CRD summary
The review concluded that conversion ratios between oral hydromorphone, oral morphine, oral oxycodone and transdermal fentanyl (opioid switching) in the treatment of cancer pain were supported by the available evidence. In light of the absence of detail for several aspects of the review, the reliability of the authors' conclusions should be regarded as being uncertain.

Authors' objectives
To evaluate the existing research on conversion ratios during opioid switching in the treatment of cancer pain.

Searching
MEDLINE, EMBASE and the Cochrane Central Register of Controlled Trials (CENTRAL) were searched up to the end of 2009 for studies in English; search terms were reported. Reference lists of identified papers and relevant systematic reviews were examined to identify further studies.

Study selection
Prospective studies of adults with chronic cancer pain which reported data on opioid conversion ratios were sought; only oral and transdermal administration were eligible. Parallel group studies, and case series with fewer than 10 patients, were excluded.

Most included studies were of patients experiencing adverse effects, or who had poor pain control; in most of the remaining studies, pain control had been stabilised. Several studies included patients with non-malignant chronic pain. The opioids studied were oral hydromorphone, oral morphine, oral oxycodone, oral methadone, transdermal fentanyl, and transdermal buprenorphine; the doses used varied across studies.

The authors did not state how many reviewers selected studies.

Assessment of study quality
Study quality was evaluated using the GRADE (Grading of Recommendations Assessment, Development and Evaluation) system. No further details of the quality assessment were provided.

The authors did not state how many reviewers performed the quality assessment.

Data extraction
Initial to final ratios and pre-switch doses were extracted.

The authors did not state how many reviewers extracted data.

Methods of synthesis
A narrative synthesis was presented, grouped by opioid sequence.

Results of the review
Thirty-one studies were included in the review; six were randomised cross-over studies (all double-blind) and the rest were either non-randomised cross-over studies or cohort studies. Sample sizes ranged from 11 to 344 patients. The authors stated that most studies had methodological flaws and were not designed to explore equi-analgesic dose data.

Three cohort studies showed a ratio of 100:1 between oral morphine and transdermal fentanyl; a cohort study reported a ratio of 150:1, and another study found a ratio of 1:100 using the opposite sequence. The evidence for a 75:1 ratio between oral morphine and transdermal buprenorphine was less reliable (one small, non-randomised cross-over study). One randomised trial supported a conversion ratio between oral morphine and oral hydromorphone of 7.5:1. There was some limited evidence from four randomised trials to support the use of an approximate conversion ratio of oral
morphine to oral oxycodone of 1.5:1; two other studies reported ratios of 1.8:1 and 2:1. The conversion between oral oxycodone and oral hydromorphone was estimated to be 1:4 in one high quality randomised trial. The conversion ratio when switching from different opioids to methadone was highly variable, ranging from 4:1 to 12:1 (10 cohort studies).

Authors' conclusions
Conversion rates between oral hydromorphone, oral morphine, oral oxycodone and transdermal fentanyl were supported by the available evidence.

CRD commentary
The review question was clear and appropriate eligibility criteria were used. Attempts to identify relevant studies were undertaken by searching relevant databases, although only studies in English were included. It was unclear whether there were any publication restrictions (no search was made specifically for unpublished studies), so the possibility of missing studies or language/publication bias affecting the results could not be ruled out. The authors did not report using methods to minimise the risk of reviewer error and bias during the review process (such as independent duplicate study selection and data extraction).

Study quality was assessed as part of a GRADE assessment, but the relevant details were not provided for individual studies to allow an evaluation. Basic study details were presented in tables and in the text. A narrative synthesis was undertaken.

In light of the absence of details for several aspects of the review, the reliability of the authors’ conclusions should be regarded as being uncertain.

Implications of the review for practice and research
Practice: The authors stated that switching to transdermal fentanyl or buprenorphine was an option for patients with stable, controlled pain and that clinicians must be prepared to titrate the dose to the specific individual patient’s need.

Research: The authors stated that randomised studies were needed to provide definitive recommendations based on more solid evidence.

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.