How to choose a risk score?

This short document sets out possible criteria to assess the validity and utility of risk assessment tools in primary care using cancer as an example.

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| Domain/criteria | Rationale/description |
| **purpose** | What do you want the risk score to do and does it measure the right thing  (e.g. risk over a relevant time period) ? |
| **Face validity** | Does the risk score include clinically important variables known to affect risk of the having cancer eg age/sex/smoking + relevant symptoms (weight loss, appetite loss) |
| **generalisability** | Has the risk score been developed on a representative population and can the results be generalised to the UK? |
| **Discrimination** | Discrimination is the ability of the risk score to differentiate between patients who have cancer and those who don’t. It is tested statistically by the ROC statistic and related tests |
| **Calibration** | This is a measure of how closely predicted risk using the risk score matches the actual observed risk of cancer. This is assessed statistically by comparing actual risk with predicted risk in a population |
| **Transparency** | Has the algorithm been published so that it is open to scrutiny and independent research? |
| **Scientific evaluation** | Has the research underpinning the algorithm been published in a peer reviewed journal? |
| **Validation** | Has the risk score been validated on a representative population and can the results be generalised to the UK? |
| **External validation** | Has the performance of the risk score been tested on a population not used to develop the score and what did the results show? |
| **Independent validation** | Has the performance of the risk score been tested by an academic team not involved in the development of the score and what did the results show? |
| **Integration – IT systems** | Can the risk score be integrated on any IT platform and into any clinical computer system? |
| **Integration – clinical assessment individual patients** | Can the risk score be used by clinicians in a clinical setting eg at the point of care with an individual patient? |
| **Integration – clinical risk stratification populations** | Can the risk score be used in ‘batch mode’ to risk stratify populations at risk of cancer who need to be recalled (safety netting)? |
| **Can it be updated** | Risk scores will need to be modified over time to take account of   * Changes in population characteristics * Changes in consultation patterns (eg in response to public awareness campaigns) * Changes in data quality (eg better recording of symptoms and outcomes) * Improvements in statistical techniques * Evolving national requirements (eg QOF or NICE) * Results of evaluation of their use |