

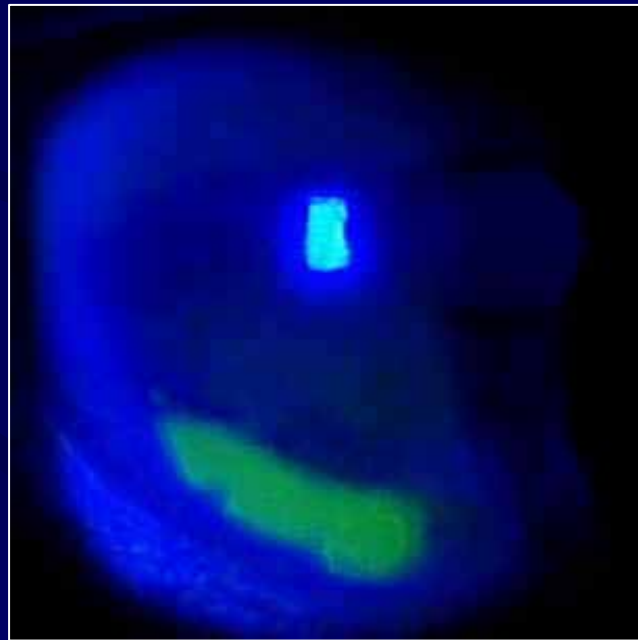
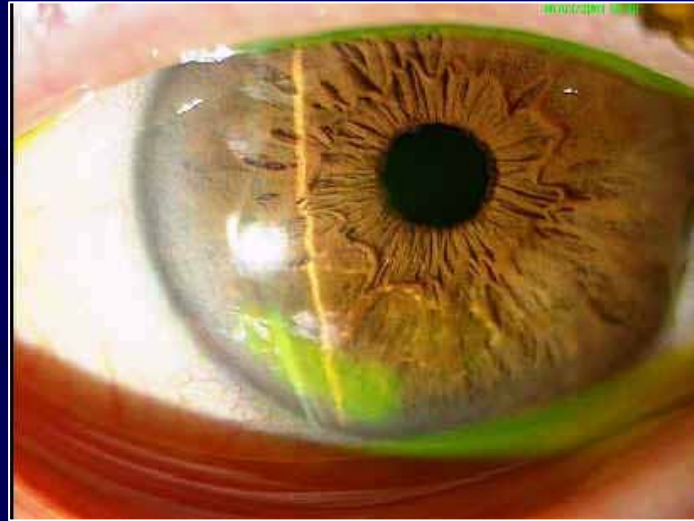
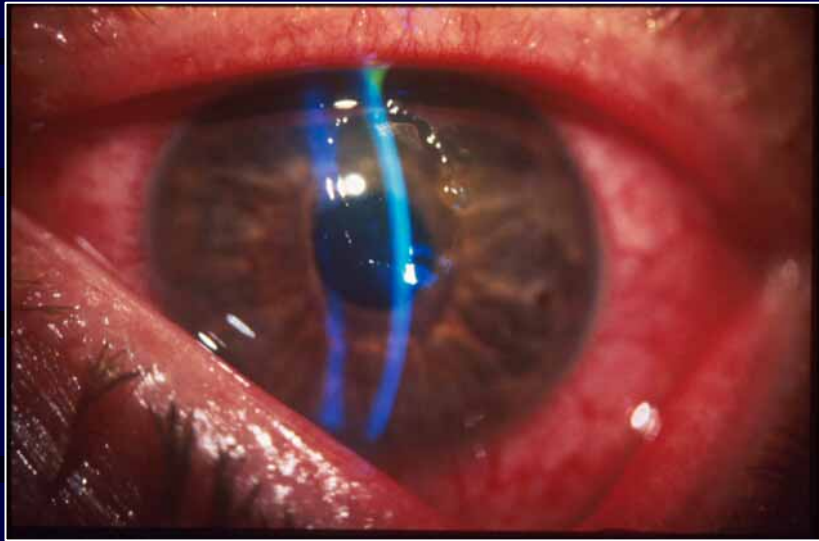
Evidence-Based Medicine Conference

眼科 R3 陳雅琪

指導老師: 徐旭亮 醫師

個案病例摘要

- A 35-years-old male patient, without underlying disease, complained severe right eye painful sensation, tearing and having difficulties to open his eye after trauma by his child's fingernail. He visited our emergent department for help where “**corneal abrasion**” was impressed.



Background information of Corneal abrasion

- The cornea is the transparent outer layer of the eye and composed of five layers, the outermost of which is the corneal epithelium.
- Corneal abrasions are **superficial defects of the epithelium of the cornea**.
- Corneal abrasions are among **the most frequent** ocular conditions encountered in eye emergency departments (Lubeck 1988;Vaughan 1995).

Background information of Corneal abrasion

- Treatment options:
 - Topical antibiotics, NSAIDs, cycloplegic agents
 - Patch (occlusion of the affected eye) for the first 24 hours
- Eye patches are often recommended despite the lack of evidence for their use.
- Patching an eye following a corneal abrasion improves healing or provides pain relief.

Asking

- Clinically, the patient still complained severe pain even with eye patching.
- Does eye patching really improve wound healing or provide pain relief?

PICO

- *Patient*
 - Patient with simple corneal abrasion
- *Intervention*
 - Eye patching
- *Comparison*
 - Without eye patching
- *Outcome*
 - Healing of the corneal epithelium, pain relief

Acquire

- Database:
 - Cochrane library
 - EBMR
 - ACP Journal club
 - EBM
 - Medline
 - Pubmed
- Key words: corneal abrasion, eye injuries, patching, occlusive dressing

Oxford Centre for Evidence-based Medicine

Levels of Evidence (May 2001)

Level	Therapy/Prevention, Aetiology/Harm	Prognosis	Diagnosis	Differential diagnosis/symptom- prevalence study	Economic and decision analyses
1a	SR (with <u>homogeneity</u> [*]) of RCTs	SR (with <u>homogeneity</u> [*]) of inception-cohort studies; CDR† validated in different populations	SR (with <u>homogeneity</u> [*]) of Level 1 diagnostic studies; CDR† with 1b studies from different clinical centres	SR (with <u>homogeneity</u> [*]) of prospective cohort studies	SR (with <u>homogeneity</u> [*]) of Level 1 economic studies
1b	Individual RCT (with narrow <u>Confidence Interval</u>)	Individual inception-cohort study with ≥ 80% follow-up; CDR† validated in a single population	Validating ^{**} cohort study with good††† reference standards; or CDR† tested within one clinical centre	Prospective cohort study with good follow-up ^{****}	Analysis based on clinically sensible costs or alternatives; systematic review(s) of the evidence; and including multi-way sensitivity analyses
1c	All or none [§]	All or none case-series	Absolute SpPins and SnNouts††	All or none case-series	Absolute better-value or worse-value analyses ††††
2a	SR (with <u>homogeneity</u> [*]) of cohort studies	SR (with <u>homogeneity</u> [*]) of either retrospective cohort studies or untreated control groups in RCTs	SR (with <u>homogeneity</u> [*]) of Level >2 diagnostic studies	SR (with <u>homogeneity</u> [*]) of 2b and better studies	SR (with <u>homogeneity</u> [*]) of Level >2 economic studies
2b	Individual cohort study (including low quality RCT; e.g., <80% follow-up)	Retrospective cohort study or follow-up of untreated control patients in an RCT; Derivation of CDR† or validated on split-sample ^{§§§} only	Exploratory ^{**} cohort study with good††† reference standards; CDR† after derivation, or validated only on split-sample ^{§§§} or databases	Retrospective cohort study, or poor follow-up	Analysis based on clinically sensible costs or alternatives; limited review(s) of the evidence, or single studies; and including multi-way sensitivity analyses
2c	"Outcomes" Research; Ecological studies	"Outcomes" Research	.	Ecological studies	Audit or outcomes research
3a	SR (with <u>homogeneity</u> [*]) of case-control studies	.	SR (with <u>homogeneity</u> [*]) of 3b and better studies	SR (with <u>homogeneity</u> [*]) of 3b and better studies	SR (with <u>homogeneity</u> [*]) of 3b and better studies
3b	Individual Case-Control Study	.	Non-consecutive study; or without consistently applied reference standards	Non-consecutive cohort study, or very limited population	Analysis based on limited alternatives or costs, poor quality estimates of data, but including sensitivity analyses incorporating clinically sensible variations
4	Case-series (and <u>poor quality cohort and case-control studies</u> ^{§§})	Case-series (and <u>poor quality prognostic cohort studies</u> ^{**})	Case-control study, poor or non-independent reference standard	Case-series or superseded reference standards	Analysis with no sensitivity analysis
5	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on economic theory or "first principles"

Searching Results (1)

Cochrane library

1) Patching for corneal abrasion. (LOE: 1a)

Cochrane Database of Systematic Reviews 2006, Issue 2.

Cochrane Central Register of Controlled Trials

1) Management of corneal abrasion in children: a randomized clinical trial (LOE: 1b)

Annals of Emergent Medicine. 40(1):67-72, 2002 Jul

2) Should we patch corneal erosions? (LOE: 1b)

Archives of Ophthalmology. 115(3):313-7, 1997 Mar

Searching Results (2)

Database of Abstracts of Reviews of Effectiveness

- 1) **Should we patch corneal abrasions: a meta-analysis (LOE: 1a)**

Journal of Family Practice, 1998, 47(4), 264-270

Medline / Pubmed

- 1) **The same as above**

Patching for corneal abrasion (Review)

Turner A, Rabiou M.

Cochrane Database of Systematic Reviews

2006, Issue 2.

Background

- Recent audits show that corneal abrasion is a common presenting eye complaint.
- Eye patches are often recommended for treating corneal abrasions despite the lack of evidence for their use.
- This systematic review was conducted **to determine the effects of the eye patch when used to treat corneal abrasions.**

Objectives

- To test the hypothesis that patching an eye following a corneal abrasion improves healing or provides pain relief.

Search strategy

- We searched
 - Cochrane Central Register of Controlled Trials (CENTRAL) (which contains the Cochrane Eyes and Vision Group Trials Register) on The Cochrane Library (2005, Issue 2),
 - MEDLINE (1966 to April 2005),
 - EMBASE (1980 to April 2005),
 - LILACS (13 April 2005),
 - NRR (2005, Issue 2) and
 - SIGLE (December 2004).
- There were no language or date restrictions in the searches.
- We also searched the reference lists of included studies, unpublished 'grey' literature and conference proceedings and contacted pharmaceutical companies for details of unpublished trials.

Selection criteria

- We included randomized and quasi-randomized controlled trials that compared patching the eye with no patching to treat simple corneal abrasions.

Data collection and analysis

- Two authors independently assessed trial quality and extracted data.
- We contacted investigators for further information regarding quality of trials.
- The primary outcome was **healing of the corneal epithelium** and secondary outcomes were **related to pain**.

Main results (1)

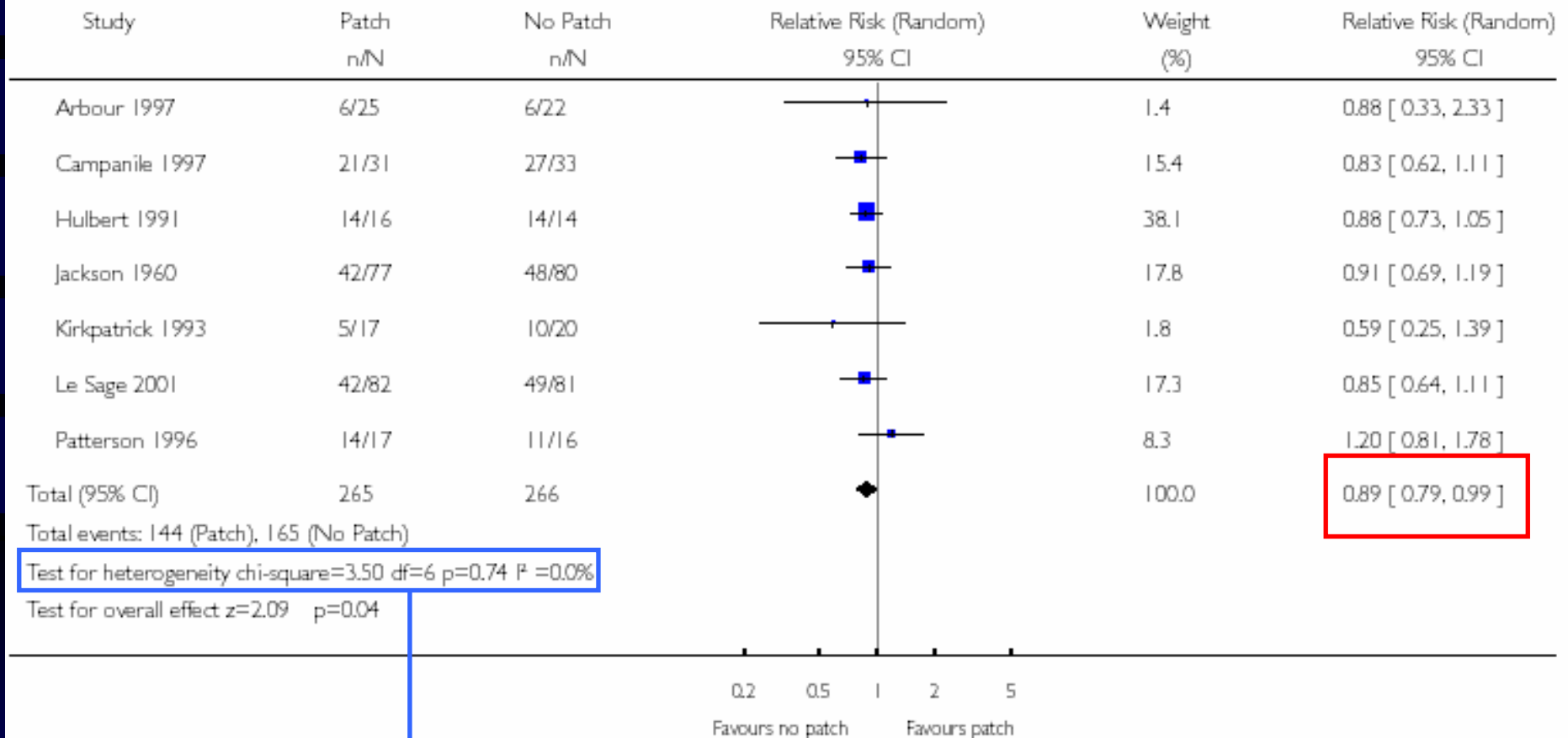
- **Eleven** trials, which randomized a total of 1014 participants, were included in the review.
- Meta-analysis of **seven** studies with dichotomous healing outcomes favored **no patching on the first day** of healing (risk ratio (RR) 0.89, 95% Confidence Interval (CI) 0.79 to 0.99).

Analysis 01.01. Comparison 01 PATCHING VERSUS NO PATCHING, Outcome 01 Number healed on day 1

Review: Patching for corneal abrasion

Comparison: 01 PATCHING VERSUS NO PATCHING

Outcome: 01 Number healed on day 1



Test for heterogeneity chi-square (Cochrane Q)=3.50 df=6 p=0.74
 \rightarrow *Cochrane Q/degrees of freedom*: 0.58 < 1 \rightarrow no heterogeneity

Main results (2)

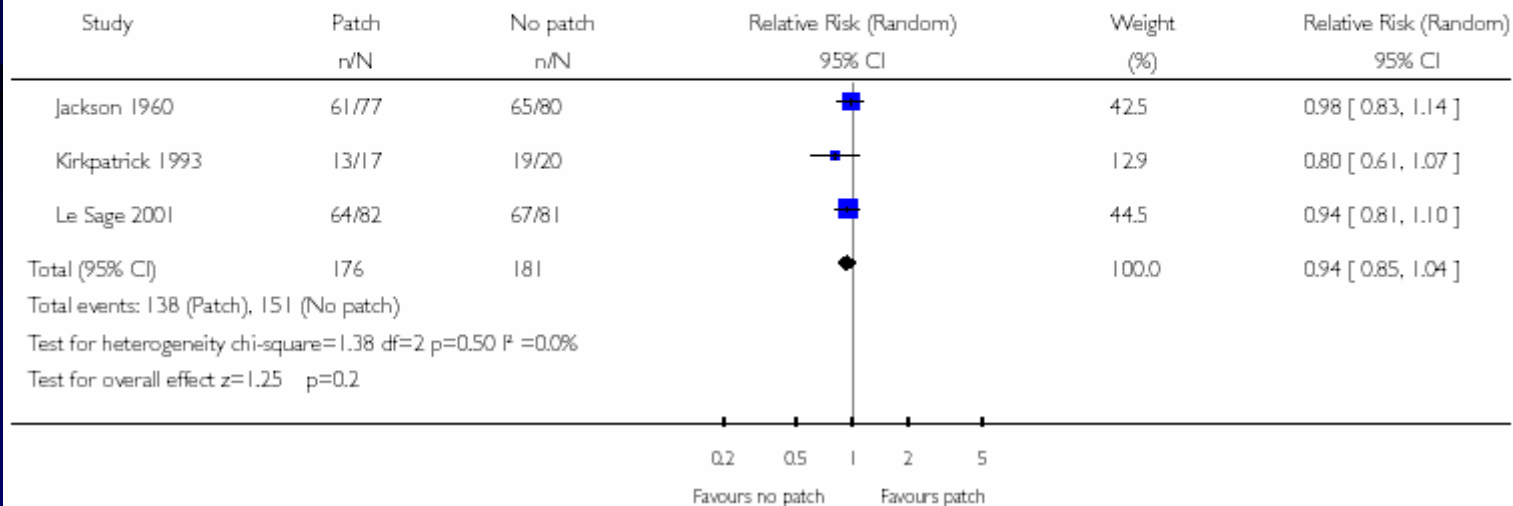
- For days two and three there was **no** significant difference between the two groups.

Analysis 01.02. Comparison 01 PATCHING VERSUS NO PATCHING, Outcome 02 Number healed on day 2

Review: Patching for corneal abrasion

Comparison: 01 PATCHING VERSUS NO PATCHING

Outcome: 02 Number healed on day 2

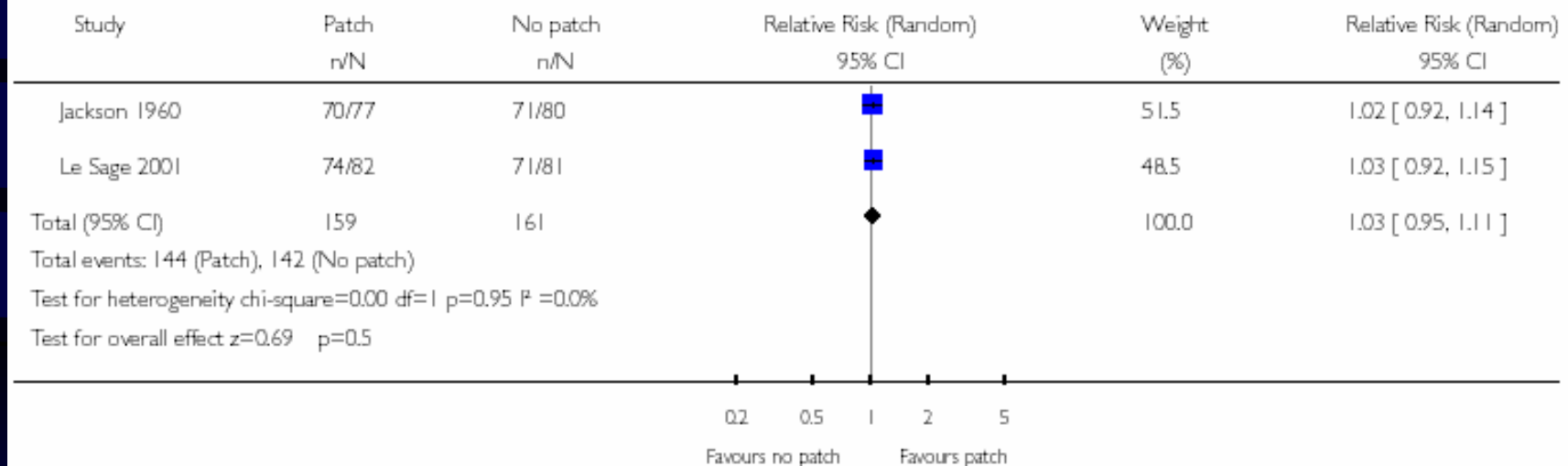


Analysis 01.03. Comparison 01 PATCHING VERSUS NO PATCHING, Outcome 03 Number healed on day 3

Review: Patching for corneal abrasion

Comparison: 01 PATCHING VERSUS NO PATCHING

Outcome: 03 Number healed on day 3



Main results (3)

- Of the nine trials that measured pain scores, **two** favored no patching and **none** favored patching.
- Complication rates were low and no differences were noted in these between the two groups.
- *No-patch groups generally received more adjuvant treatment with antibiotics and/or cycloplegics* than the patch group which is an important confounding factor.

Author's conclusions

- Treating simple corneal abrasions with a patch does *not* improve healing rates on the first day post-injury and does *not* reduce pain.
- In addition, use of patches results in a loss of binocular vision.
- Therefore it is recommended that patches should not be used for simple corneal abrasions.
- Further research should focus on large (greater than 10 mm²) abrasions.

Appraisal – systemic review

What question (PICO) did the systematic review address?

What is best?

The main question being addressed should be clearly stated. The exposure, such as a therapy or diagnostic test, and the outcome(s) of interest will often be expressed in terms of a simple relationship.

This paper: Yes No Unclear
Comment:

Where do I find the information?

The *Title, Abstract or final paragraph of the Introduction* should clearly state the question. If you still cannot ascertain what the focused question is after reading these sections, search for another paper!

Appraisal

F - Is it unlikely that important, relevant studies were missed?

What is best?

The starting point for comprehensive search for all relevant studies is the major bibliographic databases (e.g., Medline, Cochrane, EMBASE, etc) but should also include a search of reference lists from relevant studies, and contact with experts, particularly to inquire about unpublished studies. The search should not be limited to English language only. The search strategy should include both MESH terms and text words.

This paper: Yes No Unclear

Comment:

Where do I find the information?

The *Methods* section should describe the search strategy, including the terms used, in some detail. The *Results* section will outline the number of titles and abstracts reviewed, the number of full-text studies retrieved, and the number of studies excluded together with the reasons for exclusion. This information may be presented in a figure or flow chart.

Appraisal

A – Were the criteria used to select articles for inclusion appropriate?

What is best?

The inclusion or exclusion of studies in a systematic review should be clearly defined a priori. The eligibility criteria used should specify the patients, interventions or exposures and outcomes of interest. In many cases the type of study design will also be a key component of the eligibility criteria.

Where do I find the information?

The *Methods* section should describe in detail the inclusion and exclusion criteria. Normally, this will include the study design.

This paper: Yes No Unclear

Comment:

Appraisal

A - Were the included studies sufficiently valid for the type of question asked?

What is best?

The article should describe how the quality of each study was assessed using predetermined quality criteria appropriate to the type of clinical question (e.g., randomization, blinding and completeness of follow-up)

Where do I find the information?

The *Methods* section should describe the assessment of quality and the criteria used. The *Results* section should provide information on the quality of the individual studies.

This paper: Yes No Unclear

Comment: Much data were unclear (level B)

Table 01. Quality Assessment Results

Trials	Randomisation	Allocation conceal.	Masking	Attrition	Intention-to-treat	Comparable groups
Jackson 1960	C	C	C	C (65/222)	C	Yes
Hulbert 1991	B	B	B	A (3/33)	B	Yes
Kirkpatrick 1993	A	B	C	A (7/44)	C	Yes
Rao 1994	B	B	B	A (0/40)	B	Yes
Kaiser 1995	B	B	C	A (22/223)	B	Yes
Patterson 1996	A	B	C	A (17/50)	C	Yes
Arbour 1997	B	B	A	A (1/46)	C	Yes
Campanile 1997	B	B	A	A (10/74)	C	Yes
Le Sage 2001	C	C	A	A (28/163)	B	Yes
Michael 2002	A	A	A	A (2/37)	A	Yes
Agostini 2004	B	B	B	C (28/82)	C	Yes

A(adequate); B(unclear); C (inadequate).

Study	Hulbert 1991
Methods	Randomised controlled trial. 3 month duration. Unclear method of allocation. Post-randomisation exclusions 10% (unclear distribution). Masking of outcomes assessor unclear. Fluorescein staining (X4 magnification) used to assess abrasion size.
Participants	Inclusion criteria: corneal epithelial defects resulting from removal of foreign body. Exclusion criteria: participants in whom residual foreign body or stain remained after first attendance for removal. Setting: England. Number of participants: 33. Exclusions after randomisation: 3. Total available for analysis: 30. No age and sex data.
Interventions	Gauze with enough bulk to exert slight pressure on the closed eye, secured with bandage.
Outcomes	Number of days until complete healing; Number painful or painless on day 1 and 2.
Notes	
Allocation concealment	B – Unclear

Appraisal

T - Were the results similar from study to study?

What is best?

Ideally, the results of the different studies should be similar or homogeneous. If heterogeneity exists the authors may estimate whether the differences are significant (chi-square test). Possible reasons for the heterogeneity should be explored.

Where do I find the information?

The *Results* section should state whether the results are heterogeneous and discuss possible reasons. The forest plot should show the results of the chi-square test for heterogeneity and if discuss reasons for heterogeneity, if present.

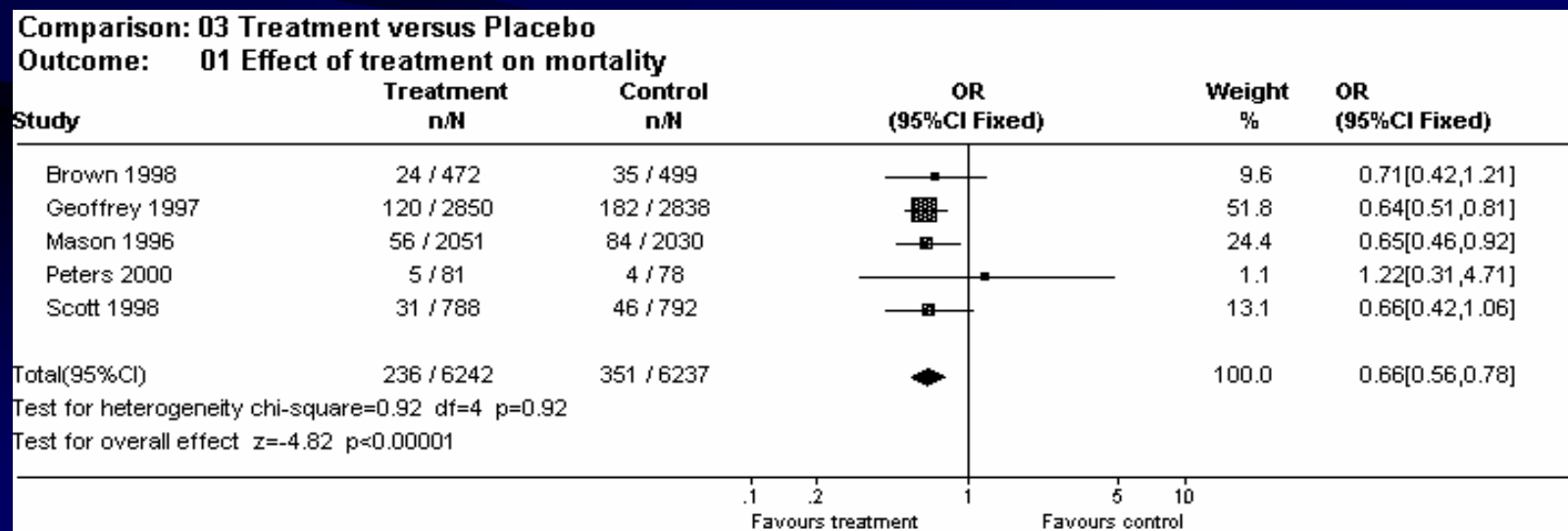
This paper: Yes No Unclear

Comment:

Appraisal

How are the results presented?

A systematic review provides a summary of the data from the results of a number of individual studies. If the results of the individual studies are similar, a statistical method (called **meta-analysis**) is used to combine the results from the individual studies and an overall summary estimate is calculated. The meta-analysis gives weighted values to each of the individual studies according to their size. The individual results of the studies need to be expressed in a standard way, such as relative risk, odds ratio or mean difference between the groups. Results are traditionally displayed in a figure, like the one below, called a **forest plot**.



Apply

- Treating simple corneal abrasions with a patch does *not* improve healing rates on the first day post-injury and does *not* reduce pain.
- It is recommended that patches should not be used for simple corneal abrasions.

Thanks for your attention!