A workshop was held on 21 October 2015 to bring together health economists and related methodologists to discuss issues in test evaluation for R&D and healthcare reimbursement. The event was a joint venture between the National Institute for Health Research (NIHR) Diagnostic Evidence Cooperative (DEC) Leeds and Canadian PACEOMICS project team.

Twenty-four delegates attended from across academia, consultancy and the UK National Institute of Health and Care Excellence (NICE). The day was split into a morning session, in which four current research projects were presented, and an afternoon session, in which priorities for future research were discussed.

### Methodology session

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| 1 | Efficient research design for diagnostic test development  
Dr Peter Hall (NIHR DEC Leeds) discussed the use of early/interim modelling and value of information analysis to inform clinical trial design, using the example of the OPTIMA study. |
| 2 | Optimising co-dependant technologies  
Dr Reza Mahjoub (PACEOMICS) outlined methodology being developed as part of his post-doctoral fellowship, to optimise test benefit over co-dependent technologies. |
| 3 | Improving early diagnosis of Multiple Myeloma in primary care  
Dr Yaling Yang (NIHR DEC Oxford) discussed issues in diagnostic assessments when dealing with a mixed patient population, limited data, and when an RCT is not feasible. |
| 4 | CEA diagnostic modelling for NICE: example of Procalcitonin  
Nigel Armstrong (Kleijnen SR Ltd.) discussed issues around choosing and using evidence to inform diagnostic models, and highlighted the importance of conducting scenario analyses when uncertainty is not fully captured in model parameters. |

### Key themes discussed & future research requirements

- **Value of early modelling** – there was general agreement across the group regarding the high utility of early/interim economic modelling (i.e. conducted before large-scale phase II/III trials) to inform and optimise research pathways. There is a need to encourage greater utilisation of early modelling and ensure appropriate dissemination of such studies to increase awareness and understanding.

- **Importance of perspective/ budget impact analysis** – current economic analyses conducted from a “NICE decision-maker” perspective may be failing to provide the type of data required by local commissioners/ decision makers. Future research should place greater emphasis on conducting analyses from alternative perspectives with a more detailed breakdown of costs and specific budget impacts.

- **Incorporating test performance measures** – current economic evaluations of diagnostic technologies ignore the potential impact of test performance measures (such as analytical and pre-analytical validity) on the accuracy and utility of a test. There is a need to develop methodology to determine how such test performance measures should be incorporated in to economic evaluations.

- **Parameter elicitation** – often elicitation of model parameter values from clinicians and experts is required in diagnostic evaluations due to paucity of data. There is a need to develop robust elicitation methods to inform diagnostic analyses.

- **Extra-welfarist approach** – there was disagreement amongst the group regarding the value of pursuing an extra-welfarist approach to assess the value of tests. This approach may identify aspects of diagnostic technology which patients value that are not currently captured using the quality-adjusted life-year (QALY), however this ‘extra value’ must be captured in the opportunity cost also.