



This Evidence bulletin summarises a recently published systematic review on *The Cochrane Library*

review title

Visual feedback of individuals' medical imaging results for changing health behaviour

(Hollands et al. 2010)

Focus of the review

Research question:

Does visual presentation and explanation of an individual's medical imaging results (including magnetic resonance imaging, tomography, radiography and ultrasonography) change health-related behaviours, and the intention to engage in those behaviours?

Why authors did the review:

It is a major challenge to achieve and maintain changes in behaviour to improve health and prevent or reduce risks of disease. Previous research suggested that showing people images from test results may be a promising approach to communicating risk, and may provide powerful motivation for health-related behaviour change.

The review focused on behaviour change related to:

Dietary fat intake; physical activity levels; smoking; alcohol consumption; medication usage and exposure to sunlight or other sources of ultraviolet radiation.

Key results of the review

What the review shows

Overall there is no strong evidence from this review to support implementation of *visual feedback of people's medical imaging results* though it may be effective for selected outcomes.

When compared to control, showing and explaining images (eg. artery scanning images to assess cardiovascular disease risk) may:

- Increase smoking cessation; and,
- Have mixed effects on other outcomes including skin self-examination behaviour, sun protection behaviours, and tanning booth usage.
- There is no evidence of significant harmful effects of the intervention (eg. anxiety), although this was poorly reported by the included trials; and there is insufficient evidence to determine the effects on other outcomes including dietary intake, medication usage, and changes in level of physical activity.

Background

Medical imaging technology provides the tool for giving people visual feedback, or evidence, of how certain behaviours may be affecting their body. Providing people with results of tests on their own body, together with an explanation, the implications of the results, and how any health risks can be reduced by changing behaviour, may be a promising method of increasing motivation to change their behaviour to reduce any damage or risks identified.

Trials included in the review

The review included 9 randomised controlled trials (RCTs); involving 1371 participants.

Five trials were conducted in *clinical* populations in the USA (3), UK (1) and the Seychelles Islands (1). Four trials were in *non-clinical* populations (1) in the USA.

Clinical populations are people in medical settings (eg. outpatient clinics or screening programmes); and non-clinical populations are healthy people outside the medical setting (eg. psychology laboratories in universities and beaches).

Interventions

The principal component of the intervention was the visual presentation and explanation (feedback) of an individual's medical imaging results. Examples of intervention and comparison arms in included trials are:

- Ultrasonography of carotid and femoral arteries in smokers, feedback to patient with 5-minute explanation and 10-minute quit-smoking counselling (intervention) *versus* 10-minute quit-smoking counselling (control).
- Ultraviolet (UV) photo feedback *versus* no photo feedback; or with additional photoaging information *versus* with no additional photoaging information.

Main results

In clinical settings:

Comparison: Visual (and verbal) feedback of medical imaging results (intervention) *versus* no imaging feedback (control)

- Three trials (featuring arterial scanning to assess cardiovascular risk) reported a *statistically significant* increase in **smoking cessation behaviours** in the intervention group when results were pooled. One of these trials also reported changes in levels of physical activity and reported *no significant difference* between the intervention and comparison groups.
- One trial measuring skin examination behaviour following a skin photography procedure reported a *statistically significant* increase in **skin self-examination behaviour** in the intervention group.
- One trial (featuring arterial scanning to assess cardiovascular risk) measuring a range of **dietary intake** and **medication usage** behaviours reported *no significant effects*.

In non-clinical settings:

Comparison: Feedback of UV photography images of the face *versus* no photo feedback; or additional photoaging information *versus* no additional information

- One trial reported a *statistically significant* reduction in **tanning booth usage** in the intervention group compared to control;
- One trial reporting on **sun protection behaviours** (intentional hours spent in the sun) found significantly *in favour* of the control group (indicating a decrease in sun exposure in the control group);
- Two further trials reported *no statistically significant effects* in terms of time spent in the sun or **sun protection behaviours**.

Conclusions

Because the available evidence is limited and results are mixed, no strong statements can be made about the effectiveness of communicating medical imaging results to change health behaviour. While it is not possible to draw any broad conclusions authors suggest that targeted interventions using medical imaging technologies may be effective in certain contexts, or as applied to certain behaviours, but this should be considered on an intervention by intervention basis.

Authors suggest that specialist smoking services may be particularly keen to follow the developing literature—there is a large scale randomised controlled trial (RCT) underway examining arterial scanning for smoking cessation.

Implications

If an imaging intervention is to be used in a

clinical or non-clinical setting consideration should be given to potential adverse effects on individuals and their families; few of the included studies took a comprehensive approach to detecting these. Imaging procedures may lead to patients and families being confronted with unexpected results and information may be easily misinterpreted. This can be avoided if possible adverse outcomes are communicated before hand.

Authors suggest that researchers move towards more rigorous and larger scale studies; and examine the consultation in a more systematic way—how and when to give feedback of images and what combination of intervention components may enhance the effectiveness of the communication of imaging feedback. Risk information alone may not be sufficient to change behaviour even if it does increase an individual's motivation.

Acknowledgements

This Evidence bulletin is a summary of a Cochrane systematic review on *The Cochrane Library*; it summarises and reports information published online in the original review.

You are welcome to forward this bulletin on to any interested colleagues/individuals, organisations or networks.

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