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Formulating a review question

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Examples of questions

Director of a diagnostic lab: "Should we purchase this device?"

Insurance company: "Should we reimburse this test?"

Guideline developers: "Should we recommend this test?"

Head of a clinical department: "How should we use this test?"

Patient: "Do I want to undergo this test?"

Clinician: "What does this test result mean?"



How should test accuracy be used?

- To identify the best tests
- To identify the best use of tests
 - Replacing
 - In combination
 - In sequence
- Probabilistic thinking
- Combining with evidence of treatment effects in decision models

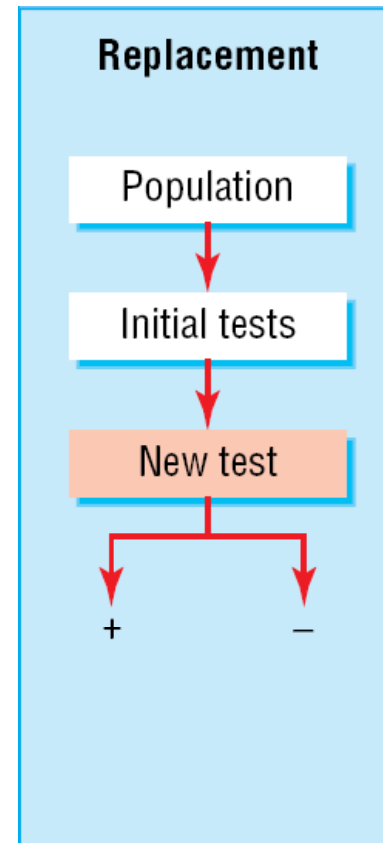
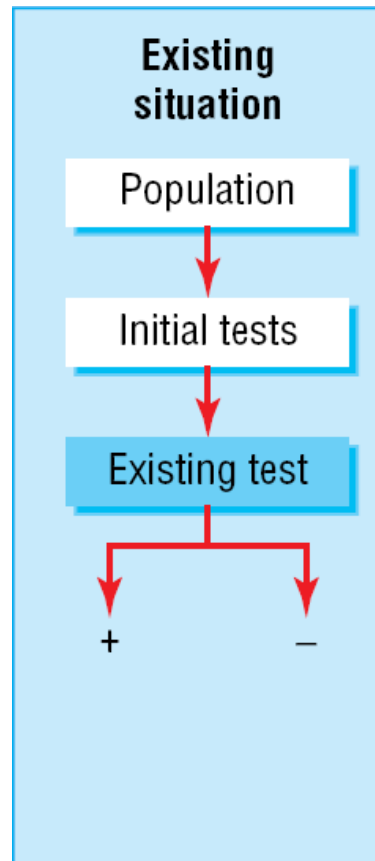


Question formulation

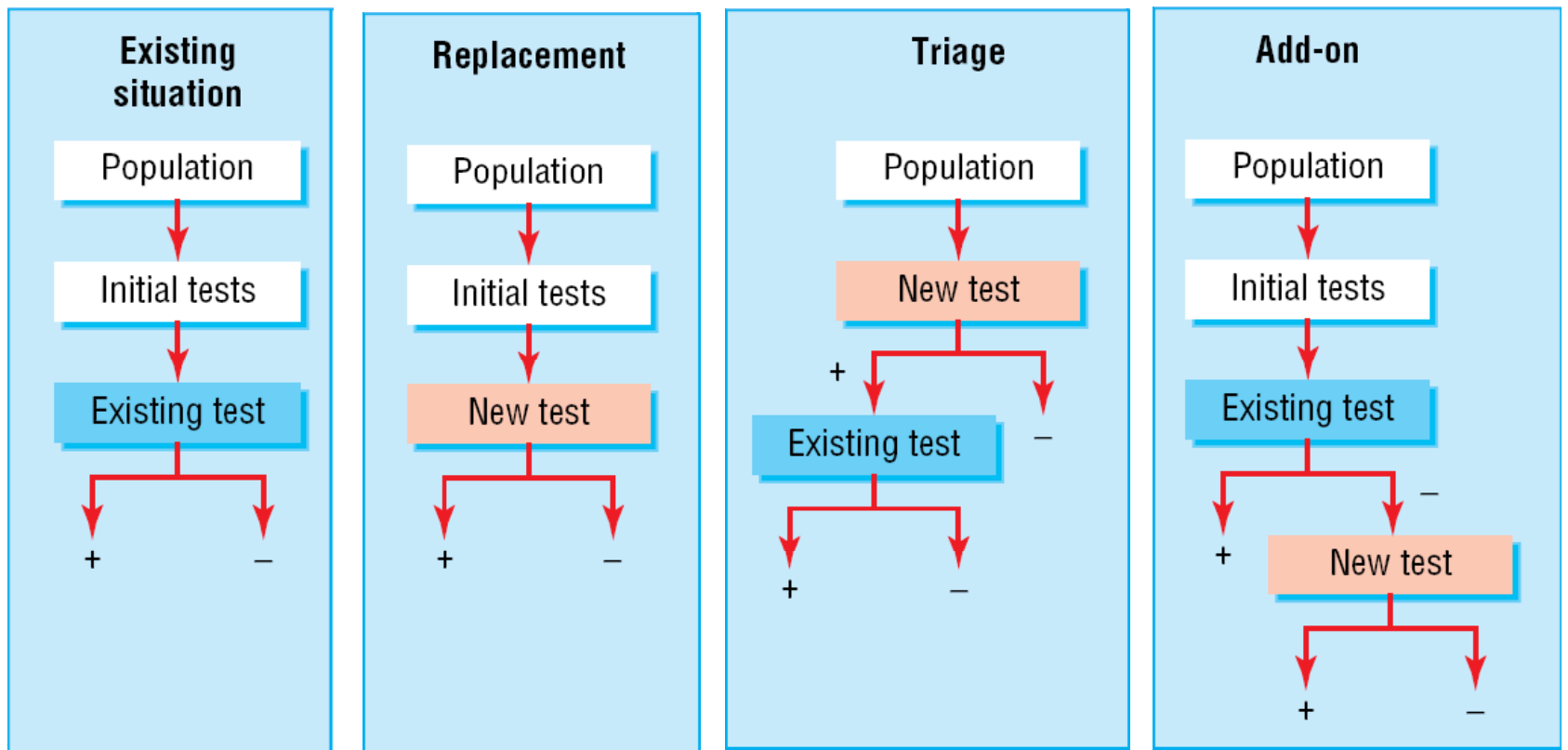
Objective of a DTA SR can be

- To make comparisons between tests concerning their global accuracy
- To estimate the accuracy of a test operating at a particular threshold
- To understand why results of studies vary

Most questions are comparative



Most questions are comparative





Replacement

- If the new index test is being considered as a replacement for the comparator test, we need to consider
 - The accuracy of the new index test
(new index test compared to ref std)
 - The accuracy of the comparator test
(comparator test compared to ref std)



Add-on

- If the new index test is being considered as additional to the comparator test, we need to consider:
 - The rule which is being used to combine tests
 - Either positive
 - Both positive
 - A scoring system
 - The accuracy of the new index and comparator tests combined
 - The accuracy of the comparator test



Triage

- If the new index test is being considered as a test to select patients for additional testing using the comparator test, we need to consider:
 - The rule which is being used to define patients who need further testing
 - New index test positive
 - New index test negative
 - The accuracy of the triage strategy combining test the new index and comparator tests
 - The accuracy of the comparator test



Components of a question

Patients, **P**resentation, **P**rior tests

Index test, **C**omparator test

Purpose: comparative question
alternative tests
role of test(s) now and future

Target disorder, **R**eference standard



Patients, Presentation, Prior Tests

- Presentation – indicates why the people in the study received the test, and indicates in what circumstances the results apply
- Sensitivity depends on the spectrum of disease in those with the target disorder
 - important to know whether restricted by prior tests, or referral status
- Specificity depends on the spectrum of alternative diseases in those without the target disorder
 - important to know whether restricted by prior tests, or referral status



Index and comparator tests

- The index test is the “new” test we wish to evaluate. A review may consider and compare several index tests.
- The comparator test is the alternative diagnostic management strategy which is standard practice and with which we would like to make comparisons



Purposes of tests

- New index tests can be used in a variety of ways to improve diagnosis.
 - They can be used to replace an existing test
 - They can be used in addition to an existing test
 - They can be used to decide whether an existing test should be undertaken



Target disorders and reference standards

- Target disease is the condition we are trying to diagnose
 - May be a pathologically defined condition
 - May simply be an indication for treatment
- Reference standard is the best way available of identifying target condition
 - Work-up or differential verification bias if tests used in reference diagnosis vary dependent on the result of the index test
 - Incorporation bias if index test is part of the reference diagnosis



Background and objectives

- The most common problem we had in the Editorial Team, was that authors were not clear on the intended role of the test and the expected (or required) accuracy for that role.
- Authors forget to explain what they really want to know.



Exercise