NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Interventional procedures consultation document

Electrical stimulation to improve muscle strength in non-neurological chronic conditions

Muscle weakness can be caused by chronic conditions that do not affect nerves directly (non-neurological), such as chronic obstructive pulmonary disease, chronic heart failure and chronic kidney disease. In this procedure, small electrical impulses are delivered to weakened muscles, usually in the arms or legs, using electrodes placed on the skin. The aim is to contract the muscles, making them stronger.

NICE is looking at electrical stimulation to improve muscle strength in non-neurological chronic conditions.

NICE's interventional procedures advisory committee met to consider the evidence and the opinions of professional experts, who are consultants with knowledge of the procedure.

This document contains the draft guidance for consultation. Your views are welcome, particularly:

- comments on the draft recommendations
- information about factual inaccuracies
- additional relevant evidence, with references if possible.

NICE is committed to promoting equality of opportunity, eliminating unlawful discrimination and fostering good relations between people with particular protected characteristics and others.

This is not NICE's final guidance on this procedure. The draft guidance may change after this consultation.

After consultation ends, the committee will:

- meet again to consider the consultation comments, review the evidence and make appropriate changes to the draft guidance

Issue date: February 2020

- prepare a second draft, which will go through a resolution process before the final guidance is agreed.

Please note that we reserve the right to summarise and edit comments received during consultation or not to publish them at all if, in the reasonable opinion of NICE, there are a lot of comments or if publishing the comments would be unlawful or otherwise inappropriate.

Closing date for comments: 5 March 2020

Target date for publication of guidance: June 2020

1 Draft recommendations

1.1 Evidence on the safety of electrical stimulation to improve muscle strength in non-neurological chronic conditions shows no major safety concerns.

- For people who have an acute exacerbation of a non-neurological chronic disease and are unable to exercise, evidence of efficacy is adequate to support the use of this procedure provided that standard arrangements are in place for clinical governance, consent and audit.
- For people who have a non-neurological chronic condition but are able to exercise, evidence on efficacy is inadequate in quality. Therefore, this procedure should only be used in the context of research.

1.2 Further research should include long-term, suitably powered and appropriately controlled randomised trials. These should report details of patient selection, type and duration of treatment. Outcomes should include quality of life, social functioning and physiological measures.

2 The condition, current treatments and procedure

The condition

2.1 Non-neurological chronic conditions such as chronic obstructive pulmonary disease, chronic heart failure or chronic kidney disease can cause impaired muscle function and weakness.

Current treatments

2.2 Rehabilitation is described in NICE's guidance on rehabilitation after critical illness, chronic obstructive pulmonary disease and chronic heart failure. Management for muscle weakness or dysfunction caused by non-neurological chronic conditions includes lifestyle change, medication (including oxygen therapy), rehabilitation (such as pulmonary rehabilitation or cardiac rehabilitation) and treating the underlying conditions.

The procedure

2.3 Electrical stimulation produces muscle contractions that aim to mimic exercise training. Small electrical impulses are applied to nerves supplying groups of muscles typically in either the arms or legs, using self-adhesive electrodes applied to the skin and connected to an electrical stimulator. This causes the muscles supplied by the nerve to contract and relax. A typical programme consists of 30 to 60 minutes of stimulation.

3 Committee considerations

The evidence

3.1 NICE did a rapid review of the published literature on the efficacy and safety of this procedure. This comprised a comprehensive literature search and detailed review of the evidence from

11 sources, which was discussed by the committee. The evidence included 5 systematic reviews and/or meta-analyses, and 6 randomised controlled trials. It is presented in table 2 of the interventional procedures overview. Other relevant literature is in the appendix of the overview.

3.2 The professional experts and the committee considered the key efficacy outcomes to be: quality of life, mood, muscle strength and function, and social functioning.

3.3 The professional experts and the committee considered the key safety outcomes to be: muscle pain or discomfort, and skin reactions to electrodes.

Committee comments

3.4 The committee noted that the procedure may be contraindicated in patients who have an electronic implant (such as a cardiac pacemaker or defibrillator).

3.5 The committee noted that there was only limited evidence that the procedure produced an additional benefit in patients who had successfully undertaken a physical rehabilitation programme.

Tom Clutton-Brock
Chair, interventional procedures advisory committee
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