



## 11 questions to help you evaluate a clinical prediction rule

### How to use this appraisal tool

Three broad issues need to be considered when appraising any study:

- **Are the results of the study valid?** (Section A)
- **What are the results?** (Section B)
- **Will the results help locally?** (Section C)

The 11 questions on the following pages are designed to help you think about these issues systematically.

The first three questions are screening questions and can be answered quickly. Only if you can answer “yes” to all three is it likely to be worthwhile continuing with the rest of the questions.

There is some degree of overlap between the questions, you are asked to record a “yes”, “no” or “can’t tell” to most of the questions. A number of italicised prompts are given after each question. These are designed to remind you why the question is important. Record your reasons for your answers in the spaces provided.

**These checklists were designed to be used as educational tools as part of a workshop setting**

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# (A) Are the results of the study valid?

## Screening Questions

**1. Is the CPR clearly defined?**

Yes

Can't tell

No

HINT:

- The type of patients to whom the CPR will be applied is clearly defined?
- The variables included in the rule are clearly defined?
- Is the outcome relevant and is it clinically reasonable? (The outcome can be expressed as a probability or as course of action)

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**2. The population from which the rule was derived included an appropriate spectrum of patients?**

Yes

Can't tell

No

HINT: Consider

- Is it adequate the way the patients were selected?
- The spectrum of patient to whom the rule will apply is well represented?

### 3. Was the rule validated in a different group of patients?

Yes

Can't tell

No

HINT:

- It is not good enough that the rule had a good performance on the patient group used to derive it. The rule should be validated in a set of patients different from those who served to derive the rule
- The validation was done in a group of patients similar to the one used to derive it

## Is it worth continuing?



### Detailed questions

### 4. Were the predictor variables and the outcome evaluated in a blinded fashion?

Yes

Can't tell

No

HINT: Did

- People evaluating the outcome know the predictor variables?
- People evaluating the predictor variables know the outcome

**5. Were the predictor variables and the outcome evaluates in the whole sample selected initially?**

Yes

Can't tell

No

HINT:

- Are exclusions and drop outs well described and do the authors discuss the reasons for them?
- Sometimes the outcome cannot be measured in the same way in all patients

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**6. Are the statistical methods used to construct and validate the rule clearly described?**

Yes

Can't tell

No

HINT:

- Were all important variables included and the positivity criteria explained?
- The statistical method is adequately described?
- Was the reliability of the rule considered?

## (B) What are the results?

### 7. Can the performance of the rule be calculated?

HINT:

- Performance results can be presented as: Sens, Sp, + LR, -LR, ROC curve, calibration curves etc.

	Outcome +	Outcome -
Rule +	a	b
Rule -	c	d

- Sensitivity =  $a/(a+c)$
- Specificity =  $d/(b+d)$
- LR+ =  $\text{sens}/(1-\text{sp})$
- LR- =  $(1-\text{sens})/\text{sp}$

### 8. How precise was the estimate of the treatment effect?

*Did they try to refine the rule with other variables to see whether the precision could be improved or the rule simplified?*

HINT: Think about

- The sample size and the number of Variables included in the CPR
- Is the rule robust? Has there been Any attempt to refine it?

**(C) Will the results help locally? / Are the findings applicable to the scenario?**

**9. Would the prediction rule be reliable and and the results interpretable if used for your patient?**

Yes

Can't tell

No

HINT: Consider

- Is your setting too different from that of the study?

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**10. Is the rule acceptable in your case?**

Yes

Can't tell

No

HINT: Consider

- The ease of use and the availability of the rule and the costs
- If the rule is reasonable from a clinical point of view

**11. Would the results of the rule modify your decision about the management of the patient or the information you can give to him/her?**

Yes

Can't tell

No

HINT: Consider

- In addition to your opinion, might there be studies analysing the impact (in monetary terms or health results) of the rule?
- If nothing will change, the rule is at best useless in terms of benefit to the patients.
- How the initial estimation has changed after applying the rule, and the effect it has had on the action threshold.

