



## Statin-induced muscle weakness and falls

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### KEY POINTS

- Statin-induced muscle weakness in older people should be factored into the risk–benefit consideration for frail, older people.
- Statin-induced muscle weakness is usually proximal.
- Risk factors for statin-induced muscle weakness include being over 80 years, being female, having lower body mass, higher statin dosages, longer duration of statin usage and concurrent diabetes.

Falls in older people are multifactorial and risk factors include muscle weakness. Statins are well known for causing muscle pain, but muscle weakness, particularly in the older person, appears to be less recognised in clinical practice. Unfortunately, the term myopathy is usually poorly defined in clinical trials of statins and it is difficult to determine the rate of muscle weakness, specifically, within this general term.

In randomised controlled trials, the reported rate of statin-induced myopathy is lower than the rate in observational studies. From observational studies, the rate of any muscle adverse effect is 5–10%.<sup>1–5</sup> Specifically for potential statin-induced muscle weakness or loss of strength during exertion, such as climbing stairs, prospective cohort studies indicate that the incidence is 3–5%.<sup>2–4</sup> The impact of this on falls is less evident, with one study finding a trend for reduced strength and increased falls,<sup>6</sup> and another finding no significant effect on muscle strength and falls, but a significant reduction in leaning balance.<sup>7</sup> The STOMP (Effect of STatins On skeletal Muscle function and Performance) study<sup>5</sup> investigated the effect of atorvastatin on muscle function in 420 otherwise healthy people. This study was in a relatively young population, with a mean age less than 45 years, and over only six months. Physical activity decreased significantly for people over 55 years old in the statin group. There was no significant difference in muscle strength, although the lower age of people in this study may have influenced this finding.

For younger people, a small reduction in muscle strength may not be clinically relevant, but in people over 80 years old and frail, even a relatively small effect on muscle strength or poorer balance may be problematic.

As with all medicines, the potential risks need to be balanced against the potential benefits. In the very elderly and frail person, as with blood pressure control, the potential long-term benefits of any treatment in terms of potential life extension need to be balanced against the risks of adverse events and the impact on quality of life for the older person. For people over 80–85 years old, the risk of muscle weakness and falls with statins needs to be considered.

Statin-induced muscle weakness is normally proximal, but may also include problems with opening jars and snapping fingers.<sup>1,8</sup> Risk factors include older age (particularly over 80 years old), longer duration of statin use, lower body mass, higher statin dosages and concurrent diabetes.<sup>3,9</sup>

### What to do

Other factors may contribute to muscle weakness in older people or may be exacerbated by statin therapy. These include neuromuscular disease, hypothyroidism and hypokalaemia. Corticosteroids and regular colchicine are potential medicine-related causes for muscle weakness. Another cause may be dehydration.

- Check for dehydration
- Check for hypothyroidism
- Check for hypokalaemia
- Stopping statin therapy for six weeks may help determine whether muscle weakness is statin induced, although a limitation of this may be the need for the person to undertake exercises to re-develop muscle strength.
- Rechallenge with another statin, at a low dosage.

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**NUGGETS of KNOWLEDGE** provides succinct summaries of pharmaceutical evidence about treatment of common conditions presenting in primary care and possible adverse drug reactions.

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## Garlic

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**G**arlic has been celebrated throughout history for its medicinal properties. Claimed to offer cardiovascular protection, boost immunity, and protect against infection and oxidative stress injury, amongst other properties, garlic ranks highly as a health-protecting food.

**PREPARATIONS:** Available fresh or as dehydrated garlic powder, garlic oil, or aged garlic extract (AGE), in tablets, capsules or topical preparations. AGE undergoes a 20-month ageing and extracting process that produces an odourless product, richer in antioxidants than fresh or other forms of garlic preparations. Variations in processing can yield very different preparations, with variable efficacies.

**COMMON NAMES:** ‘Stinking rose’, Russian penicillin

**LATIN NAME:** *Allium sativum*

**ACTIVE CONSTITUENTS:** The chemistry of garlic is complex. While allicin is widely thought to be responsible for garlic’s health benefits, it is a rather unstable compound that is rapidly converted to a variety of organo-sulphur compounds. S-allylcysteine and S-allyl mercaptocysteine are two water-soluble active compounds in AGE.

**MANUFACTURER CLAIMS:** Garlic is claimed to fight free radical damage and to reduce symptoms of cold and flu, and other upper res-

piratory tract infections, by supporting immunity and strengthening resistance to infection. Due to its antioxidant activity, garlic is claimed to reduce cardiovascular risk factors by inhibiting platelet aggregation, activating fibrinolysis and lowering blood pressure and lipids.

**EVIDENCE FOR EFFICACY:** A systematic review revealed a single trial that met inclusion criteria for the use of garlic in the common cold. Josling showed that a 12-week garlic supplement resulted in significantly ( $p<0.001$ ) fewer colds, and reduced severity and duration of symptoms, compared to placebo. While the Josling review did not reveal what supplement was used, a clinical study using an AGE product supports this finding and suggests that immune cell function may be enhanced through activity on natural killer and gamma delta T cells. Effects on blood pressure and lipids consistently show that garlic causes a reduction in mean supine systolic and diastolic blood pressure, with variable findings on total cholesterol, triglycerides, LDL (low-density lipoprotein) and HDL (high-density lipoprotein) levels. Inconsistencies in the literature are thought, in part, to be related to the components and quality of the garlic preparations.

**ADVERSE EFFECTS:** There appears to be little risk associated with garlic supplement use, although excessive amounts of raw garlic and garlic powder (>10 g) are known to cause gastrointestinal upset. Garlic odour is largely a social deterrent for most consumers, and allergic

Herbal medicines are a popular health care choice, but few have been tested to contemporary standards. **POTION OR POISON?** summarises the evidence for the potential benefits and possible harms of well-known herbal medicines.