Many care home residents are inactive and immobile (Forster et al, 2017); a 2011 survey of Bupa homes showed that 47.6% had severe mobility problems and mobility declines with age (Lievesley et al, 2011). The growing population of inactive, frail, older residents means contracture prevalence in care homes is increasing. Contractures are strongly associated with prolonged periods of immobilisation (Wagner et al, 2008), and neurological conditions such as stroke (Sackley et al, 2008) and dementia (Jamshed and Schneider, 2010). Characterised by a lack of full active or passive range of motion, they are caused by increased stiffness in the muscle, joint or surrounding soft tissue (Wagner et al, 2008). They can cause pain, interfere with sleep (Harvey et al, 2017) and increase the risk of pressure ulcers (Wagner et al, 2008).

Lower-limb contractures may impair balance and gait, and can lead to a loss of mobility. Prolonged sitting can cause hip and knee contractures, and increase the risk of being chair- or bed-bound, creating further risks to health and wellbeing (such as incontinence and depression), and may affect the ability to attend essential medical appointments. Upper-limb contractures may affect day-to-day activities such as dressing and eating (Müller et al, 2013). Hand contractures can make it difficult to keep skin clean and dry, and cut the nails, causing them to break the skin of the palms, leading to infection. Consequently, contractures may lead to social isolation and impair quality of life (Nguyen et al, 2019). Contractures in nursing home residents have been under-reported (Müller et al, 2013) but a systematic review by Offenbächer et al (2014) estimated the prevalence of contractures in nursing homes to be 55%. Sackley et al (2008) reported that 60% of stroke patients treated at a UK hospital developed contractures within a year, with a higher prevalence in nursing home residents than people living elsewhere. Wagner et al (2008) found that, of 273 frail, older nursing home residents, 61% had contractures and 45% had multiple contractures.

To ensure high-quality nursing care, it is vital to be able to identify contracture presence/risk, and monitor and intervene to prevent and manage contractures. This article describes the implementation of a contracture risk assessment tool and training programme to improve staff awareness of contractures and aid decision-making to ensure appropriate, timely interventions. Our evaluation suggests the risk assessment supported by training has the potential to improve quality of care by increasing the knowledge, skills and confidence of care home staff.

Keywords Care homes/Community nursing/Contractures/Risk assessment/

In this article...
- Prevalence and impact of contractures in care home residents
- Introduction of a contracture risk assessment tool and training programme
- Evaluation of the tool and how it is being used in care homes

A tool to prevent and manage contractures in care home residents

Key points
- Contractures are an increasing problem in care homes and affect health and wellbeing
- Many care home staff receive no training in contracture management
- Using a contracture risk assessment tool improves early identification and early intervention
- Training staff to use the tool and manage contractures leads to increased knowledge and confidence

Authors Sumya Khudadad is master of science graduate in physiotherapy from Leeds Beckett University; Sheila Barnett is clinical specialist occupational therapist, NHS Leeds Clinical Commissioning Group; Lorna Campbell is course director, physiotherapy, Leeds Beckett University.

Abstract Many care home staff have no training in preventing and managing contractures. This article describes the implementation of a contracture risk assessment tool and a training programme to improve staff awareness of contractures and aid decision-making to ensure appropriate, timely interventions. Our evaluation suggests the risk assessment supported by training has the potential to improve quality of care by increasing the knowledge, skills and confidence of care home staff.

reduce risk and prevent existing contractures from progressing. Early recognition to prevent contractures is considered the best solution for contracture management (Jamshed and Schneider, 2010). Early intervention safeguards individuals and could reduce the health and social care costs associated with contractures. At present, there is no recommended risk assessment tool, and nurses and care assistants have limited access to education and training; this makes it more difficult for them to develop the knowledge and skills needed to identify residents who would benefit from early intervention to limit the progression of contractures (Sackley et al, 2009).

**Developing a risk assessment tool**

Nursing home residents funded by NHS continuing healthcare have a high level of complexity and nursing need, and are at high risk of developing contractures. The aim of this project was to create standardised documentation for contractures and their risk factors, to be used for all NHS-funded residents on admission or readmission to nursing care homes in a city in the north of England. In 2014, a senior nurse manager (Beverley Kingwood-Burke), occupational therapist (Sheila Barnett) and physiotherapist (Ann-Marie Holliday), collaborated to develop this documentation, the contracture risk assessment tool (CRAT). They also developed a training session to teach staff in the homes how to use it.

The CRAT has two parts:
- A list of risk factors that help to identify residents’ risk of contractures (Table 1) and a body chart to mark location details of contractures;
- A guide to management, comprising a checklist of appropriate actions that ensure onward referral for appropriate and timely interventions (Table 2).

The half-day training course was for senior nursing staff with responsibility for the management of NHS-funded residents. It was designed to cover three key areas:
- Participants’ background knowledge and understanding of contractures and associated risk factors;
- Application of the CRAT to establish residents’ level of risk and appropriate contracture management;
- Practical demonstrations of a range of interventions, including the use of positioning using T-rolls and wedges to prevent or minimise contracture progression.

In 2014, the CRAT was implemented across all nursing homes with NHS-funded residents in the city.

**Evaluating the CRAT**

An independent audit was commissioned to evaluate the CRAT after two years’ implementation. Using a qualitative case-study methodology, the auditors selected a small sample of three homes using the CRAT and analysed each as an independent case. All NHS-funded residents’ case files and CRATs were examined. Researchers compared individual residents’ pathways to look for patterns, interviewed the member of staff responsible for implementing the CRAT and thematically analysed their responses. In total, the audit comprised 18 residents from three different homes.

The audit findings demonstrated that the CRAT was being used with all NHS-funded residents in the three homes, but there was significant variability in its application. In two homes, the CRAT was mostly completed by the primary nurse, but in one it was always the physiotherapist. One home had plans to train senior care staff so they could complete it.

Results indicated that body charts were the element of the CRAT least likely to be completed. There were several examples across all three homes of both a high risk of contractures and a likelihood of existing contractures being identified, for example in residents who had previously had a stroke; however, body charts for these individuals were often either undated or not completed at all.

There was variability in the documentation process within case files in all three homes. The artificial division between the CRAT and documentation about ongoing management of contractures meant that links between risk ratings and actions were not always clearly recorded.

The CRAT was viewed positively by the staff interviewed; all said they would recommend its integration into care homes not currently using it. All interviewees indicated that the CRAT guide to contracture management was clear but the risk-factor assessment was more challenging to complete; all said it required additional professional judgement, and one felt it needed consultation with other staff.

The audit was challenging and it was difficult to evaluate the direct impact of the CRAT but a number of recommendations were made to improve the clarity of the tool, including providing additional training on its application. As a result of the recommendations, we revised the CRAT to include:
- Dates of completion and review;
- Name of reviewer;
- Dates of completion of any actions identified.

The auditors advised making a training package available that covered the use of the tool, the definition, risks, consequences and management of contractures including useful equipment and onward referral for specialist input. They also recommended delivering the training session to a broader range of nursing staff and staff trainers to ensure full engagement with the tool’s intended purpose.

**The revised CRAT**

In 2017, a training session was held to introduce the revised version of the CRAT to staff from all nursing homes across the

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**Table 1. Contracture risk assessment**

<table>
<thead>
<tr>
<th>Risk level</th>
<th>Risk factors</th>
<th>Tick</th>
</tr>
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<tbody>
<tr>
<td>Significant presentation – urgent action</td>
<td>- Already presenting with contractures &lt;br&gt; - Confined to bed &lt;br&gt; - Spasticity/high tone in some muscles</td>
<td></td>
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<tr>
<td>High risk</td>
<td>- Neurological deficit, eg stroke/head injury &lt;br&gt; - Progressive neurological condition, eg multiple sclerosis/progressive supranuclear palsy/Parkinson’s &lt;br&gt; - Lifelong neurological condition, eg cerebral palsy/muscular dystrophy &lt;br&gt; - Dementia &lt;br&gt; - Trauma/burns</td>
<td></td>
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<tr>
<td>Moderate risk</td>
<td>- Musculoskeletal problems, eg arthritis/fracture &lt;br&gt; - Cognitive impairment – moderate to high &lt;br&gt; - Concordance issues (detail reason in notes section) &lt;br&gt; - Joint pain/stiffness on movement &lt;br&gt; - Resistant to staff giving care/repositioning &lt;br&gt; - Assistance with mobility/hoisted</td>
<td></td>
</tr>
<tr>
<td>Low risk</td>
<td>None of the above identified</td>
<td></td>
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</table>
city that had NHS-funded residents. Evaluation was performed independently by a Physiotherapy Master’s student as a part of her dissertation project. The evaluation aimed to find any significant differences between managers’, nurses’ and senior carers’ knowledge of, and confidence in, assessing contractures in residents. This was to gain an understanding of the educational needs across the nursing homes and ensure the training programme would support the ongoing needs of all staff.

Forty-two people from 26 homes attended the training session. All participants were invited to complete pre-training and post-training questionnaires; 30 consented to participate in the questionnaire (27 female, three male), with nursing home experience ranging from five to 15 years. The majority (70%) had had no previous contracture training and there was a statistically significant association between job role and previous contracture training:

- Managers with a nursing qualification were the most likely to have received previous training;
- A number of qualified nurses had no previous training;
- Senior caregivers were least likely to have had training.

In the pre-training questionnaires, 60% of respondents reported that the care home in which they currently worked used the CRAT. Most (64%) reported that it was completed by a nurse; only two participants reported that a carer completed the tool.

Of the respondents, 43% reported having a reasonable existing level of contracture knowledge, while 23% said they had limited or no knowledge. In total, 47% were not confident in their ability to measure contractures in residents, 60% of these were nurses or managers with a nursing background.

The post-training questionnaires indicated there was an overall improvement in knowledge and confidence levels immediately after the training. On a five-point scale, 44% of participants said the training had improved their confidence “a lot” and another 44% “a great deal”. In general, the training was well received, and 65% of respondents reported being able to incorporate concepts learned during the session into their daily work immediately.

**Implications for practice**

Nursing staff in residential homes, along with community nurses, need to be aware of contractures and their negative impact on residents. The CRAT provides evidence to request early intervention from other NHS professionals, who can give advice on treatment and equipment. This supports better contracture management.

In areas where access to appropriate NHS services is limited, nursing staff who have an understanding of contractures can refer to other services and raise awareness with commissioners that there is an unmet need. It is acknowledged, however, that this may not happen immediately.

**Conclusion**

There is a lack of training on contractures for nursing and care staff in residential nursing homes. This has affected staff confidence in managing residents who have, or are at risk of, a contracture. Due to the rising numbers of contractures in frail, older people who have, or are at risk of, contractures this requires urgent attention.

Our evaluation suggests that the combination of training and using the CRAT supports risk assessment and decision making and has the potential to improve quality of care. This has financial and clinical benefits and shifts the focus from expensive reactive treatments for contractures to prevention.

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**References**


