 (35.5%) had attended one or more centrally-organised training sessions, and over half of the sample reported attending training within their care home (n=307; 56.2%). Proportions attending training in each CCG area were similar, although a marginally greater percentage of staff in Wolverhampton reported attending centrally-organised training sessions compared to those in Walsall (37.0% compared to 33.2%). The survey returns suggest that over half of all staff who responded had attended at least one training session. Indeed, 30.6% of staff (n=167) reported attending both a central and care home-based training session. Again, the proportion was slightly lower in Walsall than in Wolverhampton, with 28.3% of staff in Walsall saying that they had attended both types of training (n=58), compared to 32.0% in Wolverhampton (n=109).

Table 3.8: Staff reported attendance at SPACE training sessions during Year 2

Training attended	All care homes	Walsall	Wolverhampton
Centrally-organised	194 (35.5)	68 (33.2)	126 (37.0)
Care home-based	307 (56.2)	114 (55.6)	193 (56.6)
Multiple attendance			
None	212 (38.8)	81 (39.5)	131 (38.4)
Either	167 (30.6)	66 (32.2)	101 (29.6)
Both	167 (30.6)	58 (28.3)	109 (32.0)

Staff were also asked to rate their satisfaction with the training they had attended, on a Likert scale from 0 ('poor') to 10 ('excellent'). As with the manager survey, staff rated the training as very good – mean scores for centrally-organised training were 8.6 out of 10 (8.9 for Walsall, 8.6 for Wolverhampton). Mean scores for care home-based training sessions were also high, at 8.8 out of 10 (8.8 for Walsall and 9.0 for Wolverhampton).

3.6.2 Staff involvement in service improvements in previous 12 months

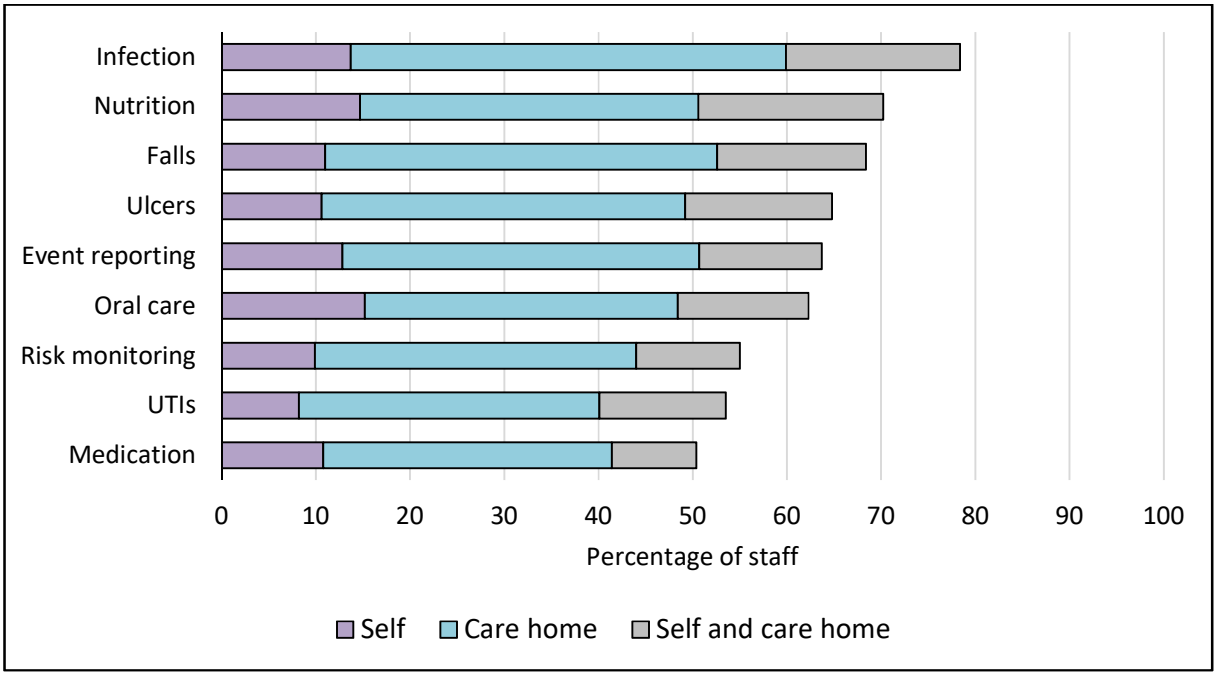
Staff were asked about their involvement in service improvements at their care home in the previous 12 months. Staff could indicate: a) if they had been personally involved in service improvements, b) if they were aware that activities had been carried out at the care home without their direct involvement, or c) to indicate both options. (Table 3.9).

Table 3.9: Involvement in service improvement activities in previous 12 months

Area	SELF (n,%)	CARE HOME (n,%)	SELF and CARE HOME (n,%)	NONE (n,%)
Infection prevention or control	75 (13.7)	252 (46.2)	101 (18.5)	118 (21.6)
Nutrition, diet and hydration	80 (14.7)	196 (35.9)	107 (19.6)	163 (29.9)
Medication management	59 (10.8)	167 (30.6)	49 (9.0)	271 (49.6)
Ulcers / wound management	58 (10.6)	211 (38.6)	85 (15.6)	192 (35.2)
Systems for monitoring risk	54 (9.9)	186 (34.1)	60 (11.0)	246 (45.1)
Oral care	83 (15.2)	181 (33.2)	76 (13.9)	206 (37.7)
Falls management	60 (11.0)	227 (41.6)	86 (15.8)	173 (31.7)
Systems for reporting events	70 (12.8)	207 (37.9)	71 (13.0)	198 (36.3)
Urinary Tract Infections	45 (8.2)	174 (31.9)	73 (13.4)	254 (46.5)

Overall, staff involvement in/awareness of changes related to infection control (n=428; 78.4%) and nutrition, diet and hydration (n=383; 70.2%) were the most likely to be reported (Figure 3.3). Activities related to falls management, ulcers/wound management, event reporting systems and oral care were all cited by over 60% of staff in terms of direct involvement, awareness of activities being undertaken in the care home, or both of these. Activities related to UTIs and medication management were least frequently reported, although the lower involvement for the latter may be primarily associated with the smaller range of job roles for whom participation in such activities was applicable.

Figure 3.3: Staff involvement in service improvements over the previous 12 months



For all areas of service improvement, staff awareness of changes within their care home was high, even if they had not been directly involved in such activities. This high level of awareness is positive when considering the potential for wider sustainability of care home quality improvements from SPACE – although a comparatively small number of care home staff may have attended training or been personally involved in many areas of service improvement, wider awareness of care home-level initiatives shows a strong indication that quality improvements have become embedded within care home culture.

3.6.3 Staff involvement in service improvements by CCG area

Figure 3.4 compares Walsall and Wolverhampton in terms of staff members' reported direct involvement in service improvement activities. Proportions were generally similar across the two CCG areas, although staff in Walsall were more likely to report direct involvement in activities to address infection, nutrition, medication management, ulcers and oral care, and staff in Wolverhampton were more likely to report direct involvement in activities related to falls management, UTIs, and systems to report events/monitor risk. The only area of service improvement in which there was a substantial difference between areas was that of event reporting, where direct involvement was reported by 42.0% of staff in Wolverhampton compared to 26.8% of staff in Walsall.

Figure 3.5 shows staff awareness of service improvements at the care home level that they were not directly involved with.

Figure 3.4: Staff reporting direct involvement in service improvements by CCG area

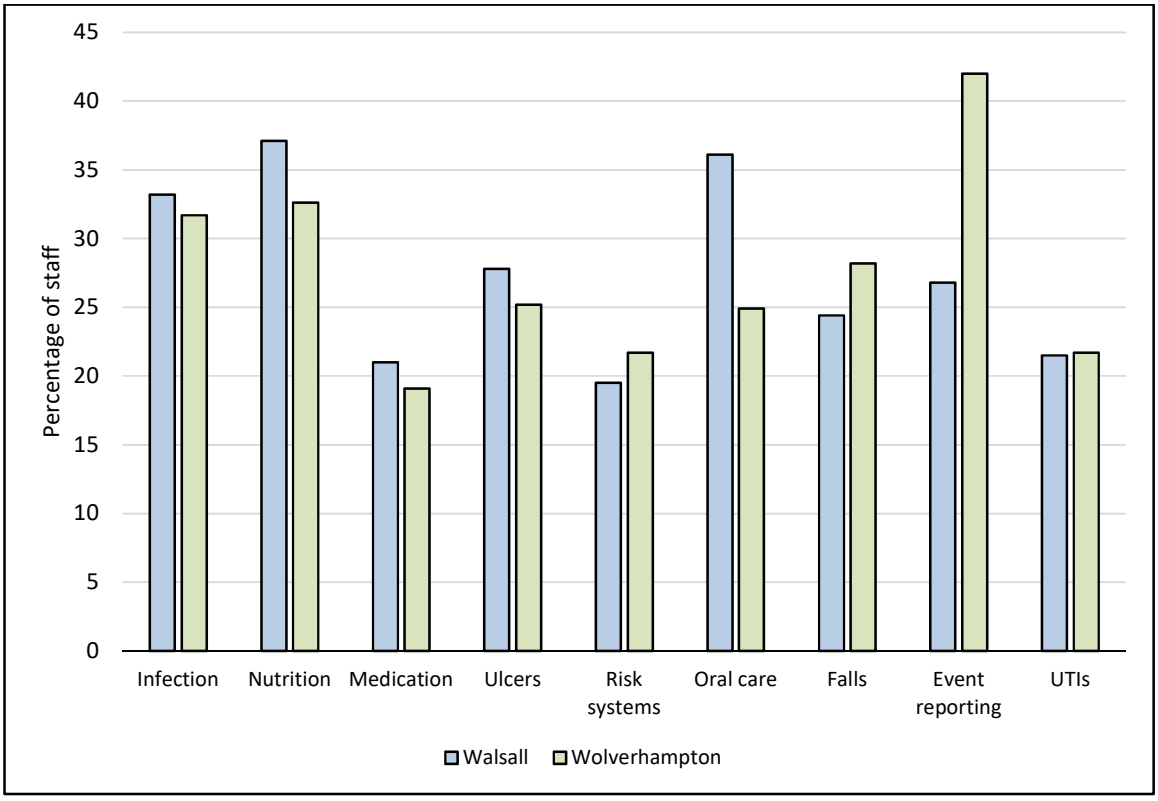
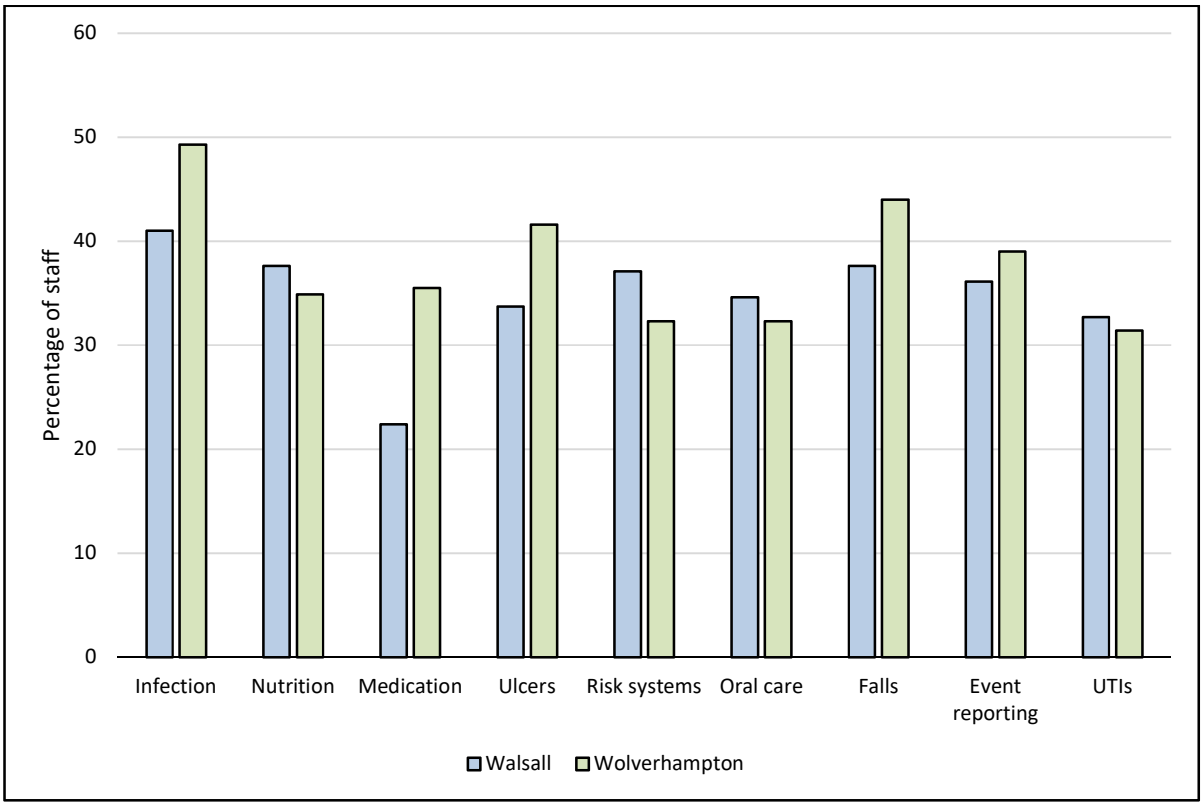


Figure 3.5: Staff reporting awareness of service improvements in the care home, by CCG area



The proportion of staff reporting awareness of improvements in their care home without their direct involvement was broadly similar in both CCG areas and generally larger overall than those reporting direct involvement at an individual level. Minor differences were evident for some activities: staff in Wolverhampton were more likely than those in Walsall to report improvements in the care home for infection control, ulcers/wound management, medication management, falls management and event reporting. Conversely, staff in Walsall had higher rates of reporting awareness of changes related to nutrition, risk monitoring systems, oral care, and UTIs.

Some forms of service improvement may be more reliant on direct personal training for effective implementation (e.g. those related to medication management or ulcers/wound management), whereas others may be more amenable to wider implementation without staff members necessarily needing to have attended training in that area themselves (e.g. the use of safety crosses for event reporting). It is positive to see that in both CCG areas, although relatively small numbers of staff personally attended training sessions, far higher numbers of staff were aware of changes within their care home. This suggests that the learning from training was cascaded effectively within the care homes by key staff who attended specific centrally-organised or care home-based training sessions and was translated effectively into improvements to address multiple areas of QI at the care home level.

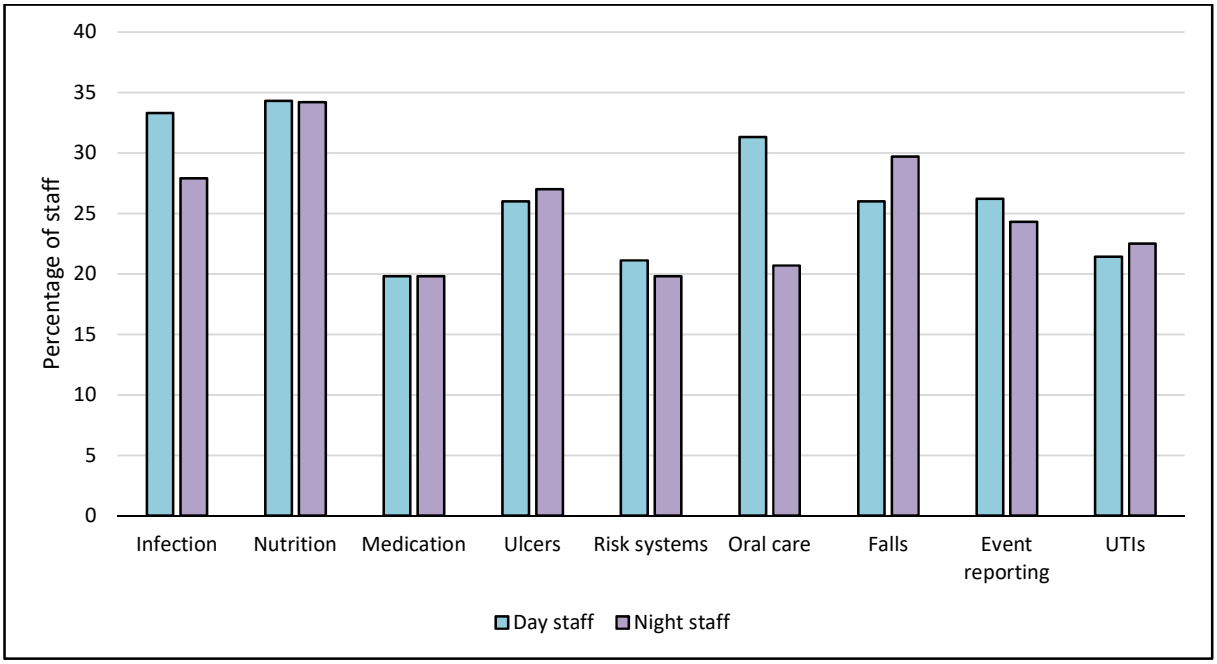
3.6.4 Comparison of involvement in service improvements by shift pattern

One hypothesis raised from analysis of baseline survey data was that care home staff working evening or night shifts only may have had fewer opportunities to participate in service improvement activities and/or skills training than those who worked day shifts. This may have implications for the extent to which quality improvements can be fully effective.

Figure 3.6 shows staff members' direct involvement in service improvements as reported in the Year 2 survey (for both CCGs combined), split according to shift pattern. Proportions were relatively similar for most service improvement areas, suggesting that staff who worked evening or night shifts did not have a substantially reduced opportunity to participate directly in service improvements. The only areas of service improvement for which evening/night staff had a difference of more than 5% in their direct involvement compared to those working day or mixed day/night shifts were those related to infection control (27.9% vs. 33.3%) and oral care (20.7% vs. 31.3%).

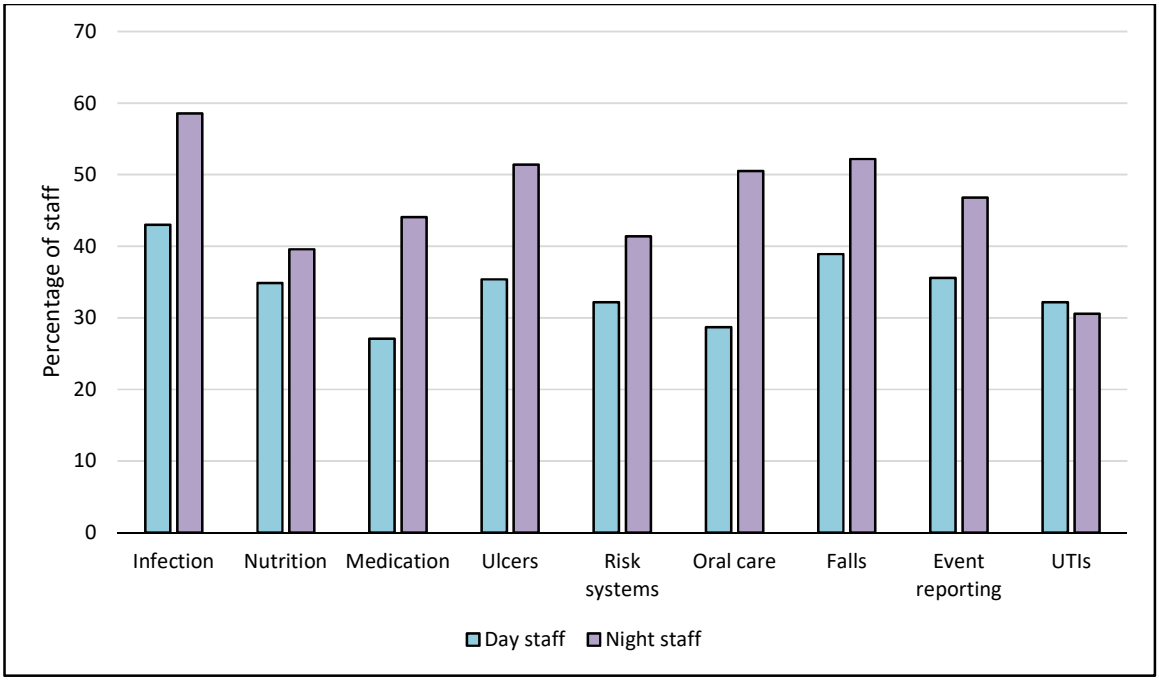
Figure 3.7 shows staff reports of awareness of service improvements within the care home that they had not been directly involved with.

Figure 3.6: Day vs. evening/night staff direct involvement in service improvement activities



When awareness of service improvements at the care home-level was assessed, a greater proportion of evening/night staff reported such awareness compared to day staff or those working mixed shifts, for all service improvement activities with the exception of UTIs. This suggests that although it might be hypothesised that evening/night staff may have fewer opportunities to participate directly in service improvements within their care home, it does not reduce the likelihood that they are aware of changes that may be happening. Indeed, these staff reported substantially higher levels of awareness than those who worked day/mixed shifts. This is a positive sign that improvements associated with SPACE have become embedded within care home culture and in standard working practices.

Figure 3.7: Day vs. evening/night staff awareness of service improvements in the care home



It was also positive to see that although the proportion of evening/night staff who reported having attended SPACE training was significantly lower than that for day staff or those working mixed shifts (Table 3.10), this did not appear to have a negative impact on the opportunities for these staff to be directly involved in service improvement activities within the care home, or to have awareness that such improvements had taken place within their care home.

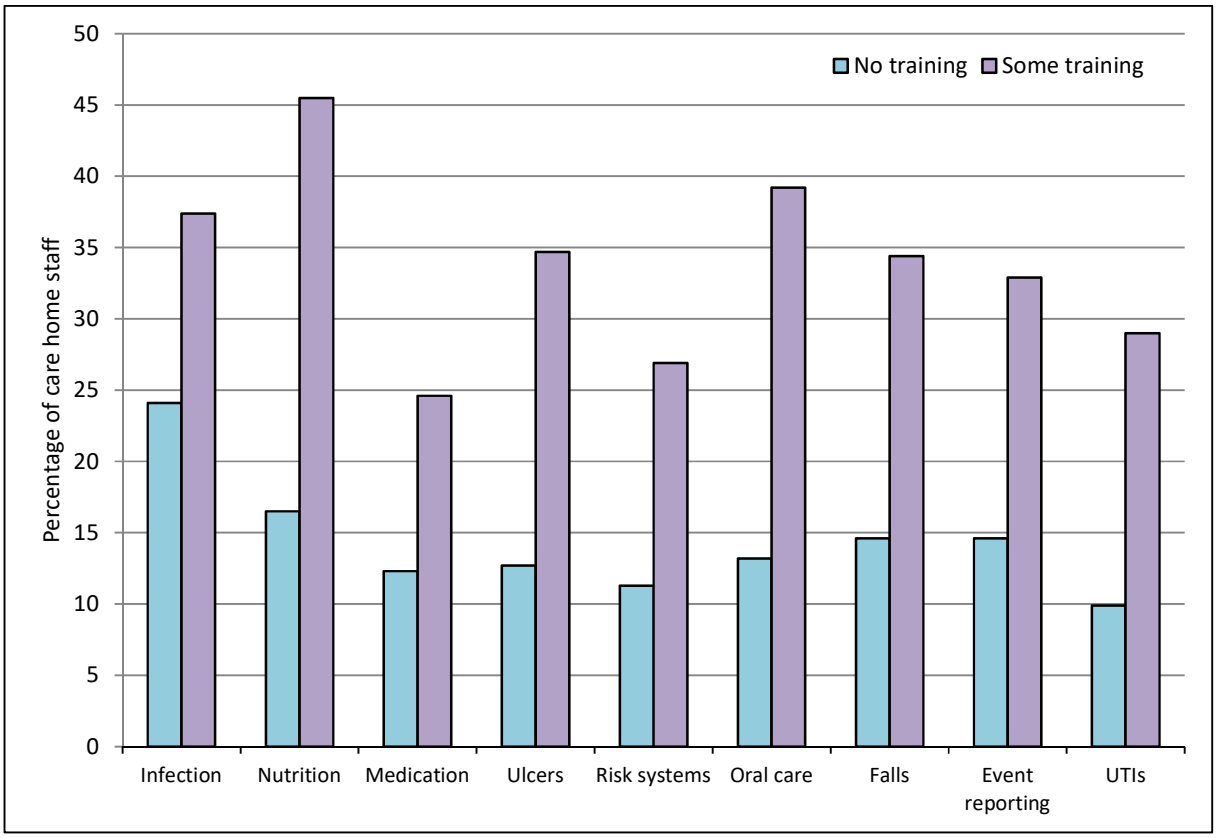
Table 3.10: Attendance at SPACE training by day vs. evening/night staff

Training attended	Day/mixed shifts	Evening/night staff	Comparison of proportions
Centrally-organised	166 (38.2)	28 (25.2)	**p=0.011**
Care home-based	262 (60.2)	45 (40.5)	**p=0.0002**

3.6.5 Association between SPACE training attendance and service improvements

It may be expected that staff who had attended training offered through SPACE might be more likely to become directly involved in service improvement activities within their care home. Figure 3.8 compares proportions of staff reporting direct involvement in each area of service improvement activity, broken down by whether or not they had attended any SPACE training.

Figure 3.8: Involvement in service improvement activities based on training attendance



The proportion of staff reporting involvement in service improvement activities showed substantial differences when broken down by SPACE training attendance, with training attendance considerably more likely to be associated with direct involvement in service improvement activities for all areas explored in the survey than a lack of training attendance. Whilst non-attendance at skills training is not a barrier to involvement in service improvements, the above analysis shows that those who participated in SPACE

training were far more likely to report direct involvement in service improvements at an individual level and underlines the importance of the training element of the SPACE programme.

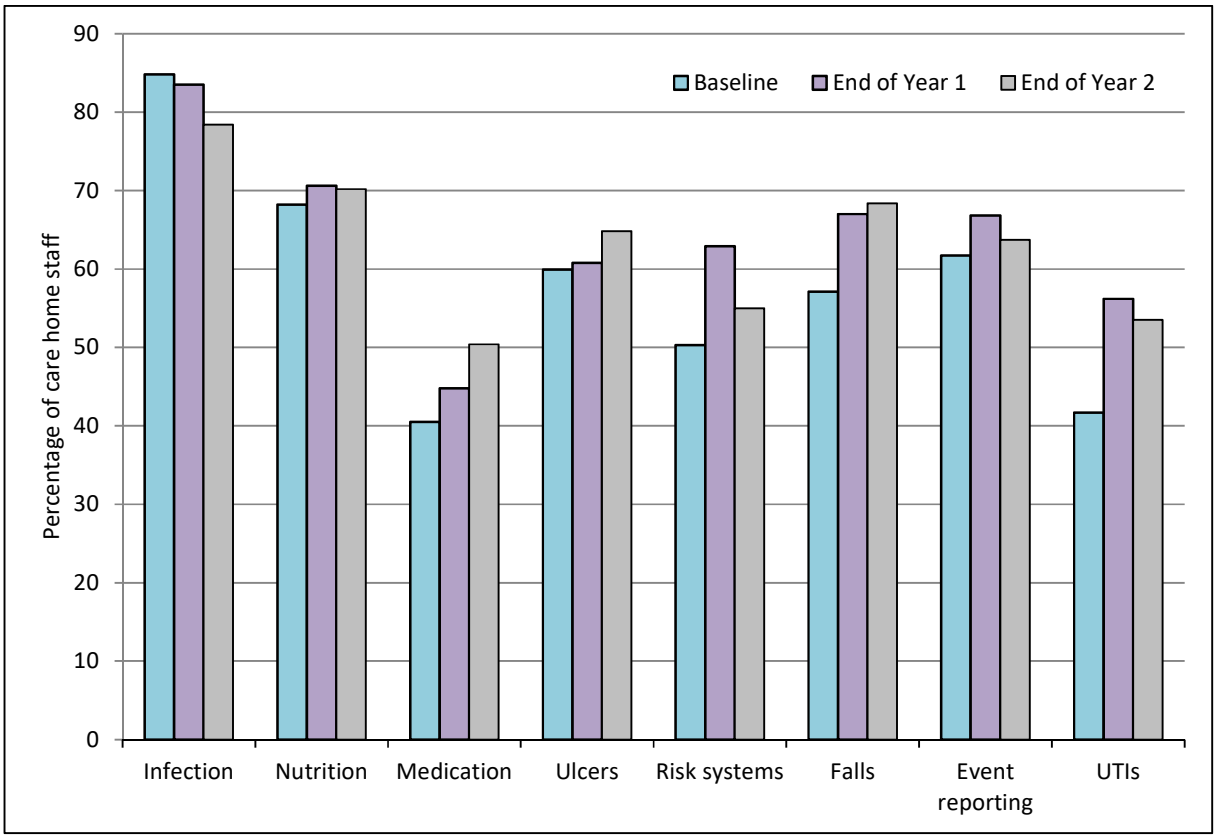
3.6.6 Staff involvement in service improvements at baseline and during SPACE

The introduction and implementation of the SPACE programme may be expected to be associated with greater engagement in service improvement activities by care home staff than was evident at baseline. Figure 3.9 shows a comparison of the proportion of staff reporting involvement in each service improvement area at baseline, at the end of Year 1, and at the end of Year 2.

Data show similar pre- and post-SPACE proportions for most areas of service improvement, although for all areas of service improvement (with the exception of activities related to infection control), the proportion of staff reporting involvement in service improvements was marginally higher post-SPACE than pre-SPACE. High levels of pre- and post-SPACE training involvement may also reflect the fact that care homes in SPACE were already improving before SPACE was launched, and demonstrate that the SPACE programme helped to consolidate involvement in training and service improvement that was already ongoing.

There were some minor differences in proportions when Year 1 and Year 2 data were compared, which may reflect the changing focus of the SPACE training carried out in Year 1 compared to Year 2. For example, reported involvement in activities related to systems for monitoring risk, reporting events, nutrition/hydration and UTIs was lower in Year 2 than in Year 1, as much training activity in these areas was carried out in Year 1 and merely consolidated during Year 2.

Figure 3.9: Involvement in service improvement activities over the whole of SPACE



* Oral care not included as this question was only asked in the Year 2 survey

3.7 SAFETY ATTITUDES QUESTIONNAIRE ANALYSIS

Although the SAQ measures six domains relating to different aspects of work perception and experience, the analysis presented here will focus mainly on the safety climate domain, as change over time in this domain is the primary outcome measure for the evaluation. Data for the other domains are included with a less detailed analysis. Data for care home managers and care home staff have been analysed separately. For all SAQ tables, the highest and lowest mean scores in each column for care home staff have been highlighted to aid interpretation.

3.7.1 Teamwork domain

Six questions in the SAQ assessed perceptions of various aspects of team working (Table 3.11). Numbers in the table refer to the mean score for each question in each group (from 0 to 100, with higher scores representing a more positive attitude, except where indicated for 'negatively worded' statements).

Care home managers had uniformly high mean scores for agreement with all statements in the teamwork domain, with an overall mean across both CCGs of 90.1 out of 100. Sub-group analysis was not undertaken for any of the care home manager responses as the sample size (n=19) was too small. However, there were fairly substantial differences in manager answers to the statement 'I have the support I need from colleagues to care for residents' which scored 96.9 from managers in Walsall compared to 84.1 in Wolverhampton. For the statement 'It is easy for staff to ask questions when they don't understand something', managers in Walsall were less likely to agree than those in Wolverhampton (84.4 compared to 97.3).

Table 3.11: Care home manager and staff responses on SAQ teamwork climate domain

Statement	CARE HOME MANAGERS			CARE HOME STAFF		
	Wa	Wv	ALL	Wa	Wv	ALL
Nurse input is well received in this care home	100.0	94.5	97.4	89.1	86.4	87.5
It is difficult to speak up if I see a problem with resident care *	90.6	88.6	89.5	75.6	71.3	72.9
Disagreements are resolved appropriately	90.6	86.4	88.2	83.0	79.9	81.1
I have the support I need from colleagues to care for residents	96.9	84.1	89.5	88.4	87.9	88.1
It is easy for staff to ask questions when they don't understand something	84.4	97.3	91.8	91.3	90.6	90.9
The nurses and other staff here work as a well co-ordinated team	81.3	86.4	84.2	87.0	83.9	85.1
Overall mean score for the domain	**90.6**	**89.7**	**90.1**	**85.8**	**83.4**	**84.3**

* Statement is reverse scored – higher scores represent greater disagreement with the statement

Care home staff scored highly for the teamwork domain, with an overall mean of 84.3 and little difference between CCG areas for any statement. The lowest scores for staff in both areas related to the statement 'It is difficult to speak up if I see a problem with resident care' (75.6 in Walsall, 71.3 for Wolverhampton). Highest mean scores overall, and for staff in each CCG 'It is easy for staff to ask questions when they don't understand something.' There were no significant differences between CCG areas for any statements in the domain.

3.7.2 Job satisfaction domain

Table 3.12 shows the responses of managers and staff to statements in the satisfaction domain, for which there were five statements.

Table 3.12: Care home manager and staff responses on SAQ satisfaction domain

Statement	CARE HOME MANAGERS			CARE HOME STAFF		
	Wa	Wv	ALL	Wa	Wv	ALL
I like my job	93.8	95.5	94.7	93.7	88.9	90.7
Working here is like being part of a family	93.8	81.8	86.8	87.9	85.2	86.2
This care home is a good place to work	96.9	93.2	94.7	90.8	87.7	88.8
I am proud to work at this care home	100.0	91.0	94.7	92.1	87.6	89.3
Morale at this care home is high	75.0	77.3	76.3	81.5	80.7	81.0
Overall mean score for the domain	**91.9**	**87.7**	**89.5**	**89.2**	**85.9**	**87.1**

Managers again scored higher than staff, with an overall mean of 89.5. In general, ratings from Walsall and Wolverhampton managers were similar for each statement, although there was a difference for the statement 'Working here is like being part of a family', with which Walsall managers had a higher level of agreement compared to Wolverhampton managers (93.8 vs. 81.8). Managers in both areas scored the statement 'Morale at this care home is high' with particularly low levels of agreement. Staff responses were again similar, with an overall mean score of 87.1. Scores were significantly higher in Walsall than in Wolverhampton for the domain (89.2 vs. 85.9; p=0.035). In both CCG areas, 'I like my job' was associated with the highest mean scores, whereas the statement 'Morale at this care home is high' showed the lowest level of agreement. Sub-group analysis comparing mean scores for each statement between Walsall and Wolverhampton showed significant differences in responses to two statements: for the statement "I like my job', although this was scored the highest for both areas, Walsall staff scored it significantly higher than Wolverhampton staff (p=0.004). Walsall staff were also significantly more likely than those in Wolverhampton to agree with the statement "I am proud to work at this care home" (92.1 vs. 87.6; p=0.007).

3.7.3 Stress recognition domain

Table 3.13 shows the results for the four statements in the stress recognition domain.

Table 3.13: Care home manager and staff responses on SAQ stress recognition domain

Statement	CARE HOME MANAGERS			CARE HOME STAFF		
	Wa	Wv	ALL	Wa	Wv	ALL
When my workload is excessive, I perform less well	68.8	78.8	74.6	54.1	58.4	57.8
I am less effective when I am tired	78.1	83.0	80.9	58.6	61.2	60.2
I am more likely to make mistakes in tense or hostile situations	62.5	72.7	68.4	53.2	54.4	54.0
Tiredness impairs my performance in emergency situations	31.3	47.3	40.6	49.0	53.7	51.9
Overall mean score for the domain	**60.2**	**70.5**	**66.1**	**53.7**	**56.9**	**55.7**

Higher scores in the stress recognition domain denote more realistic estimations of the potentially negative impact that stress and tiredness can have on staff members' ability to perform their role effectively. Mean scores for the stress recognition domain were far lower than those in any of the other domains for both managers and staff, suggesting that individuals in both groups may under-estimate the impact of stress on their work. There was around a ten point difference in mean score for the domain between managers in Walsall and Wolverhampton, with those in Wolverhampton more likely to recognise the impact of stressful working situations than their counterparts in Walsall (70.5 compared to 60.2). There was also a substantial difference for the statement 'tiredness impairs my performance in emergency situations', with managers in Walsall less likely to recognise this as a challenging issue than those in Wolverhampton (31.3 vs. 47.3).

The overall mean for care home staff in the stress recognition domain was 55.7, and scores for all statements were similar across CCG areas, with no significant differences in means. The highest and lowest scoring statements were the same for each area separately and overall – staff were most likely to agree that tiredness impairs their effectiveness, but least likely to agree that their performance in emergency situations is impaired when they are tired.

3.7.4 Perceptions of management domain

Table 3.14 shows the results for the four SAQ statements relating to perceptions of management.

Table 3.14: Care home manager and staff responses on SAQ perceptions of management domain

Statement	CARE HOME MANAGERS			CARE HOME STAFF		
	Wa	Wv	ALL	Wa	Wv	ALL
Management supports my daily efforts	75.0	93.2	85.5	83.3	79.6	81.0
Management does not knowingly compromise resident safety	80.2	90.2	86.0	66.6	69.2	68.2
I am given enough information about events that might affect me	93.8	93.2	93.4	82.7	82.7	82.7
Staff numbers in this care home are enough to handle resident numbers	93.8	100.0	97.4	66.5	68.1	67.5
Overall mean score for the domain	**85.7**	**94.1**	**90.6**	**74.7**	**74.9**	**74.9**

In this domain, care home managers scored 90.6 out of 100 overall, although managers in Wolverhampton had higher overall scores for the domain than those in Walsall (94.1 compared to 85.7). For individual statements, there was an 18 point difference in mean scores between Walsall and Wolverhampton managers for the statement 'Management supports my daily efforts' (75.0 for Walsall, 93.2 for Wolverhampton). There was also a 10 point difference for the statement 'Management does not knowingly compromise resident safety', where again, managers in Wolverhampton were more likely to agree than those in Walsall (93.2 vs. 75.0).

For care home staff, scores on the perceptions of management domain showed the lowest mean scores for all domains aside from stress recognition. Scores from care home staff in each CCG area were similar for all statements, with an overall mean of 74.9. The highest scores from Walsall staff were given for the statement 'Management supports my daily efforts', and for Wolverhampton, highest scores were given for the statement 'I am given enough information about events that might affect me'. For staff in both areas, the lowest scores were given for the statement regarding the perceived adequacy of staff numbers within the care home (66.5 for Walsall, 68.1 for Wolverhampton).

3.7.5 Work conditions domain

Table 3.15 shows the results for the statements relating to staff and manager perceptions of working conditions.

Table 3.15: Care home manager and staff responses on SAQ work conditions domain

Statement	CARE HOME MANAGERS			CARE HOME STAFF		
	Wa	Wv	ALL	Wa	Wv	ALL
Problem staff are dealt with constructively	93.8	93.2	93.4	79.0	77.8	78.3
The care home does a good job of training new staff	90.6	93.2	92.1	84.2	82.7	83.3
All the information I need for care-related decisions is available to me	93.8	94.7	94.3	88.1	86.1	86.9
Trainees at the care home are adequately supervised	84.4	95.5	90.8	84.7	82.5	83.3
Overall mean score for the domain	**90.6**	**94.1**	**92.7**	**84.0**	**82.3**	**83.0**

As in the other domains, managers scored higher than the staff, with an overall mean of 92.7 out of 100. Managers in Wolverhampton scored several points higher than those in Walsall overall, suggesting a more positive view of working conditions within their care home.

Staff reported an overall mean of 83.0 with similar scores for all statements. There were no statistically significant differences in mean scores for any of the statements in this domain on the basis of CCG area, and the highest and lowest scoring statements were the same in Walsall and Wolverhampton. Staff were least likely to agree that 'Problem staff are dealt with constructively,' and most likely to agree that 'All the information I need for care-related decisions is available to me'.

Summary of key SAQ findings for domains other than safety:

- Managers scored at least 5 points higher than staff on all domains
- Managers and staff scored lowest in the stress recognition domain, suggesting a general under-estimation of the degree to which work stress impacts on effective performance
- Scores were highest for the job satisfaction and team work domains, suggesting that despite known difficulties in the care home sector, managers and staff had high levels of job satisfaction and felt that they and their colleagues worked as a team, although staff concerns were evident over the level of morale in their care home
- Apart from the stress recognition domain, staff showed the least positive attitude towards statements relating to their perceptions of management
- A comparison of means between Walsall and Wolverhampton for each statement showed no statistically significant differences between areas for any statement on any domain other than job satisfaction, where staff in Walsall were significantly more likely to report being proud to work at their care home, and that they liked their job
- Scores for individual statements were remarkably consistent between CCGs, with the highest and lowest scoring statements from staff in Walsall and Wolverhampton being the same for all domains apart from the perception of management domain

3.7.6 Safety climate domain

The safety climate domain was of primary interest to the SPACE evaluation, and the sample size requirement was calculated to detect a 10 point increase in mean safety climate domain scores between baseline and programme end. This was based on benchmarking data on the use of the SAQ in the care home sector which suggested that a pre-intervention mean score of between 65 and 70 might be expected for safety climate.[22-24] Baseline survey data analysis in April 2016 showed that mean safety climate scores were far higher than benchmarking data might suggest (overall mean 83.4), and that positive perceptions of safety climate were already evident in care homes staff in both CCG areas before SPACE was launched. This gave little 'headroom' for further improvement in safety climate as a result of participation in SPACE, although a key goal was to see pre-SPACE scores maintained throughout the programme. Maintenance of SAQ safety climate scores was achieved in the Year 1 survey, with mean scores for care home staff of 82.6 on the domain.

Table 3.16 shows the mean scores for the seven statements relating to safety climate on the SAQ at the end of Year 2.

Table 3.16: Care home manager and staff responses on SAQ safety climate domain

Statement	CARE HOME MANAGERS			CARE HOME STAFF		
	Wa	Wv	ALL	Wa	Wv	ALL
I would feel safe if I lived at this care home	93.8	88.6	90.8	89.2	84.3	86.1
Medical areas are handled appropriately at this care home	100.0	95.5	97.4	93.5	89.2	90.8
I know who to ask about resident safety	100.0	94.7	96.9	94.9	92.0	93.1
I receive appropriate feedback about my performance	90.6	84.0	86.8	83.3	79.7	81.0
It is difficult to discuss errors *	78.1	88.6	84.2	72.7	66.4	68.8
My colleagues encourage me to report any resident safety concerns	96.9	84.4	89.7	90.2	87.4	88.5
The culture here makes it easy to learn from the mistakes of others	87.5	95.5	92.1	85.1	85.1	85.1
Overall mean score for the domain	**92.4**	**90.2**	**91.1**	**86.9**	**83.6**	**84.8**

* Statement reverse scored – higher scores denote greater disagreement with the statement

Table 3.16 shows an overall mean for care home managers of 91.1, and for care home staff a mean of 84.8. Scores for managers were fairly similar for individual statements, although there was a 12 point difference in scores for the statement 'My colleagues encourage me to report any resident safety concerns', with levels of agreement with the statement higher in Walsall than in Wolverhampton (96.9 compared to 84.4). There was also an 8 point difference in scores for the statement 'The culture here makes it easy to learn from the mistakes of others', with which managers in Wolverhampton were more likely to agree than those in Walsall (95.5 compared to 87.5).

There was a statistically significant difference in overall mean score for the safety climate domain between Walsall and Wolverhampton, with staff in Walsall scoring the domain significantly higher overall (86.9 vs. 83.6; p=0.014). There was also a statistically significant difference on the basis of CCG area for three individual statements. 'I would feel safe if I lived at this care home', was scored significantly higher by staff in Walsall compared to Wolverhampton (89.2 vs. 84.3; p=0.012). Similarly, staff in Walsall scored the statement

'Medical areas are handled appropriately at this care home' (93.5 vs. 89.2; p=0.006) and 'It is difficult to discuss errors' (72.7 vs. 66.4; p=0.048) significantly more positively than staff in Wolverhampton (the latter statement was reverse-scored, thus higher scores represent greater disagreement).

Figure 3.10 summarises the mean scores overall and for each CCG area for care home staff across all six domains of the SAQ as reported in the end of study survey in Year 2. Mean scores overall were highest for the job satisfaction domain (87.1) and safety climate domain (84.8). Close behind were the teamwork and working conditions domains, scoring 84.3 and 83.0 overall respectively. The lowest scoring domains were those related to perceptions of management (overall mean of 74.9) and stress recognition (overall mean of 55.7). Staff in Walsall scored higher than those in Wolverhampton for all domains except for stress recognition and perceptions of management.

3.7.7 Sub-group analysis of safety climate scores

Sub-group analysis was carried out to determine whether there were any significant differences in safety climate scores between groups according to key demographic, work-related or care home-related characteristics. Table 3.17 shows the sub-group analysis for care home staff demographic factors. P values <0.05 denote statistically significant differences between groups (shown in bold).

Table 3.17: Comparison of mean safety climate scores: staff demographic characteristics

Factor	Grouping	Mean safety score	Comparison of means
Age	18 to 24	82.1	p=0.271
	25 to 34	84.8	
	35 to 44	86.8	
	45 to 54	82.7	
	55 to 59	85.5	
	60+	86.3	
Gender	Male	85.6	p=0.786
	Female	85.0	
Ethnicity	White	85.1	p=0.516
	BME	84.3	
First language	English	84.9	p=0.453
	Not English	83.6	

* BME = Black and minority ethnic

Mean safety climate scores were highest in groups of staff aged between 35-44 and those aged 60 and over; marginally higher for males than females; higher for staff of white ethnicity compared to those from BME groups, and higher for staff whose first language was English. However, none of the demographic characteristics assessed in Table 3.17 showed any significant differences by respondent sub-group for safety climate score.

Table 3.18 shows a similar analysis, focused on work-related characteristics.

Figure 3.10: Mean scores overall and by CCG area for staff responses to SAQ domains in Year 2

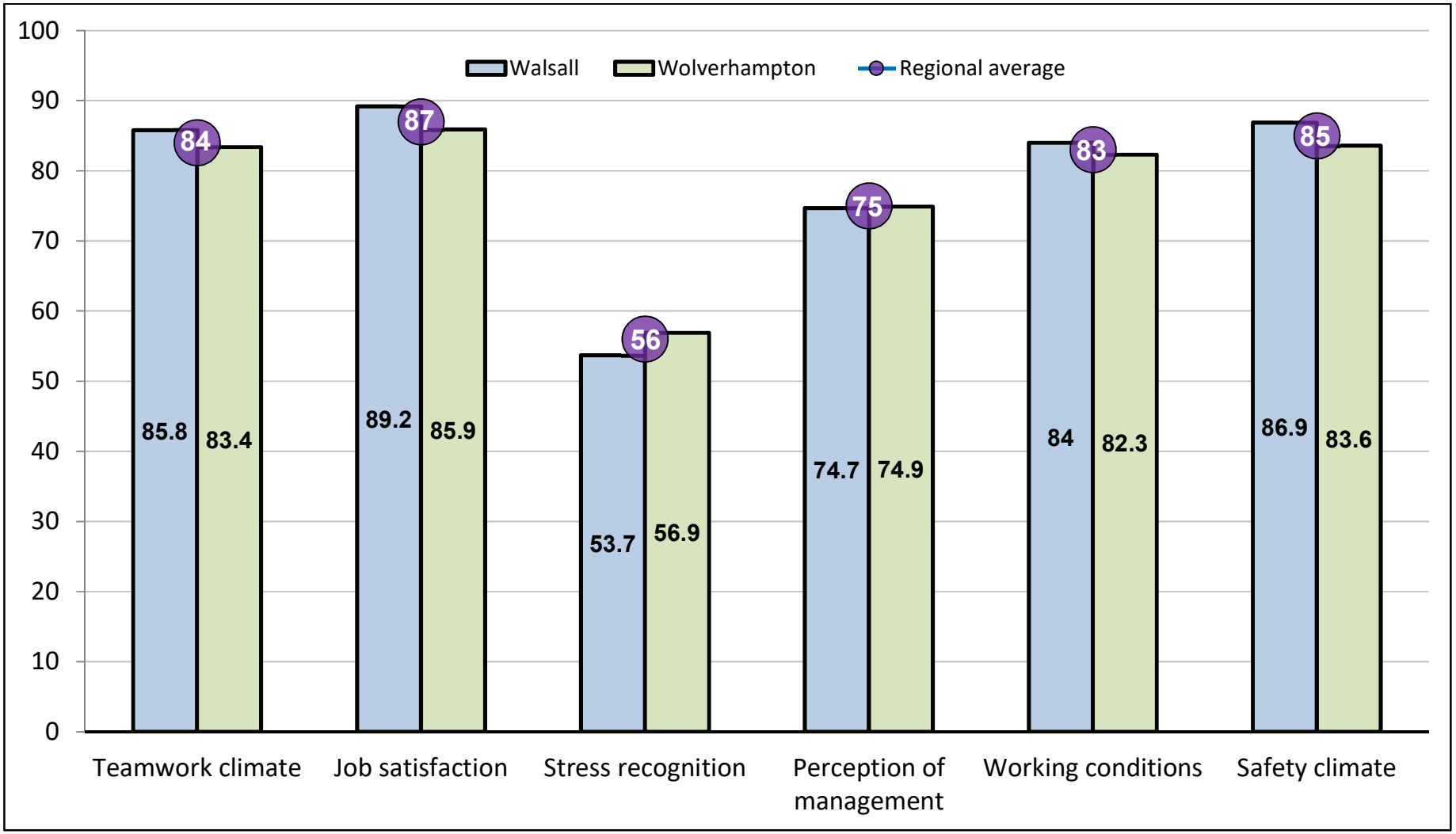


Table 3.18: Comparison of mean safety climate scores: staff work-related characteristics

Factor	Grouping	Mean safety score	Comparison of means
Job role	Managerial	86.7	**p<0.0001**
	Nurse	90.1	
	Care assistant	82.6	
	Support worker	86.8	
	Domestic	83.6	
	Maintenance	87.0	
	Administration	93.9	
	Activity co-ordinator	93.5	
	Senior carer	88.7	
	Kitchen	75.6	
Time working in care home	Less than 6 months	80.7	p=0.130
	6 to 12 months	83.5	
	1 to 2 years	86.0	
	3 to 5 years	87.1	
	6 to 10 years	85.2	
	11 to 15 years	81.6	
	15 or more years	82.5	
Working hours	Part time	83.6	**p=0.043**
	Full time	86.8	
Shift pattern	Day staff / mixed shifts	85.5	p=0.370
	Evening/nights only	81.5	
Qualifications	Less qualified	84.1	**p=0.006**
	More qualified	88.4	
Attendance at SPACE training	No training	80.6	**p<0.0001**
	Centrally organised OR care home-based	85.9	
	Centrally organised AND care home-based	89.1	
Involvement in service improvement activities	Self	87.8	p=0.129
	Care home	83.3	

Four of the work-related characteristics assessed in Table 3.18 showed a statistically significant difference in mean safety climate scores between sub-groups. There were significant differences by job role, with activity co-ordinators and administrators reporting the highest safety climate scores (93.5). Most other staff roles had safety climate scores between 80 and 90, although kitchen staff had by far the lowest perception of safety climate within their care home, scoring 76.5 out of 100 for this domain. There was also a significant difference on the basis of staff working hours, with full-time staff reporting significantly higher scores than those working part-time (86.8 vs. 83.6; p=0.043). Staff with a higher level of qualification (degree level, professional qualifications or NVQ level 5 or above) rated safety climate significantly higher than those with lower levels of qualification (88.4 vs. 84.1; p=0.006). Finally, there was a strongly significant trend in safety climate scores on the basis of attendance at SPACE training. Staff who had not attended any SPACE

training reported a mean safety climate score of 80.6. Staff who had attended either care-home based or centrally-organised training sessions rated scored safety climate at 85.9, and those who reported attending both care-home based and centrally-organised SPACE training rated safety climate at 89.1 (p<0.0001).

For the other factors, there were no statistically significant differences in safety scores between sub-groups, although day staff had higher scores than those working evening/night shifts, and staff who reported direct involvement in service improvement activities reported higher scores than those who were only aware that quality improvements had been implemented in their care home.

Table 3.19 assesses mean safety climate scores on the basis of several care home-related characteristics: care home size, CCG area, staff turnover and overall CQC rating at the last care home inspection. All of these factors showed statistically significant differences in mean safety climate score. There was a clear trend whereby safety climate scores were significantly higher in the smaller care homes and reduced as care home size increased (p<0.0001). Mean safety climate scores were also significantly higher for staff in Walsall compared to Wolverhampton (86.9 vs. 83.6; p=0.014), and significantly higher in care homes in which staff turnover was lower than average compared to those where turnover was above average (86.8 vs. 83.2; p=0.017). Finally, mean safety climate scores were strongly associated with overall CQC rating: care homes rated as outstanding or good overall had a mean safety climate score of 88.0, compared to a mean score of 79.2 in care homes rated as requiring improvement or inadequate overall (p<0.0001).

Table 3.19: Comparison of mean safety climate scores: care home-related characteristics

Factor	Grouping	Mean safety score	Comparison of means
Care home size	Small	90.2	**p<0.0001**
	Medium	86.5	
	Large	80.0	
CCG area	Walsall	86.9	**p=0.014**
	Wolverhampton	83.6	
Staff turnover	Lower than average	86.8	**p=0.017**
	Higher than average	83.2	
CQC rating overall	Outstanding or good	88.0	**p<0.0001**
	Requires improvement or inadequate	79.2	

3.7.8 Differences in SAQ mean scores over the entire SPACE period

A key goal of the programme evaluation was to assess changes in a number of outcome measures across the pre-SPACE and post-SPACE period. Figures 3.11 to 3.13 show a comparison across the three evaluation surveys for mean scores on all SAQ domains for: a) all staff, b) Walsall staff and c) Wolverhampton staff.

Figure 3.11: Comparison between SAQ scores at baseline, Year 1 and Year 2 (all staff)

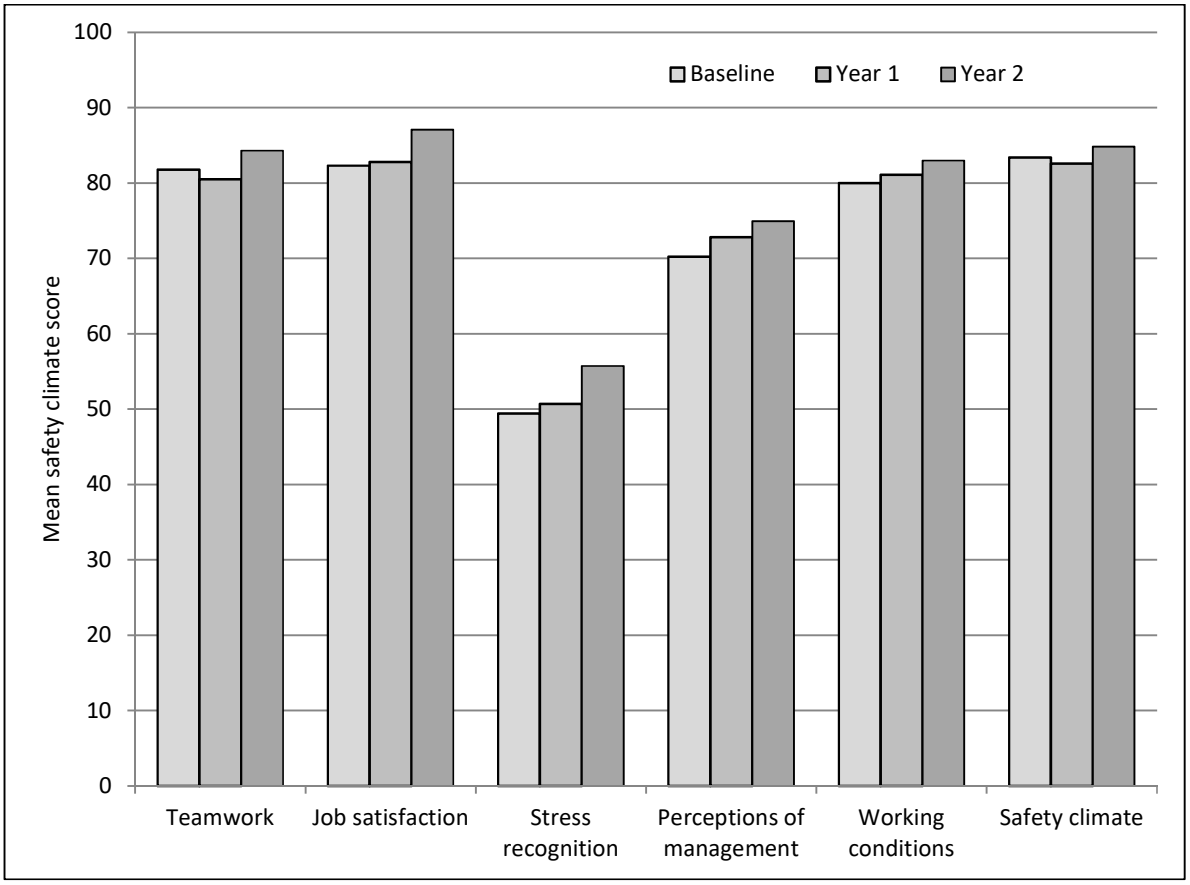


Figure 3.12: Comparison between SAQ scores at baseline, Year 1 and Year 2 (Walsall)

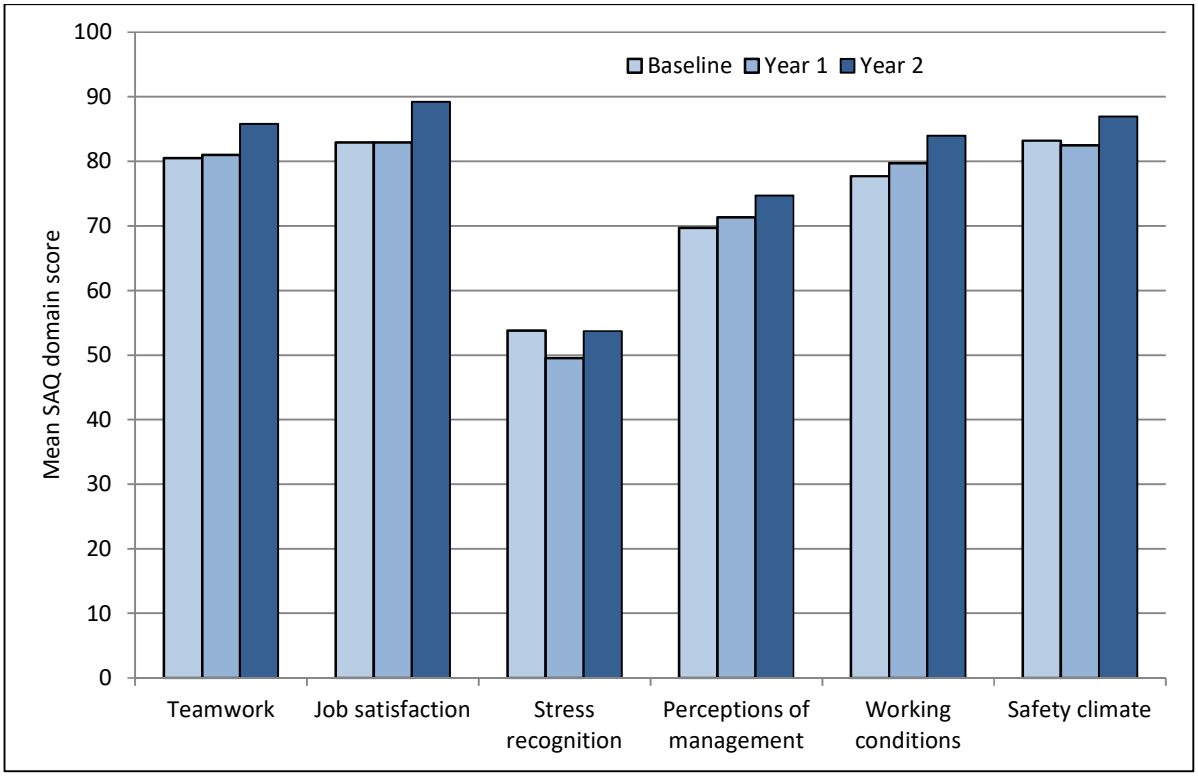
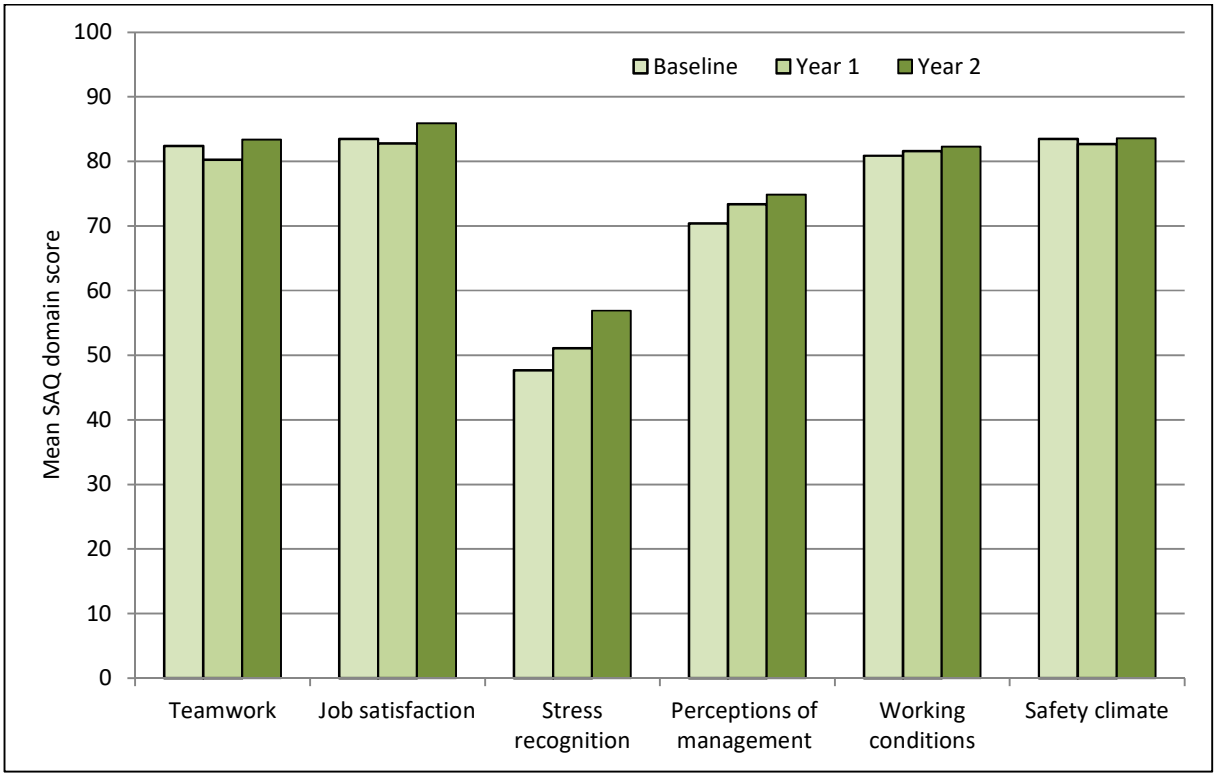


Figure 3.13: Comparison between SAQ scores at baseline, Year 1 and Year 2 (Wolverhampton)



Figures 3.11 to 3.13 show minimal differences in mean scores for all domains of the SAQ between baseline and end of Year 1, but scores for all domains were highest at the final data collection point in Year 2. This trend was evident when all data were combined, as well as when data were analysed separately for Walsall and Wolverhampton (with the exception of pre- and post-SPACE scores on the stress recognition domain in Walsall). This shows that involvement in SPACE has at least been associated with maintaining the already high scores for SAQ domains that were observed at baseline, and in a number of cases, SAQ domain scores have increased by several points between baseline and the end of the post-SPACE period. Table 3.20 summarises the change in scores for each domain between baseline and study end.

Table 3.20 Differences in SAQ domain scores between baseline and study end

	All staff			Walsall			Wolverhampton		
Domain	Baseline	Post-SPACE	Change	Baseline	Post-SPACE	Change	Baseline	Post-SPACE	Change
Teamwork	81.8	84.3	+ 2.5	80.5	85.8	+ 5.3	82.4	83.4	+ 1.0
Job satisfaction	82.3	87.1	+ 4.8	82.9	89.2	+ 6.3	83.5	85.9	+ 2.4
Stress recognition	49.4	55.7	+ 6.3	53.8	53.7	- 0.1	47.7	56.9	+ 9.2
Management	70.2	74.9	+ 4.7	69.7	74.7	+ 5.0	70.4	74.9	+ 4.5
Work conditions	80.0	83.0	+ 3.0	77.7	84.0	+ 6.3	80.9	82.3	+ 1.4
Safety climate	83.4	84.8	+ 1.4	83.2	86.9	+ 3.7	83.5	83.6	+ 0.1

Taking all staff together, the largest increases in SAQ scores between the start and end of SPACE were in the stress recognition domain, where scores increased by 6.3 points. Scores also increased substantially for the job satisfaction (+4.8 points) and perceptions of management (+4.7 points) domains. Increases were lowest in the safety climate domain, which had the highest baseline levels (+1.4 points overall).

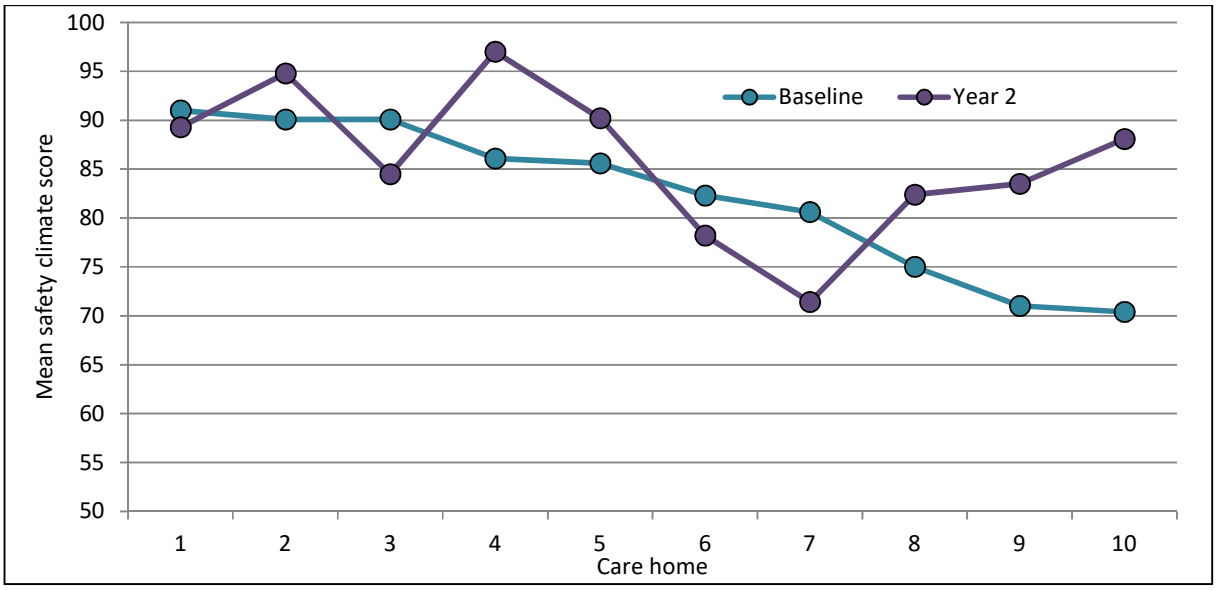
Differences in SAQ domain scores at baseline and end of SPACE were higher in Walsall than in Wolverhampton for all domains apart from stress recognition, which saw a 9.2 point increase in Wolverhampton compared to a 0.1 point reduction in Walsall. Scores on the teamwork climate domain increased by 5.3 points in Walsall compared to 1.0 in Wolverhampton; job satisfaction by 6.3 points vs. 2.4, and working conditions scores by 6.3 points vs. 1.4. For the perceptions of management domain, both CCG areas had similar increases (6.3 points in Walsall; 1.4 points in Wolverhampton), and although safety climate scores in both areas started from almost identical baseline levels, they increased by 3.7 points in Walsall and only 0.1 points in Wolverhampton.

3.7.9 Individual care home level

In addition to looking at SAQ domains overall and by CCG area, mean scores on the safety climate domain of the SAQ were analysed to explore differences between care homes over time. The results of the analysis should be interpreted with extreme caution – not only do the survey responses represent just over one third of staff to whom surveys were sent, response rates from individual care homes varied substantially, and figures for a single care home may be based solely on the responses given by just two or three staff members. For example, the absolute number of staff in individual care homes responding to the evaluation surveys ranged from 5 to 94 at baseline, and from 1 to 71 in Year 2.

Nevertheless, mean safety climate scores show some interesting variability across care homes in each CCG despite the high overall scores when all staff are considered together. In Walsall, mean safety climate scores at baseline ranged from 70.4 to 91.0, and from 71.4 to 97.0 at the end of Year 2. In Wolverhampton, mean scores ranged from 61.6 to 94.9 at baseline and between 67.3 and 100.0 in Year 2 (the latter being the difference in scores at a single care home). Figure 3.14 compares mean safety climate score by care home for Walsall between baseline and end of Year 2. The plot is ordered from highest to lowest baseline safety climate scores, with care homes distinguished by a meaningless identifier.

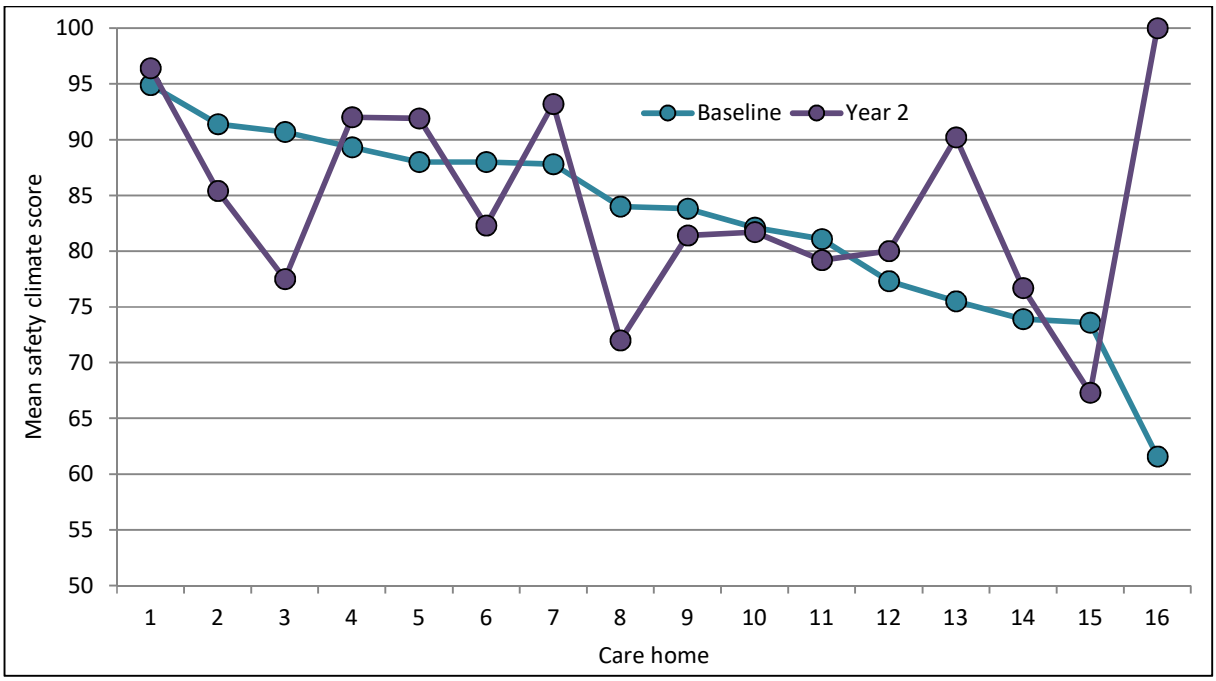
Figure 3.14: Differences in mean safety climate score over time by care home (Walsall)



Safety climate scores increased between baseline and end of Year 2 for 6/10 care homes in Walsall, and reduced for 4/10 care homes. The increases were typically more marked than the reductions, with care homes that increased their safety climate score showing a mean increase of 9.6 points, compared to a mean reduction of 4.9 points in those that reduced their score. The greatest increases between baseline and Year 2 were seen in the three care homes that scored the lowest at baseline. Care homes 9 and 10 had substantial increases of 12.5 and 17.7 SAQ safety climate points respectively.

Figure 3.15 shows the same data for care homes in Wolverhampton. The mixed pattern evident in the Walsall data is also discernible in the Wolverhampton data for change over time, with eight Wolverhampton care homes seeing an increase in safety climate scores over time, and the remaining eight seeing a reduction in scores. For the eight care homes that increased their safety climate score over time, the mean increase was 8.7 points, although this was skewed by care home 16 which recorded a 38.4 point increase in safety climate score in Year 2 compared to baseline. For the care homes that reduced their score over time, the mean reduction was 6.0 points. The pattern evident in the Walsall data, whereby the lowest scoring care homes at baseline showed the largest increases in Year 2 for safety climate was not so clear in the Wolverhampton data, with the exception of care home 16.

Figure 3.15: Differences in mean safety climate score over time by care home (Wolverhampton)



The reasons for the variability in safety climate scores over time at the individual care home level are unclear, although it is likely to be related to a number of factors such as variability in survey response rates over time, the rate of staff turnover, manager changes and general degree of engagement with SPACE. There is also the possibility that safety climate scores reduced for some care homes following participation in SPACE because staff attending quality improvement training may have improved their knowledge of what constituted a safe care home environment, leading them to perceive their care home as being either more or less safe than they had previously thought.

Summary of key SAQ findings for the safety climate domain and for differences since baseline:

- The mean safety climate score for all care home staff was 85 out of 100, second only to the job satisfaction domain when compared to other SAQ domains
- Mean scores outstrip published benchmarking data for perceptions of safety in the care home sector by at least 10 to 15 points
- Staff in each CCG area reported strikingly similar mean safety scores for most individual statements, although staff in Walsall had significantly higher overall safety scores than those in Wolverhampton
- Staff in Walsall were also significantly more likely than staff in Wolverhampton to respond positively to the statements 'I would feel safe if I lived at this care home', 'Medical areas are handled appropriately at this care home', and to disagree with the statement 'It is difficult to discuss errors'
- Overall, safety climate scores increased by 1.4 points between baseline and the end of SPACE (both CCGs together); by 3.7 points in Walsall, and by 0.1 point in Wolverhampton. This suggests that the SPACE programme has contributed to maintaining high levels of positive safety climate perception amongst care home staff and that positive safety attitudes are becoming embedded in the culture and working practices of care homes following implementation of SPACE
- Sub-group analysis showed safety climate scores to be significantly associated with job role; working hours (full-time staff had higher safety climate scores than part-time staff); staff qualifications (more qualified staff had higher scores than less qualified staff), and training attendance, whereby staff who attended SPACE training had significantly higher safety scores than those who had not attended training
- All of the care home-related characteristics assessed were significantly associated with safety climate scores, with significantly more positive scores for smaller vs. larger care homes, lower than average vs. above average staff turnover, and care homes with higher CQC ratings vs. those with lower ratings
- Despite high *overall* mean safety climate scores, there was some variability between care homes, with a mix of increases and reductions in mean safety climate scores between baseline and end of Year 2.

3.8 SURVEY FREE-TEXT COMMENTS

The care home manager and staff surveys included space for respondents to write any further comments that they wanted to make. These comments are summarised below:

At baseline, 70 staff members and 4 managers gave comments, of which 41 were broadly positive and 29 were broadly negative. Some staff criticised management and felt there was a culture of bullying pervading their care home. Some felt that certain employees were favoured; especially if they were related to the manager and that there was a lack of leadership. Other comments included concerns about understaffing and frequent sickness that put pressure on staff. Such issues, one staff member stated, could lead to mistakes being made. Dissatisfaction with remuneration was also highlighted. Conversely, other staff felt well supported and were encouraged by management to participate in training. They described their care homes as well run, friendly and welcoming, where residents' needs were prioritised. Two managers included comments describing challenges faced e.g. difficulties in recruiting good nursing staff; in-fighting amongst staff. One manager stated that since their most recent CQC report, staff changes and training had taken place. Another manager commented that they were 'proud of the home'.

In the Year 2 survey, 49 staff and 7 managers provided a comment. All of the managers made positive comments, praising the SPACE programme for its perceived beneficial impact on quality improvement within their care home, and for the opportunities that SPACE provided for sharing good practice across care homes and learning from the experience of others. For the staff, 33 of the comments were positive, with staff reporting feeling happy and supported in their role; that residents were well cared for; that management was appreciative of their efforts, and that SPACE had a considerable positive impact on their own practice and on safety at their care home as a whole. Negative comments tended to focus on issues with staff morale, perceived lack of autonomy in staff members' job roles, and issues with understaffing, particularly during night shifts.

4. RESULTS: ADVERSE EVENTS

4.1 OVERVIEW OF ADVERSE EVENT DATA ANALYSIS

Data on adverse events at all care homes are routinely collected by each CCG, and the data related to SPACE care homes were made available for the evaluation. Comparable data for Walsall and Wolverhampton were available on falls, pressure ulcer incidence, pressure ulcer grading (post-SPACE period only), UTIs, unscheduled GP visits, and ambulance conveyances from participating care homes. Although the SPACE programme aimed to reduce the incidence of avoidable harms, adverse events data did not allow an assessment of event rates on the basis of whether or not they were avoidable, thus the data presented in this Chapter include both avoidable and unavoidable adverse events.

There were challenges associated with missing data for a number of care homes. In Walsall, there was some missing data in the pre-SPACE period and during Year 1. However, data on adverse events in Year 2 was complete from all care homes. In Wolverhampton, data completeness was also problematic. Of the 16 care homes participating in the evaluation in Wolverhampton, one did not submit data on adverse events at any time point. For the remaining 15, reporting was variable for many, and no care home provided data for every month pre- and post-SPACE. Four care homes provided data for each of the 6 months pre-SPACE; 3 provided data for every month during Year 1, and 3 provided data for every month during Year 2. Anonymised tables of data coverage for participating care homes in both CCG areas are given in Appendices 4.1 and 4.2.

Data were analysed to give rates over time for the six months before SPACE (April to end of September 2016) and the 24 months after SPACE was launched (October 2016 to end of September 2018). As well as plotting monthly trends, aggregate pre- and post-SPACE rates for each event were calculated and assessed for the statistical significance of any changes over time. In order to control for differences in adverse event rates associated with care home size (i.e. larger care homes may have a greater number of falls and other harms simply by virtue of having more residents), the incidence of adverse events is expressed as the rate per 100 beds per month. Calculating a monthly rate for care homes in Wolverhampton was straightforward as data were collected on a monthly basis for all time points required by the evaluation. In Walsall, data were collected on a quarterly basis until April 2017, after which time the frequency changed to weekly data collection until April 2018. Between April 2018 and the end of September 2018, data were collected monthly. Both quarterly and weekly data from Walsall were converted into monthly rates to allow direct comparisons with Wolverhampton. Data are first presented separately for Walsall and Wolverhampton for each of the adverse events of interest, then data from both CCG areas were combined to show aggregate event trends over time. Pre- and post-SPACE data for Walsall and Wolverhampton are summarised in Appendices 4.3 and 4.4.

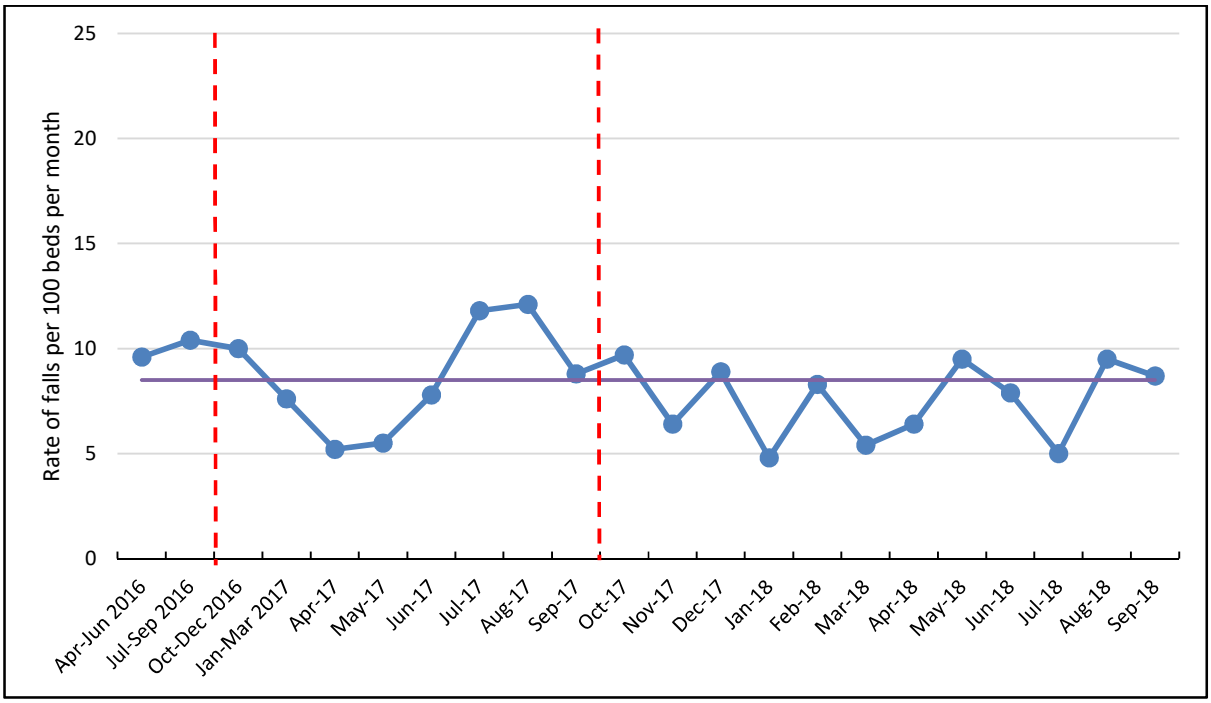
4.2 FALLS RATES

The dotted line on Figure 4.1 distinguishes between the pre-SPACE period, Year 1 and Year 2. Until June 2017, the trend for falls in **WALSALL** care homes had been one of steady and sustained reduction. However, during the summer months, falls increased substantially, and for July and August 2017, reached higher levels than the equivalent months in the pre-SPACE period. Afterwards, the falls rate reduced to show a more consistent trend, and remained fairly low throughout Year 2. In the six months before SPACE, aggregated data show a monthly rate of 10 falls per 100 residents. In Year 1, this reduced (non-significantly) to 8.6 falls per 100 residents per month ($X^2 = 2.74$; p=0.10). There was a further non-significant reduction when Year 1 and Year 2 were compared (Year 1: 8.6 per 100 beds, Year 2, 7.5 per 100 beds; $X^2 = 3.32$;

p=0.068). Comparing the six months pre-SPACE with the entire post-SPACE period shows a statistically significant reduction over time (10 vs. 7.9; X2 = 8.33; p=0.039).

The median rate of falls for the entire period of data collection was 8.5 (IQR: 6.2 to 9.6), shown by the horizontal median line on Figure 4.1. A comparison of medians pre- and post-SPACE did not show a significant reduction in median falls rates (pre: 10.0 (IQR: 9.6 to 10.0) vs post: 8.1 (IQR: 5.7 to 9.5); p=0.139.

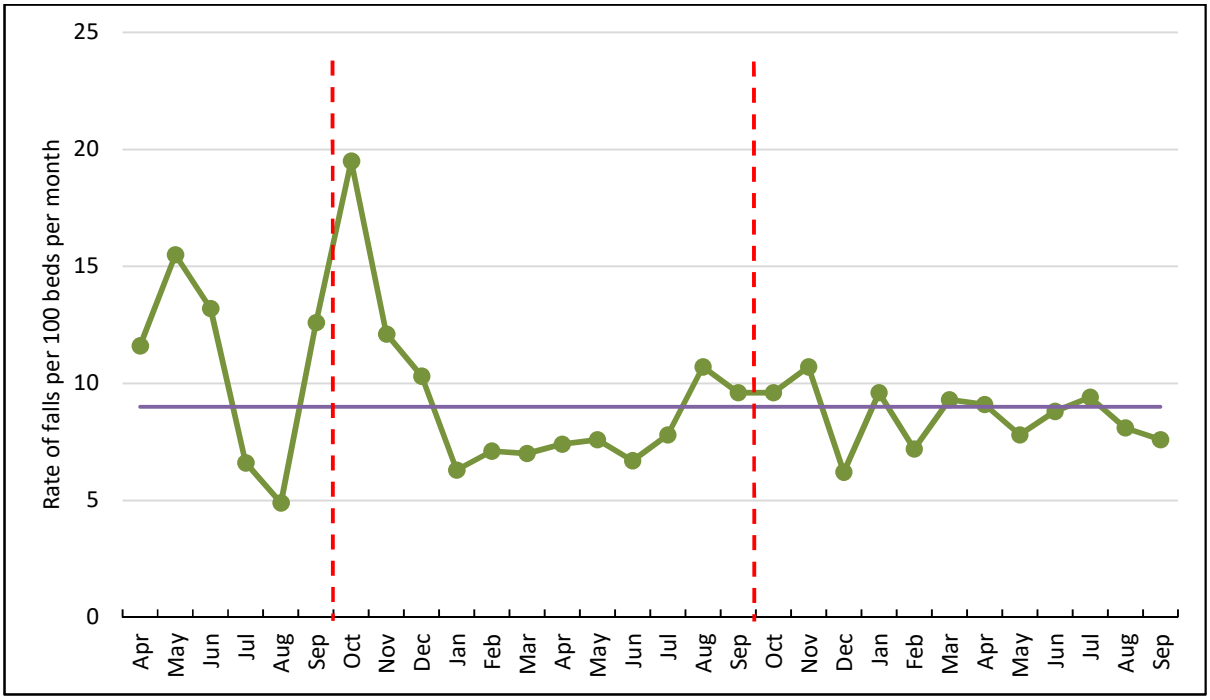
Figure 4.1: Change over time in falls rates per 100 beds, Walsall



In the 6 months before SPACE in **WOLVERHAMPTON**, there were 10.9 falls per 100 residents per month. In Year 1, this fell significantly to 8.9 falls per 100 residents per month (X^2 = 7.96; p=0.005). Falls rates remained consistently low throughout Year 2 (rate 8.8), although the reduction from Year 1 to Year 2 was not significant (X^2 = 0.01; p=0.920). (Figure 4.2). Comparing pre-SPACE with the entire post-SPACE period shows a significant reduction over time (pre-SPACE = 10.9; post-SPACE = 8.8: X^2 = 10.28; p=0.0013).

The median rate of falls for the entire period of data collection was 9.0 (inter-quartile range 7.2 to 10.7), shown by the purple median line on Figure 4.2. A comparison of medians pre- and post-SPACE did not show a significant reduction in median falls rates (pre: 12.1 (IQR: 6.2 to 13.8) vs. post: 8.5 (IQR: 7.3 to 9.6); p=0.296 (Figure 4.2).

Figure 4.2: Change over time in falls rates per 100 beds, Wolverhampton

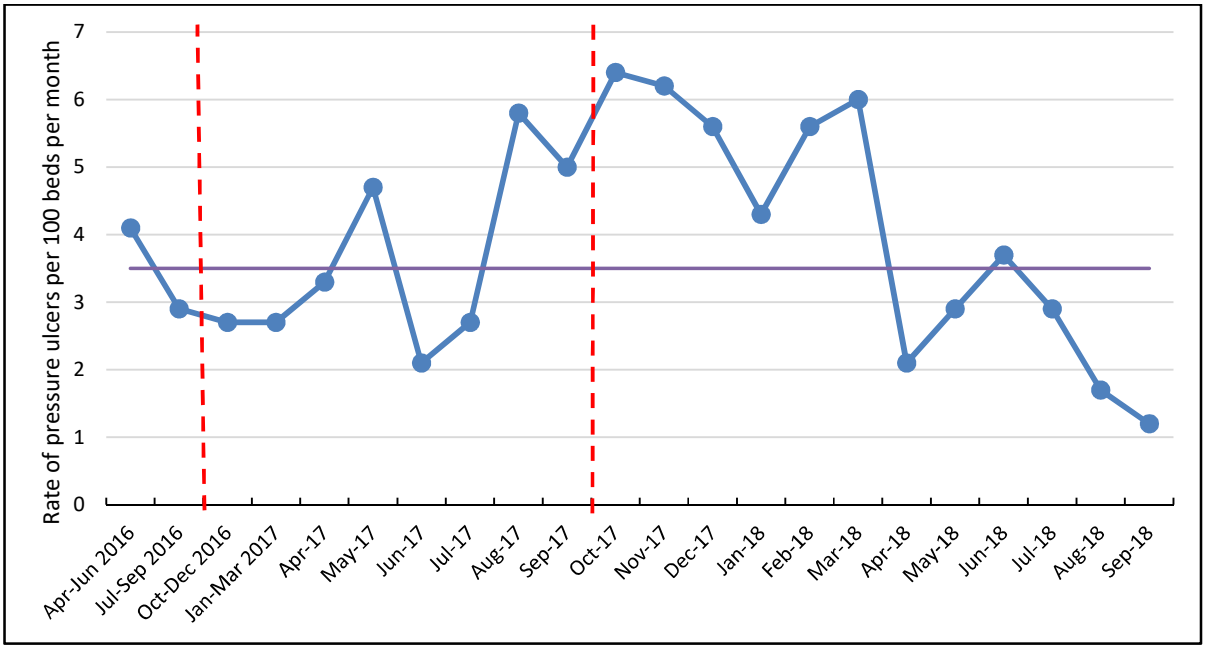


4.3 PRESSURE ULCERS

Before SPACE, there were 3.6 pressure ulcers per 100 residents per month in **WALSALL**. In Year 1, this reduced slightly to 3.5 per 100 beds per month (p=0.84). The lack of statistical significance for the comparison between pre-SPACE and Year 1 is likely due to the spike in pressure ulcers during May, August and September 2017 which reversed the previous downward trend. During Year 2, the trend was for a reduction in pressure ulcers, with a substantial reduction from June 2018 onwards, taking pressure ulcer rates well below their pre-SPACE levels. Despite this downward trend, comparing pre-SPACE to the entire post-SPACE period still shows a non-significant increase overall (3.6 vs. 3.8; $X^2 = 0.27$; p=0.603). This is largely due to the substantial variability in pressure ulcer rates over time, with the first 6 months of Year 2 showing a large increase compared to the pre-SPACE period.

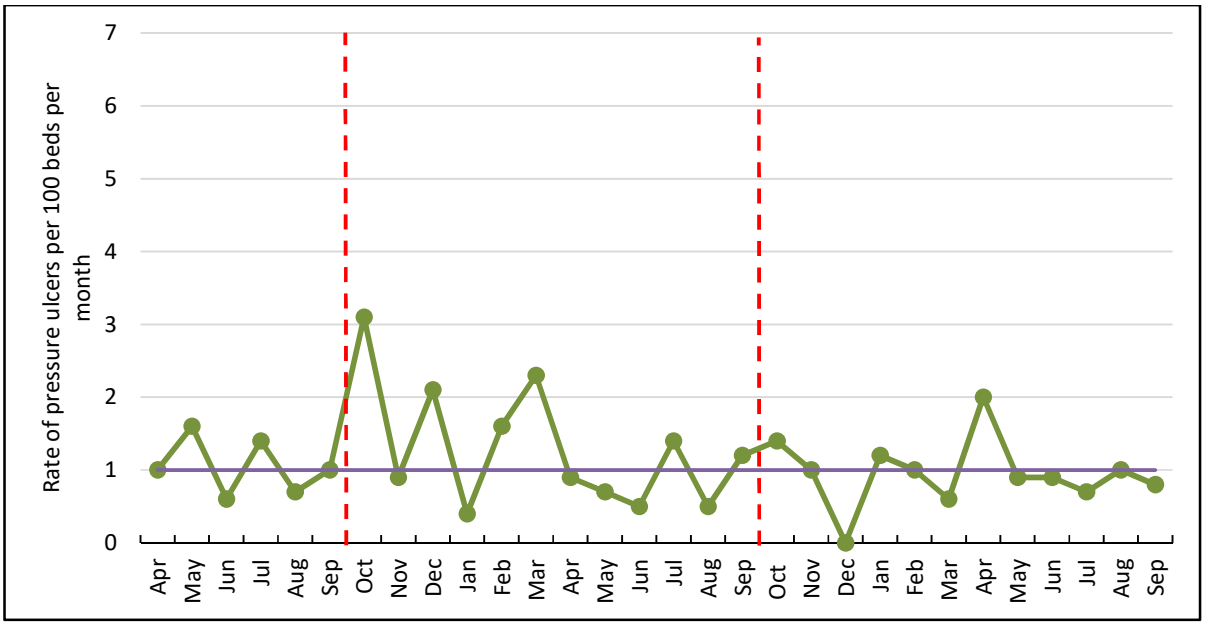
The median rate of pressure ulcers for the entire period of data collection was 3.5 (IQR: 2.7 to 5.6). A comparison of medians pre- and post-SPACE did not show a significant change in median pressure ulcer rates (pre: 3.5 (IQR: 2.9 to 3.5) vs. post: 3.5 (IQR: 2.7 to 5.6); p=0.952) (Figure 4.3).

Figure 4.3: Change over time in pressure ulcer rates per 100 beds, Walsall



In **WOLVERHAMPTON,** there were 0.9 pressure ulcers of any grade per 100 residents per month in. In Year 1, there was a non-significant increase in pressure ulcers, although rates were still low (Year 1 = 1.2 per 100 residents per month; $X^2 = 1.06$; p=0.30) (Figure 4.4). In Year 2, there was a more marked downward trend, with a rate per 100 residents per month of 1.0. This is a non-significant reduction when compared to Year 1 ($X^2 = 0.98$; p=0.322). Comparing pre-SPACE to the entire post-SPACE period continues to show a non-significant increase overall (0.9 vs. 1.1; $X^2 = 2.08$; p=0.149). The trend in pressure ulcers from month to month shows substantial variability. The median rate of pressure ulcers for the entire period of data collection was 1.0 (inter-quartile range 0.7 to 1.4). A comparison of medians pre- and post-SPACE did not show a significant difference in median pressure ulcer rates (pre: 1.0 (IQR: 0.7 to 1.5) vs. post: 0.9 (IQR: 0.6 to 1.4); p=0.781 (Figure 4.4).

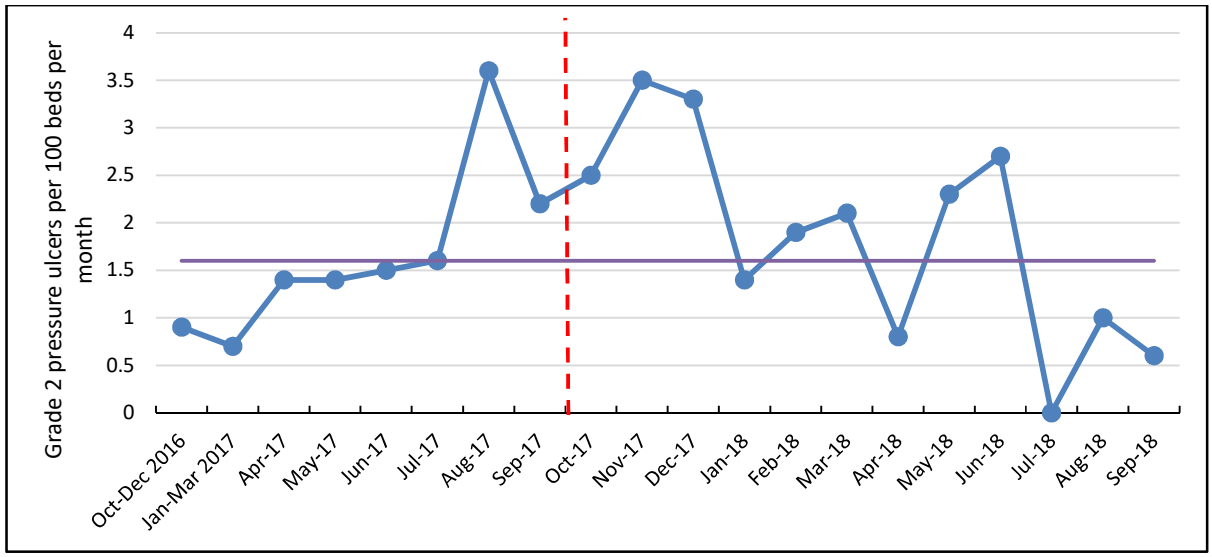
Figure 4.4: Change over time in pressure ulcer rates per 100 beds, Wolverhampton



4.3.1 Grade 2 pressure ulcers (post-SPACE only)

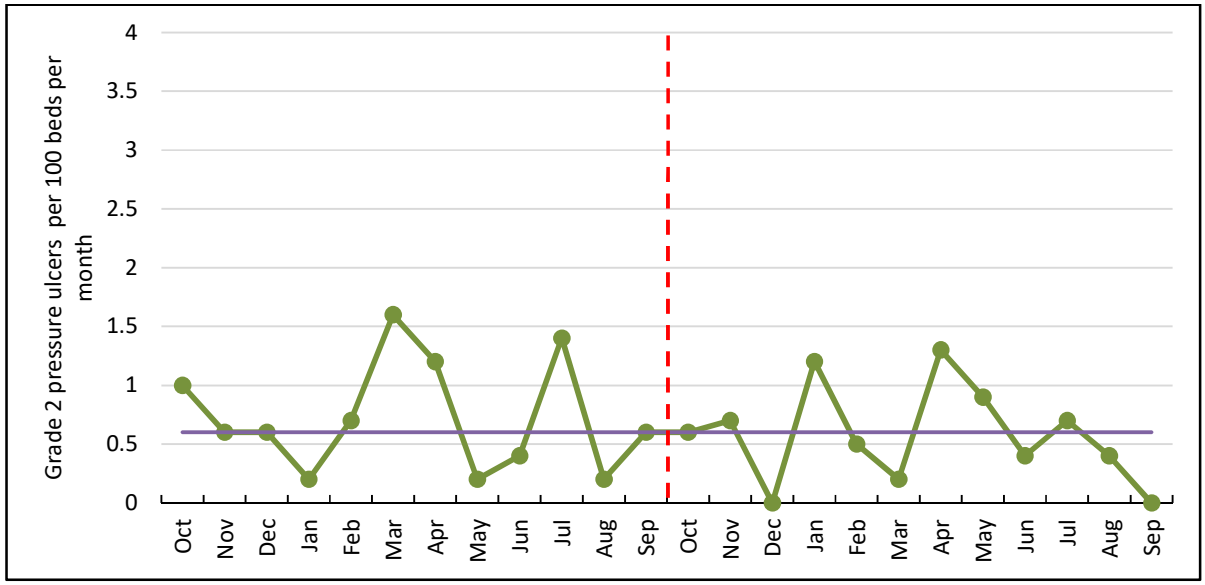
In Year 1, the rate of grade 2 pressure ulcers per 100 beds per month in **WALSALL** was 1.5 (Figure 4.5). In Year 2, this had increased to 1.8 per 100 beds per month, although the difference was not statistically significant (X^2 = 1.76; p=0.18) and the general trend in the latter months of Year 2 was towards a reduction overall. The median rate of grade 2 pressure ulcers in Year 1 was 1.5 (IQR: 1.0 to 2.1), which increased slightly during Year 2 (Year 2: 2.0; IQR: 0.9 to 2.7). There was no significant difference in medians when rates were compared for Year 1 vs. Year 2 (p=0.734).

Figure 4.5 Change over time in grade 2 pressure ulcers per 100 beds, Walsall



In Year 1, there were 0.7 grade 2 pressure ulcers per 100 residents per month in **WOLVERHAMPTON**. In Year 2, this reduced to 0.6 per 100 residents per month, although the absolute number of events was too small for significance testing. The median rate of grade 2 pressure ulcers in Year 1 was 0.6 (IQR: 0.3 to 1.0), which remained the same throughout Year 2 (median 0.6, IQR: 0.3 to 0.9). There was no significant difference in medians between Year 1 and Year 2 (p=0.514) (Figure 4.6).

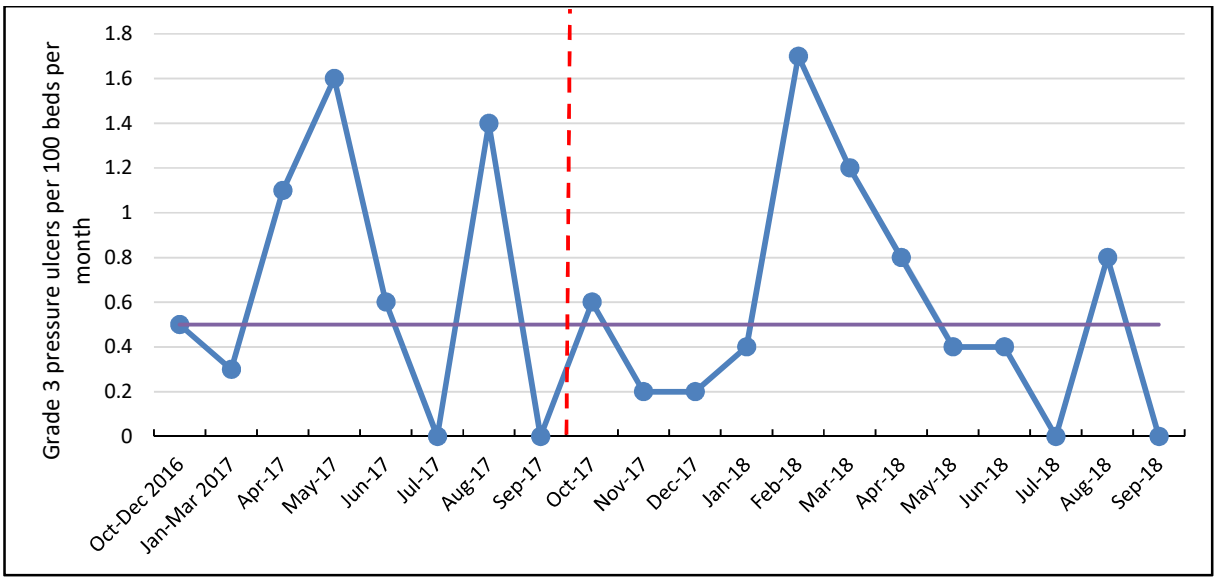
Figure 4.6 Change over time in grade 2 pressure ulcers per 100 beds, Wolverhampton



4.3.2 Grade 3 pressure ulcers

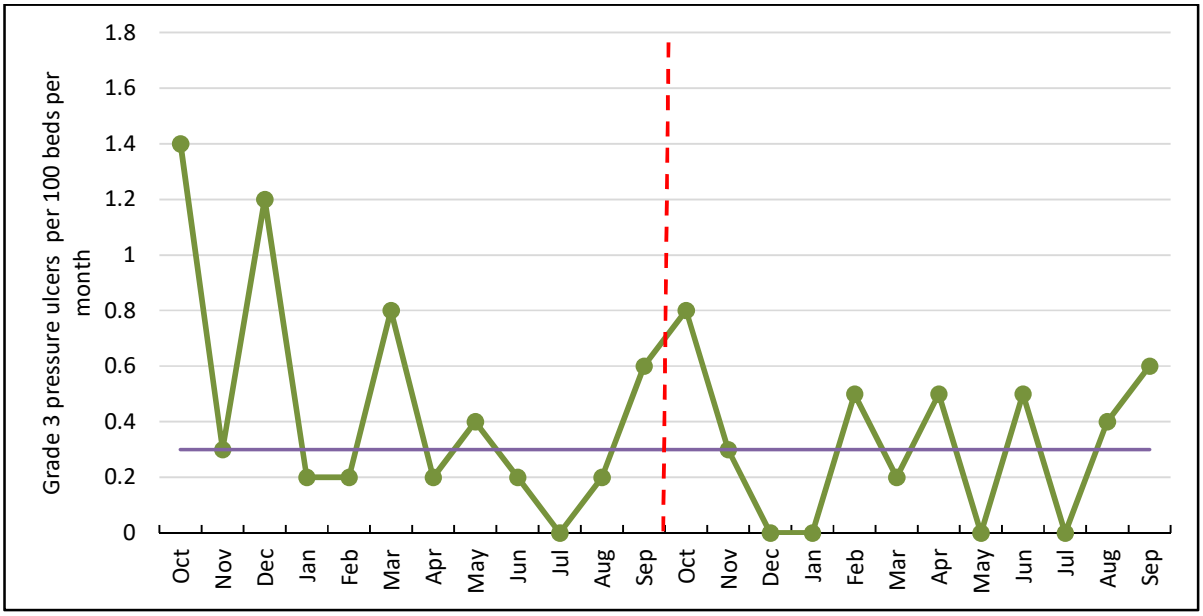
In Year 1, the rate of grade 3 pressure ulcers per 100 beds per month in **WALSALL** was 0.6 (Figure 4.7). This remained the same during Year 2 (X^2 = 1.76; p=0.680). There was substantial monthly variability and absolute pressure ulcer rates were very low. The median rate of grade 3 pressure ulcers in Year 1 was 0.6 (IQR: 0.0 to 1.3), which reduced non-significantly during Year 2 to 0.4 (IQR: 0.2 to 0.8); p=0.734.

Figure 4.7 Change over time in grade 3 pressure ulcers per 100 beds, Walsall



In Year 1, the rate of grade 3 pressure ulcers in **WOLVERHAMPTON** was 0.5 per 100 residents per month (Figure 4.8). In Year 2, this had reduced to 0.3 per 100 residents per month, although again, the absolute number of events was too small to allow significance testing. The median rate of grade 3 pressure ulcers in Year 1 was 0.3 (IQR: 0.2 to 0.8), which slightly increased during Year 2 (median 0.4, IQR: 0.0 to 0.5). There was no significant difference in medians when rates were compared for Year 1 vs. Year 2 (p=0.551). As with grade 2 pressure ulcers, there was substantial monthly variability in grade 3 pressure ulcer incidence.

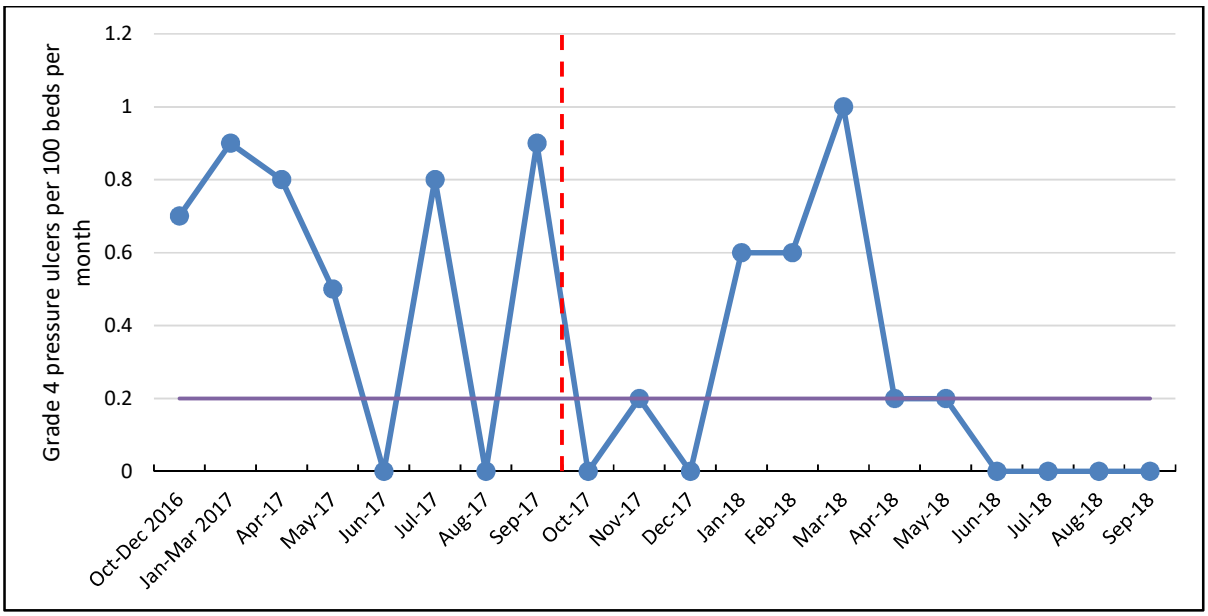
Figure 4.8 Change over time in grade 3 pressure ulcers per 100 beds, Wolverhampton



4.3.3 Grade 4 pressure ulcers

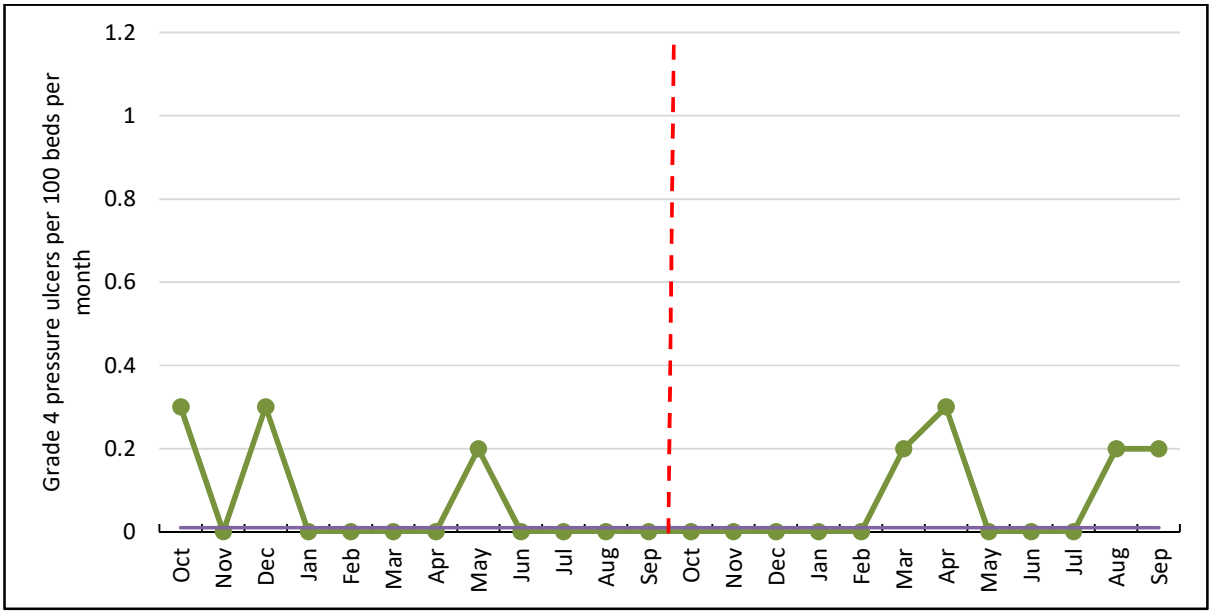
In Year 1, the rate of grade 4 pressure ulcers per 100 beds per month in **WALSALL** was 0.7 (Figure 4.9). In Year 2, there was a significant reduction to a rate of 0.2 per 100 beds per month (X^2 = 11.99; p=0.0005). The median rate of grade 4 pressure ulcers in Year 1 was 0.8 (IQR: 0.1 to 0.9), which reduced non-significantly during Year 2 to 0.1 (IQR: 0.0 to 0.5); p=0.098.

Figure 4.9: Change over time in grade 4 pressure ulcers per 100 beds, Walsall



In Year 1, the rate of grade 4 pressure ulcers per 100 residents per month in **WOLVERHAMPTON** was 0.08 (Figure 4.10). In Year 2, this had reduced to 0.07 per 100 residents per month, although again, the absolute number of events was too small to allow significance testing. The median rate of grade 4 pressure ulcers in Year 1 was 0.0 (IQR: 0.0 to 0.2), which remained the same through Year 2 (median 0.0, IQR: 0.0 to 0.2). There was no significant difference in medians when rates were compared for Year 1 vs. Year 2 (p=0.843).

Figure 4.10: Change over time in grade 4 pressure ulcers per 100 beds, Wolverhampton



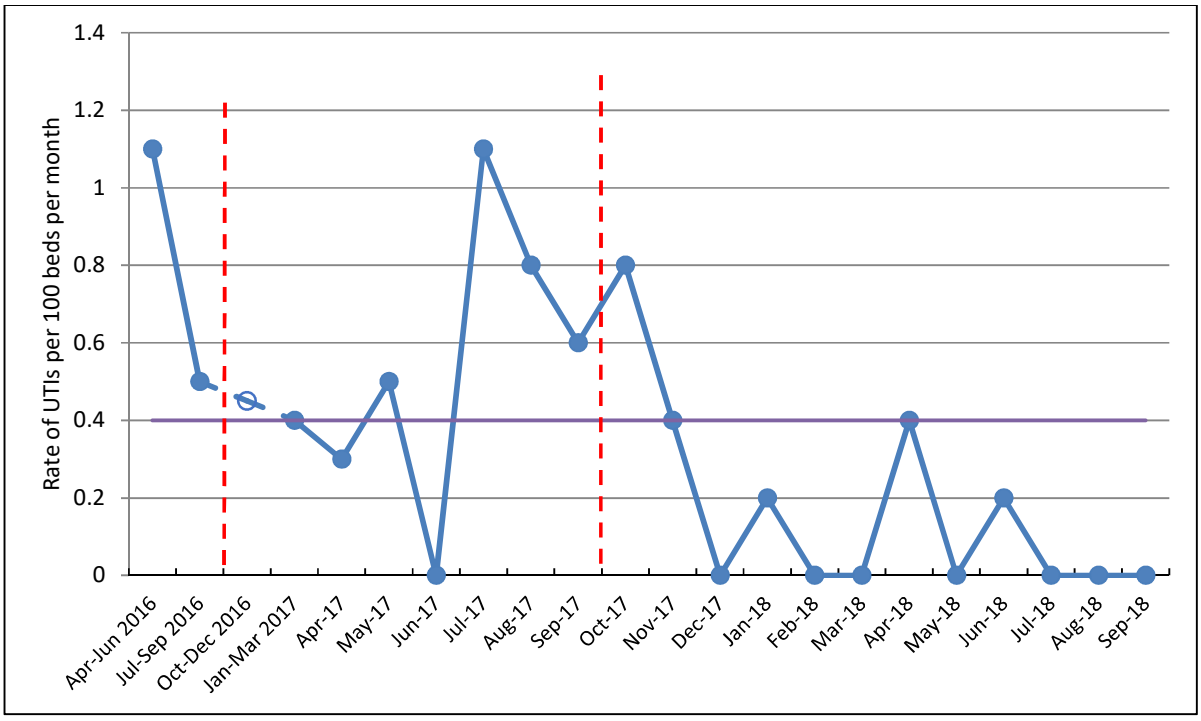
4.4 URINARY TRACT INFECTIONS

No data were available from **WALSALL** CCG for UTIs between October and December 2016. Figure 4.11 thus interpolates UTI rates on the basis of figures recorded immediately before and afterwards. Until summer 2017, there was a clear trend towards reduced UTI rates compared to the months pre-SPACE. However (although in absolute terms remaining small), there was a rise in UTI rates during July and August 2017.

After October 2017, UTI rates fell for several consecutive months before stabilising at a relatively low level. Indeed, for the last 3 months of Year 2, no UTIs were recorded in Walsall care homes. Comparing pre- and post-SPACE figures shows that in the six months before SPACE, there were 0.8 UTIs per 100 residents per month. In Year 1, this fell to 0.5 per 100 residents per month (non-significant) ($X^2 = 1.61$; p=0.20). There was a significant reduction from Year 1 to Year 2 (0.5 to 0.2; $X^2 = 8.2$; p=0.042). Comparing pre=SPACE to the entire post-SPACE period also shows a statistically significant reduction overall (pre: 0.8 vs. post: 0.3; $X^2 = 11.43$; p=0.0007).

The median rate of UTIs for the whole period of data collection was 0.4 (IQR: 0.0 to 0.6). Although the median UTI rate was lower in the post-SPACE period compared to pre-SPACE, this was not statistically significant (pre: 0.8 (IQR: 0.0 to 0.8) vs. post: 0.3 (IQR: 0.0 to 0.5); p=0.104). Comparing the Year 1 and Year 2 medians showed a statistically significant reduction (Year 1: 0.5 (IQR: 0.3 to 0.8) vs. Year 2: 0.0 (IQR: 0.0 to 0.4); p=0.016).

Figure 4.11 Change over time in UTI rates per 100 beds, Walsall

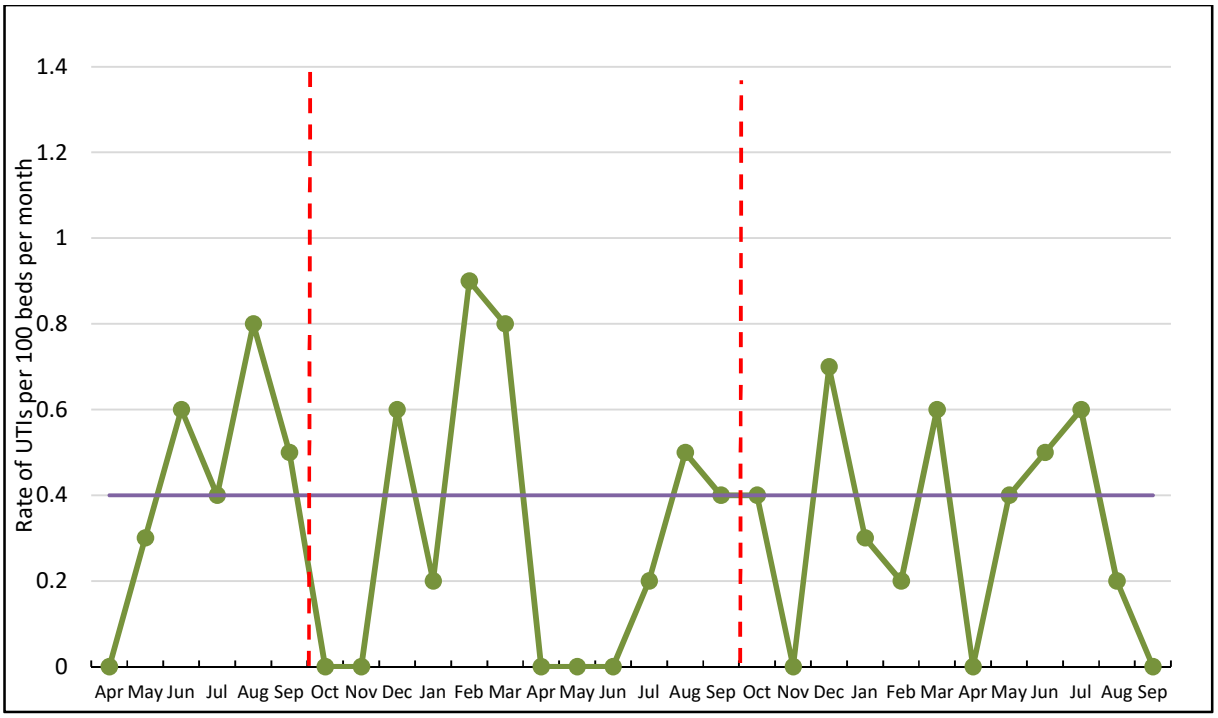


For **WOLVERHAMPTON**, data on UTIs relate to whether suspected/confirmed UTI was the reason for a hospital attendance or admission. Pre-SPACE, the rate per 100 residents per month was 0.4, which reduced to a rate of 0.3 in Year 1 (non-significant reduction: $X^2 = 0.79$; p=0.37). There were 5 months in Year 1 with a UTI rate of zero. In Year 2, the variability in UTI rates from month to month continued, with an overall monthly rate of 0.3 per 100 residents (comparison between Year 1 and Year 2 showed no difference in rates:

X^2 = 0.35; p=0.554). A comparison between pre-SPACE and the entire post-SPACE showed an overall non-significant reduction in UTI rates (0.4 vs. 0.3; X^2 = 0.9; p=0.340).

The median rate of UTIs for the entire period of data collection was 0.4 (IQR: 0.0 to 0.6). Although the median UTI rate was lower in the post-SPACE period compared to pre-SPACE, a comparison of medians across this period did not show a significant difference (pre: 0.5 (IQR: 0.2 to 0.7) vs. post: 0.3 (IQR: 0.0 to 0.6); p=0.651.

Figure 4.12 Change over time in UTI rates per 100 beds, Wolverhampton

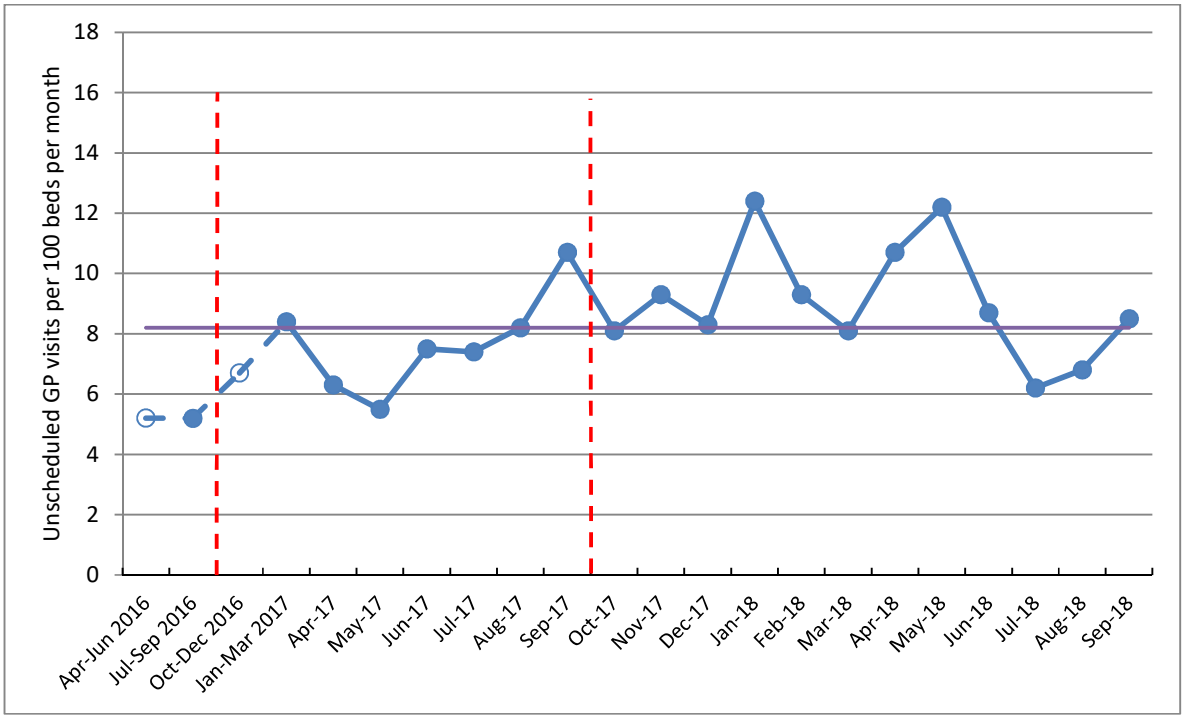


4.5 UNSCHEDULED GP VISITS TO CARE HOMES

Data on unscheduled GP visits were missing for April to June 2016 and October to December 2016 in **WALSALL**. There was a statistically significant increase across all time periods for which comparisons were carried out, and Figure 4.13 shows a fairly consistent increase over time, although rates of unscheduled GP visits did begin to drop in the latter part of Year 2. Pre-SPACE rates were 5.2 GP visits per 100 beds per month, which increased significantly during Year 1 to 8.0 GP visits per 100 beds (p=0.01). Rates continued to increase significantly during Year 2 (Year 1: 8.0 vs. Year 2: 9.0; X^2 = 3.98; p=0.046). Comparing pre-SPACE to the entire post-SPACE period also shows a statistically significant increase over time (5.2 vs. 8.6; X2 = 11.42; p=0.0007).

The median rate of unscheduled GP visits for the whole period of data collection was 8.2 (IQR: 6.6 to 9.3). A comparison of medians before Year 1 and Year 2 shows a statistically significant increase (Year 1: 7.5 (IQR: 6.4 to 8.4) vs. Year 2: 8.6 (IQR: 8.1 to 10.4); p=0.0069). A comparison of medians between the pre-SPACE and entire post-SPACE period also shows a statistically significant increase (pre: 5.2 (IQR: 5.2 to 5.2) vs. post: 8.3 (IQR: 7.0 to 9.3); p=0.0009).

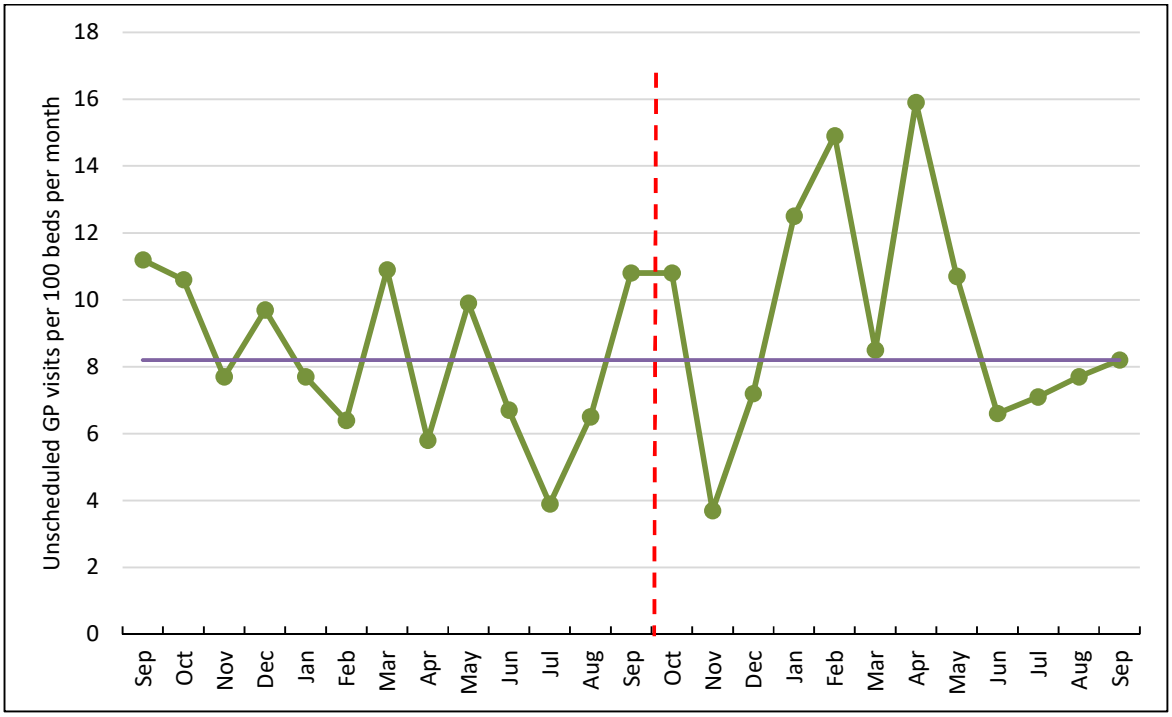
Figure 4.13: Change over time in rates of unscheduled GP visits, Walsall



Comparable data in **WOLVERHAMPTON** for the pre-SPACE period are available for September 2016 only, at which time the rate was 11.2 unscheduled GP visits per 100 residents. During Year 1, the rate of unscheduled GP visits fell significantly to 7.8 per 100 residents ($X^2 = 6.36$; p=0.012), although obviously this must be interpreted with caution. In Year 2, the monthly rate of unscheduled GP visits rose again, to 9.1 per 100 residents (Figure 4.14). Whilst a comparison between pre-SPACE and the entire post-SPACE period still shows a significant reduction over time (11.2 vs. 8.5; $X^2 = 4.3$; p=0.038), restricting the comparison to Year 1 vs. Year 2 shows a significant increase over time (7.8 vs. 9.1; $X^2 = 6.01$; p=0.014), as the number of GP visits rose sharply through the winter period 2017-2018.

The median rate of unscheduled GP visits for the entire period of data collection was 8.2 (IQR: 6.4 to 10.8). Although the median rate was higher in Year 2 than in Year 1, a comparison of medians across this period did not show a significant difference (Year 1: 7.7 (IQR: 6.4 to 10.4) vs. Year 2: 8.4 (IQR: 7.1 to 12.1); p=0.291.

Figure 4.14: Change over time in rates of unscheduled GP visits, Wolverhampton



4.6 INCIDENCE OF ANY EVENTS

The incidence of different adverse events is closely connected, and reductions in one type of event may have a knock-on effect to increases in other types of event. For example, improving hydration may lower the incidence of UTIs, but can also be associated with increased moisture lesions and ulcer formation. Similarly, promoting resident mobility to reduce pressure ulcer incidence may result in higher falls rates. With this in mind, a further analysis was undertaken to aggregate data for falls, pressure ulcers and UTIs into a single figure representing 'any event'. For Walsall, the pre-SPACE incidence of any events was 14.4 per 100 beds per month. By the end of the post-SPACE period, this had significantly reduced to a rate of 11.7 events per 100 beds per month (X^2=7.65; p=0.006). The trend in Wolverhampton was similar although less marked than in Walsall: pre-SPACE combined rates of falls, UTIs and pressure ulcers were 12.0 per 100 beds per month, which significantly reduced to a rate of 10.2 in the post-SPACE period (X^2=10.5; p=0.01).

4.7 ADVERSE EVENTS DATA FOR BOTH CCGS COMBINED

The final analysis combined adverse events data from both CCGs into a single figure for each outcome. This allowed a comparison between the pre- and post-SPACE periods for all events, and in effect controlled for the fact that baseline rates for a number of events differed between CCGs. Data are summarised in Table 4.1. When combined, trends in adverse events were similar to those seen when data from each CCG were analysed separately. Comparing pre- and post-SPACE data, rates of falls significantly reduced (10.5 pre-SPACE vs. 8.4 post-SPACE; p=0.0006). Similarly, there were significant reductions in UTIs (0.31 per 100 beds per month pre-SPACE vs. 0.16 post-SPACE; p=0.001), and when rates of 'any event' were compared (13.0 pre-SPACE vs. 11.0 post-SPACE; p=0.0003). Pressure ulcer rates showed a non-significant increase over the course of the SPACE programme, with non-significant increases in grade 2 pressure ulcers (Year 1 vs. Year 2 data only). However, there was a non-significant reduction overall in grade 3 pressure ulcers, and a significant reduction in grade 4 pressure ulcers (0.31 in Year 1 vs. 0.16 in Year 2; p=0014).

Table 4.1: Pre-SPACE vs. post-SPACE adverse events, Walsall and Wolverhampton combined

	PRE-SPACE		**POST-SPACE**			
Event	Events/Beds	Rate per 100 beds	Events/beds	Rate per 100 beds	P value	Interpretation
Falls	442/4205	10.5	1713/20342	8.4	**0.0006**	**Significant reduction**
Pressure ulcers	81/4205	1.9	472/20342	2.3	0.12	Non-significant increase
Grade 2	87/8731	1.0	140/11611	1.2	0.14	Non-significant increase
Grade 3	46/8731	0.5	52/11611	0.5	0.41	Non-significant reduction
Grade 4	27/8731	0.3	18/11611	0.2	**0.014**	**Significant reduction**
UTI	25/4205	0.6	58/19754	0.3	**0.001**	**Significant reduction**
ANY event	547/4205	13.0	2213/22042	11.0	**0.0003**	**Significant reduction**

4.8 CHANGES OVER TIME IN SELECTED ADVERSE EVENTS BY CARE HOME

Changes over time in rates of falls, pressure ulcers and UTIs were assessed for each participating care home in Walsall and Wolverhampton. Rates of unscheduled GP visits were not compared due to the paucity of pre-SPACE data from individual care homes. The findings are presented graphically in Appendices 4.5, 4.7 and 4.9 (Walsall) and Appendices 4.6, 4.8 and 4.10 (Wolverhampton). The data must be interpreted with caution as many care homes (particularly in Wolverhampton) may have reported their adverse event rates on only two or three occasions during the pre- and/or post-SPACE period.

All ten **WALSALL** care homes provided data for at least one month during the pre-SPACE and post-SPACE periods. Three care homes increased their falls rates in the post-SPACE period; two of which increased substantially compared to their pre-SPACE levels. The remaining six saw reductions in falls rates, four of which were reductions of more than 50% from their pre-SPACE rates. For pressure ulcers there was again a mixed picture, with six care homes increasing their pressure ulcer rates post-SPACE and four seeing a reduction. For UTIs, pre-SPACE data were sparse and overall rates of UTIs were low for the majority of care homes. Five care homes saw an increase in UTI rates post-SPACE, and five showed reduced UTI rates post-SPACE, with one care home in particular showing a substantial reduction from 1.9 UTIs per month to an average of 0.1 per month.

Twelve care homes in **WOLVERHAMPTON** provided data for at least one month during the pre-SPACE period and the post-SPACE period respectively. In terms of falls, four care homes increased their rates of falls when the pre-SPACE and post-SPACE periods were compared, although increases were typically modest. Eight care homes showed a reduction in their falls rates during the course of the SPACE programme. For pressure ulcers, pre-SPACE rates in Wolverhampton were very low, and the mean number of pressure ulcers reported per month increased during SPACE for all but one care home, in which there was a substantial reduction from 1.1 per month to 0.3 per month. For UTIs, the sample was split nearly equally between care homes that increased their rates since the pre-SPACE period and those that had reduced: six care homes showed increases; one showed no change, and the remaining five saw a decrease in UTI rates. For four of the five care homes in which UTI rates decreased, reductions were typically considerable, with one care home in particular reducing mean monthly UTI rates from just over 0.9 to under 0.1.

Summary of key findings for adverse event changes over time:

- Adverse event rates often showed a high degree of variability from month to month in both CCG areas. Nevertheless, there were encouraging signs of sustained downward trends over time when pre- and post-SPACE rates were compared for several outcomes
- Rates of falls significantly reduced for both Walsall and Wolverhampton when pre- and post-SPACE data were compared
- Both Walsall and Wolverhampton saw a reduction in UTI rates over time – for Wolverhampton this was a non-significant reduction as pre-SPACE rates were already low. For Walsall, this was a statistically significant reduction
- Both areas saw a non-significant increase in pressure ulcers of any grade, with a non-significant increase in grade 2 pressure ulcers in Walsall and a non-significant reduction in Wolverhampton. Both areas also saw non-significant reductions in grade 3 pressure ulcers, and a significant reduction in grade 4 pressure ulcers was observed in Walsall. For both areas, data included pressure ulcers inherited from other settings as well as those acquired in the care home, as the CCG data did not enable distinction between pressure ulcers on the basis of where they originated
- The incidence of 'any event' (falls, pressure ulcers and UTIs combined) significantly reduced over time for both Walsall and Wolverhampton
- When data from both CCGs were combined, there was a significant reduction over time in falls, UTIs, 'any events' and grade 4 pressure ulcers. Rates of any grade of pressure ulcers showed a non-significant increase overall, as did rates of grade 2 pressure ulcers
- There was a significant *increase* in rates of unscheduled GP visits to care homes in Walsall and a significant *reduction* in Wolverhampton, although pre-SPACE data were not robust. A higher rate of unscheduled GP visits may be desirable as it suggests that: a) GPs are responsive to unforeseen circumstances e.g. in the case of residents at end of life, an unscheduled GP visit may allow that resident to die in their preferred place, and b) care home staff - who are under pressure to avoid unnecessary ambulance callouts – could be calling GPs as a proactive/preferred option
- Data for some months were based on returns from few care homes due to incomplete data. This may have had an impact on the event rates observed. This may also account for the mixed picture of increases and reductions in mean monthly rates of falls, pressure ulcers and UTIs when pre- and post-SPACE data were compared for individual care homes
- Rates of several adverse events (e.g. falls, pressure ulcers) may already have been reducing pre-SPACE because of quality improvements that had already been implemented at that time

4.9 AMBULANCE CONVEYANCE DATA

Data were obtained from the West Midlands Ambulance Service (WMAS) via Wolverhampton and Walsall CCGs, on ambulance conveyances from care homes participating in the SPACE programme, both before and after SPACE began. Data were analysed to explore trends in the rate of ambulance conveyances over time in either of the participating CCGs (both overall and at the individual care home level), expressed as the ambulance conveyance rate per 100 beds per month.

4.9.1 Data considerations

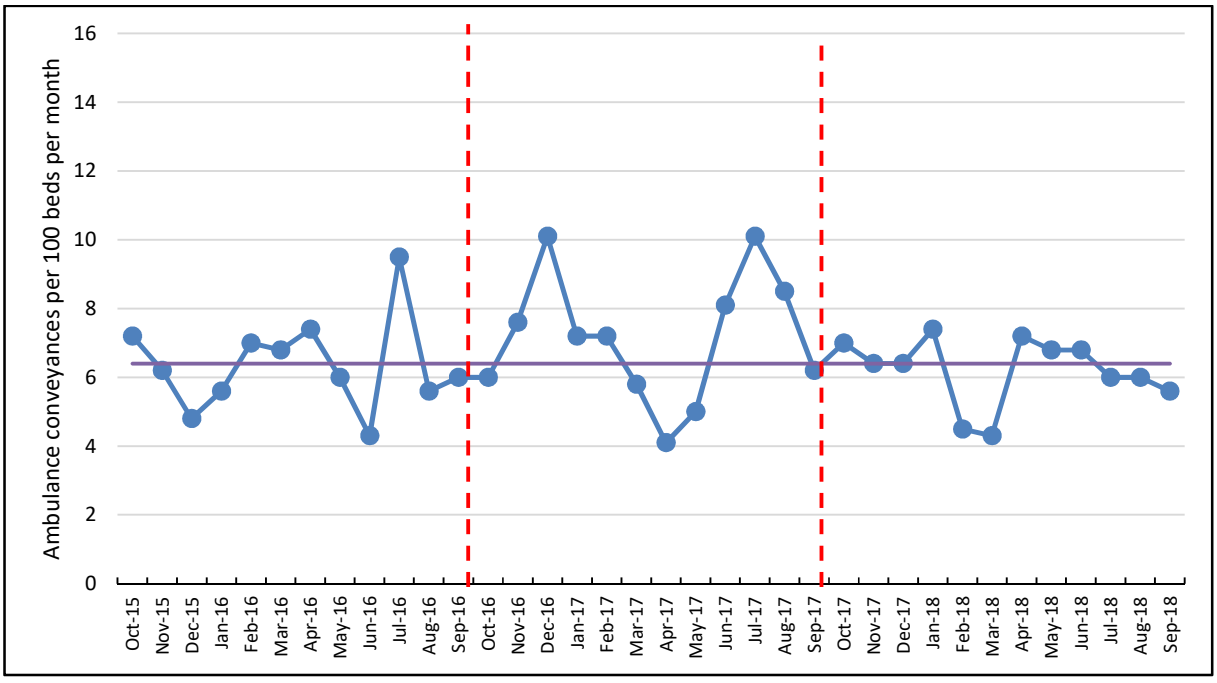
There are some caveats to bear in mind when interpreting the data. For Walsall, data related only to care homes that were considered 'high volume service users' by WMAS i.e. those that made 10 or more calls to

the ambulance service in a financial year. Data were available for 12 months pre-space (October 2015 to end of September 2016) and the 24 months since SPACE was launched (October 2016 to end of September 2018). For Wolverhampton, data were available on ambulance conveyances from 13 of the 16 care homes signed up to the SPACE evaluation, but pre-SPACE data were only available from April 2016 to end of September 2016) (6 months). Post-SPACE data were available for the full 24 month period (October 2016 to end of September 2018). Data for Wolverhampton also related to the postcode area within which a care home was located, rather than being specific to the care home itself. This meant that any ambulance calls made from nearby properties sharing the same postcode would be included in the figures analysed. This may have led to an over-estimation of ambulance conveyances from the Wolverhampton care homes.

4.9.2 Ambulance conveyance data, Walsall

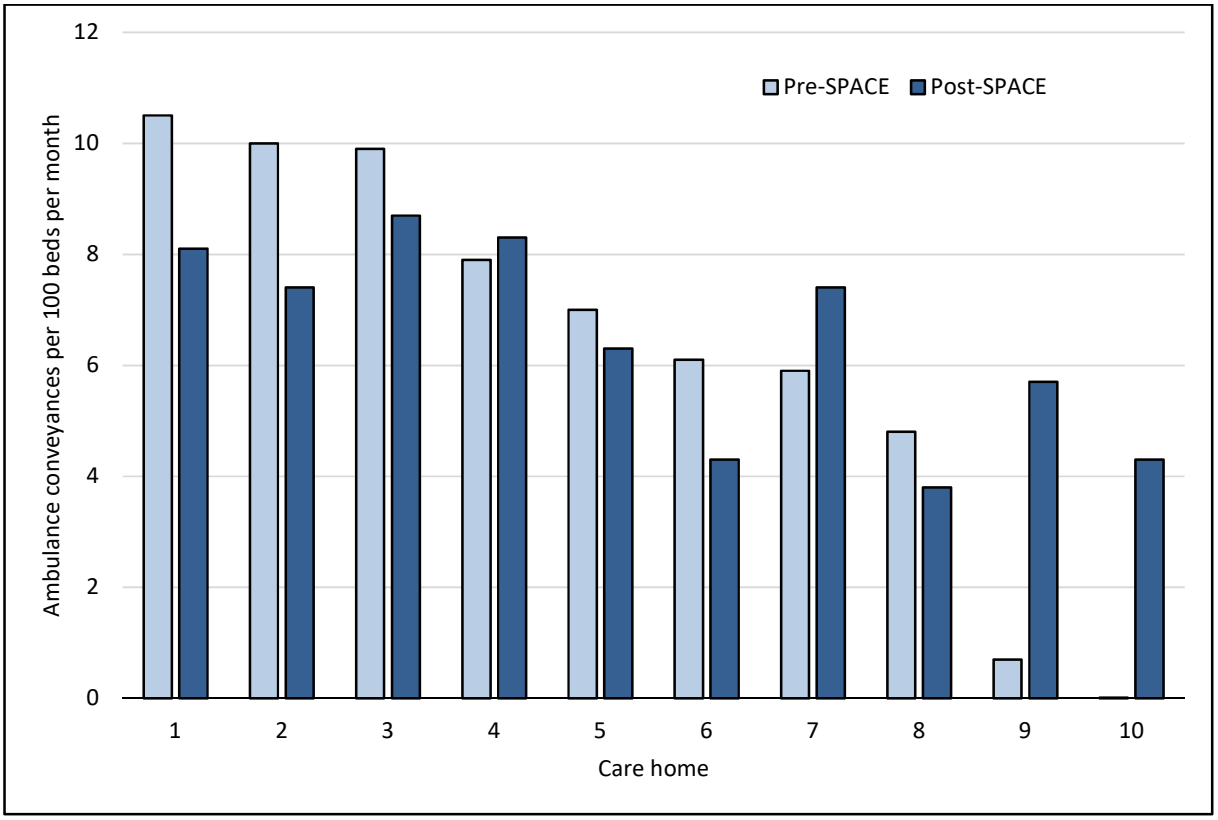
Figure 4.15 shows the trend over time in Walsall. The purple line shows the median rate of ambulance conveyances over the entire period of data collection. The dotted red lines distinguish between pre-SPACE, SPACE Year 1 and SPACE Year 2. There was a wide variation from month to month in ambulance conveyance rates, likely to be due in part to seasonal trends (median 6.4 for the entire period). Monthly rates per 100 residents ranged from 4.3 to 9.5 in the 12 months pre-SPACE, and from 4.1 to 10.1 in the post-SPACE period. During the 12 months pre-SPACE, the overall rate per 100 beds per month was 6.4 ambulance conveyances. This increased to 7.2 during Year 1 of SPACE, then fell again during Year 2 to 6.3. Comparing pre-SPACE figures with the entire 24 month post-SPACE period shows a non-significant increase from 6.4 to 6.7 (X^2=0.82; p=0.365). Comparing ambulance conveyance rates between Year 1 and Year 2 showed a reduction from 7.2 to 6.3 which fell just short of statistical significance (X^2=3.49; p=0.06).

Figure 4.15: Change over time in monthly ambulance conveyance rates, Walsall



Taking each care home in Walsall individually, 6/10 care homes showed a reduced rate of ambulance conveyances across the pre- and post-SPACE periods, with the remaining 4/10 showing increased rates (Figure 4.16).

Figure 4.16: Change over time in monthly ambulance conveyance rates by care home, Walsall



4.9.3 Ambulance conveyance data, Wolverhampton

Rates of ambulance conveyances from the postcodes in which Wolverhampton care homes were located started at a higher level than those in Walsall, with similar monthly fluctuations as that seen in the Walsall data (median 10.1 across the entire period) (Figure 4.17). Monthly rates per 100 residents ranged from 9.8 to 14.4 in the 6 months per-SPACE, and from 6.9 to 11.7 during the post-SPACE period. Pre-SPACE, the overall rate per 100 beds per month was 11.8 ambulance conveyances. This reduced slightly to 11.1 during Year 1 of SPACE, then fell again during Year 2 to 8.7. Comparing pre-SPACE figures with the entire 24 months post-SPACE shows a significant reduction from 11.8 to 10.1 (X^2=10.95; p=0.0009). Comparing ambulance conveyance rates between Year 1 and Year 2 showed a reduction from 11.1 to 8.7 which was again a statistically significant reduction (X^2=22.4; p<0.0001).

Trends for individual care homes in Wolverhampton (Figure 4.18), again showed a wide range in ambulance conveyance rates. Across the two time periods, 5/13 Wolverhampton care homes reduced their rates of ambulance conveyances (in three cases by around 50%). The remaining eight care homes for which data were available increased their rates of ambulance conveyances, although proportionally, the increases were typically small.

Figure 4.17: Change over time in monthly ambulance conveyance rates, Wolverhampton

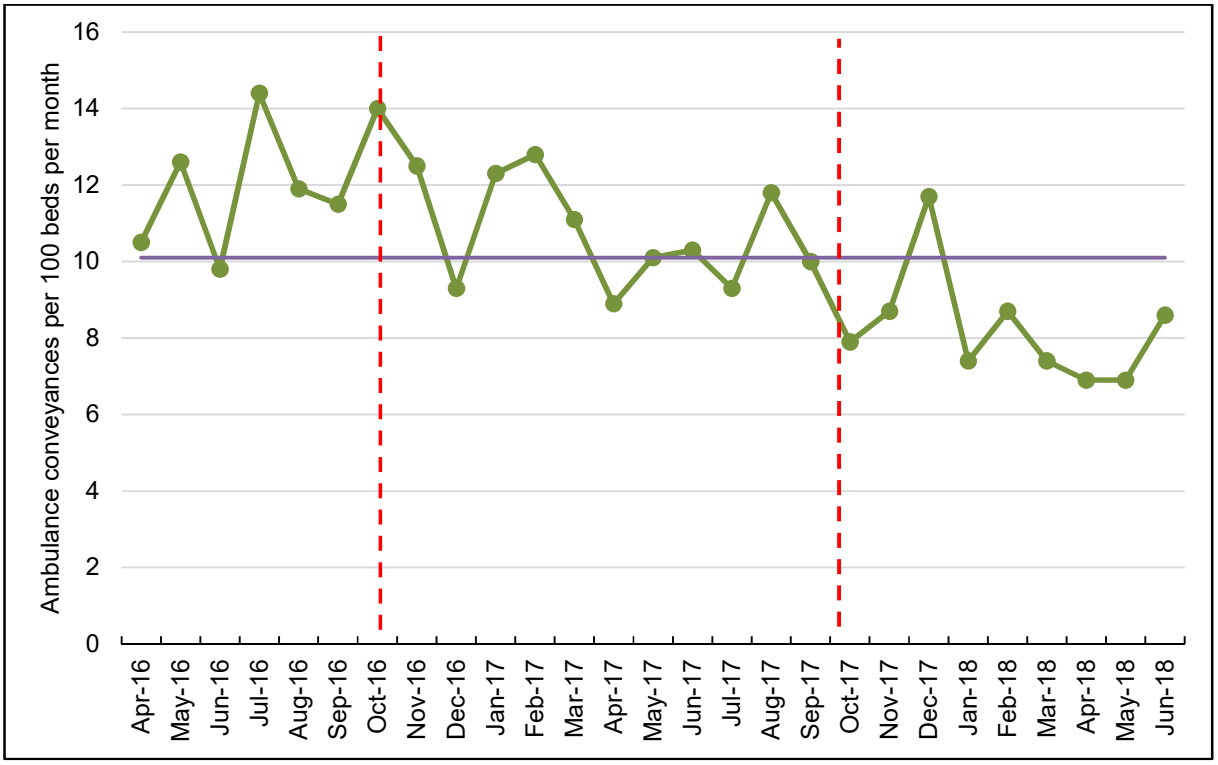
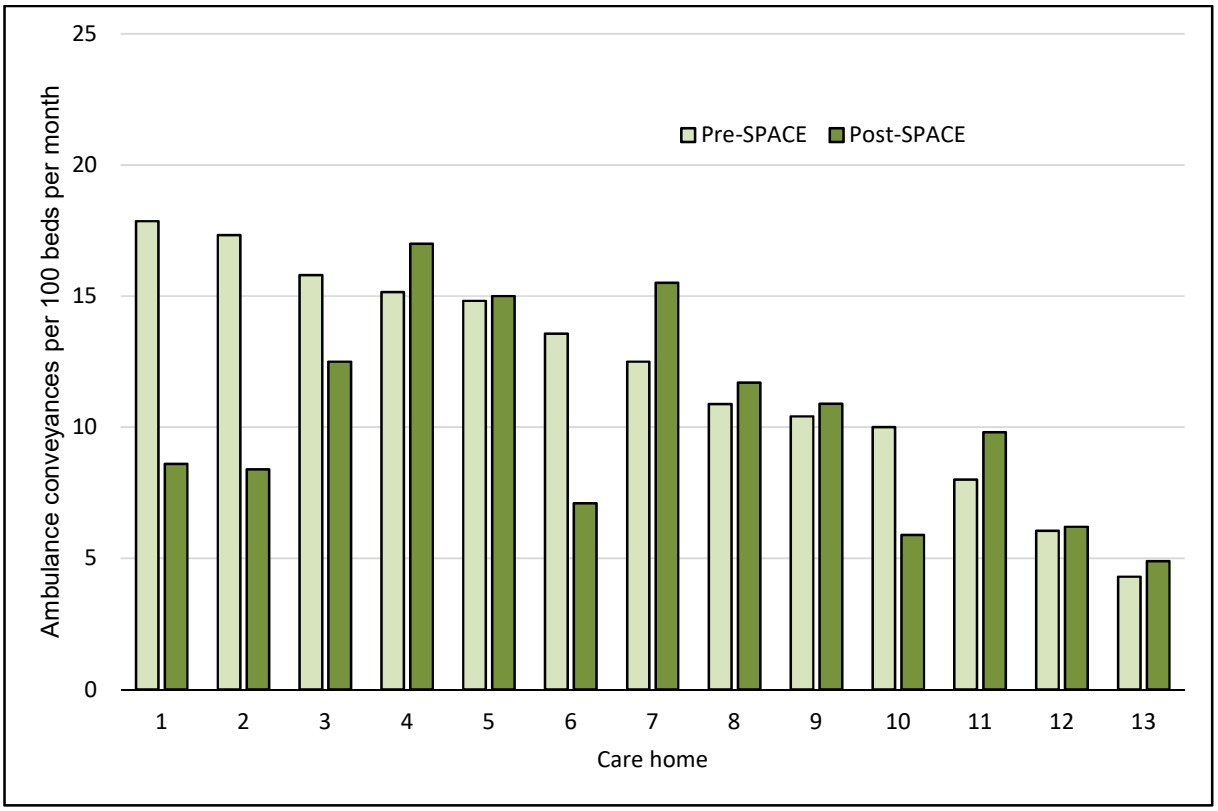


Figure 4.18: Change over time in monthly ambulance conveyance rates by care home, Wolverhampton



4.9.4 Summary of findings

The design of SPACE as a quality improvement (QI) programme may be associated with either a reduction or an increase in care homes' use of the ambulance service. Training may have increased staff members' ability to see the early warning signs e.g. of a UTI so that hospital admission can be avoided. By the same token, training may have made staff more aware of the early warning signs of conditions that *do* need hospital treatment, so they may be better able to discriminate between circumstances that require a call to the ambulance service and those that do not. If staff become better able to manage challenging behaviour, and are more attuned to issues relating to nutrition and hydration, adverse events such as falls that may previously have required a call to the ambulance service may be avoided entirely. Conversely, the training offered through SPACE may make some care home staff more risk averse, meaning that they are more likely to call an ambulance 'just in case' rather than deal with an issue within the care home. Care home residents are also typically frail and in the last years of life, and there will always be a high proportion of calls to the ambulance service that are necessary and unavoidable within this population. Therefore, the extent to which training in QI such as that offered within SPACE is able to have a measurable effect on outcomes such as rates of ambulance conveyance may be questionable.

4.10 HOSPITAL ADMISSIONS

Data were obtained from each CCG on hospital admissions from care homes participating in SPACE, for the 12 months before SPACE began, and the 24 months following the programme's launch. Data were analysed to explore trends over time (overall and at the individual care home level), expressed as the rate of hospital admissions per 100 beds per month.

4.10.1 Data considerations

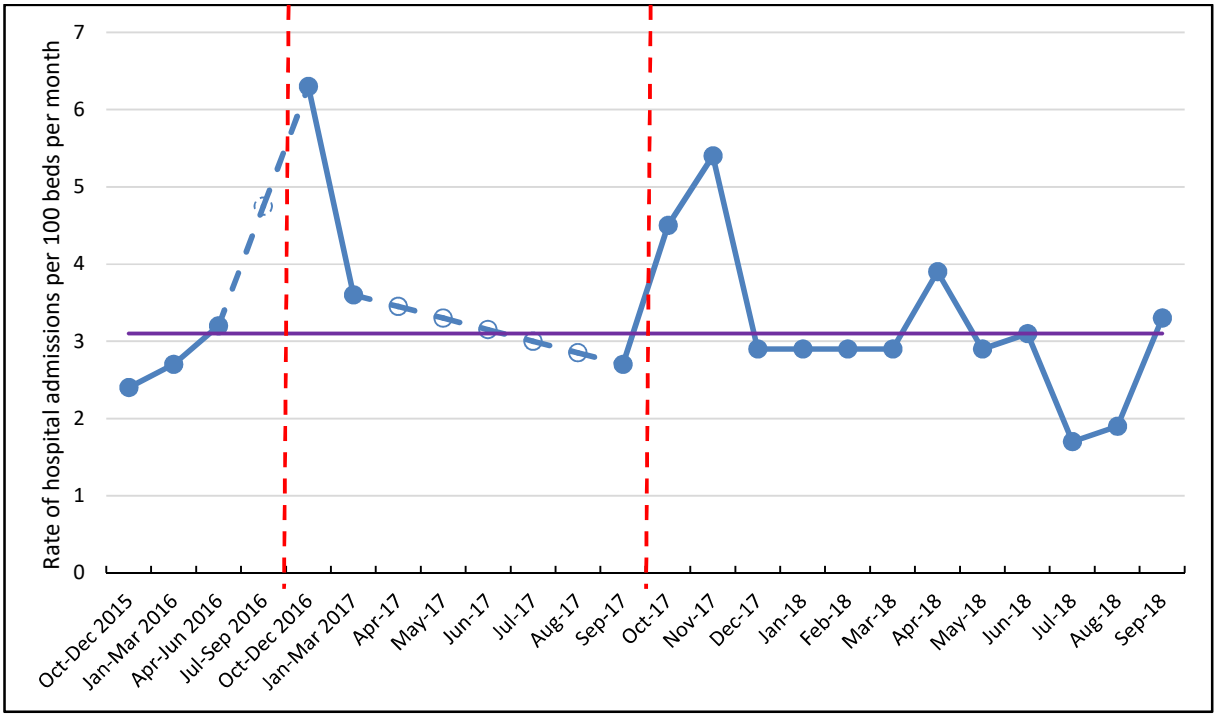
There are some caveats to bear in mind when interpreting the data. Walsall data covered all 10 participating care homes, whereas data from Wolverhampton covered the 14/16 care homes for which valid pre- and post-SPACE data were available. There is also a difference in the nature of the data: for Walsall, data related to the absolute number of hospital admissions at each time point. For Wolverhampton, data were based on the number of residents who were admitted to hospital. As some residents could have been admitted to hospital multiple times in a given month, the data from each CCG cannot be directly compared to the other, although a within-CCG comparison of rates over time is still valid. Data were all self-reported by participating care homes, and there was missing data where reporting rates were variable over time. For Walsall, there were also several months (July to September 2016 in the pre-SPACE period and April to August 2017 in Year 1) for which no data were available. The graphs of change over time thus interpolate what rates of hospital admissions would have been for these months given the known rates immediately before and afterwards. Finally, whilst all Wolverhampton data was collected on a monthly basis, pre-SPACE data (October 2015 to September 2016) and some Year 1 data (October 2016 to March 2017) for Walsall care homes were available as quarterly data only.

4.10.2 Hospital admissions over time, Walsall

Figure 4.19 shows the trend over time in Walsall. The horizontal line shows the median rate of hospital admissions over the entire data collection period. The dotted lines distinguish between pre-SPACE, SPACE Year 1 and SPACE Year 2. The median rate of hospital admissions from Walsall care homes for the entire pre- and post-SPACE period was 3.1 (IQR: 2.9 to 3.6). Monthly rates per 100 residents ranged from 2.4 to 3.2 in the 9 months pre-SPACE for which data were available, and from 1.7 to 5.4 in the post-SPACE period. Pre-SPACE, the overall rate per 100 beds per month was 2.8 hospital admissions. This increased to 3.9 during Year 1 and fell during Year 2 to 3.2, although the Year 2 rate remained above the pre-SPACE rate. Comparing pre-SPACE figures with the entire 24 months post-SPACE showed a non-significant increase

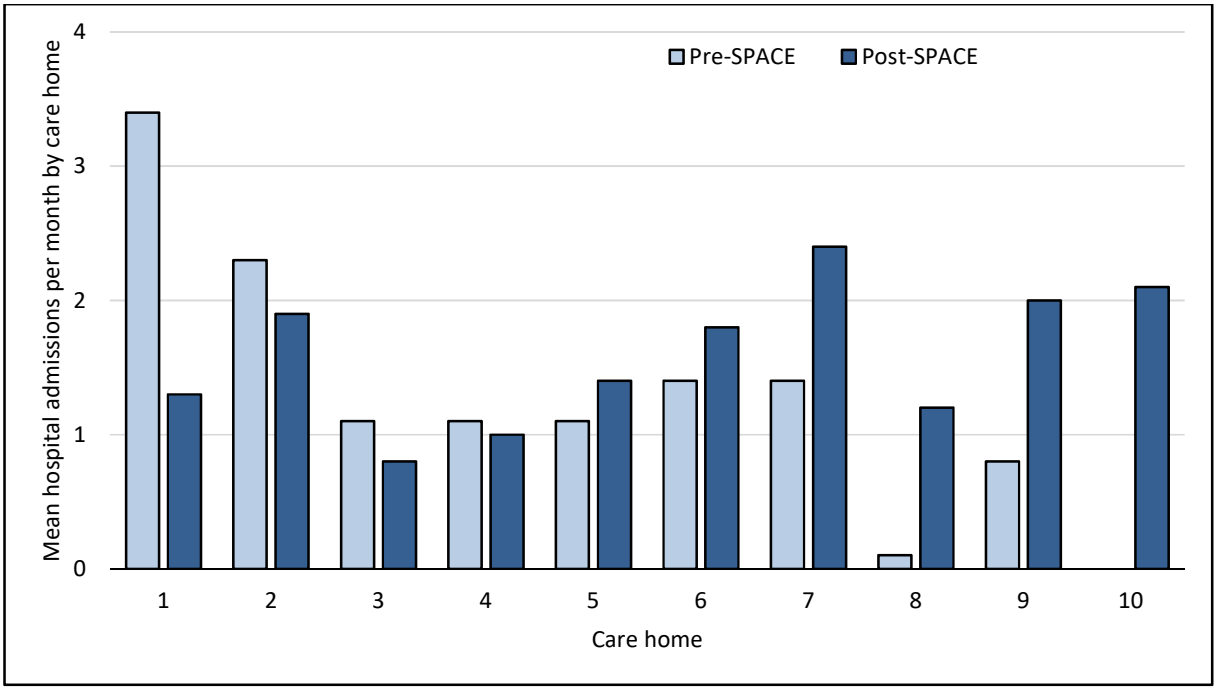
from 2.8 to 3.4 (X^2=3.2; p=0.07). Comparing hospital admissions rates between Year 1 and Year 2 showed a significant reduction from 3.9 to 3.2 per 100 beds per month (X^2=5.89; p=0.02).

Figure 4.19: Change over time in monthly hospital admission rates, Walsall



Trends over time for care homes in Walsall (Figure 4.20) showed some variability. Across the pre- and post-SPACE periods, 6/10 increased their admissions rates, and 4/10 saw a reduction over time.

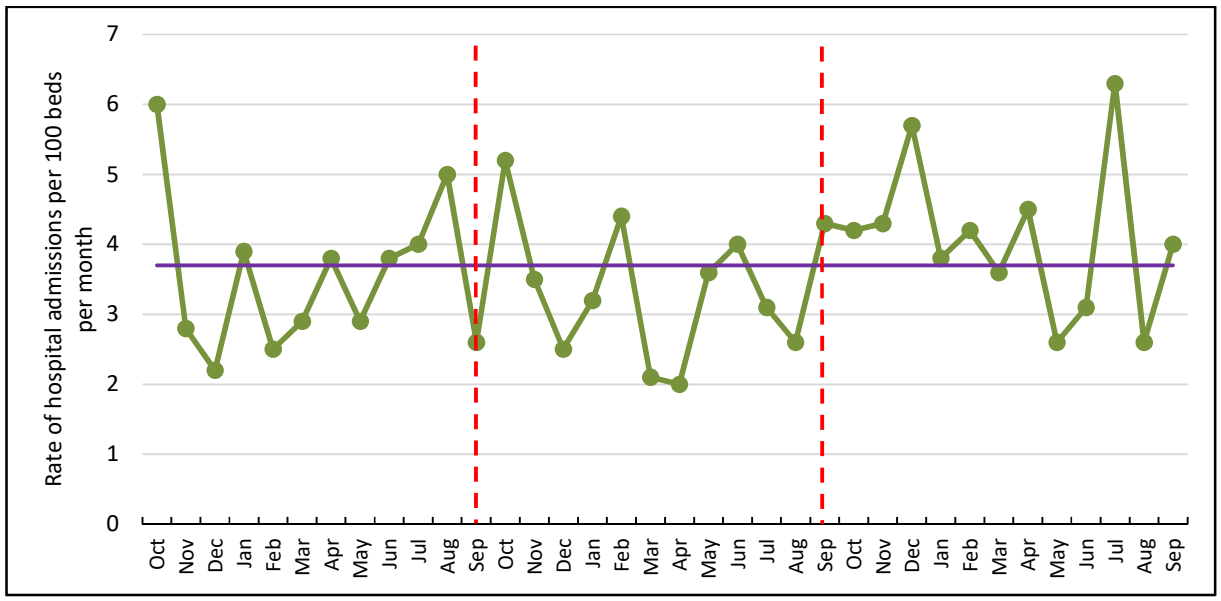
Figure 4.20: Change over time in monthly hospital admission rates by care home, Walsall



4.10.3 Hospital admissions over time, Wolverhampton

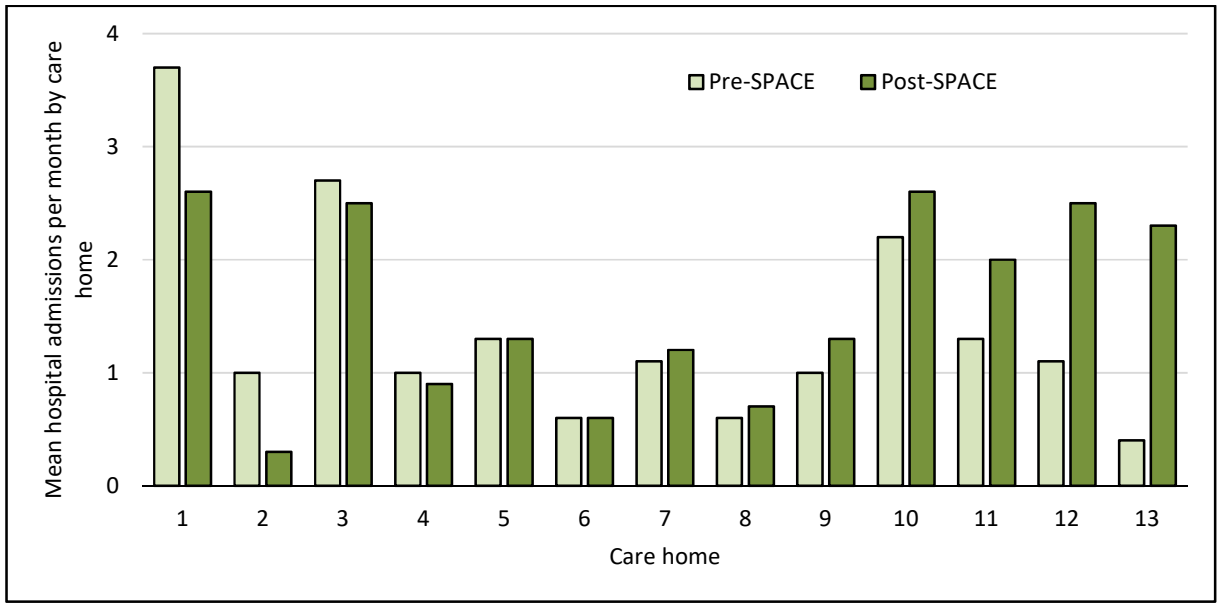
Hospital admission rates from Wolverhampton care homes started at a higher level than those in Walsall, and showed more monthly fluctuations (median 3.7; IQR: 2.7 to 4.3) (Figure 4.21). Monthly admission rates per 100 residents ranged from 2.2 to 6 in the 12 months before SPACE, and from 2.0 to 6.3 post-SPACE. Before SPACE, the overall rate was 3.5 hospital admissions per 100 beds per month, reducing slightly during Year 1 to 3.3, but increasing during Year 2 to 4.1. Comparing pre-SPACE figures with the entire 24 months post-SPACE showed a non-significant increase from 3.5 to 3.7 (X^2=0.68; p=0.410). A Year 1 vs. Year 2 comparison showed a significant increase from 3.3 to 4.1 (X^2=5.03; p=0.02).

Figure 4.21: Change over time in monthly hospital admission rates, Wolverhampton



Individual care homes in Wolverhampton (Figure 4.22), showed variable admission rates over time. Overall, 7/13 increased their admissions rates; 4/13 saw reduced rates, and two remained the same.

Figure 4.22: Change over time in monthly hospital admission rates by care home, Wolverhampton



4.10.4 Summary of findings

As with rates of ambulance conveyances, a QI programme like SPACE may be associated with reduced or increased rates of hospital admissions. In Wolverhampton, there was a non-significant increase in hospital admission rates between the pre- and post-SPACE periods, and a significant increase between Years 1 and 2. For Walsall, there was also a non-significant increase in admission rates when pre- and post-SPACE data were compared, but a significant reduction between Years 1 and 2 (although five months of data were missing from Year 1 which may have influenced the observed trends). Care home staff may have become more risk averse as a result of the training offered by the SPACE programme and be more likely to send a resident to hospital if there are any doubts over their health and observed rate of deterioration. Conversely, staff may become less likely to ask for a resident to be admitted to hospital if they have become better able to recognise the early signs of issues like infections or pressure ulcers and can manage them effectively. The reasons that care home residents are admitted to hospital can be wide-ranging, and – as with ambulance conveyances – there will always be a high proportion of hospital admissions that cannot be avoided within the care home population. Similarly, the extent to which QI training as offered within SPACE could have a measurable effect on outcomes such as hospital admissions after just two years of implementation may be questionable.

5. RESULTS: QUALITATIVE DATA

5.1 QUALITATIVE DATA COLLECTION

Qualitative data enables a detailed description of programme effectiveness and the ways that SPACE has (or has not) influenced individuals and care homes to change practice. Interviews were undertaken with care home managers and staff – both participants and non-participants in SPACE training - at four case study care homes at 12 months and 24 months, to capture information about changes to practice at the care home and individual levels. Focus groups with care home managers and staff who had participated in SPACE were planned for months 6, 12 and 18 (one in Wolverhampton and one in Walsall at each time point). However, programme facilitators in each CCG area were not appointed until January 2017 (evaluation month 3), at which point the programme began in earnest. Because of this, it was decided that there would be little value in undertaking a focus group at 6 months so the focus group schedule was changed to 12 and 24 months only. Recruitment to focus groups at 12 months proved challenging, so the focus groups at 24 months were not undertaken, and the decision was made to concentrate on the case study interviews. Interviews with programme managers and facilitators were completed at 6, 12 and 24 months.

5.1.1 Qualitative data analysis

All qualitative data were analysed thematically,[25] in line with the aims and objectives of the study, and identification of themes by the evaluation team. At least two members of the team analysed and independently coded 10% of the interview/focus group transcripts, and results were compared in team meetings until agreement was reached. Although qualitative data does not seek to be generalisable, comparisons between themes derived from the qualitative work were made, when possible, across different types of care home, CCG areas, staffing structures and staff roles to highlight any similarities or differences. So that participants cannot be identified, all quotations used in this report have been anonymised.

5.2 INTERVIEWS WITH PROGRAMME MANAGERS AND FACILITATORS

5.2.1 Purpose and design

Interviews were in-depth and semi-structured, allowing key issues to be explored without being prescriptive about content and direction. The topic guide aimed to explore participants' experience of delivering the SPACE programme; perceived barriers to quality improvement in care homes; what worked well and any barriers to effective implementation. Interviews at 6 months were designed to provide background about programme managers and facilitators' experience of working in the care home sector, and their experience of quality improvement. Interviews at 12 and 24 months tended to be more reflective, looking back on progress made, and exploring participants' thoughts about the future. Despite the slight difference in the rationale and topic guide for interviews at each time point, the results from interviews at all three time points are presented together.

5.3 RESULTS FROM INTERVIEWS WITH PROGRAMME MANAGERS AND FACILITATORS

All programme manager and facilitator interviews were undertaken over the telephone. Seven interviews took place at 6 months; six were carried out at 12 months, and five were carried out at 24 months. A wide range of experience and expertise was evident amongst interview participants: all had a clinical background, and to a greater or lesser extent, experience of working in quality improvement and/or patient safety. Experience of working within the care home sector was more limited, although two participants had between two and three years involvement in the sector prior to commencement of the programme. A number of themes emerged from the interviews:

5.3.1 Preconceived ideas about the care home sector

Participants felt that the care home sector is often perceived as 'second rate' when compared with other areas of health and social care, despite an acknowledgement that the level and complexity of care provided in care homes often exceeds that found in the acute sector. In terms of how care homes managed resident safety, there was a sense that staff *'Don't know what they don't know'* [R1 6mths]. There was a perception that safety issues were less likely to be formalised compared to the statutory sector and the level of knowledge around safety was often influenced by the manager: *'A motivated manager usually leads a motivated team'* [R2 6mths]. Facilitators felt that quality improvement was often perceived by care home managers as something that was '*Done to you*' rather being something they could influence themselves. Interviewees also reported unhelpful preconceived and pervasive attitudes about care home staff '*Not being good enough to do anything else'* [R3 6mths] and an almost self-perpetuating problem with staff recruitment and retention.

5.3.2 Challenges facing the care home sector

There was a sense that the sector was treated as a 'C*inderella service*' [R2 6mths], which had been historically *'Cut off from the statutory sector which has been disastrous for people in care homes'* [R4 6mths]. The sector was thought to be under-resourced and undervalued despite being pivotal in sustaining the health of a significant proportion of the population. In addition to the relatively transient care home workforce, other perceived challenges included: the lack of a legal minimum safe staffing limit; poorly paid staff; perceptions of over-regulation that are not balanced by providing the necessary investment in staff training, and the fact that managers often cannot pay staff to attend training. The culture within care homes can be strongly determined by the manager and owners, and because the care homes are 'owned', they have to function as a business. When asked to consider whether there were differences between different types of care home (e.g. large corporate vs. smaller privately owned care homes, or those with non-clinical management vs. those managed by a clinical lead), participants expressed a range of views. Some felt that clinical managers engaged better with new initiatives and that non-clinical managers had a more corporate, business attitude. However, one participant felt that bigger, more corporate care homes were '*Better at routine checks and safety measures'* [R1 6mths]. Conversely, another participant felt that independent care homes often had a *'Good culture of leadership…value the staff compared to large corporate homes'* [R2 6mths].

5.3.3 Securing and maintaining care home engagement with the SPACE programme

When introducing SPACE to care homes, all participants acknowledged that gaining their trust was a crucial first step. Ensuring that changes were small in scale and driven by the staff and managers in a 'bottom up' rather than 'top-down' manner was seen as important by some, along with encouraging a culture of transparency and openness. Using data to drive change was a key part of encouraging care homes to see the benefits of participating in the programme, as well as a way of tracking improvements over time. By Year 2, participants noted that the early encouragement by the facilitators about the importance of data had led to care homes using their own data to drive the focus of QI initiatives: *'They're looking at the data themselves… they're thinking about their trends…they are grasping that now and owning their data'* [R2 24mths].

However, although participants reflected that care home engagement had been very positive overall, there were some care homes that, no matter how much input they had been given, were resistant to change. Facilitators were pragmatic in their approach to these care homes: *'Some homes perhaps are not so engaged, but I do still pop in'* [R3 24mths]. There was value to be had in persisting with resistant care homes, but it was also noted *that 'You can take a horse to water, but you can't make them drink'* [R5 24mths]. Encouragingly, by Year 2, some care homes who had previously been disengaged became more keen to take on board the support from the facilitators. In one care home, this change arose after the manager was encouraged to think differently about their data trends '[Care home manager] *is not very IT*

savvy… so sitting down with him, sending him his monthly trends out, he's like "Hmm" and starting to look at them' [R2 24mths].

5.3.4 Adapting to how the care home sector works

Given the difficulties in releasing staff for training, a pragmatic and opportunistic approach often worked well when facilitators were delivering training to staff, with shorter sessions enabling staff to take part within the care home itself. Facilitators also acknowledged different learning styles when delivering staff training, using visual and pictorial presentations; encouraging practical sessions as well as celebrating good work, and encouraging the wider sharing of knowledge e.g. through newsletters and 'kitchen table' events. Undertaking events to promote good practice and organising awards for care homes that performed well in the programme gave staff the opportunity to 'celebrate success' which had a positive impact upon the care homes in both areas.

Using innovative techniques that continually adapted to the needs of the care home and the use of real world examples proved useful, such as taking photos of the care home environment to help staff appreciate how and when events like falls may occur in their workplace: *'People need the experiential part...it goes down really well as you are encouraging them to look at things from a different perspective'* [R3 12mths]. Ensuring that tools for monitoring adverse events were kept simple was another example of tailored engagement with the needs of care home staff. For instance, one facilitator shortened a post-falls report form from two pages to a brief checklist [TUMBLES checklist] that staff felt much more confident using: '*You've got to be realistic about what's going to be achievable in a working day'* [R2 12mths]. By Year 2 of the programme, care homes were reported to have become more adept at using their own data to identify areas to target for QI activities, and facilitators noted increased confidence and ownership in managing resident safety.

5.3.5 Educating and empowering staff

In Year 1, getting managers on board and encouraging 'champions' had been key to programme success and one respondent felt that the receptiveness of managers to the programme was one of the biggest successes: *'I've built a really good relationship with a lot of the managers and they're always phoning me, "oh we're doing this, we're doing that"'* [R3 12mths]. As well as supporting managers in their role, empowering and guiding less senior staff was also seen as an important mechanism to ensure that a care home was able to engage with the programme. At one care home, the senior carers were encouraged to take ownership of fluid balance audits and with support and guidance *'They could see the emerging trends and themes from doing the audit…they felt empowered to take ownership'* [R2 12mths]. This trend continued in Year 2 with staff and managers: 'T*hinking about their trends, so they're looking at the number of falls that they've had, but also the number of residents that fell'* [R2 24mths].

Linking staff education and training to QI was important to sustain new initiatives and help these to become embedded in practice: *'Because a lot of education just is "oh, this is what you do to prevent pressure injury or this it what you do to prevent falls". But it doesn't sort of say "as a result of the training what are you going to do differently? What are the practical solutions?" And actually I think getting staff to think about that and actually take some ownership for it'* [R2 12mths]. Using Appreciative Inquiry as a way of engaging with staff and providing new ways of learning from excellence was pivotal to much of the work undertaken in the care homes and the approach was embraced by staff who were exposed to it: *'We always concentrate on the negatives you know and even with the* [safety] *crosses you're always looking at the red and ambers. You're not used to looking at the greens and thinking about what went right and how can that be replicated'* [R3 12mths].

Another important aspect of educating staff was asking outside agencies to come into the care homes to provide bespoke advice and support. By Year 2, collaboration with other agencies was commonplace, with facilitators routinely inviting specialist services to support the care homes: *'I'm linking in very closely at the moment with the Macmillan primary nurses, so where if I'm in homes and I know they are avoiding difficult conversations on ACP* [Advanced Care Planning], *so it's linking in to actually help to support the* training' [R3 24mths]. This was viewed as key to sustaining QI in the care homes post-SPACE.

5.3.6 Quality improvement and ways of working

In Year 1, programme facilitators spoke of the wide range of initiatives that have been implemented or were planned, such as using safety crosses to monitor specific aspects of residents' safety, using turn clocks to help manage pressure injuries, using lavender to manage challenging behaviour, and 'fruity Fridays' and 'smoothie Sundays' to help improve nutrition/hydration. Of these, the use of safety crosses drove many of the improvements made in participating care homes. Although originally introduced by the facilitators for falls monitoring, safety crosses were adapted by care home staff in innovative ways. Reflecting on the programme as a whole, one participant stated that: *'The first year was looking at raising the profile of quality improvement and then looking at the fundamentals of pressure injury, falls, nutrition and hydration…as it was very much a new concept…but staff have evolved from that and run with it and are doing their own things'* [R3 24mths]. In Year 2, training and QI initiatives were targeted towards specific needs within the sector. One example of this was the focus in Year 2 on reducing chest infection rates by upskilling staff in oral health care awareness, or by training staff to recognise the soft signs of resident deterioration.

Co-designing interventions rather than imposing them allowed managers and staff to have 'ownership' of the programme: *'It's not us doing it to them, we're doing it with them and they're influencing in terms of where their developments should be'* [R1 12mths]. By the end of the programme, many homes were largely setting their own QI goals*: 'There's been more initiative, self-driven, more specific focus on the specific harms and continued good engagement'* [R5 24mths].

5.3.7 Barriers to care home engagement

Participants highlighted a number of barriers to engagement and success of the programme. There had been fears in some care homes at the start of the programme that it would simply be another level of scrutiny and increased bureaucracy in an already over-regulated sector which had a disproportionate 'blame culture' and poor 'public image' [R3 6mths]. There was also a perception that the climate within some care homes was punitive rather than nurturing, with too much focus upon negative reporting rather than celebrating good practice. Commonly, participants noted that there was no established culture of sharing good practice amongst care homes, such that even neighbouring care homes rarely communicated with each other. Furthermore, the fact that care homes are essentially private businesses meant that the owners needed to be fully engaged in order to support any resource implications that arose from undertaking new initiatives. Whilst many managers were able to 'get on with it', there were some instances of initiatives being temporarily withdrawn following a change of care home ownership *'As it may not fit in with corporate image'* [R3 12mths].

Frequently, an important determinant of care home engagement with SPACE was the level of engagement of the care home manager: *'I think we've got different levels of engagement from different homes.. I think that is very reflective of their state of play in terms of whether the manager's new in post or struggling or what the staff turnover's like, because we've clearly got some homes that have got a very stable manager and a very stable workforce'* [R2 12mths]. In care homes where managers changed, the momentum for quality improvements could be lost, and to an extent, the facilitators had to begin again: *'There's the issue where we get manager change you know we've had an impact on having to keep going in and refocusing really to try and keep momentum going'* [R3 12mths]. One respondent mentioned that one care home had had several

managers in a single year: '*So you have to wait for them to get settled into the post to go and introduce the programme. So it can be start, stop, start*' [R3 12mths]. This issue was perennial, with manager turnover noted to be a continuing issue in Year 2. Even if a new manager was receptive to the programme, change could not be immediate: *They're very willing and acknowledge the need for quality improvement…they need time to develop within their own role and in the culture of the home'* [R3 24mths].

In both CCG areas, facilitators often faced issues related to the fact that care homes were not always able to release staff for training. This was certainly the case at the beginning of the programme, with training sessions being arranged for 12 or 14 attendees, but only a handful of staff actually attending. Training attendance improved substantially over time, in large part due to the more opportunistic approach to training adopted by facilitators such as delivering shorter sessions in the care homes. As the managers saw the value of engaging in the programme, they were more accommodating in terms of releasing staff and hosting more *ad hoc* training sessions. As one facilitator noted, they started to see that '*Quality is fundamentally part of their job'* [R3 12mths].

5.3.8 Programme management and delivery challenges

For programme managers, there was a great deal of positivity about the programme: '*I'm really pleased with how things are going, I can see a real palpable difference'* [R5 12mths]. However, one respondent felt that an unhelpful element of competition between Walsall and Wolverhampton had crept in during the first 12 months, although this had improved somewhat in the second year of the programme and gave way to a greater degree of partnership working and sharing of good practice between the two CCGs.

Participants felt that continued work around improving safety in care homes was an important priority, not least because of how pivotal care homes were in the health economy: *'We can't support social care and healthcare without investing in the care home sector'* [R1 12mths]. It was also seen as key that the programme *'Feeds into everything we do from a commissioners point of view*' [R1 12mths] and that '*We share across Birmingham, Solihull and the Black Country…and everyone is looking and seeing what's happening and asking about it'* [R5 12mths]. National interest in SPACE was often noted. In Year 2, the programme had gained significant traction regionally: *The amount of people who contact me because they want to know more about SPACE…whenever we go and talk at any STP meeting or the CCGs, they are "right, we want to do that, come and talk to us about that"'* [R6 24mths].

5.3.9 Indicators of programme success

At its halfway point, there were encouraging signs that SPACE had become part of the culture in some of the participating care homes. The CQC had given positive feedback to some care homes about the work they have been doing around safety: *'Inspectors were very complimentary, you know, about how the programme was actually helping to support safety'* [R3 12mths]. This suggested that: *'Staff are actually taking it on board and it's not just lip service'* [R3 12mths]. Further to this, the fact that staff were developing their own ideas, unprompted, indicated that the programme and the ethos around improving quality in the care homes was becoming embedded: *'People are quite autonomous and are picking it up and putting things in and coming back to me and saying "oh, we've implemented this"…they're actually coming up with their own solutions which is very positive'* [R3 12mths].

As the programme progressed, there was a sense that some of the concerns expressed in the interviews at 6 months about the apparent reluctance of care homes to share information and collaborate with each other had not been borne out: *'I think they are realising that they're all in the same boat and when I go round, I actively share initiatives and paperwork and good ideas'* [R2 12mths]. Another respondent echoed this, saying: *'I don't think we'd have foreseen breaking down barriers* [between care homes] *and getting*

collaborative and sharing and networking between managers as much as we've actually got. It's really lovely' [R3 12mths]. Having regular managers' meetings in both Walsall and Wolverhampton also encouraged the sharing of ideas. Another sign of success related to the fact that care homes from outside the programme were keen to be involved, showing that the impact of SPACE was spreading into the wider care home community: *'There is a spread and people are realising that there can be tools that can be used to help monitor things like UTIs'* [R2 12mths].

Reflecting at the end of the programme, participants gave a number of examples demonstrating the successes of the programme. A major sign of success was the use of data to drive improvement. Furthermore, the system for data collection became more robust, allowing for rapid feedback to the care homes to support monitoring of their adverse events and associated QI initiatives: *'And it's easy to understand. It's accessible for the nursing home manager. And they can also put up the trends for their staff to say "look at how fantastically we're doing with our falls, look how brilliantly we're doing with pressure injuries...we've had a few grade 2s but that's good because we're picking them up early'* [R2 24mths].

Culture change within the care homes was noted as one of the most important successes of the programme: *'I think that's one of the big wins and the positivity of the project…being able to go in and be really well-received… a lot of managers will give me a hug. It's very welcoming and receptive'* [R3 24mths]. This was echoed by another participant: *'There's been a lot going on around resilience and using Appreciative Inquiry in the care homes and the managers have embraced it, they've used it in their supervision, they've used the approach in team meetings. Just the whole feel of the care homes within the SPACE programme is much more positive'* [R1 24mths]. This change in culture was further demonstrated by the fact that some care homes that had once feared CQC inspections now looked forward to being able to showcase their care homes and demonstrate how well they cared for their residents. This change of attitude towards the regulator had partly been allayed by the facilitators utilising an AI approach relating to the CQC domains, to enable staff to see how they were meeting CQC requirements and having the confidence to communicate this to the inspectors.

The programme was also a catalyst for other related projects and created momentum for innovation and training in diverse areas: *The oral training went really well'* and *'SPACE provided a vehicle for the deterioration project'* [R2 24mths]. *'*[We have been] *doing a lot of work in the last few months related to recognising deterioration, using safety crosses for deterioration and evolving it now to underpin other project work'* [R3 24mths]. Facilitators also noted that relationships with the local authority were more established: *'We share experiences, if there's any resources that I know that I've got for nursing homes then I'll send them out…last week we had a meeting at the local authority to discuss aspects of human factors and we're going to continue that after SPACE anyway so it's a bit collaborative working really so we can all share good practice'* [R3 24mths].

5.3.10 Programme challenges

At the half-way point in the programme, one respondent felt that at the micro level, the programme was working very well: *'We are good at identifying the local problems in the system…and there is some really innovative stuff happening and a commitment from the majority of homes'* [R4 12mths]. However, there was concern about how issues at the systems level impeded progress: *'There is a lack of opportunity in the sector...and there aren't enough wrap around services and external support systems to sustain and support the care home sector'* [R4 12mths]. The focus on compliance and regulation with care homes experiencing multiple inspections from multiple agencies was also perceived to have had a negative effect on workforce morale, which could have implications for the longevity of positive changes associated with SPACE. However, by the end of Year 2, this perceived negative effect upon workforce morale did not appear to be

borne out. Rather, the CQC was no longer feared and care homes were receptive to support from outside agencies. The sense of isolation of the care homes at the outset of the programme was less evident at the end of the programme, and care homes had become more outward looking, keen to identify how external services could support them. In Year 2, many of the challenges identified by interviewees related to the potential for the learning from SPACE to be sustained in the longer term.

5.3.11 Programme sustainability

In Year 1, there was an overwhelming sense of optimism about the perceived impact of the programme and the likelihood of long-term sustainability: *'We're already building our sustainability by making sure that staff who work in care homes have the skill set to continue that journey, continue to influence it*' [R1 12mths]. Participants felt that SPACE had gained traction within the care homes and - despite challenges faced - the first year of programme implementation had been successful. By Year 2, much of the positivity about the longer-term impact of the programme remained, with those interviewed being effusive about the quality improvements made within participating care homes. Across both areas, improved relationships between care homes and a culture of sharing programme learning were noted *'even the discussions at the forum, they're far more sharing in collaboration and realising…I think the continence stuff collectively they really collectively came together to have a raise to concerns.. I think they're realising that they can have a quite a powerful voice if they work together'* [R2 24mths]. Approaches like AI increased resilience amongst the staff.

The importance of having dynamic, committed management and leadership within the care homes was seen as the key to future sustainability, and there was a sense that sustained changes could only come about within stable teams with an engaged manager. Furthermore, investment in staff education and training, along with a focus on quality improvement was seen as important, and the need for an engaged and valued workforce was emphasised: *'You've got to have financial security, a clear plan for your workforce development, good recruitment procedures…that macro structure becomes that big cushion blanket to support them'* [R4 12mths]. One respondent described what other measures should be put in place in future – *'Robust competency frameworks and induction programmes for staff…but the homes are independent, that's the trouble. Some sort of passport so they've done their competency in one home then it would go with them to other homes. Build in time for education for staff'* [R2 12mths]. There was also a sense that the acute sector needs to recognise the importance of the care home sector: *'They rely on care homes, there needs to be investment and to be fair the CCG are quite insightful and innovative and supportive. So that's really positive. But with increasing challenges I'm not sure how doable it is'* [R2 12mths].

There was evidence that sustainability and spread in Wolverhampton in particular had been made possible with the support of the CCG *'I think we are in a better place than Walsall was because they don't have a quality team as such, as we have, so we are in a privileged position to have the team that can support the homes ongoing, going forward. So as far as we're concerned, it won't stop, it's part of business as usual'* [R1 24mths]. In Wolverhampton, elements of the programme are being introduced in residential care homes, with nurse quality advisors continuing to engage with the care homes that participated in SPACE. In contrast, trepidation was expressed for the sustainability of SPACE in Walsall: *'From, a Walsall point of view – I think the structure within the CCG is quite limited to provide support and you haven't really got anybody that's responsible for care home quality. It's an add-on to the safeguarding lead's current massive day job.'* [R2 24mths]. Another respondent expressed similar concerns *'So it is sustainable in Wolverhampton but I think the sustainability for Walsall is a big issue. And I actually think the care home managers have felt that as well'.* [R5 24mths]. These concerns do not diminish the investment and dedication of those involved in the programme*: 'I think the facilitators have done a fantastic job driving* [engagement*] and being focused. And it's not always easy when you meet resistance and keep going and you go in again and the staff have changed again or they've got different priorities, but I think they've worked in a very adaptable way to best*

meet the needs of [the home]*…and they've learned and adapted their style as to what works, so I think it's been really, really positive.'* [R5 24mths].

5.4 INTERVIEWS WITH CARE HOME MANAGERS AND STAFF IN CASE STUDY SITES

5.4.1 Selection of case study sites

The procedure for selecting care homes as in-depth case study sites (two in Walsall, two in Wolverhampton) was agreed in advance with the Programme Board. A matrix was devised, which split care homes by CCG area, care home size (larger or smaller than the mean number of beds in the area) and overall CQC rating (outstanding or good vs. requires improvement or inadequate). Each care home was placed into the relevant quadrant in the matrix and one from each quadrant was randomly selected. In Wolverhampton: one larger, lower CQC scoring and one smaller, higher CQC scoring care home were selected. In Walsall, one larger, higher CQC scoring and one smaller, lower CQC scoring care home were selected. After selection, consent was obtained from each manager for their care home to participate as a case study site.

5.4.2 Staff recruitment for interviews

Care home managers provided a list of the names and job role of all staff working in the care home. Interview packs were delivered to named staff at each care home including a participant information sheet and covering letter explaining what participation would entail. Packs also included a reply slip and pre-paid envelope to return to the evaluation team. The plan was to select staff with a range of job roles and shift patterns to ensure that as diverse a sample of staff were interviewed, with the aim of interviewing 6-8 staff members at each case study care home. This would include those who had directly participated in training and those who had not, in order to understand how embedded the programme had become in the care homes. Unfortunately, this method of recruitment yielded a very low response (n=4), and it was decided, with agreement from care home managers, to use a more opportunistic method of recruiting staff. This involved one or two members of the evaluation team being based at the care home on an agreed day to approach staff in a less formalised manner. With the manager's permission, staff on shift were approached by a member of the evaluation team and given a copy of the participant information sheet. If they were able to participate in an interview, a room was found, consent taken and the interview conducted. This method resulted in a positive response.

5.4.3 Data collection

The case study interviews aimed to collect data about staff involvement in the SPACE programme:

- Experiences of external or care home-based training
- Examples of safety changes in the home; impact upon perception of safety
- If there had been any shared learning
- Perception of impact upon residents and safety culture in the care homes
- Barriers to making changes and thoughts about the future of the programme.

Interviews lasted between 7 minutes and 40 minutes, and were audio-recorded and transcribed verbatim. Length of interview was correlated with the degree of experience or involvement of the staff member in the SPACE programme, with more senior staff interviews tending to be longer.

5.5 FOCUS GROUP

5.5.1 Sampling and recruitment

The SPACE facilitators provided the evaluation team with a list of staff members who had participated in one or more SPACE training sessions. A random sample of fifty staff from each area were sent an invitation pack

containing a covering letter, participant invitation sheet, and reply slip. Staff working at any of the four case study care homes were excluded from participation in the focus group, in order to minimise potential participant burden. Ten completed reply slips were returned by staff willing to participate in a focus group. The responses were followed up with an invitation giving the time, date and location of the focus group (one for Walsall, one for Wolverhampton). Two weeks before the focus group, members of the evaluation team followed up the invitation with each individual to check attendance. Unfortunately, staff annual leave, seasonal pressures and managers' inability to release staff to attend resulted in only one focus group taking place (with 2 staff attending from one care home in Walsall). No staff were able to attend the Wolverhampton focus group, so this could not go ahead.

5.5.2 Data collection

The focus group was held at a venue in Walsall and was attended by three members of the evaluation team; one to act as facilitator, one to take detailed field notes; and one to support administrative tasks e.g. meeting and greeting, reimbursing travel costs. The focus group explored staff experience of the SPACE programme:

- What staff had learned from the programme
- How staff had applied learning to their practice
- Perceptions around barriers and facilitators to effecting safety-related changes in the care home
- Views on the best/worst features of the programme
- Suggestions for programme improvement.

The focus group lasted around 50 minutes and was audio-recorded and transcribed verbatim. The transcript was proof-read against the recordings by the group facilitator. As noted above, no further focus groups were undertaken due to the difficulties in recruiting participants at 12 months.

5.6 RESULTS FROM CASE STUDY INTERVIEWS AND FOCUS GROUP

In Year 1, across the four case-study sites, 26 staff members were interviewed. Interviewee job roles included care assistant (n=8), senior care assistant (n=7), nurse (n=1), care home manager (n=3), unit manager (n=2), team leader (n=1), cook/kitchen manager (n=2), activities coordinator (n=1) and administrator (n=1). Participants had worked in the care home sector or at their particular care home from between 12 months and 20 years. At 24 months, 23 staff members were interviewed. Interviewee job roles included care assistant (n=6), care home manager (n=4), cook/kitchen manager (n=3), unit manager (n=2), deputy manager (n=2), senior care assistant (n=2), activities coordinator (n=2), team leader (n=1) and administrator (n=1). The results from the qualitative work are presented thematically. After each quotation, code numbers refer to the case study site and participant identifier.

5.6.1 Knowledge and involvement in the SPACE programme

Most of those interviewed were aware of the SPACE programme to some degree and many were evangelical about it. Others were able to talk about some of the new initiatives that had been introduced in their care home even if they hadn't attended any SPACE training. For example, a member of kitchen staff at one care home, although not directly involved in a new initiative to reduce challenging behaviour on a dementia unit, was aware of its purpose and could see the positive benefits. Another member of kitchen staff in a different care home was aware of new initiatives related to improving resident hydration. This respondent also knew that there had been a reduction in falls in the care home '*Sometimes they do have falls but now I think they are cutting down*' [24-4 cook – 12mths]. An administrator interviewed at 24 months described that she felt *'more involved in the second year'* [22-5 administrator – 24mths] as the programme had evolved over time and become more embedded within routine care home activities.

One respondent's first introduction to the programme had been at a kitchen table event organised by the facilitator 12 months previously. Others had been heavily involved in all parts of the programme: one manager described being *'Involved from day one – I've been involved in lots of training*' [22-5 manager – 12mths]. This level of involvement was echoed by the same manager at 24 months who had continued to develop new initiatives to build upon those started at the inception of SPACE. Despite some participants having limited knowledge of the programme, and it taking some time for them to connect the programme with some of the changes taking place in their care home, there was a sense that the programme had influenced their work. After prompting, respondents were usually able to talk about new initiatives that were taking place in their care homes: *'Oh yes, it was to do with pressure sores, dementia, that kind of thing*' [2-2 care assistant – 12mths]. It was sometimes difficult for staff to distinguish between training that was specifically SPACE-related, and other mandatory training that they attended. This was particularly the case with staff whose role was not directly 'care facing'.

Some respondents reported having taken some time to fully engage with the programme. One manager noted that when the SPACE programme was first mooted, she had felt wary, due to previous bad experiences with quality improvement teams '*Who don't understand the whole thing about nursing homes and I was sort of a bit negative…obviously*, [facilitator's] *attitude was completely different and we were glad of the help I suppose as well'* [12-1 manager – 12mths]. One manager, speaking at the focus group, had first learned about the programme following attendance at a training event in March 2017, although they described *'Starting a little bit late...and playing catch-up for a while'* [FG manager – 12mths]. When interviewed at 24 months, one manager described their initial reservations about being involved in SPACE: *'I've got to be honest, when it was first introduced to us…I didn't think that honestly we needed to do anything. There's always little improvements but I didn't think clinically that we really had much to improve on. We're a good home, we're responsive, we're safe and I thought I don't really see what we can do. Then I went to the nursing home form where* [facilitator] *introduced it to us and I went out of there buzzing'* [2-1 Manager – 24mths]. The deputy manager at the same care home also felt disinclined to be involved: *'Initially I felt as if they were interfering with what we were doing here and some of the ideas were so basic that it was a bit of an insult to have someone come in and say "you should be doing this and you should be doing that"…from my point of view it was annoying, but to see the enthusiasm that she and the programme developed with the care staff was great'* [2-3 Deputy manager – 24mths].

5.6.2 Attitudes towards learning and change

Many staff showed an eagerness to learn and clear motivation to engage with the programme. One staff member had felt empowered by the learning experience, and had been encouraged to cascade learning to her colleagues: *'Look, I learned this on my course, so perhaps we should try it here'* [2-5 care assistant – 12mths]. The cascading of knowledge was still evident when staff were interviewed at the end of the programme: *'I never went on the oral* [training] *for instance I did someone's teeth and a girl who had turned around and said "there's too much* [toothpaste] *on that and don't put water on it". She was like "if you'd gone on the training you'd know". So we are passing it on to one another'* [2-4 carer - 24mths].

The theme of SPACE participation empowering staff in all roles came across strongly: *'I find any kind of learning about anything is helpful because then we can take from that and do our bits'.* This interviewee was then asked how the less senior members of staff responded to the training. *'They're really enjoying it, because if I take an idea from SPACE and I adapt it for us, I get them involved. They feel like they've got more opportunity to put their ideas across'.* She continued: *'They* [junior staff] *tend to do more internal training, which they do enjoy because like I say, they enjoy training, but I think they would enjoy more external as well, because it's out of the home, it's a different environment and I find they're more switched on with that. When you're in the workplace for training it's hard to stay focused'* [22-4 unit manager – 12mths].

One participant stated that although there was value in passing on the knowledge gained in a training session *'there's nothing like sitting there and having someone to teach it to you'* [2–4 carer – 24mths].

The enthusiasm for programme learning was echoed by other participants, who recognised that there were still new things to learn despite their longstanding experience in the sector: *'I like new information. That's why I like this SPACE, because there's always new information coming along. Even after 17 years, there's still new information coming to light'* [2-1 senior care assistant – 12mths]. *'It's a learning process every day, even though my knowledge and my experience, I've done it a long time. It's good to have a bit of background and that bit more knowledge really, for us to carry it out and pass it on to other colleagues'* [12-6 care assistant – 12mths]. Another participant recognised that continuous learning was important for their own development: '*Because things change, don't they, things do change… so it's best to keep updated'* [12-3 care assistant – 12mths].

One manager who was new in post had been involved in staff support and training in her previous home. She felt that the SPACE programme made it possible to build on staff development: *'Making the staff autonomous, involving them in everything.. and because I've been in Wolverhampton such a long time, then when all the homes come on board, we already know each other'* [22-5 manager – 12mths]. A manager at another home expressed a desire to change: *'We want to improve and we're glad of the help if it's out there*' [12-1 manager – 12mths]. One respondent's care home had historically been innovative and forward-thinking in embracing things like new technologies. This receptive attitude to other initiatives meant that once any initial wariness had been overcome, they welcomed involvement in SPACE: *'Here, we live it and breathe it'* [22-5 manager – 12mths]. At 24 months, this same manager spoke with equal enthusiasm, and noted how participation in SPACE had been a springboard for the care home to become involved in other projects: '*It is because there was direction, there was help, there were things put in place and every time we've taken it. So the first year was great and then this second year again we're thinking there's a new continence project, so we've asked us to be part of it'* [22–5 manager –24mths].

5.6.3 Experiences of programme training

5.6.3.1 Training attendance and attitudes towards participating

For staff who attended SPACE training, there was a strong sense that it was worthwhile and enjoyable: *'I've gone to everything…anything and everything that's been put on. I've been there!'* [22-5 manager – 12mths]. Although external training was more likely to be attended by more senior staff, this was not exclusively the case. External training was often seen as an opportunity to meet staff from other care homes and to share ideas. One respondent noted the differences between mandatory training and SPACE training: *'At SPACE training we can find out what is happening in another care home…and we can do that too'* [24-5 manager – 12mths]. *'I really like the external training. I love that, I love learning the knowledge. The ones here like in the general meetings, because they're sort of an overview, it's not as interesting. So, I love the external training, so I'm always up for them'* [22-4 unit manager – 12mths]. Similar views were expressed by staff interviewed at 24 *months 'It's nice to go out instead of doing it in-house because you meet other people and have other people's opinions'* [12 -3 care assistant – 24mths].

One participant found that external training arranged for activity coordinators was useful for sharing ideas with other staff from different homes about safety issues that may arise for residents taking part in activities. She had also joined in on other training within the care home: *'I joined in, sort of, they don't involve me directly… but they've been learning about safety crosses, where people have fallen and things like that. It enables people to see what's going on in the unit'* [22-6 activities coordinator – 12mths]. Several participants were also positive about the influence of SPACE in strengthening their relationships with outside agencies

such as regional continence teams, which had previously been more fragmented: '*They came into SPACE and we're working really closely with them… we feel they're part of our multi-disciplinary team'* [22-5 manager – 12mths].

5.6.3.2 Learning from training

The practical nature of the training was found to be helpful, especially when compared to online e-learning courses: *'It's a hands on job isn't it...I think you take more in than sitting at a computer'* [2-1 senior care assistant – 12mths]. This was echoed by another respondent, who stated: *'I think the training overall has got really good feedback from everybody as well. Because, I think a few people will agree with me, I don't think e-learning training is as effective as the SPACE training we've had'* [22-8 senior care assistant – 12mths]. One participant described a training session about safeguarding which had a particularly powerful impact: *'I found the fact that it was in an auditorium and they were acting out certain sequences, opposed to someone just stood there with a board just telling you about the sequence… you were watching it happen rather than being told to us.'* [2-7 senior care assistant – 24mths].

Staff felt that training received in their care home had been a positive experience that had improved their ability to perform their role: *'I feel so knowledgeable now, I can actually turn round and say "well you know, she ain't had cream…and you need to change the pad". It's nice to be able to put my input in'* [2-5 care assistant – 12mths]. *'When I first started as senior I wasn't that confident… since SPACE I did get more confidence from it because people were listening to me. I'm confident in my knowledge, I'm confident with the support, especially from* [facilitator name]*'* [22-4 unit manager – 12mths]. A number of staff reported that training had been useful in helping them to see how adverse outcomes were often linked: *'It's really made us aware, you know…. when somebody's sitting there giving you statistics, you think oh my God!*' [2-1 senior care assistant – 12mths]. The design of the training sessions was also praised: *The one training that stood out for me, was the falls prevention training. I found it really useful…the way it was interactive'* [22-8 senior care assistant – 12mths].

5.6.3.3 Application of learning to practice

As one of the case study sites was used as a hub to hold external SPACE training, staff there were particularly engaged in training activities: *'Other people from other homes will come here. This is the main place. Any training I've had, we've taken part here where other people come to'* [22-8 senior care assistant – 12mths]. One respondent who had attended external training related to AI noted that it was a different way of looking at problem solving. '*It's putting it into practice, and it will take me quite a lot of practice to think that way. I think nurses, by nature, are reflective'* [12-1 manager – 12mths]. She went on to mention that the care home was planning to use AI when recruiting new staff.

Although not all staff had the opportunity to attend training, it was encouraging that these staff members were aware of the new initiatives taking place in their home*: 'The safety crosses, they're very good.. they monitor falls and UTIs*' . This member of staff also emphasised the benefit of having a culture of cascading information to multiple staff in the care home: '*They're* [the staff] *quite enthusiastic because I think staff here, they like to be on board with ideas'* [22-3 senior care assistant – 12mths].

It is worth noting that in interviews undertaken at 24 months, although there was a significant amount of reinforcement of the experiences of QI initiatives in the care homes, interviewers had to use a more probing approach to elicit responses from some of the junior staff members. When examples were given by interviewers of the kinds of initiatives that SPACE had introduced, staff were able to recognise these as being part of activity within the care home. It is possible that the lack of initial recognition that specific

initiatives were linked with SPACE could be attributed to the fact that the initiatives were already firmly embedded within the routine activities of the care homes.

5.6.4 Impact upon care home safety

There was a strong feeling across all case study sites that the SPACE programme had impacted *'Massively, I mean – you know, we've got the ideas and everything, but without the help of SPACE, with all the different projects going on, and the support…that's why it's been so successful'* [22-5 manager – 12mths]. When interviewed at 24 months, one participant described how powerful SPACE had been for their care home: *'It has been brilliant actually. The SPACE project I think kind of lighted that fire in us to do things because I think you can become stagnant in the home and you carry on with your normal routine, but having those meetings and coming up with ideas it's like a buzz, you are excited to do new thing, new project, new protocols'* [22-2 - unit manager – 24mths]. A manager at another care home noted that she had become more confident about the CQC visiting the home since the SPACE programme had been running: *'The day CQC came in, they came in and I was landed back from my holidays so the staff were ringing me saying "CQC is here". I said "not to worry, everything's there…and obviously they done really well and the CQC were really pleased'.* [24-1 manager – 24mths]. One manager also noted the impact upon CQC ratings for participating care homes: *'Every home has improved. In SPACE every home has had some improvement. A lot of us have had our CQC…we went from requires improvement to good across the board and the other homes have as well'* [22-1 manager – 24mths].

5.6.4.1 Falls

The falls training provided as part of SPACE was universally praised by those who had attended it, and it was felt to have had a measurable impact on falls rates: *'75% of the staff attended it and bearing in mind I've got 67 staff. Because of the training, our rate has gone down to zero…because we look at small things like environment, slippers, shoes…so because of SPACE and because all the staff took it on board we're practically at zero'* [22-5 manager – 12mths]. For one respondent, attending falls training had made them change the way they engaged with the residents around falls: *'We've actually adapted to a new thing now, instead of just going to them and sitting them down, we will say "do you remember when you broke your hip when you were in hospital?" and she says "yes", and you'll say "if you keep standing up and walking around there's a chance that that's going to happen again", and then she sits down'* [2-5 care assistant – 12mths]. By the end of the programme, care homes continued to report a positive impact on falls rates: *'All our staff have had falls awareness training… our falls have plummeted to zero'* [22-5 manager – 24mths]

Using data and tools like safety crosses within the care home to monitor events such as falls were also seen as positive contributors to reductions in falls rates: *'Since we've introduced the safety crosses it seems to have reduced the levels of falls…we used to have a substantial amount of falls upstairs, especially on the dementia ward – we had falls prevention training, implemented a few things which has helped to reduce it'* [22-8 senior care assistant – 12mths]. The simplicity of tools like safety crosses was also recognised by interviewees: *'We are spending less time writing things down and more time observing…we've improved our paperwork…because* [staff] *have more knowledge and input they're highlighting that more and dealing with it quicker. So it's preventing hospital admissions, IV antibiotics…across the board…chest infections, UTIs everything. They're a lot more switched on and they're enjoying it because they've got that responsibility'* [22-4 unit manager – 12mths].

5.6.4.2 In-house adaptation of generic tools for other uses

One respondent described the value of using safety crosses to monitor residents whose behaviour was challenging: *'It may show a pattern, but some days certain people are mithered, shall we say, and other days we have certain people plus two or three, but at least it shows, it may not be a pattern but it may show things*

need doing on order to make it safer for them' [12-5 nurse – 12mths]. The sense of improvement was noted by another respondent at the same care home: *'People are on board and people are coming up with it* [ideas] *and it just becomes the way.. we're flying'* [22-3 senior care assistant – 12mths].

5.6.4.3 Perception of widespread impact

Although interviewees were most likely to mention falls training and the use of tools like safety crosses, there was a sense that involvement in SPACE had helped to develop a culture receptive to multiple quality improvements. One respondent summarised the changes made, including*: 'Always making sure they have their foot brakes on their wheelchairs…using the right slings. They've done really well with urinal tract infection…the food looks more appetising, rather than being slopped in a dish...they have smoothies afternoon and that way they're getting more fluids into them'* [22-6 activities coordinator – 12mths]. Another respondent felt that SPACE allowed a more holistic approach to managing safety: *'I don't know, they probably just think of safety as falls, where it isn't, it's the whole bigger picture isn't it? So I was just starting to look at the bigger picture rather than just what led up to the fall'* [12-1 manager – 12mths]. Since attending SPACE training, one activities coordinator noted how it had heightened awareness of how their role could help monitor residents' wellbeing: *'When I go and do hand therapies, they have some patients that their hands are* [closed] *and I gently prise then open and see if their nails have stuck in and they have sores… you have to make staff aware'* [22-1 activities coordinator – 24mths].

5.6.5 Enablers of changes to safety culture

5.6.5.1 Supportive owners and managers

Care homes where managers were supported by the owners to make decisions, invest in staff and introduce initiatives seemed more likely to flourish: '*The managers are allowed to run it* [the care home] – *obviously there's things we have to stick to, but any new paperwork or anything, they go "right we'll put it on the intranet". We're even sharing things from SPACE within our own company'* [22-5 manager – 12mths]. Another manager running a privately owned care home also mentioned the importance of supportive owners who trusted her and gave her autonomy. This enabled the care home to try a number of new ideas. Furthermore, having a manager who encouraged staff to attend training and supported them to apply their learning to practice was a clear enabler to the motivation and engagement of staff in the programme - *'I've not met any resistance. I think it's because as a manager I'm really enthusiastic'* [22-5 manager – 24mths]. One staff member emphasised the value of managers showing strong leadership in driving change: *'I think change starts at the top. In order to make change…the manager's got to help to implement change'* [22-8 senior care assistant – 12mths]. This attitude was reflected in another care home, where the role of the manager in 'leading by example' was recognised: *'* [the manager is] *instilling a whole new culture into the home…she'll pick it up and run with it. And implement it in the home, which can only improve the service that you're providing and the care you're providing'* [22-1 administrator – 12mths].

Strong communication skills on the part of the manager were recognised as important for making staff feel involved: *'Manager has excellent communication skills – she tells us absolutely everything. Like, everything that's happened in a meeting, everything that they talked about – she likes to keep us all informed, so we're all aware'* [22-8 senior care assistant – 12mths]. The importance of the manager cascading new information was cited as important when staff were interviewed at 24 months: *'She always lets us know, keeps us updated in everything which is really good'* [22-3 unit manager – 24mths]. A similar picture was presented in another care home: *'Keeping all staff informed, which* [the manager] *does anyway, and obviously if anything changes we keep each other informed'* [12-5 senior care assistant – 24mths].

5.6.5.2 Devolving responsibility to staff

Managers recognised that giving staff responsibility for designing and implementing improvements to specific areas of safety was fundamentally important: *'*[asking them] *what they'd like to be champions of. What they've got an interest in – tissue viability, end of life, infection control. Because they've chosen it, then we've sorted out training bespoke to them. That's when you get the uptake and interest'* [22-5 manager – 12mths]. The sense of ownership from this was reported to instil pride in the staff and was particularly important for less senior staff members: *'There's that hierarchy of the nurses make the decisions and the care assistants carry out the decisions and it's a bit old fashioned in that way, but it's actually saying "come on. You're level 3 care assistants, you should be able to make that decision"… and they've really taken that on board'* [12-1 manager – 12mths]. At 24 months, one participant noted that having a senior nurse facilitating the programme and devoting time to the more junior staff had really boosted staff morale: *'She gives them confidence. I mean, you know she's a senior nurse and for her to show and interest in them is great…they're like"* [facilitator's name] *thinks I'm important, so I am".* [22-3 deputy manager – 24mths].

5.6.5.3 C*ommunication, sharing and teamwork*

Although some participants noted that change could be difficult, the value of teamwork was recognised*: 'People can find it difficult to change.. even in life...some people find it harder than others. But it's about working through it together. I found that by working as a team'* [22-8 senior care assistant – 12mths]. Incorporating SPACE into the daily running of the care home was also reported as important for embedding changes into working practices: '*It's a day to day thing you see, obviously when we have handover and everything we sit and suggest amongst ourselves, as colleagues, what we could do. Obviously you're trial and error...if it works carry on, if it doesn't then think of something else'* [12-6 care assistant – 12mths]. This teamwork and information sharing within care homes had beneficial impacts on how staff related to each other: *'We've got communication books in place as well so, like, every day we can communicate between ourselves...it's not always possible to see someone on a daily basis. So you handover to the next shift and all the people who have had three days off, they can go to the book and see what's happened'* [22-8 senior care assistant– 12mths]. At 24 months one staff member stated that: *'Staffing has improved, staff morale has improved and yeah, it's come in the last couple of years it has changed for the better'.* [22-7 – senior care assistant 24mths].

One of the overall objectives of SPACE was to create a community of best practice, where care homes formed a collaborative network and shared learning with each other. At 12 months, this was reported to be developing in a positive way: *'Having regular staff, residents and visitor meeting helps with changes…we come with ideas of what they suggest, and then everyone has a chance to be involved'* [22-7 unit manager – 12mths]. There was a strong feeling that collaboration between care homes had been an important enabler of success, as being part of a larger group allowed care homes to leverage improved support and training that they may not have had access to individually: *'The collaboration has been there and has been good and I think it's, I mean, there's lots of new mangers and I think working together, another 12 homes working together, we've bought all these outside services in and training and everything else...the support for each other is a big part of what the project is about'* [FG – manager – 12mths]. This was echoed by other participants who spoke of the value of learning from what had been introduced in other care homes: *'Other managers talk about their place, what they've introduced and everything, which is really good'* [22-7 unit manager – 12mths].

The developing community of mutual support across care homes was argued to be helping to change their attitudes towards each other. Whereas historically care homes in the same area may have seen each other only as rivals, this was reported by several participants to be changing: *'At the end we are a business and we're competitors I suppose in that way and I think that was the way, but to be fair the culture is changing*

and we are sharing information' [12-1 manager – 12mths]. Another respondent stated: *'Sharing of information is a massive part and it's very much created that team feeling…normally you have homes against each other because it's a fight for beds really, in all honesty that's the culture of it. Because of this programme we're now all a team'* [22-4 unit manager – 12mths]. The culture of sharing and mutual support continued to be evident by the end of Year 2: one manager felt that the programme had engendered a sense of community and camaraderie across the homes who had previously been insular and isolated: *'What's very nice is that the homes have come together'*. [12-1 manager – 24mths].

5.6.6 Barriers to changing safety culture

Rotas and shift cover were reported to make it difficult for staff to be released to attend external training, particularly when travel time and lack of reimbursement for travel to/from training were considered. Although one case study site was able to pay staff to attend training – ensuring the sessions were well attended - this was the exception rather than the rule. The impact of financial constraints on implementing new initiatives was also mentioned, and obtaining the necessary support from owners had sometimes proved challenging.

Making training equally accessible to all staff was not always possible. One respondent noted that night staff rarely had the opportunity to attend training and: *'Don't get the interaction with other professionals* [such as the dietician service]*… they're missing out on the opportunities to pick the brains of the dietician'* [12-1 manager – 12mths]. Focus group participants also described issues with staffing as barriers to making and sustaining safety improvements: *'We've lost some of our staff and staff retention hasn't been brilliant…staff are really stubborn which is really challenging'* [FG – manager – 12mths]. Although retention of more senior staff was less of an issue, retaining high quality junior staff was challenging: *'I was talking with other people you know, there are carers who come, there are carers who come and do their job because they can't do anything else. There are carers who take the job because they are on benefits and it's to get the job centre off their back, so they'll come and do a couple of months and then leave. And you think, they're wrong reasons, you might as well stack shelves in Tesco because let's face it, caring isn't the most highly paid job in the world…you've got to be committed because otherwise, what's the point'* [FG – shift manager – 12mths]. However, when interviewed at 24 months, two of the managers in the case study sites reflected that the programme had a positive impact upon staff retention and a reduction in absences: *'Certainly I would say over the last twelve months, just off the top of my head, we've definitely had better staff retention….Is this a direct result of SPACE? I think it has a part to play because of how staff feel. I mean any people that you interview, if you ask them how they feel about working here I'd be surprised if anyone was negative'* [2-1 manager – 24mths]. Another manager noted this positive impact upon their staff: *'Last month there was 100% attendance by staff, I didn't have one person off sick.*' [22-1 manager – 24mths].

5.6.7 Things that could have been done differently

In general, participants were unable to suggest ways that SPACE could have been run differently. This seemed to be due to a combination of optimism about the programme and staff members' lack of preconceived ideas about how the programme should have been delivered: *'I think the way it is, is perfect. I think the timing between how long we get before we have our meetings is great. The training, we're given enough time. I think it's really positive'* [22-4 unit manager – 12mths]. At 12 months only one respondent suggested that if the programme was to run again there could be: *'More training for staff…or even having opportunities to meet people from other homes, to discuss ideas. I mean involving everybody. You know, in your awards or something like that, recognising carers'* [22-8 senior care assistant – 12mths]. This respondent was enthusiastic and had been highly engaged in SPACE, so was keen for all staff to be given the same opportunity to participate. At 24 months, one manager felt that is would have been useful if more staff could have attended training: *'There could have been more of it to enable everyone to do it and then*

that could have taken place here I suppose. So if you were doing oral care quite a lot of people did do it but not everyone did it' [12-1 manager –24mths].

5.6.8 SPACE in the future

From the interviews undertaken at 12 months, for those who had been directly involved in SPACE, there was a sense of optimism about the future of the programme. One participant reported that: '*The programme exceeded expectations…because I don't know if I actually knew what we were going to get out of the programme to be honest'* [FG – manager – 12mths]. Some felt that SPACE was already so well embedded within their care home that it would be sustainable once the programme officially ended: *'It's embedded with all the extra from SPACE. We've already got our ideas for carrying on over and above'* [22-5 manager – 12mths]. This feeling was echoed by another manager: '[SPACE has become] *'the new normal' if you like. 'I feel [SPACE] belongs to them, they're more passionate about it'* [2-1 manager – 24mths].

However, a small number of staff expressed trepidation about the future post-SPACE: *'We're so excited for it and we're so motivated…we don't want the momentum to just go, which I think unfortunately, because of the culture of care homes it will just fade, which will be really sad'* [22-4 unit manager – 12mths]. At the end of the programme, a range of views were expressed about the potential legacy of SPACE, and what this might mean for individual care homes. There was generally more optimism about the future from staff working in Wolverhampton than in Walsall. One manager in Wolverhampton had been proactive in having discussions with other SPACE care homes to ensure that the bi-monthly manager forums would continue beyond the programme. This pre-emptive planning indicates the value placed on SPACE by participating care homes, and the will to continue with innovations. It was also noted that since SPACE had been running, many residential homes had become keen to be involved: *'We want to help* [facilitator name] *to spread it out to residential homes'* [22-2 manager - 24mths]. Another participant felt that although it was a shame it was coming to an end, they felt the impact would be minimal: *'We will just carry on… it will just be that the things still happen and we'll be doing it, but obviously without the actual SPACE meetings.'* [22-5 administrator – 24mths]. The manager at the other Wolverhampton case study site expressed a similar 'business as usual' view: *'Obviously we're still continuing. Even though the programme is not there, we're still continuing.'* [24-1 manager – 24mths].

However, some staff in Wolverhampton care homes noted the potential impact of not having dedicated facilitator support to organise cross-home activities: *'I know they've been talking about how we're going to keep that going and they said about other homes hosting other homes. But it's the getting together part that I think we will struggle with… Because you've got SPACE, they head it and they organise the meetings. We all worked to that, but obviously without that I just wonder how it's going to progress'* [22-2 Unit manager – 24mths]. Another participant echoed this sentiment *'I think we need SPACE. SPACE is just like somebody behind you to just help you'* [24-5 assistant manager – 24mths].

More uncertainty was expressed by those interviewed in Walsall case study sites. One manager felt that as older managers retire and new managers start who haven't been involved in SPACE, the impetus for programme learning could be lost. That said, this manager felt confident that their care home would sustain the changes: *'Whatever changes we have made there, they're still there'* [12-1 manager – 24mths]. Concerns about the future were also echoed at the other case study site: *'I'm disappointed with what's happening with* [facilitator's name] *moving from her role. She had a massive impact on care homes and she rallied for us all the time. I mean from the moment she left her post, the emails stopped coming through about different incentives, you know, for things for us to do and courses. We barely hear from the CCG now in that respect, so disappointing, very disappointing…. And I don't think we'll be represented anymore like we used to.'* [2-1 manager – 24mths]. Worries that things would lapse in the care home were expressed by the

deputy manager in the same care home who also felt that the carers who had particularly benefited from the programme would miss the support they had received.

5.7 SUMMARY OF KEY QUALITATIVE FINDINGS

- Comments made by interviewees were extremely positive and nobody who was interviewed was critical of the programme apart from views about the sustainability of programme learning after active facilitation ended
- Views about the benefits of the programme were widely held, and there were no discernible differences between the attitudes of managers and staff within the case study care homes, despite these being selected to cover a diversity of sizes and baseline quality ratings
- Overall, the qualitative findings present positive attitudes towards the programme. There was a sense that the programme had a demonstrable impact on quality and safety in participating care homes
- Participants were enthusiastic about the programme and their experience of training, regardless of their job role
- Interviews and the focus group with care home staff yielded a number of insights into how SPACE became embedded into practice – positive experiences of training; impact upon safety practice and upon workforce confidence and empowerment
- Participants reported numerous examples of how they had been able to change their own practice and share learning with their colleagues, fostering a strong sense of teamwork and collaboration
- This collaboration and sharing of information was also evident at the regional level, with positive signs that a strong network of sharing best practice was developing in both Walsall and Wolverhampton
- The level of engagement in the programme appeared to depend upon a care home having a well-engaged manager to drive change
- There is a sense of optimism about the legacy of the programme, although there were some worries about sustainability
- Without executive support at CCG level, care homes (particularly in Walsall) may struggle to sustain change in the longer-term

6. DISCUSSION

6.1 RECAP OF EVALUATION METHODS AND OBJECTIVES

This report has outlined the results from evaluating the full 24 months of SPACE programme implementation. The findings are derived from surveys returned by 19 care home managers and 546 staff (Year 2); analysis of routinely-collected CCG adverse events data for the six months preceding SPACE compared to the 24 months in which SPACE was actively implemented; 18 semi-structured interviews with programme managers and facilitators; 49 interviews with managers and staff at four case study care homes, and a focus group with two participants. These methods were supplemented by ongoing analysis of documentation related to SPACE, and a total of 184 hours of research team observations of training sessions and attendance at key programme meetings (123 hours in Year 1; 61 hours in Year 2).

The report thus provides a view of: a) the effectiveness of SPACE in upskilling care home managers and staff in quality improvement techniques, b) the impact of the programme on attitudes towards safety, c) the extent to which participating care homes have been able to implement quality improvement initiatives, and d) the impact on outcomes such as rates of avoidable harms. It also allows an assessment of some of the facilitators and barriers to effective programme implementation and evaluation; a consideration of key 'ingredients' of success; the implications for longer-term sustainability of programme learning within the care homes that participated, and the potential for wider spread and adoption of the programme in other settings and/or other geographical areas.

6.2 SUMMARY OF FINDINGS

Overall, SPACE can be considered to have been a success: care home managers and staff reported numerous benefits and changes to their day-to-day practice, and there was clear evidence of widespread change to safety processes within participating care homes (Table 6.1).

Table 6.1: Summary of evidence for changes to safety processes

- Using resources provided by programme facilitators and adapting these as necessary according to each care home's specific context and circumstances
- Improving the use of data about avoidable harms to track trends over time and to think about how rates could be reduced
- Assessing the impact of changes (sometimes formally, sometimes less formally) by applying PDSA and other QI methodologies to testing new ideas and adapting them as needed
- Taking part in external and care home-based training about specific harms (e.g. falls, UTIs), and broader training about approaches to safety and QI (e.g. Learning from Excellence, Appreciative Inquiry)
- Increasing use of tools such as SBAR to ensure that clear communication could take place between care home staff and organisations like the West Midlands Ambulance Service

There was strong engagement from most care homes in their uptake of risk monitoring tools such as safety crosses, and numerous examples of generic tools being adapted by managers and staff to monitor specific areas of quality within their own care home. Care homes increasingly saw the collection and interpretation of their own data as a means of facilitating quality improvements and monitoring their effects, and tools were used to improve communication between care home staff and outside agencies such as the West Midlands Ambulance Service. This suggests that managers and staff were able to take ownership of quality

improvements at the care home level, and the use of QI tools became increasingly embedded in the working practices of care homes as the programme progressed. There was also positive engagement with QI techniques such as the use of PDSA cycles, Learning from Excellence, and widespread adoption of the principles of Appreciative Inquiry across participating care homes. Importantly, these tools and techniques allowed care homes to begin to change attitudes towards assessing safety and quality, moving away from assigning blame when an adverse event occurs, towards considering what usually goes right when such events are avoided. A key feature of the programme that differed from other, similar programmes,[14] was the intensity of support provided by the SPACE facilitators. Each participating care home received at least fortnightly visits from their respective facilitator to review progress and to provide appropriate support.

A particular facilitator of care home implementation of quality improvement was the co-design of QI initiatives between the programme facilitators and care homes. This is noted within the patient safety literature as a key means to embed changes within organisations, recognising the importance of individual circumstances and emphasising the need for active engagement from managers and staff in implementing change.[17,26] Survey responses from managers and staff showed widespread involvement in external and care home-based training, and there was evidence from both the surveys and qualitative work that the learning from skills training had been directly translated into specific improvements to multiple areas of safety within participating care homes. There were also reports of improvements to teamwork, communication and sharing of best practice – both within individual care homes and across the wider network of care homes participating in SPACE, and a number of changes to safety climate (Table 6.2).

Table 6.2: Summary of evidence for changes to safety climate

- Engaging all levels and job roles within the care home in QI initiatives, including domestics, cooks, maintenance, carers, activity co-ordinators, administrators, care assistants, nurses and clinical leads
- Staff feeling empowered to suggest ideas, and being given the autonomy to implement changes
- Improved use of data to support quality improvement, and a high degree of information visibility, such as displaying data on specific incidents (e.g. safety crosses) and other safety information on handover boards, reception areas and staff rooms or resident lounges
- A growing culture of information sharing within individual care homes, such as staff members who had attended training cascading the learning from this training to those who had not attended
- A growing culture of information sharing and mutual support between care homes, with managers and staff viewing those in other care homes as colleagues rather than competitors
- A clear desire to continue using tools to monitor quality improvements after SPACE
- Increasing recognition by regulatory bodies like the CQC that the changes introduced as part of SPACE made a material improvement to quality in a number of care homes
- Increasing confidence when liaising with external agencies like tissue viability teams and continence services

Crucially, involvement in service improvements was reported by staff in all roles and at all levels of seniority, suggesting that training helped staff to understand the part that they could play in improving quality in their workplace, and there was strong evidence of a sense of empowerment and pride amongst participating staff. The literature suggests that care home staff often have low literacy levels and poor language skills which present challenges for designing training and motivating staff to attend.[27] The pragmatic, flexible approach taken by the programme facilitators in both Walsall and Wolverhampton seems to have been effective in overcoming these challenges, which was a key strength of the programme and which resulted in over 1000

individual staff members across both boroughs receiving training in various aspects of quality improvement methodology and its practical application. Added to this, there were positive signs that staff who had not attended training were nevertheless aware of changes implemented within their care home. This was particularly evident in the case of evening/night staff, who reported comparatively low levels of direct attendance at training sessions, but high levels of understanding and awareness of service improvements. Staff also reported that training had improved their confidence in liaising with outside agencies such as rapid response teams and specialist services, and there were numerous instances in which the CQC noted in its inspection reports that participation in SPACE had been associated with quality improvements.

Scores on the Safety Attitudes Questionnaire (SAQ) increased overall on all domains, in spite of the high levels reported before SPACE was launched, which outstripped benchmarking data and had been assumed early in the evaluation to leave little headroom for improvement during the programme. Increases ranged from a 1.4 point improvement in safety climate scores, through increases of 4.7 and 4.8 points in the perception of management and job satisfaction domains respectively, and an increase of 6.3 points in the domain related to stress recognition. These increases were achieved despite two difficult years for the care home sector, in which numerous external and internal pressures might have been expected to reduce staff members' positive perception of safety and their workplace as a whole. Staff in Walsall and Wolverhampton reported remarkably similar scores for each SAQ statement on all domains, although staff in Walsall had significantly higher overall safety scores than those in Wolverhampton and there was some variability in SAQ scores when assessed at the individual care home level. Safety climate scores were found to be positively associated with being a full time member of staff, being more qualified, and attending SPACE training. Safety climate scores were also associated with a number of care home characteristics: scores were significantly more positive for smaller vs. larger care homes, those with lower than average rates of staff turnover, and care homes with higher CQC ratings vs. those with lower ratings. This suggests that a number of key staff and care home characteristics contributed to the effectiveness of SPACE. Overall, the fact that SAQ scores were maintained and even increased over time – particularly given that high staff turnover rates made it likely that most staff completing the Year 1 and Year 2 surveys were not the same individuals that completed the baseline survey – suggests that positive attitudes towards safety and quality became embedded in the culture of the majority of participating care homes.

Expectations for rapid progress in 'hard' outcomes like rates of avoidable harms or hospital admissions may conflict with the need to adapt approaches to quality improvements over time.[28,29] For both Walsall and Wolverhampton, the absolute incidence of avoidable harms was relatively low before SPACE began, and it is challenging to substantially reduce event rates that are already at a low level. Although data on falls and other events were routinely collected by quality assurance teams at both CCGs, data were often incomplete or missing entirely, which may have impacted on the event rates observed despite efforts to adjust for missing data. Nevertheless, the quality and quantity of available data improved over the course of the programme, and there were encouraging trends towards reductions in rates of a number of avoidable harms when pre- and post-SPACE data were compared. Rates of falls significantly reduced in both CCG areas. Rates of UTIs also reduced over time in both areas – showing a statistically significant reduction in Walsall. Although care homes in both CCGs saw a non-significant increase in pressure ulcers of any grade and a non-significant increase in grade 2 pressure ulcers in Walsall, data from both areas showed a reduction in the more severe grade 3 and grade 4 pressure ulcers – the latter a significant reduction in Walsall. This indicates that staff became more able to identify and manage pressure ulcers at an earlier stage, preventing them from deteriorating further. Combining data across both CCGs showed a significant reduction in falls, UTIs, 'any events' and grade 4 pressure ulcers. Rates of ambulance conveyances from participating care homes showed a slight increase over time in Walsall and a significant reduction over time in Wolverhampton,

and for both CCGs, rates of hospital admissions had a non-significant increase between baseline and the end of the programme.

6.3 COMPARING WALSALL AND WOLVERHAMPTON

The findings were similar in each CCG area – SAQ scores were virtually identical in all domains, uptake of training and positivity from managers and staff about the impact of SPACE on safety culture and working practices was high in both areas, and there were a number of trends towards meaningful reductions in several areas of avoidable harm. Programme delivery in each area started differently, with Wolverhampton initially relying primarily on provision of external training events, and Walsall focusing on care home-based training. As the programme progressed, these approaches crossed over, and care homes in both CCG areas had opportunities to participate fully in both external and care home-based training. Overall programme effectiveness (as measured by changes in avoidable harms) was marginally better in Wolverhampton than in Walsall. This may be partly related to the different criteria applied by each CCG when selecting care homes to participate in SPACE. All Walsall care homes participated on a voluntary basis. Although 10/18 care homes in Wolverhampton participated voluntarily, for the remaining eight, participation was a requirement of the NHS contract held between themselves and the CCG. Both areas experienced challenges in the wider health economy over the course of SPACE, which were particularly pronounced in Walsall. Nevertheless, despite differences over time in their respective approaches to delivering the programme, it appears that SPACE was effective in both Walsall and Wolverhampton with high levels of engagement with programme activities in both areas. This was undoubtedly due in large part to the efforts of the facilitators in each area and to the support they provided to participating care homes.

6.4 CHALLENGES TO PROGRAMME IMPLEMENTATION

Interviews with programme managers and facilitators, and with managers and staff in the case study care homes showed a number of challenges to implementing the programme. First, facilitators reported an element of **suspicion and mistrust** on the part of some care home managers and staff when they first engaged with participating homes. These managers tended to see SPACE as another form of regulatory intrusion that would entail increased workloads and bureaucracy for uncertain gains. However, the facilitators in both areas worked hard to build relationships and provide substantial support to participating care homes, staff and managers. This often required a strong understanding of the context of each care home and facilitators used numerous approaches with different care homes to engage them with the programme.

Whether or not the training and support provided as part of SPACE could be translated into effective quality improvement was often heavily dependent on the **leadership** provided by the care home managers. The influence of leadership is frequently reported in the patient safety literature,[21] and other similar programmes have found that leadership and care home capacity to engage with QI were key influences on uptake and engagement.[14,17] Change is often driven by managers, either directly by their own actions, or through their attitudes towards allowing staff the freedom to design and implement quality improvements within the care home itself.[30] Engagement from care home owners is also known to be important, particularly for corporate chains of care homes. However, there are questions over the kind of managerial involvement that impacts on the effective implementation of improvements most strongly. Key areas cited in the literature include managerial autonomy to make decisions, alignment of improvement programmes with care home priorities, engagement from the relevant staff, having a culture of seeing change as something to be welcomed, and the receptiveness of managers and staff towards making changes happen.[17] As reported in Chapter 3, there was a high turnover of managers in some participating care homes in both Walsall and Wolverhampton, and several changes of ownership, which was problematic for maintaining change in these care homes, as

facilitators were frequently required to develop new relationships with new managers so that momentum in programme implementation was not lost.

Further to issues of leadership, rates of **staff turnover** were high, averaging over 30% in each year of the programme and ranging from 3% to 60% in Year 1 and from 14% to 97% in Year 2 across individual care homes. As with the changes to managers and care home ownership, high rates of staff turnover were a challenge to programme implementation and may have affected the extent to which positive changes and the learning from skills training could become embedded within the culture of participating care homes during the course of the programme. However, workforce turnover did not appear to affect engagement with SPACE, and SAQ scores were maintained well over the course of the programme, finishing with scores on all domains higher than those reported at baseline. The flexibility of the facilitators' approach to training, and the emphasis within the programme on the co-design of interventions appears to have mitigated some of the negative effects that could have arisen as a result of workforce turnover. Workforce development also became a key component of the programme and was given a high priority in each area. Existing staff were offered opportunities for career advancement through access to nurse associate and other clinical and/or competency training, and care homes were promoted as an attractive setting for registered nurse apprenticeships and pre-registered nurse training placements.

The Year 1 evaluation report highlighted the potential impact of the different levels of **engagement** with the programme seen in participating care homes. This was argued to have a significant potential impact on the extent to which the programme could be deemed effective. At one end of the spectrum were care homes that had been fully engaged with all aspects of SPACE, where there was little incentive to stop implementing service improvements and where positive change had become largely self-sustaining. At the other end of the spectrum was a small number of care homes that had minimal engagement with SPACE, and which were likely to take little from the programme to apply to their working practices. In the middle was a third group of care homes that had been engaged but had needed substantial amounts of ongoing support to facilitate their engagement. These care homes were reported at the end of Year 1 as the most likely to be negatively affected when formal programme facilitation ended. The facilitators addressed the issues by changing the approach to programme implementation over time. Whilst Year 1 had focused on building relationships with the care homes, delivering training and supporting care homes to use various tools and resources to make changes to practice, Year 2 became largely about consolidating this work and putting significant programme resources into engaging with SPACE care homes who had not been fully involved in the programme during Year 1. Amongst other strategies, the facilitators used comparative data from care homes across each borough to demonstrate to each care home their level of improvement on various metrics compared to their peers. This appeal to the 'competitive spirit' frequently seen across the care home sector encouraged the less engaged care homes to see the multiple benefits that the more engaged care homes had derived from programme participation and was successful in increasing engagement for a number of care homes that had hitherto been less engaged.

6.5 CHALLENGES TO PROGRAMME EVALUATION

There was a great deal of positive interaction between the evaluation team and the care homes, CCGs and – in particular – the facilitators, with whom the team established a close working relationship. This meant that feedback and data were available throughout SPACE and could be used as a means of refining the programme approach on an ongoing basis. It also meant that the evaluation team was able to respond quickly to changes in programme organisation and delivery to ensure that as much relevant data as possible was captured to inform the evaluation. However, there were also a number of challenges associated with evaluating the programme, which required flexibility and a pragmatic approach to overcome.

1. **Timing:** Although evaluation activities followed a pre-determined protocol, the timing of programme implementation meant that evaluation documentation and processes for data collection needed to be drafted before the content of the programme was known. This may have had implications for the suitability of some of the data collection instruments used, although the manager and staff surveys were adapted at each time point, and the interview topic guide was kept flexible so that participants' experiences and reflections on relevant elements of the programme could be explored.

2. **Focus:** Following point 1, it was necessary to take a flexible approach to the evaluation so that unanticipated elements of the SPACE programme could be incorporated into evaluation activities. For example, a substantially greater time was spent observing training than was initially planned. This was necessary to capture the wide range of areas in which the facilitators offered training, and to observe the numerous ways that training sessions were adapted and tailored to the context of specific care homes.

3. **Methods:** It became clear that methods such as focus groups were not likely to succeed with care home staff, so this method could not be used. Similarly, the planned formal approach to arranging interviews with managers and care home staff in the case study care homes and using a sampling frame to ensure maximum diversity of shift patterns and job roles was required to give way to a more opportunistic approach in which interviewers spent a day or two at each care home and interviewed staff on shift at those times.

4. **Representativeness:** Although selected randomly using a pre-determined sampling frame to maximise case diversity, the four case study care homes were all highly engaged with the programme, and the findings from the qualitative work showed similar and almost universally positive experiences of the programme. The experience of these four care homes may not have been representative of all 26 that participated in the evaluation.

5. **Data**: Performing a meaningful analysis of outcomes data was difficult. Care homes do not have an established track record of collecting data, and analysis of routinely collected data capturing changes in rates of avoidable harms over time was challenging. However, the evaluation team was able to work closely with the facilitators in each area to ensure that the data were as complete as possible. Using self-reported data to inform analysis of hospital admissions was less robust than analysing admissions data collected directly from hospital information systems at the participating Trusts, and the lack of control data meant that it was not possible to ascertain whether the observed trends were operating independently of SPACE or were directly attributable to the programme.

6. **Responses**: Obtaining a meaningful response rate to the care home manager and staff surveys at each time point was challenging. Low response rates (<25%) and sampling bias are common in research with care homes, with those homes that have more stable staffing and strong management typically more likely to participate than those with staff shortages, weaker management or high turnover. Participating staff are also self-selecting: those who choose not to participate may be night staff, those working few shifts, and those who find written English difficult. However, a range of strategies was used to improve response rates, which were higher than expected. Most care homes were well-represented in responses, and the profile of staff respondents was representative of the adult social care workforce as a whole.

7. **Priorities and politics:** There were some tensions between the evaluation team's need to give an unbiased assessment of progress and the findings from data analysis, and the desire of those

delivering the programme to celebrate achievements and sustain engagement from the participating care homes. Positive findings were sometimes interpreted too positively, whereas more challenging results were often viewed defensively. There was also an element of competition between Walsall and Wolverhampton CCGs at times. This posed challenges for the evaluation team being able to maintain its role as independent evaluator, whilst not being perceived by either of the CCGs to favour the other at any point.

8. **Maintaining independence**: It was necessary for the evaluation team to develop close relationships with the facilitators in each borough so that the evaluation could capture and review all elements of programme activity. However, the development of such close relationships also carried the risk that our desire to see the programme succeed could compromise our position as independent, external evaluators. These issues were reflected on regularly at evaluation team meetings and discussed alongside the ongoing data analysis to ensure that our independent position was maintained when assessing programme effectiveness. Emerging findings were presented to the programme steering group on a regular basis and their implications discussed with all stakeholders. The mixed methods approach and use of data from multiple sources also ensured that the risk of bias in the interpretation of our findings was minimised.

6.6 PROGRAMME SUSTAINABILITY

Although many of the managers and staff interviewed at the case study care homes were confident that SPACE had become embedded in their day-to-day working practices, there were others who worried that the momentum could be lost when active provision of SPACE training stopped. Changing the behaviour of individual care home staff is not sufficient to sustain change, particularly in a sector where staff and manager turnover is high. For change to be sustained, it is important that the improvements brought about as a result of participation in SPACE have become embedded within the culture of the care homes and that QI has become 'the new normal', although the relationship between culture and quality is often complex.[16] Although SPACE has been associated with some improved outcomes, such as reductions in rates of some avoidable harms, more substantive embedded change may take longer to achieve, especially for care homes that were less involved in the programme than others and where change may not have become embedded to the same extent. Consequently, the Year 1 evaluation report highlighted the importance of planning for the longer-term sustainability of SPACE after formal facilitation and funding for the programme ceased. Overall, attempts to sustain key elements of SPACE for the future have been more substantive in Wolverhampton, and the prospects for sustainability are consequently – at the time of writing this report – stronger there than in Walsall.

In the last six months of the programme in Walsall, there was an effort to build QI capability across the borough by spreading QI skills to teams that supported care homes, such as the CCG, Public Health, falls teams, dementia teams and the Local Authority. There was also a commitment from the CCG that care home managers and staff would be able to access training offered by Walsall Healthcare Trust on an ongoing basis. However, one of the key findings from the evaluation is that the important elements of success for SPACE were: a) the ongoing and intensive support provided by facilitators directly to participating care homes, and b) the development of tailored training and resources made specific to the needs of each care home. Although it is important that managers and staff continue to have access to training opportunities, attending generic training sessions that may have been designed primarily for acute Trust staff, and having no access to one-to-one support is likely to compromise the sustainability of programme learning and achievements in Walsall. A proposal to retain QI support to Walsall care homes and extend support to

homes in the residential sector is currently being considered by commissioners, but no agreement has yet been made.

In Wolverhampton, efforts to ensure the longer-term sustainability of SPACE have been more advanced and wide-ranging, and support for care homes is formally linked in to the integrated care alliance and planning at STP (Sustainability and Transformation Partnership) level. As in Walsall, there has been an attempt to spread QI skills more widely through offering QI training to quality assurance officers from the Local Authority, continuing healthcare assessors and members of the CCG quality and safety team. Training included QI methodology (model for improvement, PDSA, process mapping, AI and Learning from Excellence), as well as showcasing some of the improvements undertaken within Wolverhampton care homes as part of SPACE. Providing QI training to the CCG's Quality Assurance team means that they will be able to take over and extend the role formerly undertaken by the facilitator with regard to QI support to care homes. Most importantly, the (pre-existing) role of Quality Assurance and Compliance Officer (QACO) in Wolverhampton has been enhanced through close liaison with the quality team to replicate many of the responsibilities and support functions formerly carried out by the SPACE facilitator.

In addition, there has been a commitment in Wolverhampton to maintain ongoing relationships between care homes and specialist teams (e.g. tissue viability, falls, rapid response, continence services) so that care homes continue to have access to supportive services in the wider health economy. As part of this, there was a transition in the last few months of SPACE towards teams like tissue viability giving training directly to care home staff on avoidable harms, taking the place of the training formerly offered by the SPACE facilitator but maintaining the element of responsiveness to individual care homes' needs. Finally, the bi-monthly manager forums, newsletters and annual awards are planned to continue, and a resource library is in development, to be accessed via the CCG website.

6.7 SPREAD AND WIDER ADOPTION

Although securing the spread and wider adoption of SPACE was not an explicit aim of the programme, it is useful to consider the scope for such wider adoption in the future. As noted in Chapter 2, there has been much local, regional and national interest in the work that has been done through SPACE, and there is scope to make the programme available to the residential care sector in Walsall and Wolverhampton, across the Black Country via the regional STP, and to care homes in other parts of the West Midlands/England. Continuing to disseminate the positive messages from the programme at regional and national events is one means of maintaining wider interest in the programme and optimising its potential for adoption in other geographical areas and/or settings. Nevertheless, it cannot be assumed that a programme that worked in one area/setting will work in others. Traditional approaches to spreading innovation tend to assume that once an intervention has been developed and successfully implemented in one area, it can be diffused and taken up by others in a straightforward way. However, when initially successful interventions spread to new settings, they may fail to achieve the same (or any) impact.[31] This may be because interventions have not been conceptualised in ways that enable them to be successfully reproduced in new contexts, or that programmes to spread interventions have not been organised in ways that adequately support adopters to reproduce them.[32] Thus, it is unlikely that simply sharing the resources from SPACE with those in other areas will lead to successful implementation elsewhere and replication of the success that SPACE has demonstrated.

Furthermore, the issue of context and the influence of past efforts to improve quality within the care home sector could be important mediators of the potential success of programmes like SPACE in other areas. It is likely that some of the effectiveness of SPACE in both CCGs was related to the legacy of concerted efforts to

improve quality and safety in care homes for a number of years prior to SPACE. As a result, many of the participating care homes had built up good relationships with the CCGs and local authorities over a number of years, making it more likely that they would be largely receptive to engagement with SPACE. Other areas without this history of QI initiatives or pre-existing relationships with CCGs and other regulatory bodies may find it more difficult to replicate the success of SPACE. Similarly, it is well known that changes take time to become embedded, and we cannot know whether the changes observed as part of SPACE are entirely attributable to the programme itself, or whether they reflect the maturation of changes that have come about following ongoing attempts to improve quality and safety in care homes in both CCGs.

6.8 KEY SUCCESS FACTORS FOR SPACE

A number of factors emerged from the evaluation that appeared to indicate key success factors that contributed to the effectiveness of the SPACE programme. These factors were distilled from the evaluation team observation of training events, the manager and staff surveys, and the qualitative work with programme managers and facilitators and staff working in the case study care homes.

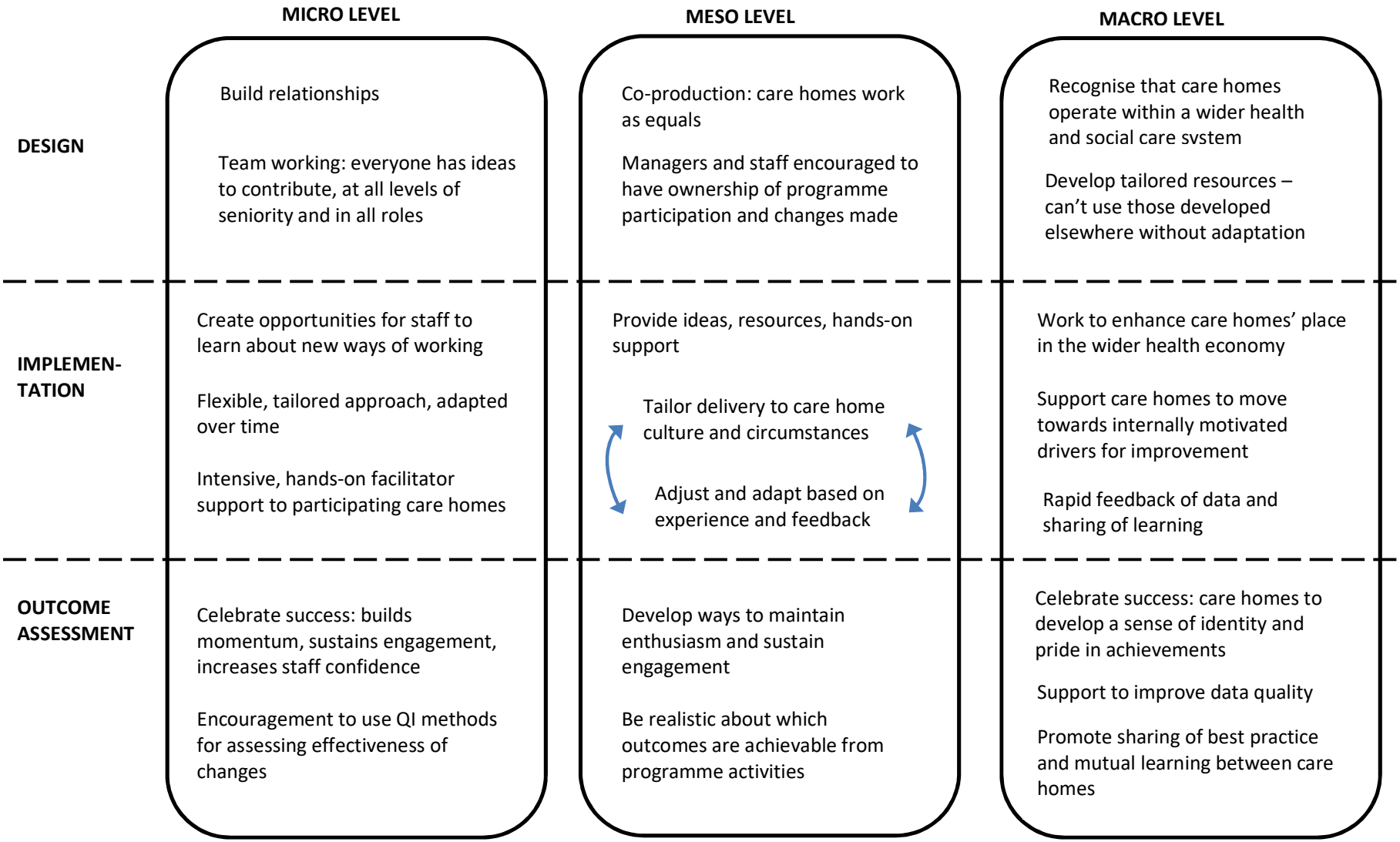
1. Having passionate facilitators who developed a deep understanding of issues within the care home sector and who tailored the programme and support provided accordingly
2. Developing ways to engage and empower a wider range of staff than just managers or senior nursing staff
3. Providing highly intensive, 'hands-on' facilitation where participating care homes received multiple visits from facilitators over the course of the programme, and were able to contact the facilitators about any issue, at any time
4. Focusing on the co-creation of quality improvements with the care homes rather than standardised tools or approaches being implemented in a top-down manner
5. Having the flexibility to use language and examples relevant to care homes, and delivering tailored training that combined theory with practical application
6. Focusing on the use of simple rather than complex tools for facilitating QI in participating care homes
7. Building strong relationships with care home managers who helped to foster positive relationships within the care homes and supported staff to see that the programme was worthwhile and important
8. Supporting the care homes to collect and interpret their own data for quality improvement and for tracking trends over time
9. Providing ideas, encouragement, resources and ongoing support
10. Providing regular feedback on progress and encouraging care home managers and staff to develop a sense of ownership of change
11. Providing opportunities for care homes to share ideas, best practice and to learn from each other
12. Supporting care homes in their liaison with external organisations to make them feel that they were a valuable part of the wider health economy.

Although any quality improvement programme is necessarily more than the sum of its individual parts, these 'ingredients' for success have implications for others who may be considering introducing similar programmes in other areas, or for widening the scope of SPACE to other settings such as the residential care sector. Crucially, SPACE has shown that it is important that QI interventions are both relevant for, and tailored to the care home context at all levels of the system from the individual staff (micro) level, through to care home structures and processes (meso level), and up to the wider regulatory context in which care homes operate (macro level). The success factors identified in this evaluation map on to these different system levels, showing how they were considered in programme design, implementation and in the assessment of outcomes (Figure 6.1).

6.9 CONCLUSIONS

Despite the complexity of the care home sector and the challenges associated with embedding quality improvements in this setting, the provision of bespoke and flexible training in QI and intensive facilitator support to participating care homes combined to create an effective and well-received programme that had a real impact on managers and staff, on working practices within the care homes, and on their collaborations with each other and with service providers in the wider health economy. Care home managers and staff reported numerous benefits, quality improvements and changes to their day-to-day practice, and there was clear evidence of widespread change to safety processes and safety climate in participating care homes. The pragmatic, flexible approach taken by programme facilitators in both areas was a key strength of the programme, and there were encouraging trends towards meaningful reductions in the incidence of avoidable harms in a number of areas, suggesting that change had become embedded within participating care homes despite high rates of staff turnover and the inherent challenges associated with the complex health and care needs of the care home resident population.

Figure 6.1: Mapping of SPACE success factors across system levels



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APPENDIX 1: Sources used to inform the summary of SPACE

Appendix 1.1: List of documents reviewed to inform the summary of the SPACE programme

Type of information
Written documents or communications
Minutes from operations group meetings
Minutes from steering group meetings
Progress reports provided by facilitators at operations/steering group meetings
Correspondence between facilitators and members of the evaluation team (e.g. emails)
Care home visitor information leaflets
Posters displayed in participating care homes
Newsletters disseminated by Walsall and Wolverhampton
SPACE magazine/newsletter disseminated by West Midlands Patient Safety Collaborative
PowerPoint slides used to guide facilitator delivery of care home manager/staff training
Presentations/posters used by facilitators to disseminate SPACE results at local/national conferences
Evaluation team observations
Logs completed by evaluation team following care home-based training session observation
Logs completed by evaluation team following centrally-organised training observation
Evaluation team attendance at care home manager meetings/forums
Evaluation team observation of activity coordinator meetings

APPENDIX 2: Evaluation team observations

Appendix 2.1: Evaluation team observations, Year 1

Type of event	Date	Event	CCG area
Steering Group meetings	23/08/2016	Steering Group (2 hours)	Both
	06/10/2016	Steering Group (2 hours)	Both
	15/12/2016	Steering Group (2 hours)	Both
	09/05/2017	Steering Group (2 hours)	Both
	18/10/2017	Steering Group (2 hours)	Both
Operations Group meetings	24/01/2017	Operations Group (1.5 hours)	Both
	21/03/2017	Operations Group (1.5 hours)	Both
	03/05/2017	Operations Group (1.5 hours)	Both
	20/06/2017	Operations Group (1.5 hours)	Both
	18/07/2017	Operations Group (1.5 hours)	Both
	22/08/2017	Operations Group (1.5 hours)	Both
	04/10/2017	Operations Group (1.5 hours)	Both
Patient Safety Collaborative	29/11/2016	PSC Regional care homes event (7 hours)	Both
	23/05/2017	PSC National learning day (7 hours)	Both
National events	21/11/2017	Patient First Conference (8 hours)	Both
Care home managers' meetings	07/09/2016	West Midlands Care Home Association (3 hours)	Both
	17/11/2016	Nursing Home Forum (4 hours)	Walsall
	17/05/2017	Nursing Home Forum (4 hours)	Walsall
	28/06/2017	Nursing Home Forum (4 hours)	Walsall
	27/09/2017	Nursing Home Forum (4 hours)	Walsall
	15/11/2017	Nursing Home Forum (4 hours)	Walsall
	26/09/2017	Care home managers meeting (2 hours)	Wolverhampton
	17/10/2017	Care home managers meeting (2 hours)	Wolverhampton
	28/11/2017	Care home managers meeting (2 hours)	Wolverhampton
Training observations: Walsall	28/06/2016	Care homes communication day (6 hours)	Walsall
	05/06/2017	Falls awareness training, care home 3 (2 hours)	Walsall
	05/06/2017	Meeting with manager, care home 2 (1 hour)	Walsall
	05/06/2017	Catch up with staff, care home 8 (1 hour)	Walsall
	05/06/2017	Meeting with manager, care home 12 (1 hour)	Walsall
	30/08/2017	Meeting with manager, care home 2 (1.5 hours)	Walsall
	30/08/2017	QI training, care home 4 (2 hours)	Walsall
	05/09/2017	QI training, care home 12 (2.5 hours)	Walsall
	25/10/2017	Appreciative Inquiry training (7 hours)	Walsall
	30/10/2017	'Kitchen table event', care home 12 (2.5 hours)	Walsall
	30/10/2017	Catch up with staff, care home 8 (1 hour)	Walsall
Training observations: Wolverhampton	14/03/2017	Champions meeting (6 hours)	Wolverhampton
	27/04/2017	Appreciative Inquiry training (3.5 hours)	Wolverhampton
	11/07/2017	QI training, care home 35 (2 hours)	Wolverhampton
	24/08/2017	QI training, care home 22 (3 hours)	Wolverhampton
	24/08/2017	QI training, care home 24 (1.5 hours)	Wolverhampton
Other meetings	10/07/2017	Activity co-ordinator's meeting (2.5 hours)	Walsall
	04/10/2017	Activity co-ordinator's meeting (2.5 hours)	Wolverhampton
	20/11/2017	CQC information sharing meeting (2 hours)	Walsall

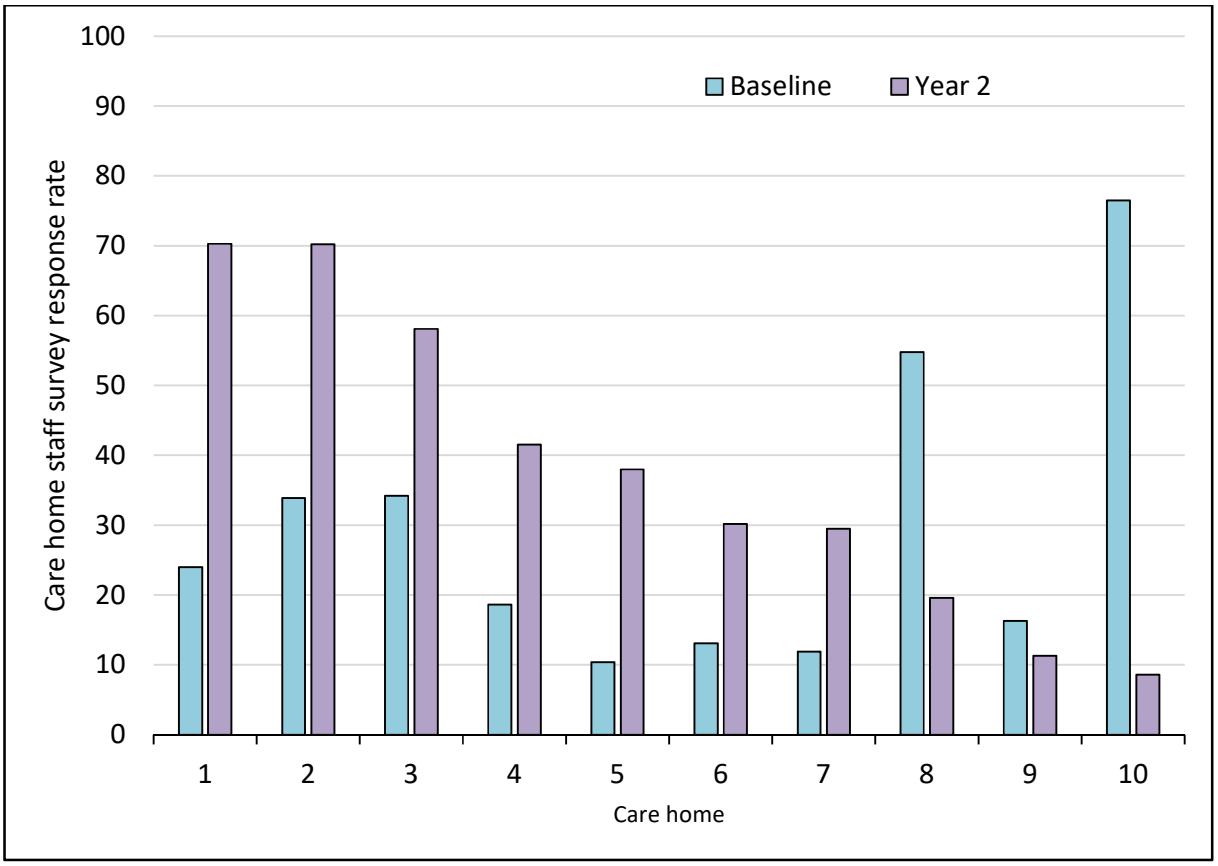
Appendix 2.2: Evaluation team observations, Year 2

Type of event	Date	Event	CCG area
Steering Group meetings	18/04/2018	Steering Group Meeting (1.5 hours)	Both
	05/12/2018	Steering Group Meeting (1.5 hours)	Both
Operations Group meetings	10/01/2018	Operations group meeting (2 hours)	Both
	21/06/2018	Operations group meeting (2 hours)	Both
	27/09/2018	Operations group meeting (2 hours)	Both
Conferences or Regional events	13/03/2018	Celebrating Success regional event (8 hours)	Walsall
	24/04/2018	Care home partnership event (6 hours)	Wolverhampton
	22/11/2018	Celebrating Success regional event (6 hours)	Wolverhampton
Care home managers' meetings	27/02/2018	Care home managers' forum (2 hours)	Wolverhampton
	29/05/2018	Care home managers' forum (2 hours)	Wolverhampton
	19/07/2018	Care home managers' forum (2 hours)	Wolverhampton
	25/09/2018	Care home managers' forum (2 hours)	Wolverhampton
	14/02/2018	Nursing home forum (2.5 hours)	Walsall
	21/03/2018	Nursing home forum (2.5 hours)	Walsall
	11/07/2018	Nursing home forum (2.5 hours)	Walsall
	05/09/2018	Nursing home forum (2.5 hours)	Walsall
Training observations: Walsall	25/04/2018	UTI QI (1 hour)	Walsall
	30/04/2018	Oral care/chest infection reduction workshop (3 hours)	Walsall
	03/07/2018	Oral care/chest infection reduction workshop (1 hour)	Walsall
Training observations: Wolverhampton	13/06/2018	Oral hygiene workshop (3 hours)	Wolverhampton
	19/07/2018	Care home managers development event (4 hours)	Wolverhampton
Other meetings	16/07/2018	Care home adverse event data meeting (1 hour)	Walsall
	26/07/2018	Care home adverse event data meeting (1 hour)	Walsall

APPENDIX 3: Supplementary data from staff surveys

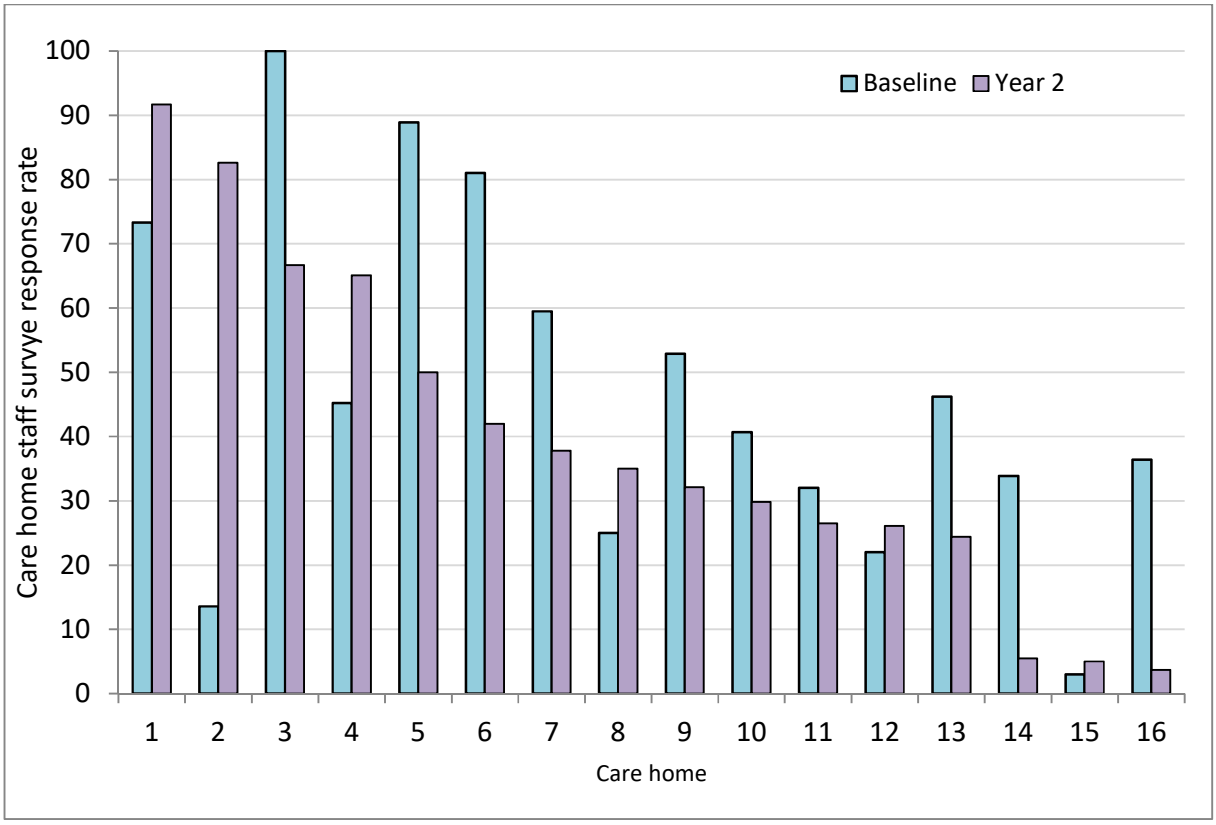
Appendix 3.1: Survey response rates by care home at baseline and end of Year 2, Walsall

Care home	Baseline response rate	Year 2 response rate	Difference
1	24.0	70.3	+ 46.3
2	33.9	70.2	+ 36.3
3	34.2	58.1	+ 23.9
4	18.6	41.5	+ 22.9
5	10.4	38.0	+ 27.6
6	13.1	30.2	+ 17.1
7	11.9	29.5	+ 17.6
8	54.8	19.6	- 35.2
9	16.3	11.3	- 5.0
10	76.5	8.6	- 67.9

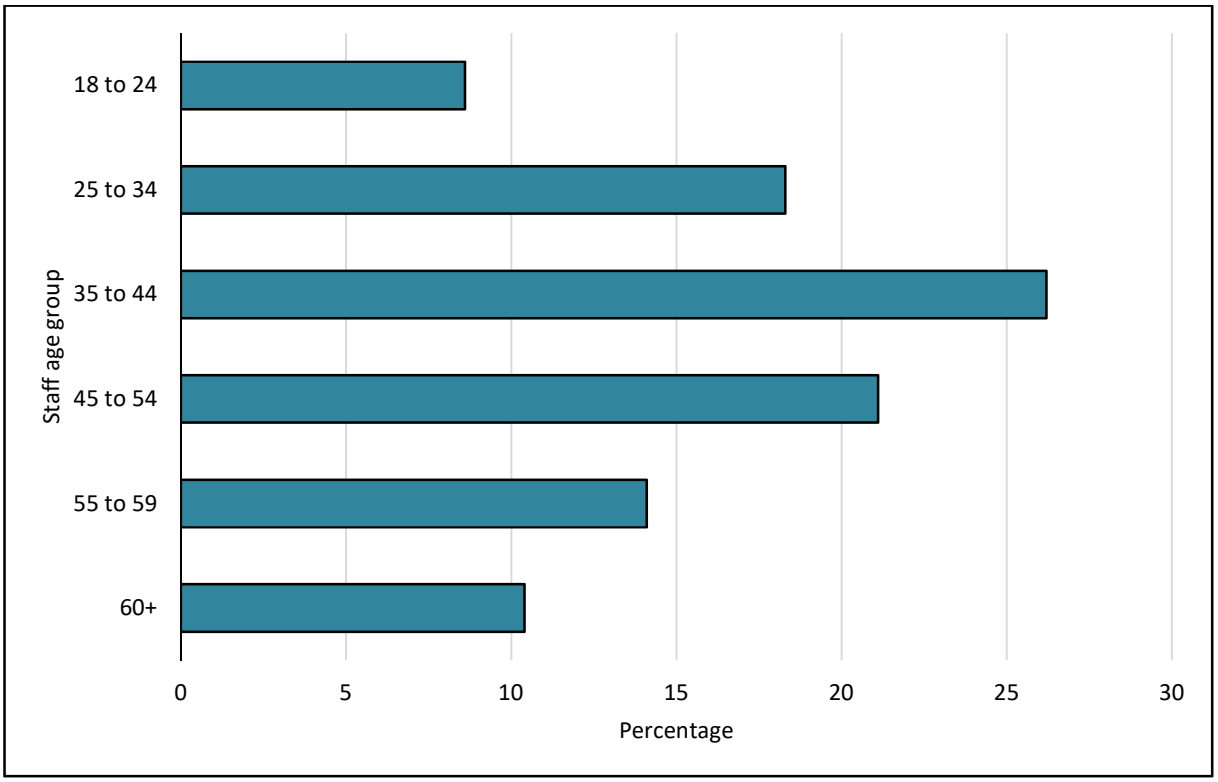


Appendix 3.2: Survey response rates by care home at baseline and end of Year 1, Wolverhampton

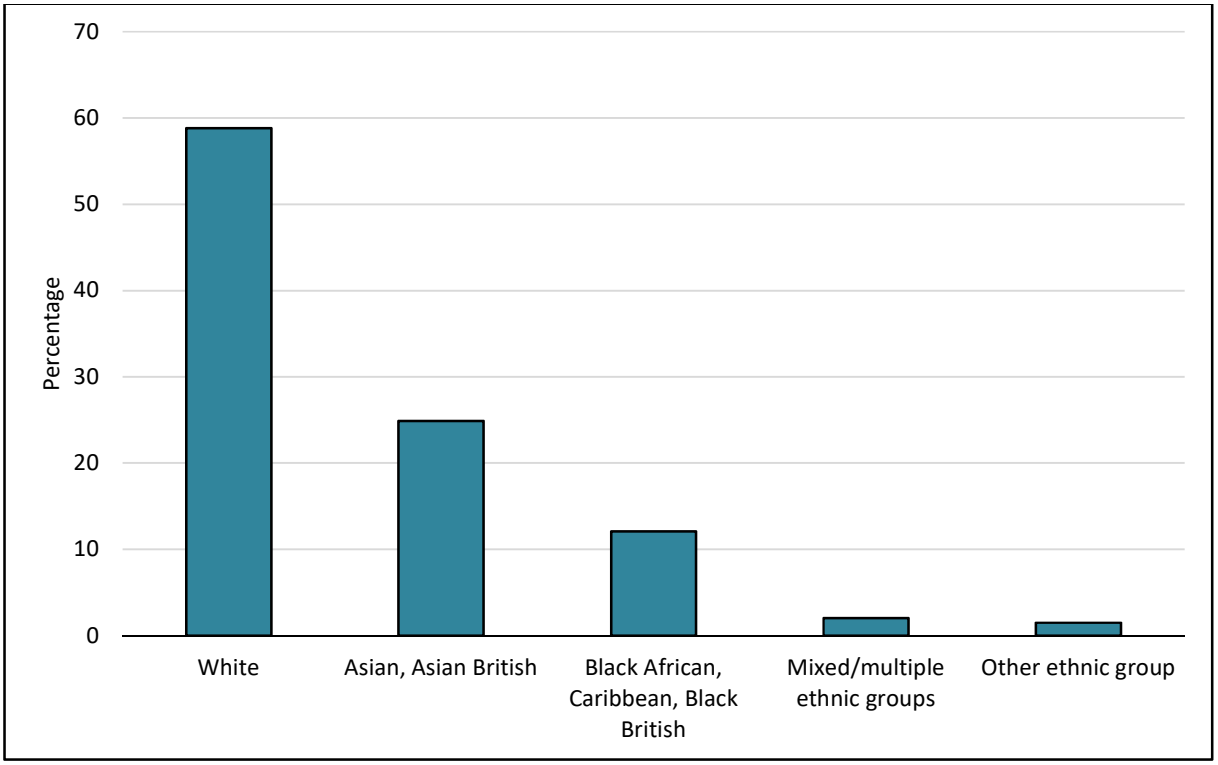
Care home	Baseline response rate	Year 2 response rate	Difference
1	73.3	91.7	+ 18.4
2	13.6	82.6	+ 69.0
3	100.0	66.7	- 33.3
4	45.2	65.1	+ 19.9
5	88.9	50.0	- 38.9
6	81.0	42.0	- 39.0
7	59.5	37.8	- 21.7
8	25.0	35.0	+ 10.0
9	52.9	32.1	- 20.8
10	40.7	29.8	- 10.9
11	32.0	26.5	- 5.5
12	22.0	26.1	+ 4.1
13	46.2	24.4	- 21.8
14	33.9	5.5	- 28.4
15	3.0	5.0	+ 2.0
16	36.4	3.7	- 32.7



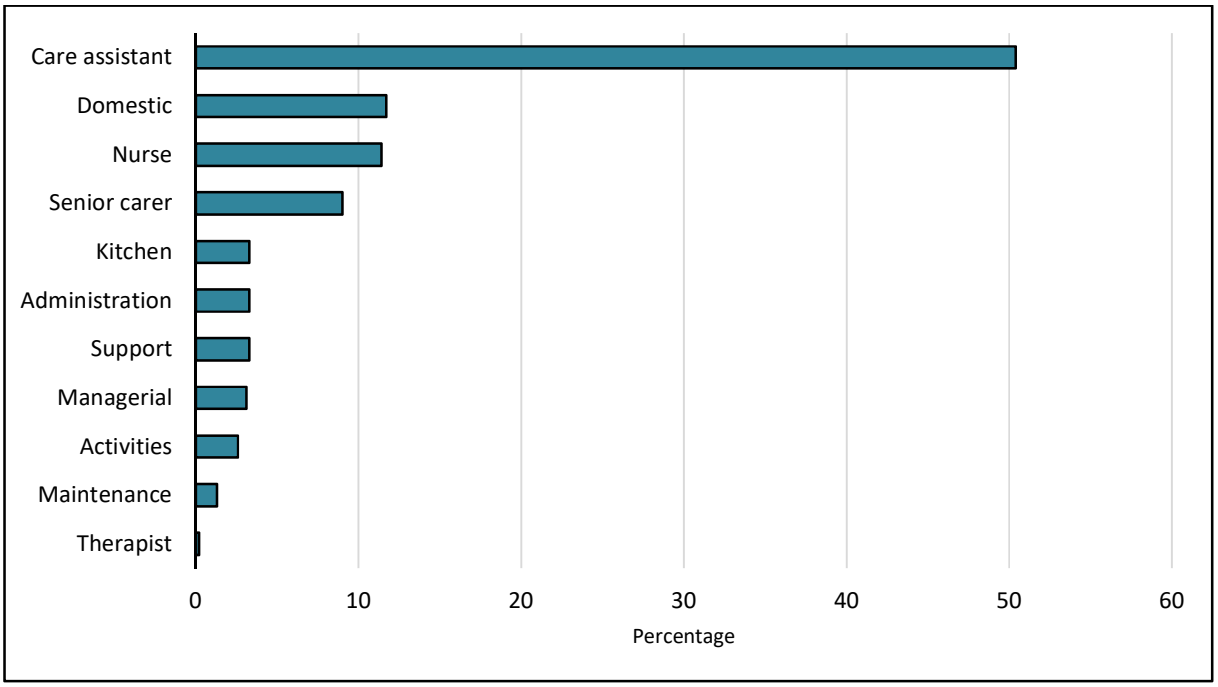
Appendix 3.3: Care home staff ages



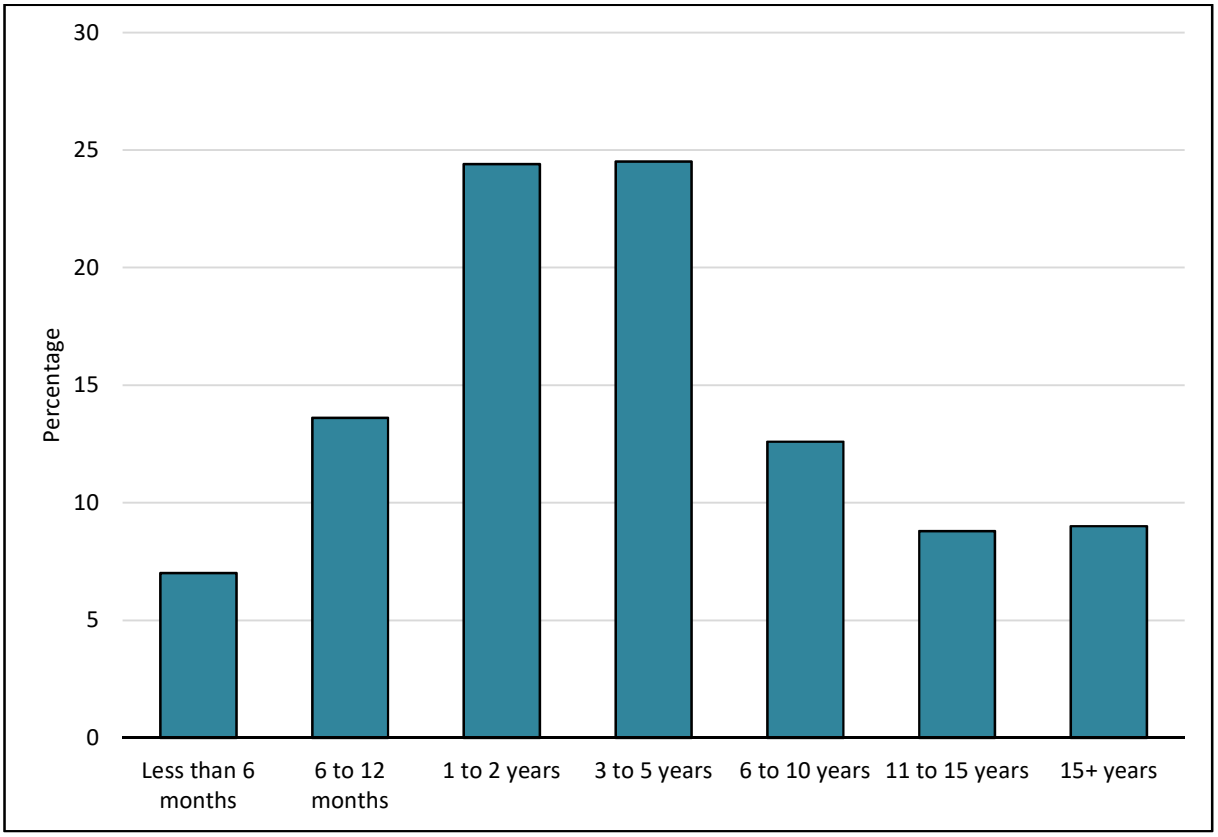
Appendix 3.4: Care home staff ethnic groups



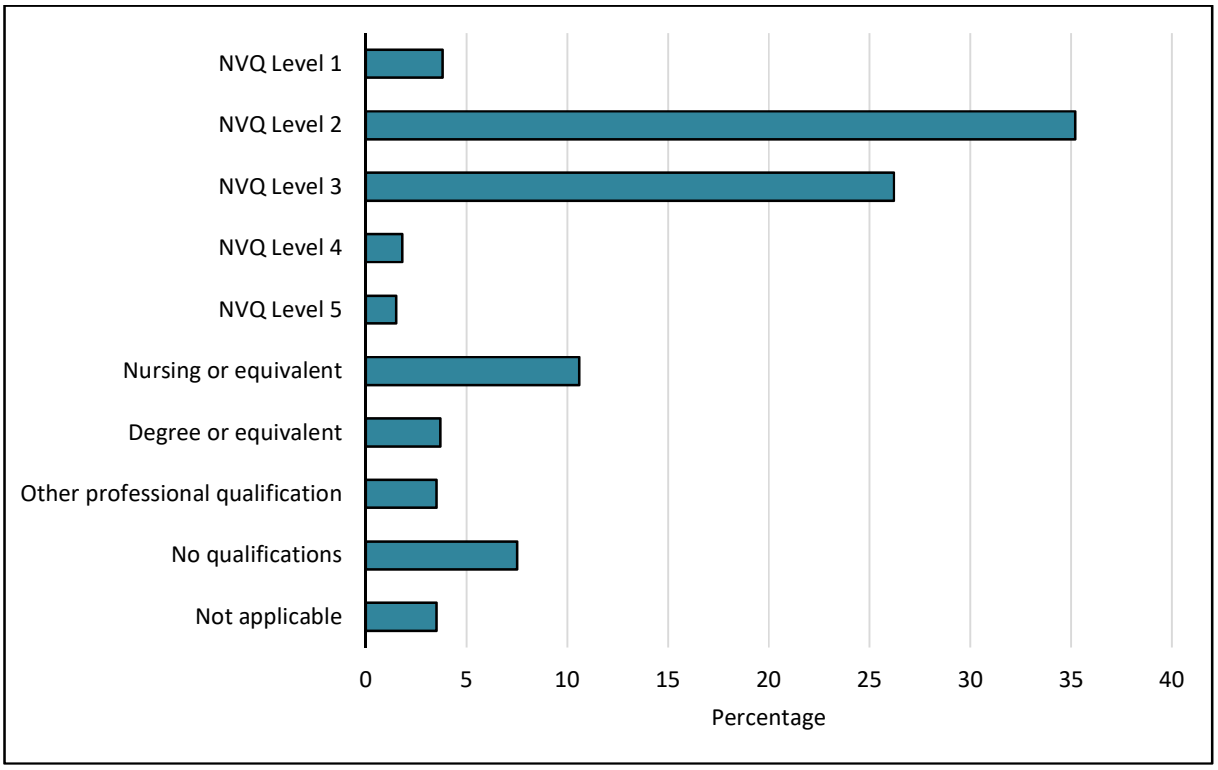
Appendix 3.5: Job role, care home staff



Appendix 3.6: Length of time working at current care home



Appendix 3.7: Care home staff qualifications



APPENDIX 4: Supplementary information relating to avoidable harms

Appendix 4.1: Completeness of data for Walsall care homes

	Apr Jun 16	Jul Sep 16	Oct Dec 16	Jan Mar 17	Apr 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17	Nov 17	Dec 17	Jan 18	Feb 18	Mar 18	Apr 18	May 18	Jun 18	Jul 18	Aug 18	Sep 18	Total
Care home	**Pre-SPACE**		**Year 1**								**Year 2**												
1																							21
2																							20
3																							21
4																							20
5																							21
6																							22
7																							22
8																							19
9																							21
10																							22

Appendix 4.2: Completeness of data for Wolverhampton care homes

	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	Total
Care home	**Pre-SPACE**						**Year 1**												**Year 2**												
1																															28
2																															28
3																															24
4																															25
5																															25
6																															25
7																															14
8																															22
9																															19
10																															23
11																															29
12																															14
13																															24
14																															2
15																															14
16																															0

Appendix 4.3: Pre-SPACE vs. post-SPACE event rates, Walsall

	PRE-SPACE		**POST-SPACE**			
Event	Events/Beds	Rate per 100 beds	Events/beds	Rate per 100 beds	P value	Interpretation
Falls	181/1818	9.96	734/9269	7.92	**0.039**	**Significant reduction**
Pressure ulcers	65/1818	3.58	355/9269	3.83	0.60	Non-significant increase
Grade 2 *	51/3461	1.47	107/5808	1.84	0.18	Non-significant increase
Grade 3	22/3461	0.64	33/5808	0.57	0.68	Non-significant reduction
Grade 4	25/3461	0.72	14/5808	0.24	**0.0005**	**Significant reduction**
UTI	15/1818	0.83	25/8681	0.29	**0.0007**	**Significant reduction**
ANY event**	261/1818	14.36	1114/9269	12.01	**0.006**	**Significant reduction**

* Data on pressure ulcer grading only available during the post-SPACE period – comparisons of rates of grade 2, 3 and 4 pressure ulcers are based on Year 1 vs. Year 2 data; ** data on 'any event' combines rates of falls, pressure ulcers of any grade and UTIs

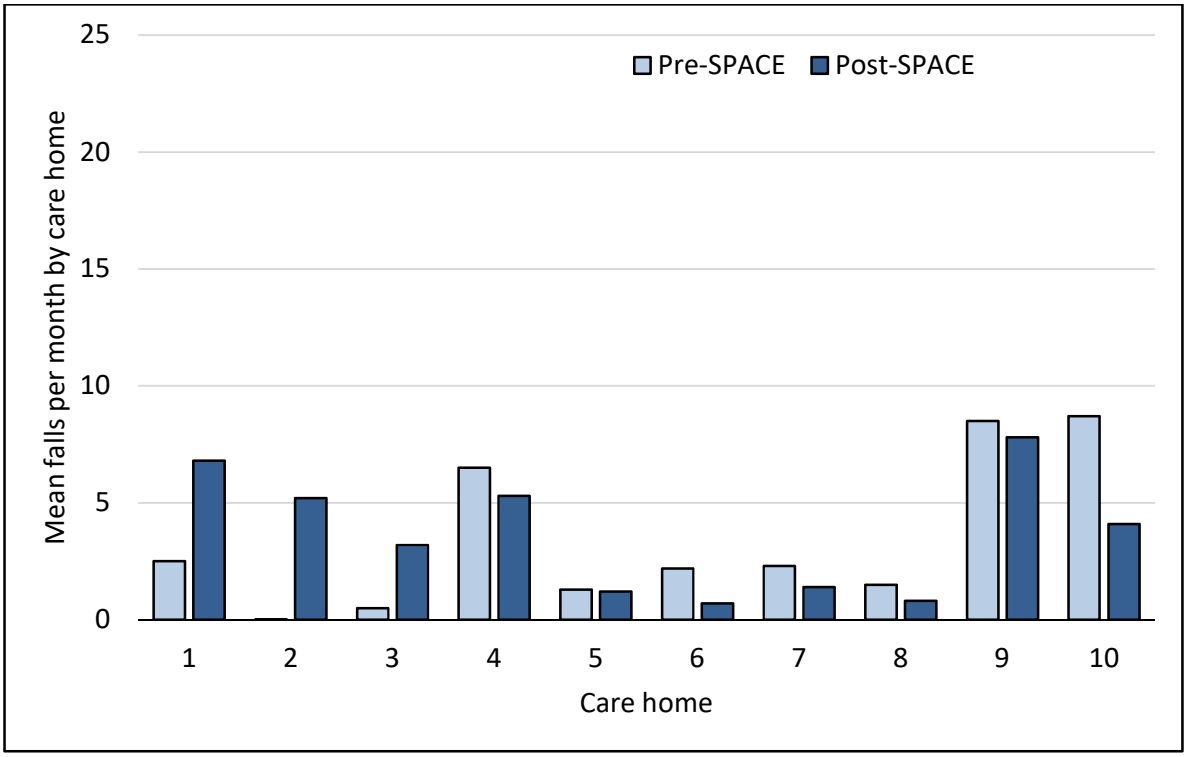
Appendix 4.4: Pre-SPACE vs. post-SPACE event rates, Wolverhampton

	PRE-SPACE		**POST-SPACE**			
Event	Events/Beds	Rate per 100 beds	Events/beds	Rate per 100 beds	P value	Interpretation
Falls	261/2387	10.93	979/11073	8.84	**0.0013**	**Significant reduction**
Pressure ulcers	16/2215	0.72	117/11073	1.10	0.15	Non-significant increase
Grade 2 *	36/5270	0.68	33/5803	0.57	0.45	Non-significant increase
Grade 3	24/5270	0.45	19/5803	0.33	0.28	Non-significant reduction
Grade 4	3/5270	0.08	4/5803	0.07	Numbers too small to calculate	
UTI	10/2387	0.41	33/11073	0.30	0.34	Non-significant reduction
ANY event**	286/2387	12.00	1099/10773	10.20	**0.01**	**Significant reduction**

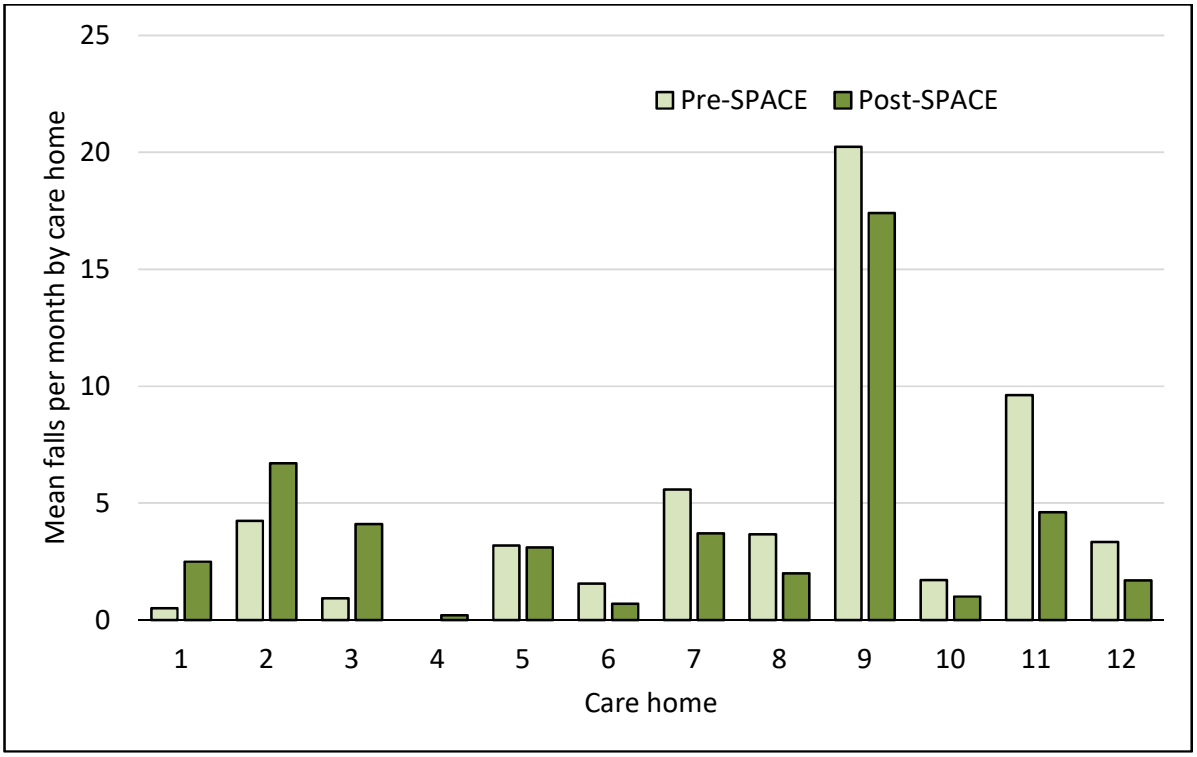
* Data on pressure ulcer grading only available during the post-SPACE period – comparisons of rates of grade 2, 3 and 4 pressure ulcers are based on Year 1 vs. Year 2 data; ** data on 'any event' combines rates of falls, pressure ulcers of any grade and UTIs

Appendices 4.5 to 4.7 show average monthly rates of falls, pressure ulcers and UTIs for each individual care home in Walsall. Light blue bars represent the 6 months pre-SPACE for each care home, and dark blue bars represent the 24 months during which SPACE was implemented for each care home. Equivalent data for Wolverhampton are shown in Appendices 4.8 to 4.10, with light green bars showing pre-SPACE data, and dark green bars denoting post-SPACE data..

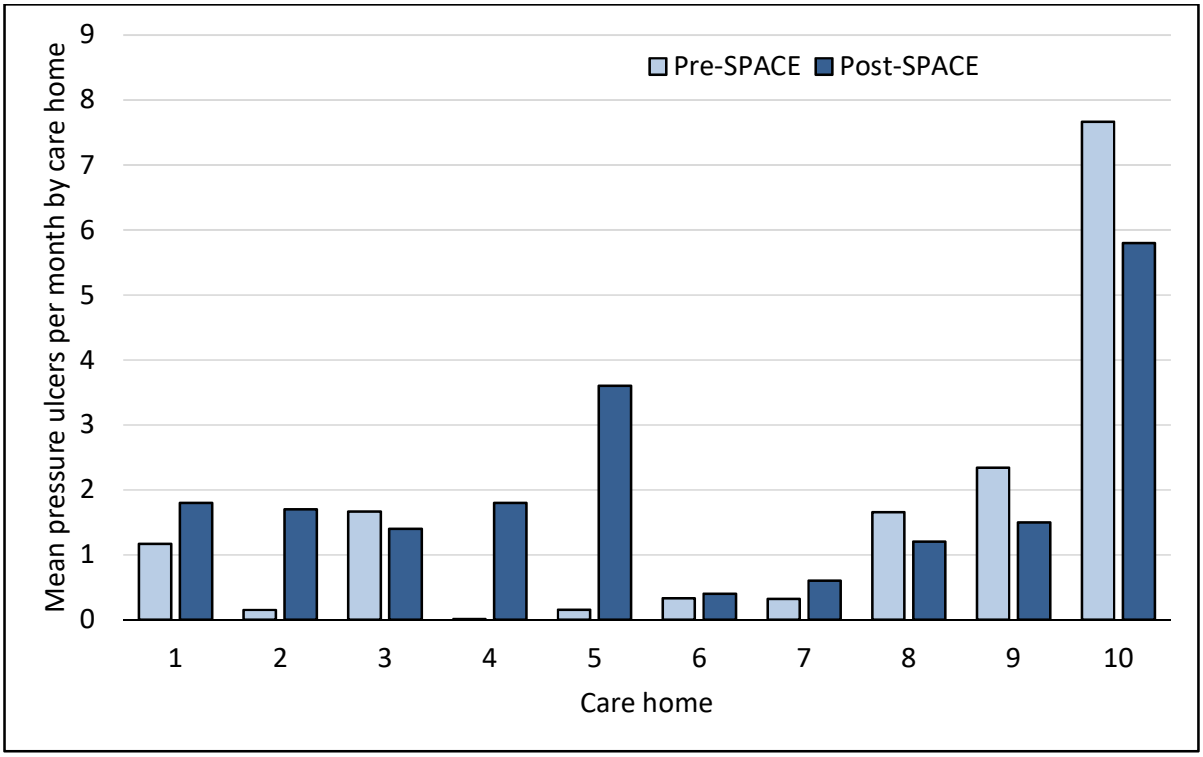
Appendix 4.5: Change in falls rates before and after SPACE in Walsall care homes



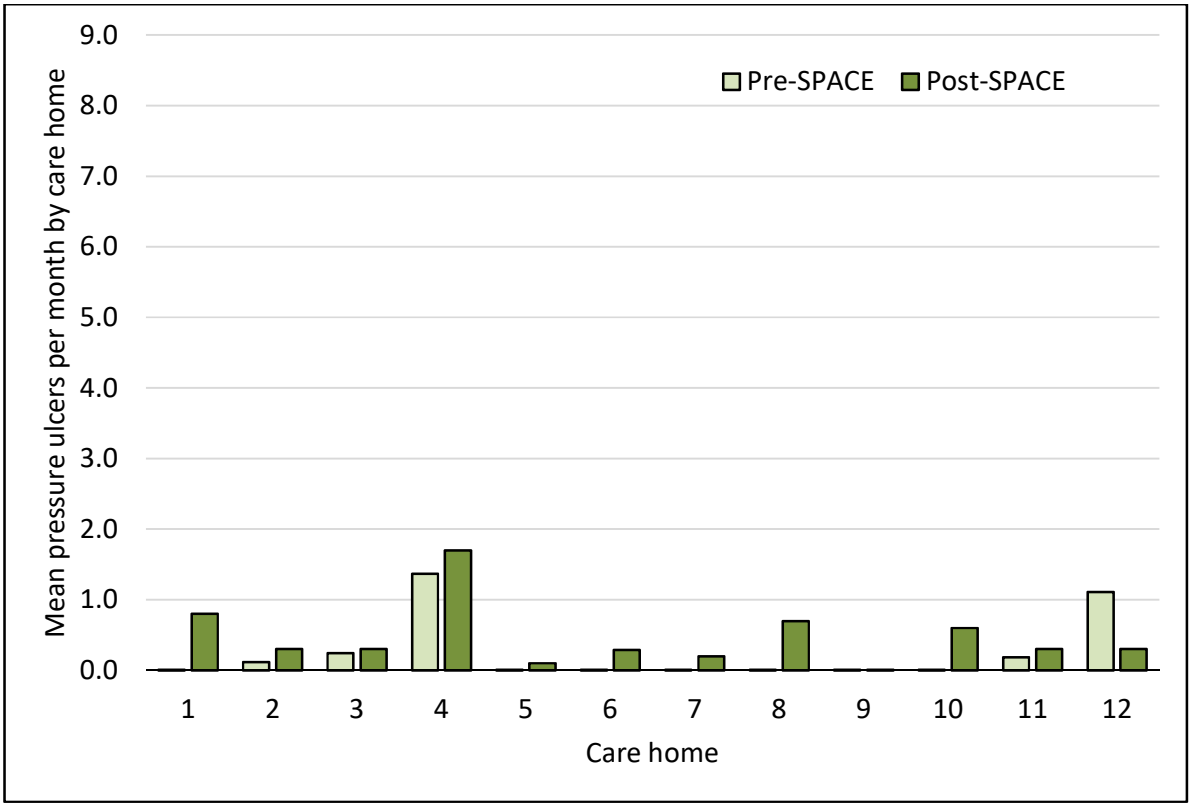
Appendix 4.6: Change in falls rates before and after SPACE in Wolverhampton care homes



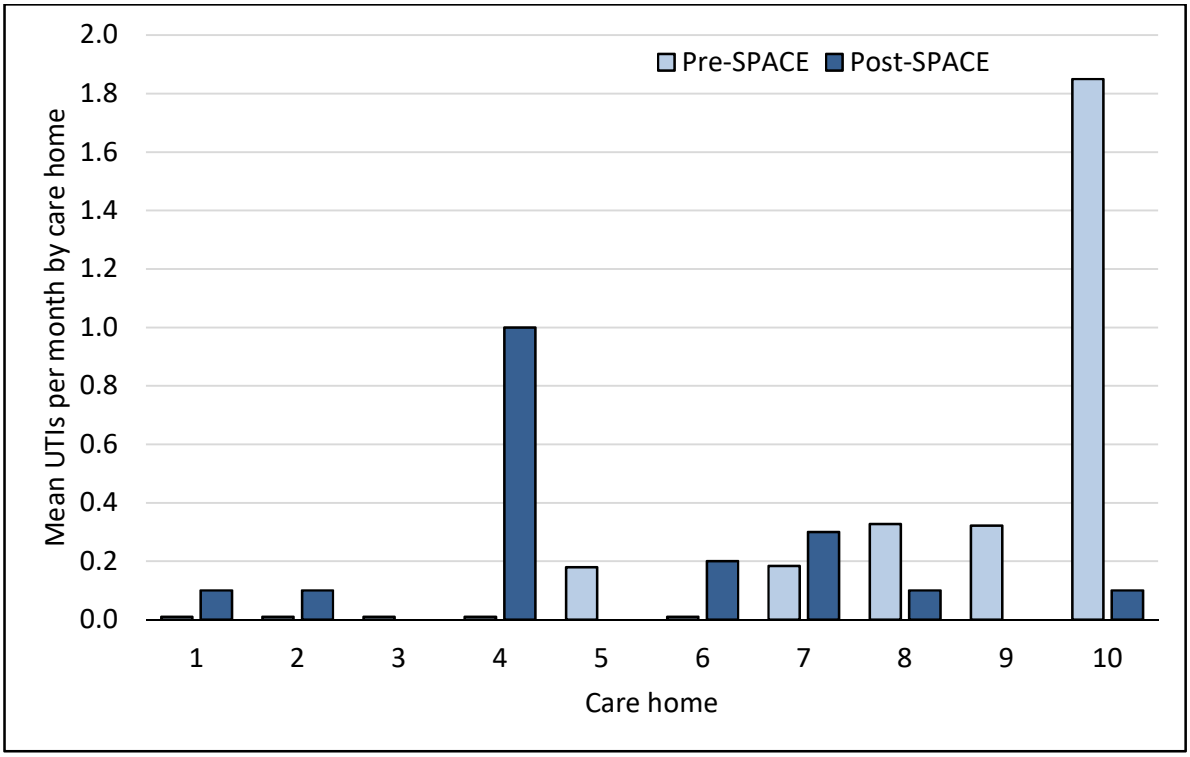
Appendix 4.7: Change in pressure ulcer rates before and after SPACE in Walsall care homes



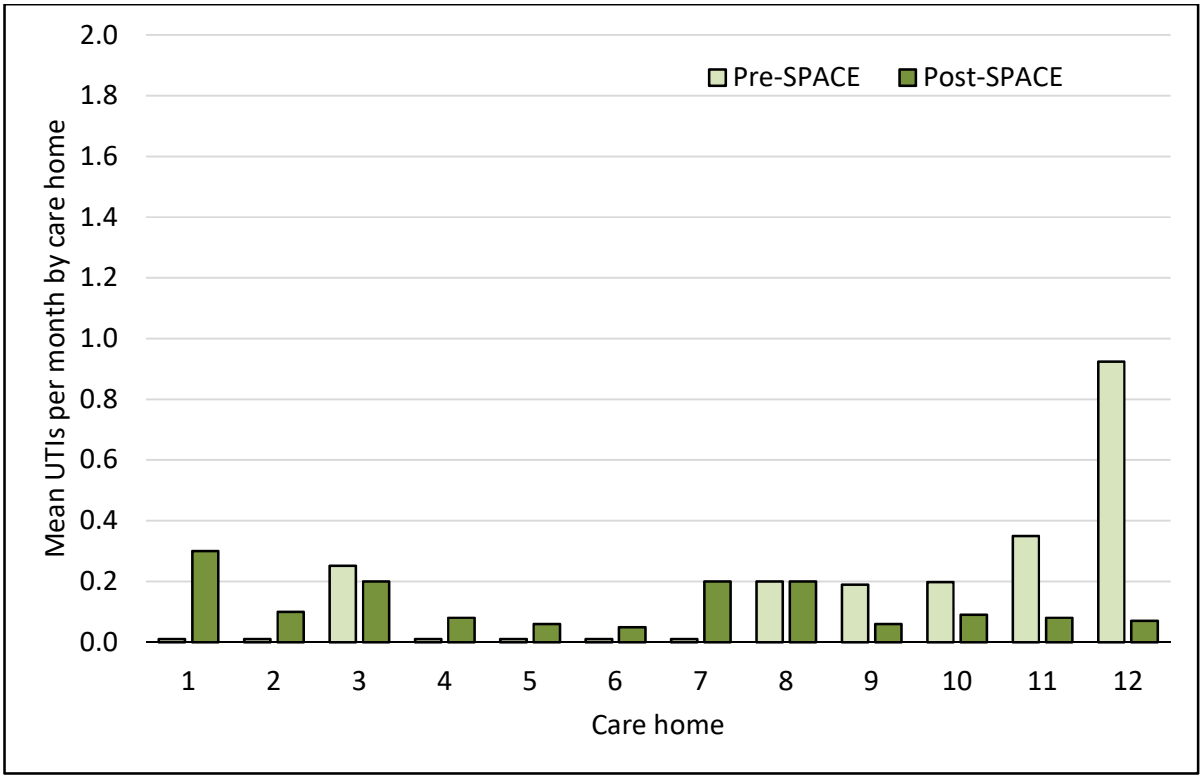
Appendix 4.8: Change in pressure ulcer rates before and after SPACE in Wolverhampton care homes



Appendix 4.9: Change in UTI rates before and after SPACE in Walsall care homes



Appendix 4.10: Change in UTI rates before and after SPACE in Wolverhampton care homes



APPENDIX 5: Evaluation timescale (NB Programme began in Month 0)

ACTIVITIES (months)	-4	-2	-1	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32
Preparation and approvals																				
Development of data collection tools																				
Application for ethical approval																				
Care home sign-up to evaluation																				
CCG and Local Authority approvals																				
Quantitative data collection																				
Baseline survey: Care home managers																				
Yr 1/Yr 2 surveys: Care home managers																				
Baseline survey: Care home staff																				
Yr 1/Yr 2 surveys: Care home staff																				
Adverse events data analysis																				
Qualitative data collection																				
Observation																				
Document analysis																				
Facilitator and CCG manager interviews																				
Focus groups *																				
Case study interviews																				
Analysis																				
Interim quantitative analysis																				
Interim qualitative analysis																				
Final analysis																				
Report writing and dissemination																				
Reports to Programme Board																				
Final report																				
Dissemination																				

* Focus groups originally planned for months 24-26 did not take place