

- Title** Tyrosine Kinase Inhibitors as First Line Treatment for Advanced Non Small Cell Lung Cancer
- Agency** HTA Malaysia, Health Technology Assessment Section, Medical Development Division, Ministry of Health Malaysia
Level 4, Block E1, Parcel E, Presint 1,
Federal Government Administrative Center, 62590 Putrajaya, Malaysia
Tel: +603 88831229, Fax: +603 88831230; htamalaysia@moh.gov.my, www.moh.gov.my
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Aim

To assess the safety and efficacy/effectiveness and cost-effectiveness of tyrosine kinase inhibitors as first line treatment for advanced non-small cell lung cancer as well as to conduct local economic evaluation of these drugs based on available data.

Conclusions and results

Evidence showed that Erlotinib and Gefitinib significantly prolonged progression free survival and increased overall response rates when compared with platinum-based doublet chemotherapy in the previously untreated advanced non-small cells lung cancer patients with epidermal growth factor receptor (EGFR) gene mutation. However, there was insufficient evidence to show the difference in overall survival between both tyrosine kinase inhibitors and chemotherapy.

The common adverse events with tyrosine kinase inhibitors (TKI) were diarrhea, rash, acne, dry skin and pruritis. In addition, it has also been reported that liver enzyme elevations were also seen in Erlotinib and Gefitinib groups. Interstitial lung disease is also known as EGFR-TKI related lethal disease; however, less than 1% of patients treated with TKI would develop the interstitial lung disease.

From the decision analytic modelling that has been conducted, the deterministic incremental cost-effectiveness ratio (ICER) of Erlotinib and Gefitinib is RM298, 904.98 and RM261, 898.27 respectively. The price of tyrosine kinase inhibitors, duration of progression free and number of patients who response to the treatment have shown to be a sensitive parameter for ICER and may be a key determinant before considering the first line treatment for advanced non-small cell lung cancer for EGFR mutation positive patient.

Recommendations (if any)

Gefitinib and Erlotinib is not recommended to be used as first line treatment for advanced non-small cell lung cancer with epidermal growth factor receptor (EGFR) gene mutation until it is proven to be cost-effective since the reported ICER is more than the suggested cost-effectiveness threshold by the WHO. Price negotiation may be able to encourage wider patient access for this treatment based on the financial affordability of the

healthcare provider. In addition, prospective EGFR mutation should be routinely tested before the initiation of treatment in advanced NSCLC patients.

Methods

Electronic databases were searched through the Ovid interface: Ovid MEDLINE® In-process and Other Non-indexed citations and Ovid MEDLINE® 1946 to present, EBM Reviews - Cochrane Central Register of Controlled Trials – January 2015, EBM Reviews - Cochrane Database of Systematic Reviews - 2005 to January 2015, EBM Reviews - Health Technology Assessment – 1st Quarter 2015, EBM Reviews-NHS Economic Evaluation Database 1st Quarter 2015, EBM Reviews- Cochrane Methodology Register 3rd Quarter 2012, EBM Reviews- Database of Abstracts of Review Effects 1st Quarter 2015, EBM Reviews- ACP Journal Club 1991 to February 2015, EMBASE – 1996 to 2015 March 03 and Econlit 1886 to February 2015.

Google Scholar was used to search for additional web-based materials and information. Additional articles were identified from reviewing the references of retrieved articles. Last search was conducted on 4th March 2015. Relevant articles were critically appraised and evidence graded using US/Canadian Preventive Services Task Force.

Further research/reviews required

Further survival modelling may provide information on the long term benefit of tyrosine kinase inhibitors as first line treatment for advanced non small cell lung cancer

Written by

Ku Nurhasni & Dr. Hanin Farhana, MaHTAS, Malaysia