INAHTA Brief

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***Title*** Epidermal Growth Factor Receptor (EGFR) Mutation Test for Patients with Non-Small Cell Lung Cancer (NSCLC)

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***Reference*** Technology Review Report – 018/2013, online:
http://www.moh.gov.my/index.php/database_stores/store_view_page/30/222

**Aim**

The objective of the technology review was to review the clinical effectiveness and diagnostic performance of EGFR mutation testing to detect the presence of EGFR mutations in patients with non-small cell lung cancer (NSCLC).

**Conclusions and results**

There were fair to good level of evidence that suggest epidermal growth factor receptor (EGFR) mutation test contribute to the delivery of personalised cancer treatment plans by identifying the suitable patients for treatment with tyrosine kinase inhibitor with promising clinical effectiveness such as better overall response, overall survival and progression free survival. The evidence suggested that EGFR mutations were detected more frequently in women, non-smokers and in patients with histology result of adenocarcinoma.

A variety of methods have demonstrated to be potential alternatives to the historical standard for EGFR mutation testing, namely direct sequencing. However, the only choice of the testing methods should base on local setting whether detection of known activating EGFR mutations only or all possible mutations is required, the availability of the equipment and laboratory's expertise, availability of sample and cost. In order to maximize the benefit of the EGFR mutation test for local population, proper selections of patients need to be taken into consideration as ethnicity, sex and smoking status were reported to be associated with EGFR mutation.

There was one retrievable scientific evidence addressing the cost effectiveness of EGFR mutation testing and first-line treatment with Gefitinib for patients with advanced adenocarcinoma of the lung which was conducted in Singapore. It was reported that EGFR mutation-testing and first-line treatment with Gefitinib and second-line chemotherapy for EGFR mutation positive patients and chemotherapy followed by best supportive care for those with mutation negative shown to be a dominant strategy compared to no mutation testing and standard treatment with quality adjusted life years (QALYs) increase by 0.04 and costs decrease by SGD 2,400.

**Recommendations (if any)**

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**Methods**

Scientific electronic databases were searched through OVID interface which include OVID MEDLINE (R) In process &Other Non-Indexed Citations and OVID MEDLINE (R) 1946 to present, Cochrane Central Register of Controlled Trials June 2013, Cochrane Database of Systematic Reviews 2005 to May 2013, EBM Reviews- Database of Abstracts of Reviews of Effects 2nd Quarter 2013, EBM Reviews- Health Technology Assessment 2nd Quarter 2013, EBM Reviews-NHS Economic Evaluation Database 2nd Quarter 2013, EBM reviews-ACP journal Club1991-June 2013, EBM Reviews-Cochrane Methodology Register 3rd Quarter 2012, Embase and PubMed. Last search was done on 15th August 2013 and there was no limitation during the search. Relevant articles were critically appraised using Critical Appraisal Skills Programme (CASP) checklists. Evidence was graded according to the US / Canadian Preventive Services Task Force and NHS Centre for Reviews and Dissemination (CRD) University of York, Report Number 4 (2nd Edition).

**Written by**

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