

Safe staffing for adult nursing care in community settings

Evidence review

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Executive Summary

In 2013 the Department of Health and NHS England asked the National Institute for Health and Care Excellence (NICE) to develop evidence based guidelines on safe staffing, with a particular focus on nursing staff for England.

NICE began work on the sixth topic it was referred - safe staffing for nursing in community care settings, in 2015. This report presents the systematic review findings which were going to inform the development of the guideline for this topic. In June 2015 the Safe Staffing guideline programme was suspended.

The review aims to systematically identify, assess and synthesise the available evidence relating to the following primary questions:

- What approaches for assessing and determining nursing staff requirements and/or skill mix, including toolkits, are effective in community settings for adult nursing care and how often they should be used?
 - What evidence is available on the reliability and/or validity of any identified approach or toolkits?
- What outcomes are associated with safe staffing for adult nursing care in community settings?
 - Do nursing staffing levels, ratios of nursing staff per head of the population, average or minimum caseloads or skill mix affect outcomes?
 - What outcomes should be used as indicators of safe staffing nursing?
- What patient/service user/carer factors, staffing and environmental factors affect nursing staff requirements for adults in community settings?
- What organisational factors affect nursing staff requirements for adults in community settings at a team or service level?
- What nursing care activities should be considered when determining nursing staff requirements for adults in community settings?
 - What activities are currently carried out by nursing staff?
 - Do the activities carried out by registered nurses and non-registered nursing support staff (such as healthcare assistants, healthcare support workers and nursing assistants) differ?
 - How much time is needed for each activity, and does this differ according to the setting in which care is delivered (for example, a person's home or a community clinic)?
 - Are activities that are carried out by nursing staff associated with outcomes?

Sixteen studies were identified for inclusion in this review. Most of the included studies were observational in design and provided only moderate or low quality evidence. No high quality studies were identified for inclusion in this review.

This review identified 2 studies that described toolkits or approaches for determining nursing staff requirements in community care settings. Both studies were of low quality.

The review found 3 studies indicating which outcomes may be associated with nurse staffing levels, although none of these studies aimed to examine the association between nurse to

patient ratios and outcomes. These 3 studies were of low quality and had significant methodological limitations which made their findings unreliable.

This review did not identify any evidence that specifically described how minimum staffing levels or ratios may support safe nursing in community care settings.

This review found no evidence describing how staffing factors, organisational factors, environmental factors and patient factors should be taken into account when setting nursing staff levels in community care settings.

This review identified 11 studies that presented data on the nursing activities undertaken in community care settings in the UK. The majority of these studies were prospective cross-sectional studies that used surveys to collect data; 7 were of moderate quality and 4 were of low quality.

This review identified no economic evidence for any of the review questions.

From the included studies it is not possible to draw firm conclusions about what approaches for assessing and determining nursing staff requirements and/or skill mix are effective in community settings for adult nursing care. It is also not possible to determine what outcomes are associated with nurse staffing levels in community settings for adult nursing care. There are some consistencies across the studies exploring community nursing tasks and activities that may generate identifiable categories of community nursing activities.

1. Overview

The National Institute for Health and Care Excellence (NICE) was asked by the Department of Health and NHS England to develop an evidence-based guideline on safe staffing for nursing in community care settings.

NICE began work on this topic in March 2015 with a focus on adult nursing care in community settings. This report presents the systematic review findings which were going to inform the development of this topic area. In June 2015 the Safe Staffing guideline programme was suspended.

1.1. Introduction

Identifying approaches to safe nurse staffing in community care settings is a key challenge for health service providers. Recent enquiries (Francis 2010, Berwick 2013, Keogh 2013) have highlighted the role of poor staffing levels in deficits in care leading to adverse outcomes and poor patient experiences. Safe nurse staffing requires that there are sufficient nurses available to meet patient needs, that nurses have the required skills and are organised, managed and led in order to enable them to deliver the highest level of care possible.

The need for a review of nurse staffing in community care settings was highlighted by the Queen's Nursing Institute report commissioned by NHS England: Developing a national District Nursing Workforce Planning Framework (2014). The report identified the need for a robust system to objectively assess population demands, determine the size of the workforce required to meet demand in a given locality, and deploy the available workforce efficiently.

There are a number of reasons why staffing for adult nursing care in community settings needs to be reviewed. These include:

- increasing demand for nursing care at home
- ageing population with more complex needs
- increased prevalence of complex long-term health problems
- earlier discharge and discharge of patients with more serious or complicated medical problems
- advances in healthcare techniques and technology allowing more complex care to be delivered at home
- decreasing numbers of qualified district nurses and community specialists.

NHS England's five year forward view noted that there has yet to be a shift from acute to community sector-based working, with just a 0.6% increase in the numbers of nurses working in the community over the past 10 years. In December 2014, there were 1264 community matrons and 5644 district nurses (full time equivalent) working in the community compared with 1545 community matrons and 7979 district nurses in December 2009 (Health and Social Care Information Centre). Community health services as a whole have around 100 million patient contacts per year, and comprise approximately £10 billion of the NHS

budget (King's Fund report). Over the age of 75, 1 in 4 people need a district nurse's care at home, rising to 1 in 2 people over 85. To meet this growing demand, home nursing services have been changing and developing, but as a consequence there are fewer community specialists (district nurses) with more nursing tasks being done by healthcare assistants (Queen's Nursing Institute).

The Queen's Nursing Institute report commissioned by NHS England showed that decision-making around the workforce structure and scheduling of nursing staff is decentralised and not systematic, and often derived from available budgets, historical practice or overly simplistic and standardised caseload sizes.

A King's Fund report on managing quality in community healthcare services highlighted that nursing staff shortages were a recurring theme reported in surveys and interviews. Providers were least positive about their performance in the area of ensuring adequate staffing numbers, skill mix and caseload. Monthly performance reports to boards showed that providers were failing to meet targets for appraisal compliance, staff sickness and mandatory training rates. Providers reported that planning and managing the workforce within community services was challenging, largely because of the volume of demand and increase in patient acuity (how ill the person is), with patients being discharged earlier into the community to relieve pressure on acute services.

Nurse staffing levels in the community are typically captured as either a ratio (for example, number of district nurses per 1000 head of population) or through average caseloads (for example, number of patients seen per district nurse). There is no existing guidance on appropriate staffing ratios, the required number of community nurses per population or recommended maximum caseloads. National work has been undertaken to benchmark nurse staffing levels in the community, but this does not determine whether existing staffing levels are sufficient to ensure safe care.

This review is intended to identify the evidence base which would help inform safe staffing in adult nursing in community settings and assess how patient, staff, environmental and organisational factors influence nurse staffing requirements in these settings.

1.2. Review Questions

Seven questions were identified and developed for this review, as follows:

1. What approaches for identifying and determining staffing requirements and/or skill mix, including toolkits, are effective in community settings for adult nursing and how often should they be used?
 - What evidence is available on the reliability and/or validity of any identified approach or toolkits?
2. What outcomes are associated with safe staffing for adults nursing in community settings?
 - Do nursing staff levels, ratios of nursing staff per head of population, average or minimum caseloads or skill mix affect outcomes?
 - Which outcomes should be used as indicators of safe staffing for nursing?

3. What patient/service user/carer factors affect nursing staff requirements for adults in community settings? These might include:
 - Population demographics, including prevalence of chronic disease, multi-morbidity and clinical frailty
 - Case mix and volumes
 - acuity (how ill the person is)
 - level of dependency on nursing care (including capacity for self-care)
 - complexity of intervention required or care provided
 - availability of support (family or carers)
4. What environmental factors affect nursing staff requirements for adults in community settings? These might include:
 - Geographical location (urban or rural, ease of access to people's homes and community clinics, travel time)
 - Time of day or night, or season
 - Ease of access to equipment and supplies
 - Existence of other teams or services (such as care homes)
5. What staffing factors affect nursing staff requirements for adults in community settings? These might include:
 - The division and balance of activities between nurses with Specialist Practitioner Qualification, general registered nurses and non-registered nursing support staff (skill mix)
 - Staff turnover
 - Availability of and care and services provided by other multidisciplinary team members or carers
 - Management and administrative factors
 - Staff and student teaching and supervision arrangements
6. What organisational factors affect nursing staff requirements for adults in community settings at a team or service level? These include:
 - Organisational management structures and approaches
 - Organisational culture
 - Organisational policies and procedures (including those for staff training and revalidation, lone working and use of technology)
 - Range of services commissioned
7. What nursing activities should be considered when determining safe staffing requirements for nursing for over 18s in community care settings?
 - What activities are currently carried out by nursing staff?
 - Do the activities carried out by registered nurses and non-registered nursing support staff (such as healthcare assistants, healthcare support workers and nursing assistants) differ?
 - How much time is needed for each activity, and does this differ according to the setting in which care is delivered (for example, a person's home [including care homes], or a community clinic)?
 - Are activities that are carried out by nursing staff associated with outcomes?

2. Methods

2.1. Overview

This systematic review was conducted in accordance with [Developing NICE Guidelines: the manual](#) (NICE 2014).

This evidence review included the following steps:

- Databases were searched using a peer-reviewed search strategy (Appendix A).
- Potentially relevant primary studies were identified by reviewing titles and abstracts using the pre-specified inclusion and exclusion criteria described in the review protocols (Appendix B). A second reviewer performed a consistency check by screening the titles and abstracts of a random sample of 10% of the references against the same checklist. Any disagreements between the two reviewers were discussed and resolved.
- Full text papers for all references assessed to be potentially relevant were retrieved and independently screened against the pre-specified inclusion and exclusion criteria (Appendix B) by two reviewers. Any disagreements between the two reviewers were discussed and resolved with recourse to a third reviewer when necessary.
- Included studies were quality appraised using an appropriate checklist as specified in [Developing NICE Guidelines: the manual](#) (NICE 2014) where possible.
- The methods and results of each included study were extracted into evidence tables (Appendix C).
- The evidence from included studies was also summarised into summary tables and a narrative description of the findings was produced.
- Evidence statements were generated.

2.2. Search Strategies

Search strategies and review protocols were developed to identify relevant primary studies (studies that were carried out to acquire data directly from participants or data sources) and review papers (papers that include the results of 2 or more primary research studies), including economic evaluations (evaluations that determine the best use of available resources) (see Appendices A and B). Two search strategies were developed – one for review question 1 and another for review questions 2 to 7. Separate protocols were developed for review question 1, review questions 2 to 6, and review question 7. The search strategies were developed by an information specialist and were quality assured by a colleague within NICE's Information Services team.

The search strategies included the following databases:

- British Nursing Index
- CENTRAL
- Cochrane Database of Systematic Reviews (CDSR)
- Cochrane Library
- Cumulative Index to Nursing and Allied Health (CINAHL)
- Database of Abstracts of Reviews of Effects (DARE)
- EconLit

- Embase
- Health Management Information Consortium (HMIC)
- NHS Economic Evaluations Database (NHS EED)
- Medline, including in-process
- Social Policy & Practice

To identify other potentially relevant evidence, the following resources/approaches were also used:

- The World Wide Web was searched for grey literature.
- Potentially relevant references provided by stakeholders during scope consultation were considered, as were any additional studies identified by NICE.
- Backwards and forwards citation searching on included studies and relevant review papers was undertaken as required.

Following advice from topic experts, a date restriction of 2005 was imposed on the systematic review and studies published before this date, or which used data collected before this date, were excluded. This is because practice and standards within community care settings have changed substantially since 2005.

2.3. Screening Criteria

As a minimum, the full text of the studies had to fulfil one of the following criteria in order to be eligible for inclusion in the systematic review:

- Report nurse staffing in relation to outcomes (see Box 1 below)
- Report staffing in relation to factors (patient factors, environmental factors, organisational factors or staffing factors)
- Report staffing in relation to factors and outcomes
- Report activities carried out by registered nurses, healthcare assistants or assistant practitioners

Patient satisfaction studies were not eligible for inclusion unless the study compared the impact of nurse staffing on patient satisfaction.

A full list of the inclusion and exclusion criteria for this systematic review can be found in the review protocols in Appendix B. Operational definitions and outcomes used to inform the screening of titles, abstracts and full papers are included in sections 2.3.1 and 2.3.2.

2.3.1. Operational definitions

Nursing team: the group of workers delivering 'hands on' nursing care in community care settings including:

- Registered nurses
- Non-registered nursing staff such as healthcare assistants or assistant practitioners

Nurse staffing: the size and skill mix of the nursing team in the community care setting, relative to the number of patients cared for. Expressed as nursing hours per patient, nurse-to-patient ratios or an equivalent measure (for example, district nurses-to-population ratio).

2.3.2. Outcomes

Box 1 shows a list of the outcomes that were considered when searching for and assessing the evidence. It should be noted that this list is not exhaustive and any outcomes that were linked to nursing in the studies were included in the evidence review. Many of these outcomes were not present in the literature.

Box 1. Outcomes considered

Serious incidents

- Deaths and serious untoward incidents attributable to problems with the care received in community care settings.
- Serious, largely preventable patient safety incidents that should not occur if the available preventative measures have been implemented by healthcare providers (also known as 'never events'). Examples include:
 - Incorrect administration of drug treatments
 - Serious safeguarding incidents

Delivery of nursing care

- Preventing avoidable deterioration
- Preventing unnecessary admission to hospital
- Preventing healthcare associated infections
- Timely discharge from hospital
- Improving the safety of discharge from hospital
- Preventing medication errors
- Preventing medical device errors
- Prevention and effective management of pressure ulcers
- Wound-healing rates
- Preventing falls
- Rehabilitation and recovery
- Independent living
- Preventing avoidable venous thromboembolism
- Completing safeguarding duties
- Co-ordination of care
- Enabling self-care for long term conditions
- Supporting people to die at home if they choose

Other

- Nursing staff retention
- Nursing staff sickness rates

- Nursing staff clinical appraisal and statutory review rates
- Nursing vacancy rates
- Current and up to date nursing staff training
- Costs (including care, staff and litigation costs)

Reported feedback

- Reported experience and satisfaction ratings related to community nursing, such as complaints related to nursing care
- Quality of life (health-related and social care-related)
- Staff experience and satisfaction ratings

2.4. Search Results

2.4.1. Search 1: Review question 1 (toolkits)

The database searches returned 2702 items for screening. Of these, 2620 were rapidly excluded via title/abstract screening and 45 were requested for full text assessment. In addition, related search strategies, expert recommendations and backwards citation searching identified 32 additional items for full text assessment.

A total of 77 papers were requested for full text assessment. Of these, 2 studies met the inclusion criteria and were included in this systematic review. A list of the studies excluded at the full text assessment stage is available in Appendix D along with the reasons for their exclusion.

2.4.2. Search 2: Review questions 2 to 7 (outcomes, factors and activities)

The database searches returned 23,429 items for screening. Of these, 23,052 were rapidly excluded via title/abstract screening and 332 were requested for full text assessment. In addition, related searches, expert recommendations and backwards citation searching identified 45 items for full text assessment.

A total of 377 papers were requested for full text assessment. Of these, 14 studies met the inclusion criteria and were included in this systematic review. A list of the studies excluded at the full text assessment stage is available in Appendix D along with the reasons for their exclusion.

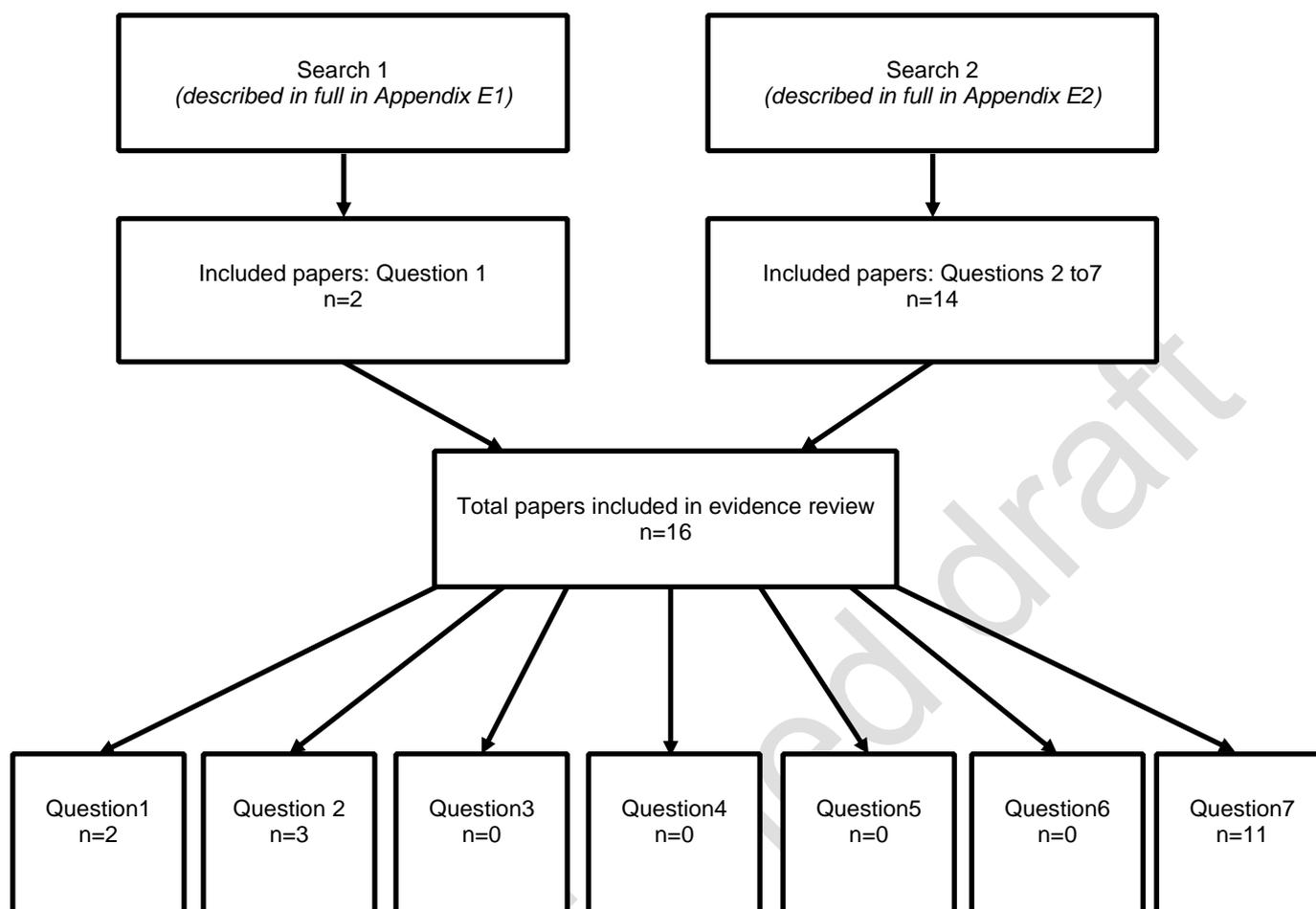


Figure 1: Flow diagram of included studies

2.5. Critical Appraisal and Quality Assessment

2.5.1. Cross-sectional study checklist

All 16 of the included studies were either cross-sectional or a before and after design. None of the checklists currently suggested in *Developing NICE Guidelines: the manual* (NICE 2014) were considered suitable for the quality appraisal of the evidence identified by this review. The checklist selected for the studies in this review is a combination of items derived from the quality assessment methods reported in 3 previous evidence reviews undertaken within the NICE safe staffing programme (Bazian Ltd 2014, Drennan et al 2014, Simon et al 2014), and the *Interim Methods Guide for Developing Service Guidance* (NICE, 2014).

This checklist allowed for a summary assessment of bias and considered items such as study design, sampling procedures, data collection methods and analysis techniques. Each checklist item is accompanied by notes on potential bias factors to consider and ratings associated with different aspects of bias. A complete version of the checklist is available in Appendix F.

Each included study was independently quality assessed. A second reviewer performed an independent quality assessment on all of the studies. The 2 reviewers resolved any disagreements and confirmed overall quality scores.

For each item, the following ratings were assigned:

- ++ where the item was unlikely to contribute to any bias in the study
- + where the item may have contributed to bias in the study, but the bias was unlikely to be significant
- where the item may have contributed to significant bias in the study

An overall quality score was then calculated for each included study based on the individual ratings of each item within the assessment checklist. Each included study was assigned one of the following quality scores:

- ++ High quality. Most items unlikely to contribute to any bias in the study, further research is very unlikely to change our confidence in the estimate of effect
- + Moderate quality. Most items may have contributed to bias in the study, but the bias was unlikely to be significant; further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate
- Low quality. Most items may have contributed to significant bias in the study, high risk of bias for the majority of evidence may decrease the confidence in the estimate of the effect, further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate

2.6. Data Extraction and Evidence Tables

Data from the included studies were extracted into evidence tables adapted from templates in Developing NICE Guidelines: the manual (NICE 2014). Evidence tables for the included studies can be found in Appendix C.

2.7. Evidence Synthesis

The synthesis of the evidence is presented in a narrative format with results tables used as appropriate to display patterns, direction and significance of relationships. Quantitative methods of synthesising evidence (e.g. meta-analysis) were not considered appropriate for this review.

Evidence statements are provided for each review question. These are brief summary statements which outline key findings from the evidence review and include the number of studies identified, the overall quality of the evidence and the direction and certainty of the results.

3. Results

This section of the report presents the findings for all 7 review questions.

Several overarching themes were identified when assessing the evidence base for this review:

- There was a lack of high quality intervention studies identified in the literature searches.
- All of the included studies are either cross-sectional or before and after in design and are thus at risk of endogeneity and other biases. This is largely a consequence of the studies assessing staffing variables and outcomes that are both independently influenced by other variables, particularly patient acuity and dependency. As a result, some of the observed associations may underestimate the true impact of certain factors on outcomes.
- Endogeneity and other biases may also give rise to counter-intuitive findings whereby increases in certain variables (such as the proportion of registered staff) are associated with an increase in adverse outcomes.
- No studies reporting economic evaluations or analyses were identified for any of the 7 review questions included in this report.

A general theme identified throughout the papers included in the review was the poor reporting of both study methods and results, in particular some studies:

- presented narrative results statements but failed to provide any numerical data and associated statistical measures to support their findings.
- failed to adequately describe their data collection instruments. Consequently it was difficult to interpret findings in certain studies.

3.1. Review Question 1

This section of the evidence review presents the findings related to review question 1. Details of the included studies are reported in the evidence tables in Appendix C. A summary of the included studies is provided in table 1. Results are reported in table 2.

3.1.1. Review Question

What approaches for assessing and determining nursing staff requirements and/or skill mix, including toolkits, are effective in community settings for adult nursing care and how often should they be used?

- What evidence is available on the reliability and/or validity of any identified approach or toolkits?

3.1.2. Evidence

In total, 2 studies were identified that are relevant to this review question (Jones and Russell 2007 and Ray et al. 2011). Both studies were prospective before and after studies. One study was conducted in a primary care trust in the UK (Jones and Russell 2007) and the other in a region covering urban, suburban, and rural communities in Canada (Ray et al. 2011).

One study developed and implemented a tool for distributing nurses within different teams in a district nursing service (Jones and Russell 2007). The tool used a formula based on:

- the number of people aged over 65 years that the team is responsible for
- the number of people aged over 75 years that the team is responsible for
- the number of patients seen
- the number of 15 minute units used on direct and indirect patient care and
- the existing caseload size.

These factors were calculated for an average full-time equivalent nurse in the service as a whole (rather than a specific team) and the total for each team. The results for the total for each team were then divided by the results for the full-time equivalent nurse in the service as a whole to provide an number of full-time equivalent nurses needed for each factor in each team. The user of the tool can use either the number of nurses needed for a particular factor (e.g. patients aged over 65 years), or an average of the number of full-time equivalent nurses for each factor to determine the number of nurses needed in each team. The tool is limited in that it cannot be used to determine the overall number of district nurses required across a service. It also does not take skill-mix or different travel times for different teams into account.

The other study implemented a 'central schedule' for indicating the required number of staff on any given day (Ray et al. 2011). No further details were provided about this schedule. In addition to the central schedule, a 2-minute time limit was built into the voicemail system used by district nurses to contact each other outside of team meetings, and more staff were hired. No further details were provided as to the number of staff hired or how the decision was made as to how many new staff to hire.

Neither of the studies provided information on which method was used to determine staffing before the intervention was used.

Both studies were of low quality. Neither of the studies reported confidence intervals or p values, and so it is not known whether the differences in outcomes before and after the intervention were statistically significant. In one study (Jones and Russell 2007) it was unclear whether the primary care trust used in the study was representative of other primary care trusts in the UK. The outcome measures used in the study were not clearly defined and it is not clear if they were accurately measured. Only narrative results were provided for most of the outcomes. In the other study (Ray et al. 2011) the intervention was not clearly defined. It was also not clear how the data presented supported the study authors' conclusion that nursing satisfaction was enhanced and turnover was reduced, particularly as the authors noted that the study did not measure nurse satisfaction.

No economic evidence was identified for this review question.

A summary of the 2 included studies is provided in table 1.

Table 1: Summary of included evidence for review question 1

Reference	Study Design, Country & Setting	Intervention (new toolkit or approach)	Comparator (previous system or tool)	Limitations	Quality Score
Jones and Russell (2007)	Study design: Prospective before and after Country: UK Setting: 1 PCT	Tool for distributing nurses within different teams based on number of people aged 65 years or older, number of people aged 75 years or older, number of patients seen, amount of time spent on direct and indirect care, and existing caseload size.	Not reported.	Outcome measures not clearly defined and not clear if accurately measured. Numerical data not provided for most outcomes. Not clear if power calculation performed. No statistical methods reported in the paper. Confidence intervals and p values not reported. Comparator (i.e. what was used before the tool to determine team size) not described.	-
Ray et al. (2011)	Study design: Prospective before and after Country: Canada Setting: Region covering urban, suburban and rural communities	'Central schedule' for indicating required number of staff In addition, a 2 minute time limit was built into the voicemail system and more staff were hired (no further details given).	Not reported.	Intervention not clearly defined. Power calculation not performed No statistical methods reported in the paper. Confidence intervals and p values not reported.	-
Abbreviations used: PCT, primary care trust.					

One low quality study reported a reorganisation of the district nursing service from 22 teams with an average of 5.2 full-time equivalent nurses per team to 16 teams with an average of 6 to 8 full-time equivalent nurses, with no change in overall volume of clinical staff (Jones and Russell 2007). The study reported that this enabled “economies of scale and consistency in how teams are supported, in terms of administrative and infrastructure” to be achieved. It also allowed the “release of four practice teachers from managerial responsibilities to become practice development facilitators, working directly with teams across the city to support continuous professional development and help nurses to develop new skills required to manage complex patient care.” No numerical data was provided.

The other study, which was also low quality, reported a decrease in the number of voicemails being sent and received by district nurses, and the amount of time spent sending

and receiving voicemails by district nurses after using a 'central schedule' for indicating the required number of staff, implementing a 2-minute time limit on voicemail messages, and hiring new staff (Ray et al. 2011; average number of voicemails: before= 20, after= 17; total time receiving voicemails: before= 18 minutes, after= 14 minutes; average number of voicemails sent: before= 19, after= 13; total time spent sending voicemails: before= 16, after= 9). The statistical significance of the differences in the data from before and after the implementation of the schedule was not reported.

A summary of the results from the 2 studies is presented in table 2.

Table 2: Results of included studies for review question 1

Study/Paper reference and Quality score	Jones and Russell (2007) Quality score: -		Ray et al. (2011) Quality score: -	
	Previous system or tool	New toolkit or approach	Previous system or tool	New toolkit or approach
Details of approach	Details not provided.	Formula for redistribution of staff.	Details not provided.	'Central schedule' for indicating required staff, limiting voicemail length, hiring of new staff.
Staffing	22 teams, average 5.2 FTE nurses per team.	16 teams, average 6 to 8 FTE nurses per team. No change to overall volume of clinical staff.	Not reported.	Not reported.
Outcomes	Baseline values not reported.	Achieved "economies of scale and consistency in how teams are supported, in terms of administrative and infrastructure." "[Allowed us to] release four practice teachers from managerial responsibilities to become practice development facilitators, working directly with teams across the city to support continuous professional development and help nurses to develop new skills required to manage complex patient	Average number of voicemails per day=20	Average number of voicemails per day=17
			Total time receiving voicemails per day=18 minutes	Total time receiving voicemails per day=14 minutes
			Average number of voicemails sent per day=19	Average number of voicemails sent per day=13
			Total time sending voicemails per day=16 minutes	Total time sending voicemails per day=9 minutes

		care.”		
Abbreviations used: FTE, full-time equivalent.				

3.1.3. Evidence Statements

The evidence included for this review question is only partly applicable to community care settings in the UK. This is because 1 identified study was conducted in the UK (Jones and Russell, 2007) and the other study used data from countries with health care systems that are significantly different to the health care system in the UK (Ray et al. 2011).

No economic outcomes were identified for this review question.

Evidence from 1 before and after study (Jones and Russell 2007, [-]) suggests that using a formula for determining teams of district nurses within a service can achieve “economies of scale and consistency in how teams are supported, in terms of administrative and infrastructure” (no numerical data provided, p value not reported).

Evidence from 1 before and after study (Jones and Russell 2007, [-]) suggests that using a formula for distributing district nurses within teams can relieve 4 staff members of managerial responsibilities, allowing them to help nurses develop new skills required for patient care (no numerical data provided, p value not reported).

Evidence from 1 before and after study (Ray et al. 2011, [-]) suggests that using a ‘central schedule’ for determining the required number of staff, implementing a 2-minute time limit on voicemails, and hiring new staff reduces the average number of voicemails per day, the total time spent receiving voicemails per day, the average number of voicemails sent per day and the total time spent sending voicemails per day (average number of voicemails: before= 20, after= 17; total time receiving voicemails: before= 18 minutes, after= 14 minutes; average number of voicemails sent: before= 19, after= 13; total time spent sending voicemails: before= 16, after= 9; p values not reported).

3.2. Review Question 2

This section of the evidence review presents the findings related to review question 2. Details of the included studies are reported in the evidence tables in Appendix C. A summary of the included studies is provided in table 3. Results are reported in table 4.

3.2.1. Review Question

What outcomes are associated with safe staffing for adult nursing care in community settings?

- Do nursing staff levels, ratios of nursing staff per head of population, average or minimum caseloads or skill mix affect outcomes?
- Which outcomes should be used as indicators of safe staffing for nursing?

3.2.2. Evidence

In total, 3 papers (Fukui et al. 2014; Hurst 2006; Luo et al. 2012) were included for this review question. A brief summary of these studies can be found in Table 3

One of the studies was a prospective cross-sectional study (Fukui et al. 2014) and 1 was a retrospective cross-sectional study (Luo et al. 2012). The third study used several different methods, namely a secondary analysis of existing datasets, interviews, and a systematic review (Hurst 2006). Given the limitations of their designs, no direct causal inference can be made from any of the observed associations whether or not they reach statistical significance.

One study included home-visit nursing agencies in Japan (Fukui et al. 2014), one study included primary care trusts in England (Hurst 2006), and the third study included home health and hospice care agencies in the USA (Luo et al. 2012). Two of the studies report a nurse to patient ratio (Fukui et al. 2014 and Luo et al. 2012) and the other study reports a district nurse to population ratio (Hurst 2006).

One of the studies reports the nurse to patient ratio as an outcome for home-visit nursing agencies that are profitable, stable, and not profitable (Fukui et al. 2014). One study reports several patient populations, staff and organisational outcomes, including life expectancy, patient satisfaction, and staff satisfaction (Hurst 2006). The third study reports staff turnover as an outcome (Luo et al. 2012).

All of these studies had significant methodological limitations. All of the studies were considered to be of low quality and at a high risk of bias, with findings which were unreliable. It was not clear in any of the studies how participants were recruited, how participants compared to non-participants, and if the studies were sufficiently powered. In addition, confidence intervals and p values were not clearly reported in 1 study (Fukui et al. 2014). In 1 of the other studies it was not clear how data collected from different sources were combined, not all outcomes were clearly defined, and no statistical analyses were presented (Hurst 2006). In the third study, staffing data were obtained from staff members and may not have been accurate (Luo et al. 2012). All 3 of the included studies are at risk of endogeneity as both outcomes and staffing levels are independently influenced by factors such as patient need and acuity. This may serve to underestimate reported associations with staffing outcomes. Both endogeneity and other types of bias can limit the reliability of study findings and may contribute to counter-intuitive results whereby increases to staffing are associated with increases in adverse outcomes.

It is important to emphasise that none of the studies aimed to look at the association between nurse to patient ratios and outcomes. One of the studies looked at the turnover rate of different types of nursing staff and the mean nursing staff to patients ratio (Luo et al. 2012). One study looked at factors that differed in profitable and unprofitable home-visit nursing agencies, of which 1 factor was the nurse to patient ratio (Fukui et al. 2014). One study presented data for 3 different groups of primary care trusts, including data on nurse to population ratio and data on patient and staff outcomes (Hurst 2006). As the nurse to population ratio was different for each of the groups of primary care trusts, outcomes are presented in this evidence review for each group of primary care trusts (and therefore each nurse to patient ratio). However, the study did not examine the statistical significance of the

differences in the outcomes for the different groups of primary care trusts. Due to the limitations of the 3 studies, it is not appropriate to draw firm conclusions on the association between nurse to patient ratio and outcomes from the data presented here.

Unpublished draft

Table 3: Summary of included evidence for review question 2

Reference	Study Design, Country & Setting	Outcomes	Nursing Team	Limitations	Quality Score
Fukui et al. (2014)	Study design: Prospective cross-sectional Country: Japan Setting: Home-visit nursing agencies	<ul style="list-style-type: none"> Nurse to patient ratio for agencies with different financial statuses 	<p>Number of patients per nursing staff, calculated using total number of patients during 1 month stay as denominator.</p> <p>Profitable= 18.1 patients per 1 member of nursing staff Stable= 14.5 patients per 1 member of nursing staff Unprofitable= 11.3 patients per 1 member of nursing staff</p>	<p>Not clear how participants were recruited.</p> <p>Participants in study sample were not compared to the population.</p> <p>Not clear how exposure was measured.</p> <p>Power calculation not clearly reported.</p> <p>Confidence intervals not reported.</p> <p>P values not clearly reported.</p> <p>Not clear how applicable the exposure (profitability) is to UK NHS setting.</p>	-

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Reference	Study Design, Country & Setting	Outcomes	Nursing Team	Limitations	Quality Score
Hurst (2006)	Study design: Secondary analysis of existing datasets combined with interviews and a systematic review Country: UK Setting: Primary care trusts in England	<ul style="list-style-type: none"> • District nurse to population ratio • Male life expectancy • Female life expectancy • Coronary heart disease deaths per 100,000 population • Coronary heart disease death rate improvement • Cancer death rate improvement • Breast cancer screened • Other screening • Teenage pregnancy improvement • Reference cost index • Four-week smoke quitters • Delayed hospital transfer • Patient satisfaction • Patient complaints per 10,000 population • Health visitor and 	<p>District nurse to population ratio.</p> <p>England average= 5059 population to 1 nurse</p> <p>3 star PCTs= 5131 population to 1 nurse</p> <p>Band 6 PCT= 11,780 population to 1 nurse</p>	<p>Not clear how data collected from different sources were combined.</p> <p>Unclear how participants were recruited for interviews.</p> <p>Unclear how included PCTs compared to PCTs that were not included.</p> <p>Not all outcomes are clearly defined.</p> <p>No statistical analyses presented.</p> <p>Comparative groups consist of different numbers of PCTs.</p>	-

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Reference	Study Design, Country & Setting	Outcomes	Nursing Team	Limitations	Quality Score
		district nursing vacancies • Sickness absence • Staff satisfaction • Improving work lives Note: 'Population to FCE ratio' is also reported as an outcome, however, it is not defined in the study and so not included here.			
Luo et al. (2012)	Study design: Retrospective cross-sectional survey Country: USA Setting: Home health and hospice care agencies	• Staff turnover	Nurse to patients ratio Mean= 0.33 nursing staff per patient	Unclear how participants were recruited. Participants were not compared to non-participants. Staffing data may not be accurate as it was reported by staff members. No power calculation reported.	-
Abbreviations used: PCT, primary care trust.					

Results from the 3 studies are summarised in the text below and presented in detail in Table 4. Most of the results are from 1 study in which the staff to patient ratio and outcomes were reported as variables without any further analysis (Hurst, 2006). The plausibility of a trend or correlation between some of the variables is not clear, for example, district nurse to population ratio and teenage pregnancy and no statistical measures were provided to support the correlations. In addition, all of the studies are of low quality. This means that any trends or correlations seen in the data from this study should be interpreted with extreme caution.

One low quality study (Hurst 2006) study suggests there were no consistent trends between population per district nurse and several patient outcomes, staff outcomes, or organisational outcomes. The same study showed there were trends showing increase in the population per district nurse may be associated with improvements in some patient outcomes. Statistical measures such as p-values were not reported for these associations.

One low quality study (Luo et al. 2012) suggests that there was a statistically significant association between the nursing staff to patients ratio and registered nurse staff turnover and home healthcare aide staff turnover, but no statistically significant association between the nursing staff to patients ratio and licensed practical nurse staff turnover.

One low quality study (Fukui et al. 2014) suggests that profitable home-visit nursing agencies have more patients per nurse than financially stable or unprofitable agencies, however, the odds ratios for stable vs. profitable and stable vs. unprofitable agencies were not statistically significant.

Table 4: Results from included studies for review question 3

Study/Paper reference	Statistical analysis	Staffing measure	Results
Fukui et al. (2014)	Univariate and multinomial logistic regression.	Nurse to patient ratio.	<p>Number of patients per nursing staff: Profitable agencies=18.1 (SD 16.8) Stable agencies=14.5 (SD 8.8) Unprofitable agencies=11.3 (SD 7.0) P<0.001 (unclear which comparison this is for)</p> <p>Number of patients per nursing staff compared to financially stable agencies: Profitable agencies=OR 1.18 (95% CI 0.85 to 1.66) Unprofitable agencies=OR 0.79 (95% CI 0.51 to 1.24)</p>
Hurst (2006)	None.	District nurse to population ratio.	<p>District nurse to population ratio: England average=5059 3 star PCTs=5131 Band 6 PCT=11,780</p> <p>Male life expectancy (years): England average= 75.5 3 star PCTs= 75 Band 6 PCT=75.6</p> <p>Female life expectancy (years): England average=80.2 3 star PCTs=80.2 Band 6 PCT=81.0</p> <p>CHD deaths per 100k population: England average=118 3 star PCTs=123.7 Band 6 PCT=110</p> <p>CHD death rate improvement (5 is good*): England average=3 3 star PCTs=3 Band 6 PCT=3</p> <p>Cancer death rate improvement (5 is good*): England average=3 3 star PCTs=3 Band 6 PCT=3</p> <p>Breast cancer screened (%): England average=78.4 3 star PCTs=80.8 Band 6 PCT=83.0</p> <p>Other screening (5 is good*): England average=4.5 3 star PCTs=4.5 Band 6 PCT=4.5</p> <p>Teenage pregnancy improvement (5 is good*): England average=3</p>

Study/Paper reference	Statistical analysis	Staffing measure	Results
			<p>3 star PCTs=4 Band 6 PCT=3</p> <p>Reference cost index (100 is average*): England average=113 3 star PCTs=102 Band 6 PCT=124</p> <p>Four-week smoke quitters (2 is good*): England average=2 3 star PCTs=2 Band 6 PCT=2</p> <p>Delayed hospital transfer (1 is good*): England average=3 3 star PCTs=3 Band 6 PCT=2</p> <p>Patient satisfaction (5 is good*): England average=3 3 star PCTs=3 Band 6 PCT=3.2</p> <p>Patient complaints per 10,000 population: England average=1.7 3 star PCTs=1.3 Band 6 PCT=2.6</p> <p>Health visitor and district nursing vacancies (%): England average=1.6 3 star PCTs=1.3 Band 6 PCT=1.0</p> <p>Sickness absence (%): England average=4.1% 3 star PCTs=4.0% Band 6 PCT=3.4%</p> <p>Staff satisfaction (%): England average=3 3 star PCTs=3 Band 6 PCT=3</p> <p>Improving work lives (2 is good*): England average=2 3 star PCTs=2 Band 6 PCT=2</p>

Study/Paper reference	Statistical analysis	Staffing measure	Results
Luo et al. (2012)	Logistic regression models.	Nursing staff to patients ratio	Factors associated with staff turnover: Registered nurse staff turnover: Nursing staff to patients ratio=AOR 0.44 (95% CI 0.28 to 0.70, p<0.001) Licensed practical nurse staff turnover: Nursing staff to patients ratio=AOR 0.75 (95% CI 0.49 to 1.13, p not significant) Home healthcare aide staff turnover: Nursing staff to patients ratio=AOR 0.57 (95% CI 0.41 to 0.81, p<0.01)
Abbreviations used: AOR, adjusted odds ratio; CI, confidence interval; PCT, primary care trust. *No further details provided.			

3.2.3. Evidence Statements

The evidence included for this review question is only partly applicable to community care settings in the UK. This is because 1 identified study was conducted in the UK (Hurst, 2006) and the other studies used data from countries with health care systems that are significantly different to the health care system in the UK (Fukui et al. 2014 and Luo et al. 2012).

No economic outcomes were identified for this review question.

Patient outcomes

Evidence from 1 study that combined secondary analyses of existing datasets with interviews and a systematic review (Hurst 2006, [-]) suggests there were no consistent trends between population per district nurse and several patient outcomes (cancer death rate improvement, improvement in number of deaths from coronary heart disease, male or female life expectancy, patient complaints per 10,000 population, 'other' screening, number of people quitting smoking for 4 weeks, and teenage pregnancy improvement). Statistical measures such as p-values were not reported for these associations.

Evidence from 1 study that combined secondary analyses of existing datasets with interviews and a systematic review (Hurst 2006, [-]) suggests there were trends showing that increases in the population per district nurse may be associated with improvements in several patient outcomes (eligible patients screened for breast cancer, delayed hospital transfer, patient satisfaction). However, statistical measures such as p-values were not reported for these associations.

Staff outcomes

Evidence from 1 study that combined secondary analyses of existing datasets with interviews and a systematic review (Hurst 2006, [-]) suggests there were no consistent trends between population per district nurse and staff satisfaction or improving work lives. Statistical measures such as p-values were not reported for these associations.

Evidence from 1 study that combined secondary analyses of existing datasets with interviews and a systematic review (Hurst 2006, [-]) suggests there were trends showing that increases in the population per district nurse may be associated with improvements in

sickness absence. However, statistical measures such as p-values were not reported for this association.

Evidence from 1 retrospective cross-sectional study (Luo et al. 2012, [-]) suggests that there was a statistically significant association between the nursing staff to patients ratio and registered nurse staff turnover ($p < 0.001$) and home healthcare aide staff turnover ($p < 0.01$), but there was no statistically significant association between the nursing staff to patients ratio and licensed practical nurse staff turnover (p value reported as 'not significant').

Organisational outcomes

Evidence from 1 prospective cross-sectional study (Fukui et al. 2014, [-]) suggests that profitable home-visit nursing agencies have more patients per nurse than financially stable or unprofitable agencies (p value not reported), however, the odds ratios for stable vs. profitable and stable vs. unprofitable agencies were not statistically significant.

Evidence from 1 study that combined secondary analyses of existing datasets with interviews and a systematic review (Hurst 2006, [-]) suggests there were no consistent trends between population per district nurse and reference cost index. Statistical measures such as p-values were not reported for this association.

Evidence from 1 study that combined secondary analyses of existing datasets with interviews and a systematic review (Hurst 2006, [-]) suggests there were trends showing that increases in the population per district nurse may be associated with decreases in staff vacancies. However, statistical measures such as p-values were not reported for this association.

3.3. Review Question 3

This section of the evidence review presents the findings related to review question 3.

3.3.1. Review Question

What patient/service user/carer factors affect nursing staff requirements for adults in community settings? These might include:

- population demographics, including prevalence of chronic disease, multi-morbidity and clinical frailty
- case mix and volumes
- acuity (how ill the person is)
- level of dependency on nursing care (including capacity for self-care)
- complexity of intervention required or care provided
- availability of support (family or carers).

3.3.2. Evidence

No evidence was identified that met the inclusion criteria for this review question.

3.3.3. Evidence Statements

No evidence was identified for this review question.

3.4. Review Question 4

This section of the evidence review presents the findings related to review question 4.

3.4.1. Review Question

What environmental factors affect nursing staff requirements for adults in community settings? These might include:

- geographical location (urban or rural, ease of access to people's homes and community clinics, travel time)
- time of day or night, or season
- ease of access to equipment and supplies
- existence of other teams or services (such as care homes).

3.4.2. Evidence

No evidence was identified that met the inclusion criteria for this review question.

3.4.3. Evidence Statements

No evidence was identified for this review question.

3.5. Review Question 5

This section of the evidence review presents the findings related to review question 5.

3.5.1. Review Question

What staffing factors affect nursing staff requirements for adults in community settings? These might include:

- the division and balance of activities between nurses with Specialist Practitioner Qualification, general registered nurses and non-registered nursing support staff (skill mix)
- staff turnover
- the availability of and care and services provided by other multidisciplinary team members or carers
- management and administrative factors
- staff and student teaching and supervision arrangements.

3.5.2. Evidence

No evidence was identified that met the inclusion criteria for this review question.

3.5.3. Evidence Statements

No evidence was identified for this review question.

3.6. Review Question 6

This section of the evidence review presents the findings related to review question 6.

3.6.1. Review Question

What organisational factors affect nursing staff requirements for adults in community settings at a team or service level? These might include:

- organisational management structures and approaches
- organisational culture
- organisational policies and procedures, including those for staff training and revalidation, lone working and use of technology
- range of services commissioned.

3.6.2. Evidence

No evidence was identified that met the inclusion criteria for this review question.

3.6.3. Evidence Statements

No evidence was identified for this review question.

3.7. Review Question 7

This section of the evidence review presents the findings related to review question 7. Details of the included studies are reported in the evidence tables in Appendix C. A summary of the included studies is provided in table 5. Results are reported in tables accompanying each section.

3.7.1. Review Question

What nursing care activities should be considered when determining nursing staff requirements for adults in community settings?

- What activities are currently carried out by nursing staff?
- Do the activities carried out by registered nurses and non-registered nursing support staff (such as healthcare assistants, healthcare support workers and nursing assistants) differ?
- How much time is needed for each activity, and does this differ according to the setting in which care is delivered (for example, a person's home or a community clinic)?
- Are activities that are carried out by nursing staff associated with outcomes?

3.7.2. Evidence

Eleven studies were identified for this review question (Axelrod et al. 2010, Jackson et al. 2013, Jackson et al. 2015, James et al. 2009, Kirby and Hurst 2014, Leary et al. 2008, Leary and Anionwu 2014, Newbury et al. 2008, Pender and Spilsbury 2014, Sargent et al. 2007 and Unsworth et al. 2008) that presented data on the types of activities and key tasks undertaken by nursing staff in UK community settings.

The majority of the studies were prospective cross-sectional studies that used surveys to collect data. Four studies of specialist nurses covered the UK as a whole using national databases to recruit participants (Axelrod et al. 2010, James et al. 2009, Leary et al. 2008 and Leary and Anionwu 2014). These studies looked at Parkinson's Disease Specialist Nurses, Diabetes Specialist Nurses, Lung Cancer Clinical Nurse Specialists and Sickle Cell and Thalassaemia Specialist Nurses respectively. One study of Community Palliative Care

Nurse Specialists was based on 1 team of nurse specialists who covered a geographical population of 500,000. Studies of general community nursing teams (including district nursing community staff [registered nurses and healthcare assistants] and community matrons), were smaller scale, covering counties or care trust boundaries (Jackson et al. 2013, Jackson et al. 2015, Kirby and Hurst 2014 and Unsworth et al. 2008). One study (Pender and Spilsbury 2014) looked at the activities of healthcare assistants only. One study (Sargent et al. 2007) looked at the activities of community matrons only.

Seven studies (Axelrod et al. 2010, Jackson et al. 2013, Jackson et al. 2015, James et al. 2009, Kirby and Hurst 2014, Pender and Spilsbury 2014, and Sargent et al. 2007) were moderate in quality because they were observational in design and had no major limitations. Four studies were considered to be low quality (Leary et al. 2008, Leary and Anionwu 2014, Newbury et al. 2008 and Unsworth et al. 2008), because of a lack of clarity regarding the included staff group, setting, or methods, small sample sizes or risk of participant bias.

No economic evidence was identified for this review question.

Table 5: Summary of included evidence for review question 7

Reference	Study Design, Country & Setting	Data collection method	Nursing Team	Limitations	Quality Score
Axelrod et al. (2010)	Cross-sectional. Prospective survey of UK PDNS. Data from 76 nurses.	Questionnaire	89 PDNS responded (76 to question of interest), 40% response rate 60.7% PDSN for more than 5 years 80.9% completed PDSN training 9% undergoing training 76.4% working exclusively with people with Parkinson's 32.6% qualified to prescribe	Exact response rate uncertain as Parkinson's Disease Society's national database (from which surveys were mailed) may be out of date. Existence (if any) of non-response bias cannot be established. Sampling not randomised or stratified. Unclear what % of survey respondents were based in the community.	+
Jackson et al. (2013)	Cross-sectional. Prospective collection and analysis of activity data from community nurses in Kent and Medway. Data from 24 nurses collected over 10 days.	Paper-based tool	24 band 5-7 nurses working in general and specialist community nursing roles in 3 Community Health Care Trusts.	Number of self-selected participants is small, with an uneven distribution across the 3 sites. It is not clear whether outcomes were measured by participants or by an observer. Sample not randomised or stratified. Sample representative of 1 region only (3 organisations).	+
Jackson et al. (2015)	Cross-sectional. Prospective collection and analysis of activity data from community nurses in Kent, Surrey and Sussex. Data from 80 nurses collected over 4 months.	Web-based tool	80 band 5-7 district and community nurses representing 4 organisations. 11,000 points of data with 7,629 interventions collected.	Sample size by participating organisations is small. Dataset does not allow for generalisations or inferences to be made about the pattern of work undertaken by community practitioners in the region. Sample not randomised or stratified.	+

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Reference	Study Design, Country & Setting	Data collection method	Nursing Team	Limitations	Quality Score
James et al. (2009)	Cross-sectional. UK DSNs. Data from 104 nurses.	Survey	159 diabetes centres returned questionnaires, 44% response rate 18% from primary care organisations 81% from acute trusts 1% from nurses working in general practice surgeries 104 responses from Community DSNs	Risk of responder bias. Power calculation not reported for comparison of community and hospital nurses. Sampling not randomised or stratified.	+
Kirby and Hurst (2014)	Cross-sectional. Prospective audit of community nurses in Cumbria. Data collected from 394 nurses over 7 days.	Diary	394 district nursing community staff participated (registered nurses and healthcare assistants). Staff represented 46 teams from 6 localities. 16,735 nursing interventions analysed.	Power calculation not reported. P values not reported. Sampling not randomised or stratified.	+
Leary et al. (2008)	Mixed methods study (including prospective and retrospective audits) of UK lung cancer CNS. Data collected from 21 nurses.	Telephone calls	Strand 1: 21 specialist nurses from 14 teams. Strand 3: 17 nurses involved in 2 year mathematical modelling project 6 nurses involved in further analysis using the inter-relational database.	Unclear whether lung cancer CNS included in this study are hospital or community-based (or both). Study design not clearly stated, and confused due to the 3 different strands of the study Sampling not randomised or stratified.	-
Leary and Anionwu (2014)	Mixed methods including mathematical modelling and computational mathematics and qualitative interviews. Study of SC&T specialist nurses working in acute and community care in	Interviews, workshop, activity tool	117 SC&T specialist nurses 8966 nursing events captured over 1639 hours from a total of 22.8 WTEs 15 community and 11 acute* *Unclear what this number equates to.	Data relates to community nursing activities for both children and adults. Not all data is broken down into acute and community nurses. Study design unclear Sampling not randomised or stratified.	-

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Reference	Study Design, Country & Setting	Data collection method	Nursing Team	Limitations	Quality Score
	England. Data collected from 117 nurses over 70 hours.				
Newbury et al. (2008)	Cross-sectional. Prospective survey of 1 community palliative care nurse specialist team serving a mixed rural and urban area (population of 500,000). Data collected from 15 nurses over 4 weeks.	Paper-based tool	15 community palliative care nurse specialists (plus 1 nurse specialist working on a bank basis). Nurses worked a mixture of full-time and part-time hours, making up 11.16 WTEs. Team based at hospice.	Data collection not validated. Data self-reported, potential for Hawthorn effect, use of 1 code changed after the first week of data collection which may have skewed the findings. Study design not clearly stated. Unclear how participants were recruited. Small sample size, with data drawn from 1 community palliative care team only.	-
Pender and Spilsbury (2014)	Mixed methods study of UK healthcare assistant activities. Data collected from 57 participants.	Surveys, interviews and secondary analysis of national data sets.	37 provider organisations participated (49% of England total). 37 senior managers/directors of nursing and 20 service managers/caseload holders participated in interviews.	Sample not randomised or stratified.	+
Sargent et al. (2007)	Cross-sectional. Patients and carers across 6 PCTs). Data collected from 124 patients and carers.	Interviews	Community matrons.	Potential participant bias Sampling not randomised or stratified.	+

Reference	Study Design, Country & Setting	Data collection method	Nursing Team	Limitations	Quality Score
Unsworth et al. (2008)	<p>Cross-sectional.</p> <p>Prospective study of district nursing teams working in Northumberland Care Trust.</p> <p>Data collected for an unknown number of nurses over unknown period of time.</p>	Observation	A total of 51 district nursing teams may have been involved in the project to identify capacity, but this is unclear.	<p>Acknowledged variation between teams across the country.</p> <p>Unclear how participants were recruited.</p> <p>Non-participants not identified.</p> <p>Sampling not randomised or stratified.</p>	-
<p>Abbreviations used: CNS, Clinical Nurse Specialist; DSN, Diabetes Specialist Nurse; PCT, Primary Care Trust; PDSN, Parkinson's Disease Specialist Nurse; SC&T, Sickle Cell and Thalassaemia; WTE, Whole Time Equivalent.</p>					

Key activities currently carried out by specialist nurses

Two studies of moderate quality (Axelrod et al. 2010 and James et al. 2009) identified types of activity undertaken by specialist nurses and the proportion of survey respondents reporting it (see Table 6).

Table 6: Specialist nurse activities (proportion of respondents reporting activity)

Study	Axelrod et al. (2010)	James et al. (2009)
Specialist nurse	Parkinson's Disease Nurse Specialist	Diabetes Specialist Nurse
Activities (proportion of respondents reporting activity)	Medicines advice, prescribing (16.6%) Support, counselling, advice (15.8%) Education and information (14.6%) Disease/symptom/care management (11.5%) Clinic (9.9%) Liaise multi-disciplinary team, coordinate care (9.5%) Assessment, care planning (7.1%) Home visits (4.7%) Telephone advice (3.9%) Total care (diagnosis to death)/as the Parkinson's Disease Specialist job description/'huge remit' (3.6%) Research (1.2%) Administration (0.8%)	Patient management (96%) Education for patients (95%) Education for other allied healthcare professionals (91%) Education for nursing staff (89%) Education for medical staff (81%) Dose adjustment only (62%) Prescribing (56%) Non-medical prescribing (46%) Ante-natal clinics (41%) Pump training (36%) In-patient work (36%) Cardiovascular disease (20%) Foot clinics (14%) Hypertension clinic (11%) Renal clinics (9%) Pre-assessment clinics prior to surgery (5%)

One study rated low for quality (Newbury et al 2008), identified the proportion of a Community Palliative Care Nurse Specialist's time spent on each component of their role, based on the average across a team of 15 nurses. Two other low quality studies (Leary et al. 2008 and Leary and Anionwu 2014) also analysed the distribution of specialist nurse activity according to the proportion of a nurse's time spent on each type (see Table 7). The figures in the Leary et al. (2008) study were derived from 352 events performed over 8 days, while the Leary and Anionwu (2014) study analysed 4763 events.

Table 7: Specialist nurse activities (average proportion of time spent on each type of activity)

Study	Newbury et al. (2008)	Leary et al. (2008)	Leary and Anionwu (2014)
Specialist nurse	Community Palliative Care Nurse Specialist	Lung Cancer Clinical Nurse Specialist	Sickle Cell & Thalassemia Specialist Nurses

Activities (average proportion of time spent on each type of activity [range*])	Clinical practice (69% [56 to 77%]) 'General' (15% [8 to 23%]) Education/support (9% [1 to 24%]) Management (5% [1 to 3%]) Research (3% [0 to 7%]) Consultancy (0% [0 to 1%])	Clinical (65%) Admin (28%) Educational (4%) Consultation (2%) Research (1%)	Physical (35%) Admin Non clinical (25%) Psychological (16%) Admin Clinical (14%) Social (5%) Referral (5%)
*Range is reported where it is provided in the study.			

Newbury et al. (2008)

In this low quality study, activity classified as 'clinical practice' included computer record-keeping. Time spent on computer record-keeping ranged from 13.2% to 21.3% of a Community Palliative Care Nurse Specialist's time (average 16.4%). Time spent on clinical practice without computer record-keeping ranged from 35.5% to 55% (average 46.5%).

The reported clinical contact time activities included time spent on telephone calls with other professionals (average 6.2%), visits to patients or family members of patients (average 21.1%), bereavement visits (average 1.1%), and telephone calls to patients or patients' families (average 6.4%).

The time spent on 'Education/support' included time spent giving education/support (average 3.2%, range 0 to 14.3%), time spent receiving education/support (average 3.6%, range 0 to 8.7%) and time spent giving and receiving individual support (average 1.7%, range 0 to 4.5%).

The proportion of time spent driving ranged from 7.9% to 22.8%, the average being 14.3%.

On average, the amount of time spent on breaks over 4 weeks was 6.25 hours.

Other activities identified that did not fit into specified codes included:

- Funeral attendance
- Car breakdown – waiting for assistance
- Letter writing
- Parental leave
- Looking up medical records at doctor's surgery
- Attempted visit – patient not in.

Leary et al. (2008)

In a low quality study by Leary et al. (2008), half of the administration was clinical in nature, including case management and facilitating investigations.

Results

The follow-up events^a were broken down into the following categories and presented in a graph^b:

- Education (staff)
- Management/resources
- Service design/redesign
- Administration
- Brokering
- Case/Pathway management
- Clinical leadership
- Clinical expertise

The study found that telephone contact represented a minimum of 26% of Lung Cancer Clinical Nurse Specialists' (CNS) activity by time. The content of the telephone calls was as follows: prevention, symptoms, investigations, diagnosis, treatment, palliative care, follow-up, bereavement, referral, support and reassurance, and 'other'. Follow ups to phone calls by the CNS were either home visits, ward visits, clinic reviews, nurse-led review, or discharge. It is not possible to present numerical data for these activities as they were presented on a graph in the study paper.

Additionally, the study found that the time spent per nursing event was mostly 0 to 15 minutes (69%), followed by 15 to 30 minutes (19%), 30 minutes to an hour (8%), 1 to 2 hours (3%) and more than 2 hours (1%). However, it was not clear whether the Lung Cancer Clinical Nurse Specialists were working in the community or hospital-based.

Leary and Anionwu (2014)

The ratio of clinical to nonclinical/clerical work in community settings was reported to be 74:26. This was a low quality study.

Key activities carried out by nursing staff

A research project reported in a moderate quality study by Jackson et al. (2013) piloted use of the Cassandra Matrix workload activity tool and as part of this collected data on general and specialist community nursing activities in 3 Community Health Care Trusts in Kent and Medway over a period of 10 days. The identified activities included (in order of significance^c):

- Care planning and evaluation
- Caseload management
- Symptom control and advice
- Promoting self-management
- Reassessment of needs
- Handovers
- Administration.

^a Further information is not provided on what constitutes an 'event'.

^b It was not possible to extract numerical data from the graph.

^c p values not reported.

Their data also indicated that practitioners engaged less (although still significantly) in providing health education, risk assessment and reviews, hospital avoidance, coordinating care, clinical risk assessment, chasing up of referrals and results. They also identified that a large amount of travelling was done.

A smaller proportion of the overall work consisted of rescue work, carer support, dealing with distress, anxiety management, anxiety rescue, social assessment, safeguarding the vulnerable, mediation of relationships, social advice, psychological assessments, advocacy, communicating significant news, and joint assessments.

One moderate quality study looked at the activities of community matrons from the patient and carer perspective (Sargent et al. 2007). Five categories of community matron task were identified, from the tasks frequently described by patients and carers, as follows:

- Clinical care (top-to-toe physical examinations, listening to patients' chests, ordering tests and investigations, checking medications, prescribing medications [in accordance with care plans], organising prescriptions [in liaison with the GP], referring patients to specialist clinics, monitoring blood pressures, giving patients vaccinations and vitamin injections, weighing patients, obtaining blood and urine specimens, providing ad-hoc wound care, and conducting initial care assessments for social services).
- Care co-ordination (liaison and collaboration with individuals and organisations).
- Education (health promotion, disease education, information and advice about medications, advice about support services [including referrals]).
- Psychosocial support
- Advocacy (Advocating on the behalf of patients with hospital consultants, GPs, pharmacists and nursing services; advocating on the behalf of patients and carers with social services; advocating on behalf of the patients and carers with a wide range of organisations to gain access to services and obtain equipment; writing letters of support and following up referrals with telephone calls to social workers; advocating on patients' behalf with local authorities to have environmental hazards such as uneven footpaths rectified; and liaison with pharmacists to ensure medications were provided to patients in user-friendly formulations and packaging).

One moderate quality study looked at the activities of healthcare assistants (Pender and Spilsbury 2014). They identified the tasks carried out by band 3 community nursing assistants and grouped them according to 13 categories:

- Personal care (assisting with hygiene needs; continence care [plus reassessment after initial assessment by registered nurse]; daily living support).
- Elimination care (bowel care; stoma care; insertion of urethral catheters [female only]).
- Nutritional care (nutritional advice; dietary advice to patients with diabetes, blood glucose monitoring; percutaneous endoscopic gastrostomy [PEG] feeding).
- Rehabilitative care (movement/mobility; exercise sessions; fitting healthcare equipment).
- Medicine administration (administering insulin [to stable patients only]; administering eye drops; changing fentanyl patches [pain relief]; reminding patients to take medications; ear syringing).
- Respiratory care (upper airway suction).
- Sample taking (venepuncture; testing specimens).

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- Contribution to discharge planning (supporting the discharge of a patient from hospital).
- Clinical observations (systemic observations; ECGs; pulse oximetry; bladder scanning).
- Long-term conditions (undertaking clinical observations and reporting to registered nurse).
- Palliative/end of life care (supporting patient and relatives).
- Wound care (simple wound dressings [for example grade 1 or 2 pressure area care]; assisting in leg ulcer clinic; compression bandaging).
- Administrative (record keeping – chatting and reporting care delivery; entry of outcomes data).

A moderate quality study by Jackson et al. (2015) reported on a phase 2 pilot of the Cassandra Matrix workload activity tool in a moderate quality study. They reported the proportion of interventions undertaken by district nurses, general and specialist community nurses working in 4 community nursing organisations in Kent, Surrey and Sussex, according to 6 categories:

- Physical (43%)
- Psychological (19%)
- Case management (19%)
- Clinical admin (8%)
- Social (6%)
- Non-clinical admin (5%)

The top 10 interventions were also identified:

- Data entry (16%)
- Clinical admin (15%)
- Physical assessment (11%)
- Symptom assessment (11%)
- Wound management (10%)
- Non clinical admin including routine chasing up (9%)
- Psychological assessment (8%)
- Shared decision making (7%)
- Promoting self-management (6%)
- Performing procedures (6%)

The categories of activity were further broken down into specific tasks and presented in the study as a graph but it was not possible to extract the data from this format. However, the total number of events for each specific task was provided (see Table 8).

Table 8: Number of events for each activity identified by Jackson et al. (2015)

Intervention	Total
Data entry	973
Clinical admin	894
Physical Assessment	679
Symptom Assessment	638
Wound management	571

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Intervention	Total
Non clinical admin including routine chasing up	540
Psychological assessment	467
Shared decision making	435
Promoting self-management	360
Administering medicines (IM, SC)	347
Performing procedures	354
Anxiety management	345
Medicines education	293
Social assessment	255
Medicines advice	253
Supporting clinical choice and meeting information needs	228
Stock control/ordering	205
Informal and formal teaching	187
Review results & act on findings	176
Referrals Clinical (x1)	162
Requesting/recommending medications	161
Lifestyle changes & Social adaption	151
Dealing with distress	139
Mental capacity assessment	132
Continence management	127
Advocacy	120
Performing near patient testing	117
Requesting investigations	110
Advanced care planning conversations	94
Body image/Psycho-sexual	89
Referrals other i.e. equipment (x1)	80
Brokering care	79
Prescribing/supplying products	73
Communicating significant news	72
Phlebotomy	71
Referrals Clinical (more than 1)	71
Professional activity i.e. regular meetings/journal clubs/grand rounds etc.	67
Rescue work (physical/devices/drugs/iatrogenic)	64
Anxiety rescue work	59
Safeguarding	57
Prescribing medications	50
Administering or managing IV	48
Domestic/safety	48
Titration medications	46
Leadership work-monitoring standards, vigilance & role modelling	45
Referrals Social (x1)	44
Continence assessment	44
Falls assessment	38
Social needs assessment (formal)	36
Mediation of relationships/conflict resolution	36
Administering medicines (oral)	33
Referrals other i.e. equipment (more than 1)	31
Service development/management	28

Intervention	Total
Finance/benefits advice/housing	21
Management of enduring mental health issues	18
Referrals Social (more than 1)	12
Biographical disruption	8
Enteral feeding	6

One moderate quality study (Kirby and Hurst 2014) and 1 low quality study (Unsworth et al. 2008) reported on the proportion of time spent on different types of activity by community nurses. The results are presented in Table 9.

Table 9: Community nurse activities (average proportion of time spent on each type of activity)

Study	Kirby and Hurst (2014)		Unsworth et al. (2008)
Community nurse	District nursing community staff		District nursing teams
Activities (average proportion of time spent on each type of activity)	Cumbria	Scotland	Client visit (33.8%) Clinical admin (27.5%) Travel (20.7%) Liaison with other professionals (7.8%) Other Admin (3.3%) Client contact (2.3%) Mentoring and teaching (1.4%) Away (1.3%) Continuing professional development (1.2%) Meetings (0.8%)
	Direct care (35%) Associated (23%) Indirect care (22%) Travel (19%) Unproductive (2%)	Direct care (39%) Associated (35%) Travel (13%) Indirect care (11%) Unproductive (<1%)	
Direct care = direct nursing, face-to-face care, e.g. redressing a wound, Indirect care = patient-related activity that is one step removed from the patient, e.g. writing nursing notes, Associated = routine clerical work.			

The low quality study by Unsworth et al. (2008) reported that on average a whole time equivalent nurse completed 6.9 visits per day, with each visit lasting on average 35 minutes. However, it is unclear how many nursing teams were involved in this stage of the research, or whether different types of community nursing staff were included, such as community matrons or healthcare assistants. In addition, the activity data were collected from 1 shift only.

Differences in activities carried out by registered nurses and non-registered nursing staff (healthcare assistants), and different bands of nurses

A moderate quality study by Kirby and Hurst (2014) additionally reported on the differences in proportions of time spent on different types of activity between registered nurses and unregistered nursing staff: The results are presented in Table 10.

Table 10: District nursing community staff activities compared between registered nurses and healthcare assistants

Study	Kirby and Hurst (2014)	
Activities	Registered nurses	Healthcare assistants

(average proportion of time spent on each type of activity)	Direct care (34%) Indirect care (23%) Associated (23%) Travel (18%) Unproductive (2%)	Direct care (35%) Associated (24%) Travel (22%) Indirect care (17%) Unproductive (1%)
Direct care = direct nursing, face-to-face care, e.g. redressing a wound, Indirect care = patient-related activity that is one step removed from the patient, e.g. writing nursing notes, Associated = routine clerical work.		

Kirby and Hurst (2014) also reported that, on average, registered nurses visited 11 patients per day, and healthcare assistants visited 12.5 patients per day. In addition, handing over to fellow workers was the commonest indirect care activity, and that half of the associated work time was clerical work.

A moderate quality study by Jackson et al. (2013) identified several differences in the activities of nursing staff working at different pay bands. They reported that the band 5 practitioners only did a small amount of work involving interpersonal relationship skills, with the band 6 practitioners doing a higher proportion than the band 5 practitioners, and the band 7 practitioners a high proportion than the band 6 practitioners. They identified that band 7 practitioners engaged in significantly higher amounts of caseload management and other administrative tasks than band 5 and band 6 practitioners. Band 5 practitioners were found to be engaged more significantly in procedural work, care planning and travelling than band 6 and band 7 practitioners. However, the sample size was small (22 staff) and representative of only 2 community healthcare organisations. In addition, community mental health nurses may have been included in the dataset. The data was presented in a graph and it was not possible to extract the numerical data from the graph.

3.7.3. Evidence Statements

The evidence included for this review question is directly applicable to community care settings in the UK. This is because only studies that used data from the UK were included.

No economic outcomes were identified for this review question.

Activities of specialist community nurses

Diabetes Specialist Nurses

Evidence from 1 cross-sectional study (James et al. 2009, [+]) identified 16 types of activities undertaken by Diabetes Specialist Nurses: patient management, education for patients, education for other allied healthcare professionals, education for nursing staff, education for medical staff, dose adjustment only, prescribing, non-medical prescribing, ante-natal clinics, pump training, in-patient work, cardiovascular disease, foot clinics, hypertension clinic, renal clinics and pre-assessment clinics prior to surgery.

Lung Cancer Clinical Nurses

Evidence from 1 mixed-methods observational study (Leary et al. 2008, [-]) identified the average proportion of a Lung Cancer Clinical Nurse Specialist's time spent on 5 different types of activity: clinical, admin, educational, consultation, research. Half of the administration was clinical in nature, including case management and facilitating investigations. Follow up events were categorized into 8 types: education (staff),

management/resources, service design/redesign, administration, brokering, case/pathway management, clinical leadership and clinical expertise. Content of telephone calls was as follows: prevention, symptoms, investigations, diagnosis, treatment, palliative care, follow-up, bereavement, referral, support and reassurance, and 'other'. Follow ups to phone calls were either home visits, ward visits, clinic reviews, nurse-led review, or discharge.

Evidence from 1 mixed-methods observational study (Leary et al. 2008, [-]) found that time spent per nursing event for Lung Cancer Clinical Nurse Specialists was mostly 0 to 15 minutes, followed by 15 to 30 minutes, 30 minutes to an hour, 1 to 2 hours and more than 2 hours.

Palliative Care Nurses

Evidence from 1 prospective cross-sectional study (Newbury et al. 2008, [-]) identified the average proportion of a Community Palliative Care Nurse Specialist's time spent on 5 different types of activity: clinical practice, 'general', education/support, management, research, and consultancy. Clinical contact time activities included time spent on telephone calls with other professionals, visits to patients or family members of patients, bereavement visits, and telephone calls to patients or patients' families. Education/support activities included time spent giving education/support, time spent receiving education/support and time spent giving and receiving individual support. Other activities included funeral attendance, 'car breakdown – waiting for assistance', letter writing, parental leave, looking up medical records at doctor's surgery and 'attempted visit – patient not in'.

Evidence from 1 prospective cross-sectional study (Newbury et al. 2008, [-]) identified the average proportion of a Community Palliative Care Nurse Specialist's time spent on computer record-keeping was 16.4%, clinical practice without computer record-keeping was 46.5%, and driving was 14.3%. Over 4 weeks, the average Community Palliative Care Nurse Specialist spent 6.25 hours on breaks.

Parkinson's Disease Nurses

Evidence from 1 prospective cross-sectional study (Axelrod et al. 2010, [+]) identified 12 types of activities undertaken by Parkinson's Disease Nurse Specialists (in order of proportion of nurses reporting the activity): medicines advice/prescribing, support/counselling/advice, education and information, disease/symptom/care management, clinic, liaise multidisciplinary team (MDT)/coordinate care, assessment/care planning, home visits, telephone advice, total care (diagnosis to death/as the PDS job description/'huge remit' [not defined by study author], research, administration.

Sickle Cell and Thalassemia Specialist Nurses

Evidence from 1 mixed-methods study (Leary and Anionwu 2014, [-]) identified the average proportion of a Sickle Cell and Thalassemia Specialist Nurse's time spent on 6 different types of activity: physical (35%), 'admin non clinical' (25%), psychological (16%), 'admin clinical' (14%), social (5%), and referral (5%).

Evidence from 1 mixed-methods study (Leary and Anionwu 2014, [-]) identified that the ratio of clinical to nonclinical/clerical work for Sickle Cell and Thalassemia Specialist Nurses working in community settings was 74:26.

Activities performed by district nurses, general community nurses, and specialist community nurses

Evidence from 1 prospective cross-sectional study (Jackson et al. 2015, [+]) identified the 10 most common interventions by district nurses, general and specialist community nurses were data entry, clinical admin, physical assessment, symptom assessment, wound management, non-clinical admin including routine chasing up, psychological assessment, shared decision making, promoting self-management, and performing procedures. The average proportion of district nurses, general and specialist community nurses' time spent on 6 different types of activity: physical (43%), case management (19%), psychological (19%), clinical admin (8%), social (6%) and non-clinical admin (5%).

Evidence from 1 observational study (Jackson et al. 2013, [+]) identified 7 major types of activity undertaken by general and specialist community nurses: care planning and evaluation, caseload management, symptom control and advice, promoting self-management, reassessment of needs, handovers and administration. Additional activities were also identified; including health education, risk assessment and reviews, hospital avoidance, coordinating care, clinical risk assessment, and chasing up of referrals and results. A large amount of travelling was done by general and specialist community nurses.

Evidence from 1 observational study (Unsworth et al. 2008, [-]) identified the average proportion of time spent on different types of activity by district nursing teams: client visit (33.8%), clinical admin (27.5%), travel (20.7%), liaison with other professionals (7.8%), other admin (3.3%), client contact (2.3%), mentoring and teaching (1.4%), 'away' (1.3%), continuing professional development (1.2%), and meetings (0.8%).

Evidence from 1 observational study (Kirby and Hurst 2014, [+]) identified the average proportion of time spent on 5 different types of activity by district nursing community staff in Cumbria: direct care (35%), 'associated'^d (23%), indirect care (22%), travel (19%), unproductive (2%) and in Scotland: direct care (39%), 'associated' (35%), travel (13%), indirect care (11%), and unproductive (1%). Handing over to fellow workers was the most common indirect care activity, and that half of the associated work time was spent on clerical work.

Evidence from 1 observational study (Unsworth et al. 2008, [-]) showed that on average a whole time equivalent community nurse did 6.9 visits per day with each visit lasting on average 35 minutes.

Activities performed by community matrons

Evidence from 1 prospective cross-sectional study (Sargent et al. 2007, [+]) identified 5 categories of community matron tasks: clinical care (e.g. top-to-toe physical examinations), care co-ordination (e.g. liaison and collaboration with individuals and organisations), education (e.g. health promotion), advocacy (e.g. on behalf of patients with hospital consultants) and psychosocial support.

Activities performed by community nursing assistants

Evidence from 1 mixed-methods study (Pender and Spilsbury 2014, [+]) identified 13 categories of tasks carried out by band 3 community nursing assistants: personal care,

^d Routine clerical work.

elimination care, nutritional care, rehabilitative care, medicine administration, respiratory care, sample taking, contribution to discharge planning, clinical observations, long-term conditions, palliative/end of life care, wound care and administrative.

Comparison of activities performed by different types of nursing staff

Evidence from 1 prospective cross-sectional study (Kirby and Hurst 2014, [+]) suggests that different proportions of time are spent on 5 types of activity by registered nurses and healthcare assistants. Registered nurses spent a larger proportion of their time on indirect care and being unproductive than healthcare assistants. Healthcare assistants spent a large proportion of their time on direct care, 'associated' activities, and travel than registered nurses. The statistical significance of these differences was not reported. Registered nurses visited an average of 11 patients each day and healthcare assistants visited an average of 12.5 patients each day. The statistical significance of this difference is not reported.

Evidence from 1 prospective cross-sectional (Jackson et al. 2013, [+]) reported that band 5 practitioners only did a small amount of work involving interpersonal relationship skills, with the band 6 practitioners doing a higher proportion than the band 5 practitioners, and the band 7 practitioners a high proportion than the band 6 practitioners. Band 7 practitioners engaged in higher amounts of caseload management and other administrative tasks than band 5 and band 6 practitioners. Band 5 practitioners engaged more in procedural work, care planning, and travelling than band 6 and band 7 practitioners. The numerical data and associated statistical significance of these differences was not reported.

4. Conclusions

4.1. Summary of the evidence

This review identified 2 studies that described toolkits or approaches for determining nursing staff requirements in community care settings. Both studies were of low quality.

The review found 3 studies indicating which outcomes may be associated with nurse staffing levels, although none of these studies aimed to examine the association between nurse to patient ratios and outcomes. These 3 studies were of low quality and had significant methodological limitations which made their findings unreliable.

This review did not identify:

- evidence that specifically described how minimum staffing levels or ratios may support safe nursing in community care settings.
- evidence describing how staffing factors, organisational factors, environmental factors and patient factors should be taken into account when setting nursing staff levels in community care settings.
- economic evidence for any of the review questions

This review identified 11 studies that presented data on the nursing activities undertaken in community care settings in the UK. The majority of these studies were prospective cross-sectional studies that used surveys to collect data; 7 were of moderate quality and 4 were of low quality.

From the included studies it is not possible to draw firm conclusions about what approaches for assessing and determining nursing staff requirements and/or skill mix are effective in community settings for adult nursing care. It is also not possible to determine what outcomes are associated with nurse staffing levels in community settings for adult nursing care. There are some consistencies across the studies exploring community nursing tasks and activities that may generate identifiable categories of community nursing activities.

4.2. Gaps in the evidence

Many of the studies identified in the literature searches were commentary pieces, opinion articles or news stories. These were excluded from the review as they were not primary research.

A large number of studies retrieved in the literature searches reported staff and patient perceptions of the adequacy of staffing levels; however, the majority of these studies did not report any actual staffing data and thus had to be excluded.

Several studies were identified that described approaches or toolkits for determining the number of nursing staff needed in community settings, however, most of them are not included in this review because they did not compare 2 or more approaches or toolkits. Other studies reported approaches or toolkits for determining caseloads or patient dependency (or both) and are not included in this review because they did not report staffing data relating to the use of these approaches or toolkits.

Whilst a large body of evidence which considers the relationship between patient factors and a range of outcomes was identified, none of these studies included data relating to staffing, and therefore did not meet the inclusion criteria for this review. This represents a major gap in the evidence base.

This review found that there was:

- no robust evidence to support the use of particular approaches or toolkits for identifying safe staffing requirements for nursing and/or skill mix.
- no evidence that specifically describes how minimum staffing levels or ratios may support safer nursing in community care settings.
- a lack of high quality intervention studies demonstrating the direction of the relationship between nurse staffing and key outcomes.
- no evidence on patient/service user/carer factors, environmental factors, staffing factors or organisational factors which may need to be taken into account when setting nurse staffing requirements. This review did not identify any evidence from economic evaluations regarding the cost effectiveness of different nurse staffing models or approaches.

4.3. Suggested research areas

The gaps in the evidence for this review present several potential areas for research, including:

- Robust studies of particular approaches or toolkits for identifying safe staffing requirements for nursing and/or skill mix.
- Studies of minimum staffing levels or ratios and the effect of these on safer nursing in community care settings.
- High quality intervention studies that report the direction of the relationship between nurse staffing and key outcomes.
- Studies of patient/service user/carer factors that need to be taken into account when setting nurse staffing requirements in community care settings.
- Studies of environmental factors that need to be taken into account when setting nurse staffing requirements in community care settings.
- Studies of staffing factors that need to be taken into account when setting nurse staffing requirements in community care settings.
- Studies of organisational factors that need to be taken into account when setting nurse staffing requirements in community care settings.

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5.2. Included Studies

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