

Rib fractures are the most common non-spinal fracture in older people. Pain from rib fractures can affect breathing, which can result in lung complications such as pneumonia. These complications lead to patients staying in hospital for an average of nine additional days. The main treatment of pain from rib fracture is use of strong painkillers, usually opioids like morphine. However older people are more likely to experience side effects from these opioids, which can include breathing problems. Because of this, older people receiving opioids need to receive high-level, specialist care.

Lidocaine is a different type of painkiller and can be given using a patch applied to the skin. These patches are used in the treatment of other types of pain, for example after shingles, and have been shown to have no serious side effects when used in older people. Some small studies have shown that these patches are effective in patients with rib fracture. However none of these studies have been carried out in older people, who could gain the most benefit.

RELIEF was a feasibility trial which looked at the use of lidocaine patches in older patients with rib fracture. The aim of the feasibility trial was to investigate whether it would be possible to run a future trial evaluating the use of lidocaine patches in older patients, and to guide the design of that trial.

Patients took part in the trial between October 2021 and October 2022, and were recruited from seven NHS hospitals in England and Scotland. Patients could take part if they were aged over 65 years, attended an Emergency Department with traumatic rib fracture (for example, after a fall) and needed to be admitted for ongoing care. Patients with capacity were approached to provide consent to take part in the trial. For patients without capacity, a consultee (for example, a relative or independent doctor) or Legal Representative was approached on behalf of the patient. Participants were assigned at random to receive either lidocaine patches or standard care (usual pain relief). All other aspects of their care was the same.

129 patients were approached about RELIEF and 100 consented to take part. Consent to take part was mostly provided by patients themselves (70%). Recruitment to the trial was originally planned to take place over 18-months. However, due to the COVID-19 pandemic, members of the trial team were redeployed. As a result, it was decided to shorten the period to 12-months – it was still possible to recruit the 100 participants in this time.

48 participants were assigned to receive lidocaine patches (intervention group) and 52 to standard care. Participants in both groups had similar characteristics when they joined the trial, for example age and medical history. Most rib fractures were due to a fall from less than 2 metres and on average four ribs had been fractured. 95% of participants in the intervention group received at least one lidocaine patch. In the standard care group, 34% of participants also had a lidocaine patch applied.

Information was collected for the trial relating to participants' medications, pain and hospital stay, including whether participants had any breathing complications in the 30 days after joining the trial. This information was fully collected for 87% of participants. Some data was very hard for hospitals to collect, for example a mobility measure called Timed up-and-go.

Participants were asked to complete a questionnaire relating to their quality of life, 30 days after rib fracture – 95% of expected questionnaires were completed and returned. Three participants were withdrawn from the trial and six participants died prior to the 30-day questionnaire.

The findings of the RELIEF trial will be used to inform the design of a future trial. It has been shown that patients are willing to take part in this trial and to complete follow up questionnaires. Some participants received a patch when they shouldn't have – to address this, a future trial might use a placebo patch. This would look identical to the lidocaine patch but not contain any painkiller. Some data was very difficult for hospitals to collect and so would not be included in a future trial. The RELIEF trial also highlighted that older patients with rib fractures experience very ill health, adding to the need for more treatments to improve outcomes for this vulnerable population.

The RELIEF trial results are being written up for publication and the RELIEF team are already working on plans for a future trial.

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