Summarising diagnostic accuracy using a single parameter

Mark Simmonds

Centre for Reviews and Dissemination

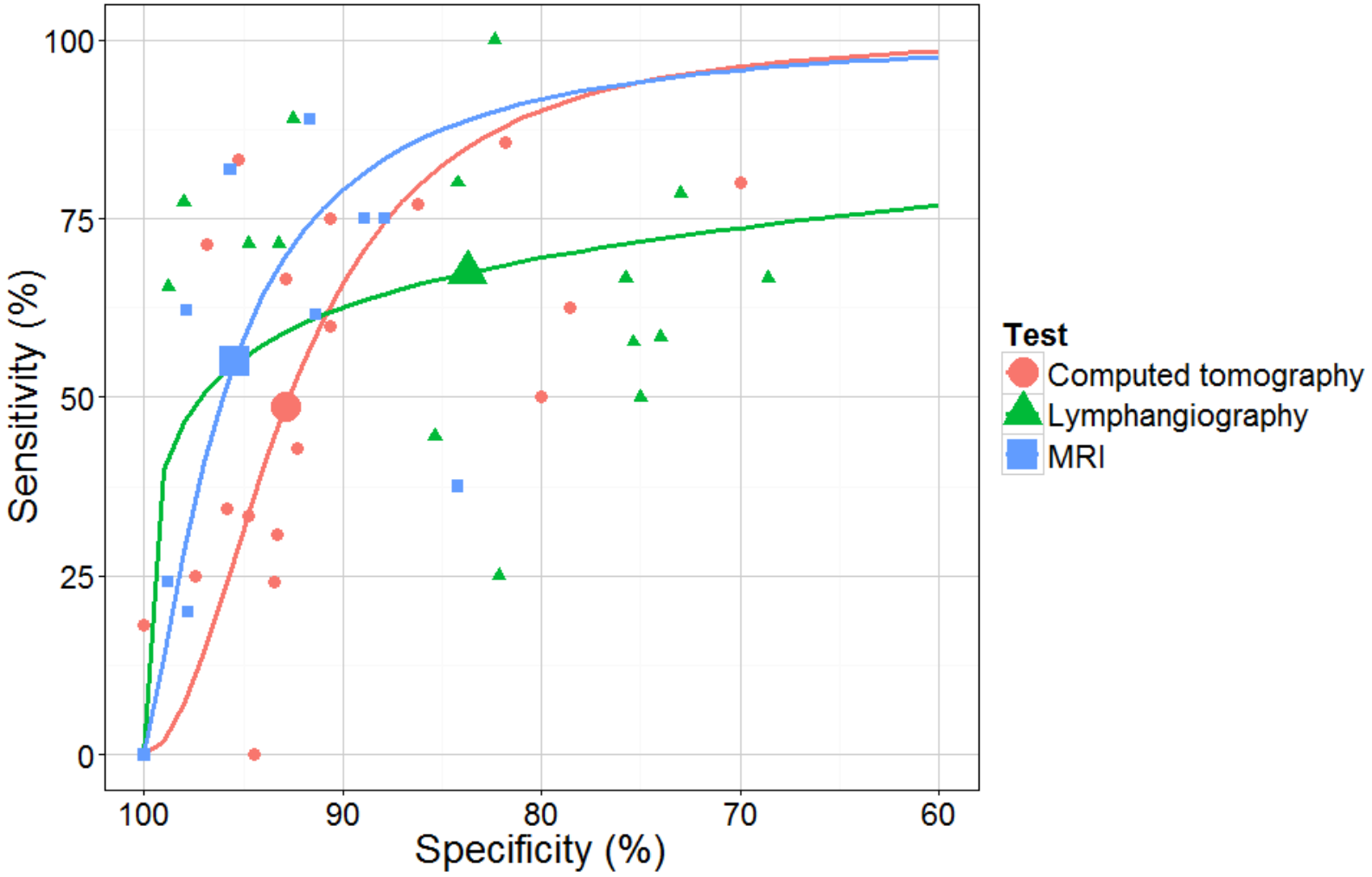
University of York, UK

I have no actual or potential conflict of interest in relation to this presentation.

Diagnostic Meta-Analyses

- Bivariate and hierarchical summary ROC (HSROC) methods recommended
- Account for correlation between sensitivity and specificity
- BUT
- Can be difficult to interpret
- Difficult to conduct in RevMan

Diagnosing lymph node metastases



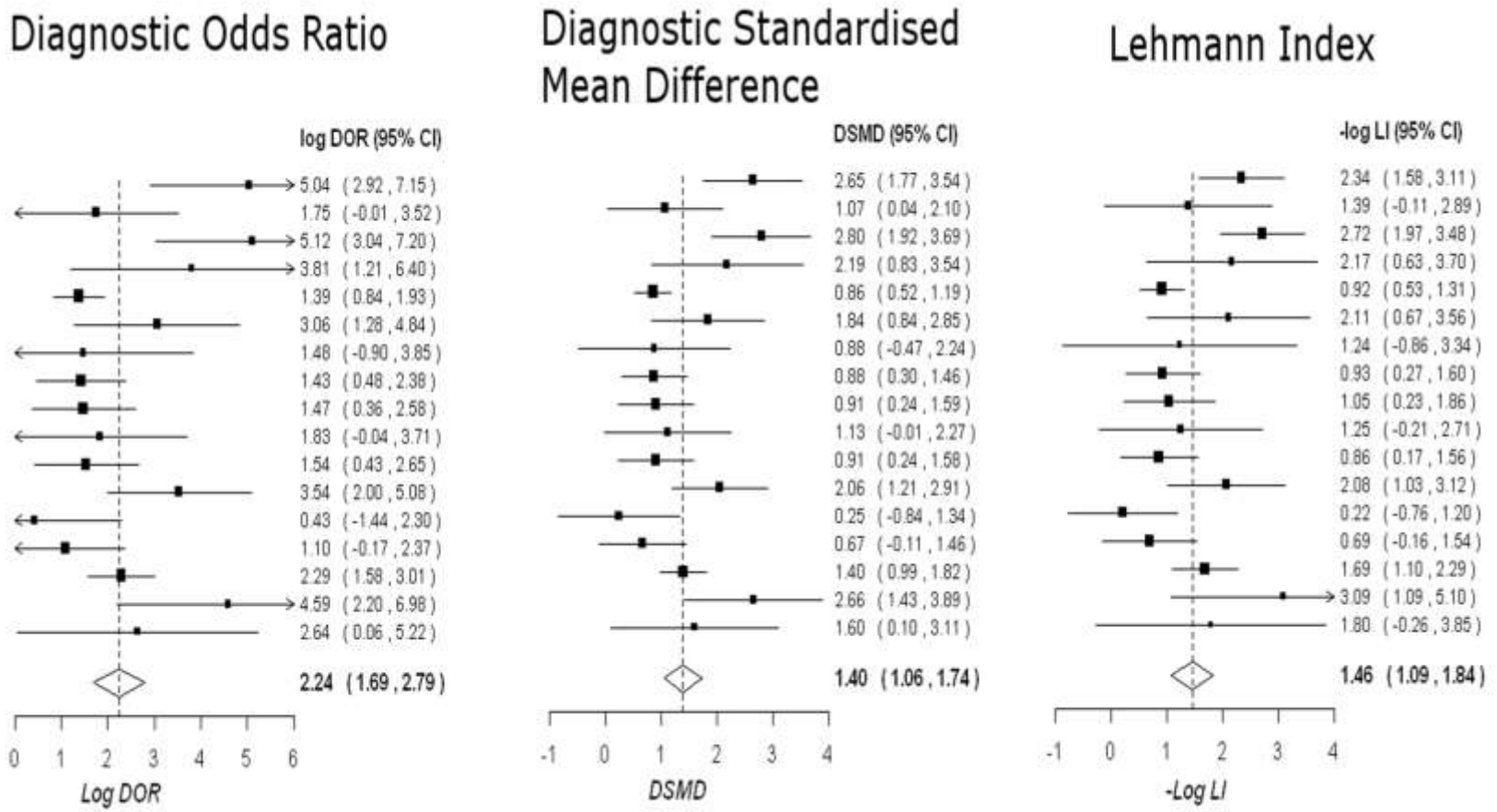
The single parameter approach

- Find functions $\theta = f(Sens., Spec.)$

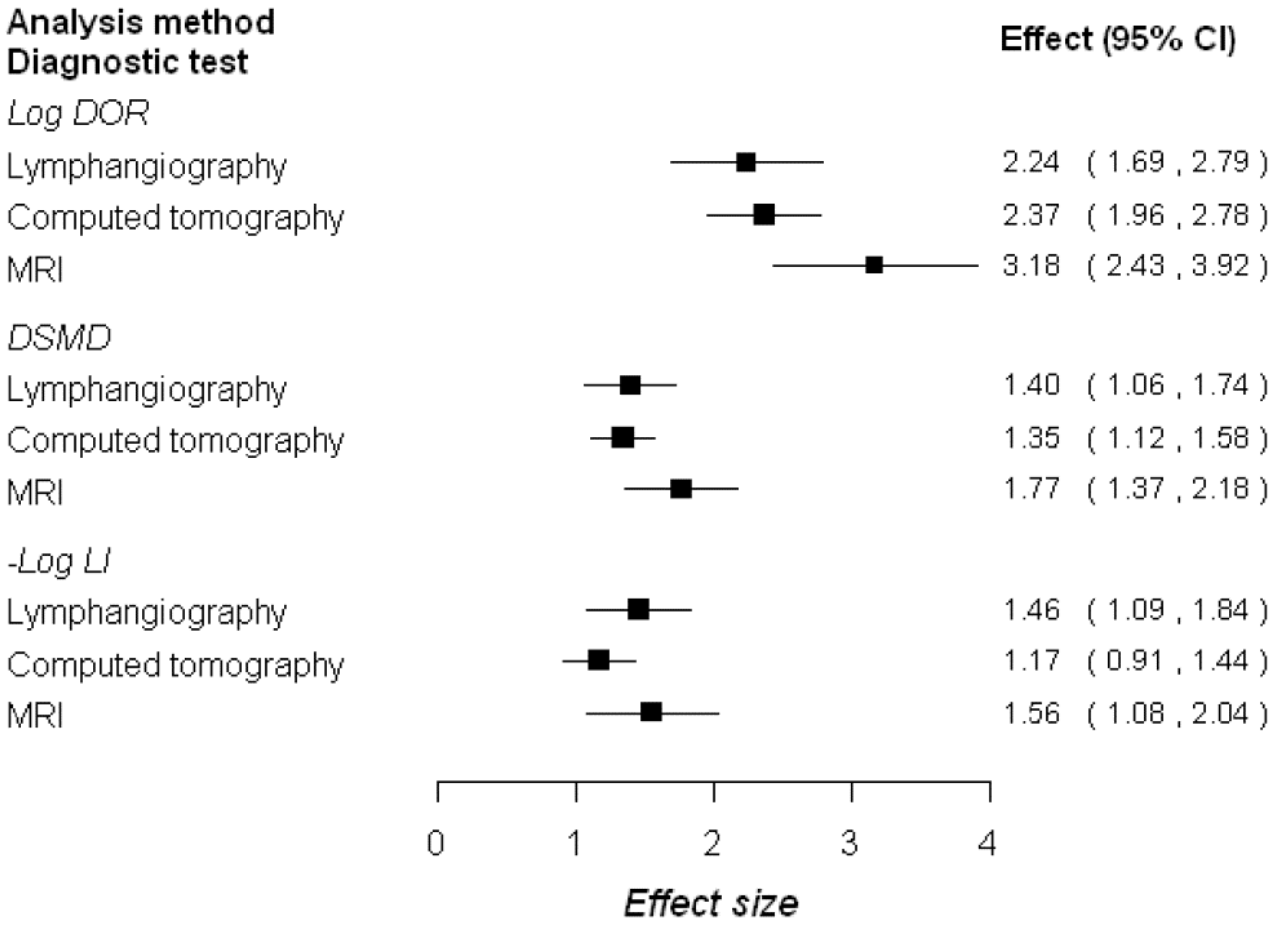
Name	Formula
Youden's Index	Sens. + Spec.
Diagnostic (log) odds ratio	$logit(Sens.) + logit(Spec.)$
Diagnostic standardised mean difference	$\Phi^{-1}(Sens.) + \Phi^{-1}(Spec.)$
Lehmann Index	$cloglog(Sens.) + cloglog(Spec.)$

- All easily calculated using regression models of the 2x2 test data

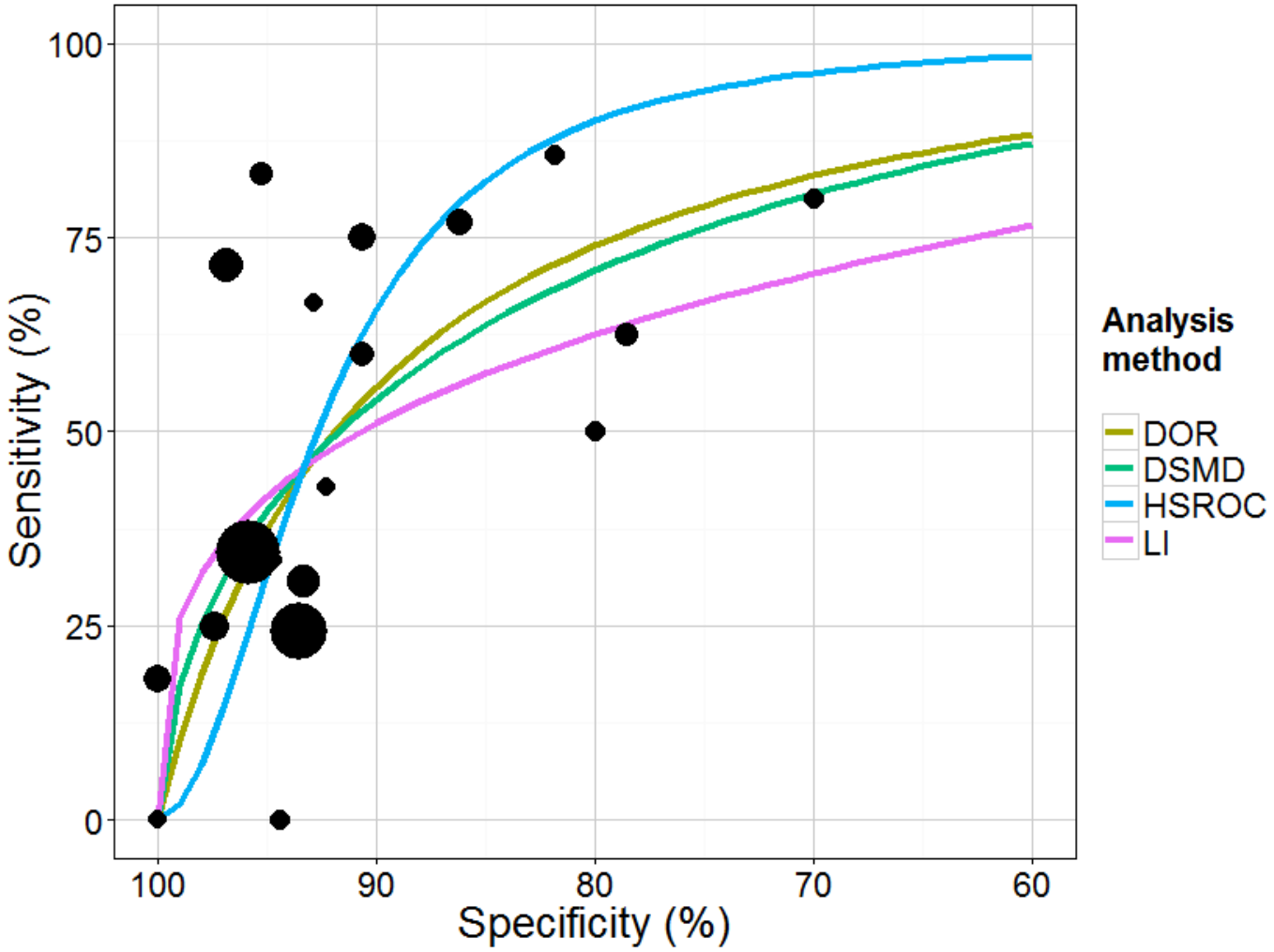
Forest plots for lymphangiography



Comparing methods and index tests



Summary ROC curves for CT scan



Summary

- HSROC and bivariate methods can be difficult to use and interpret
- Single parameter models allow for use of more familiar meta-analysis methods
- Different models can lead to different conclusions
- Diagnostic meta-analyses must consider the distribution of the index test when planning analyses