Background

- Non-small cell lung cancer (NSCLC) is the largest subset (85%) of lung cancer, with lung adenocarcinoma being the most common histology (40% of NSCLC) [1,2].
- Although there is no cure for patients with distant metastases (stage IV), systemic therapy is offered to all patients who can tolerate it, which estimates to about 94% of patients in the United States and 88% of patients across the European Union [3,4].
- Patients suffer from debilitating symptoms, including constant, severe dyspnea, chronic cough, severe pain, fatigue, anxiety, and depression, all of which significantly reduce physical and intellectual activities [5].
- Of 30-60% of NSCLC patients with brain metastases, few survive longer than 3-7 months and experience severe physical, cognitive, and functional impairments despite whole-brain radiation therapy [6].
- The most common quality of life (QoL) is especially related to patients with late-stage disease and those receiving later lines of treatment.

Cost-utility analyses undertaken to inform decision-making require a set of health state utility values (HSUVs) so that the time patients spend in different health states can be aggregated into quality-adjusted life-years.

Objectives

- Our systematic review assessed the availability and variation of HSUVs and disutilities associated with previously treated EGFR-mutant NSCLC.

Results

- Of the twenty-six records from the QOL SLR publications, five reported HSUVs. Two additional publications were identified via a bibliographic search. In total, seven publications reporting HSUVs were identified: two publications on a phase 2 single arm trial, two longitudinal cohort studies, one single-center cross-sectional patient survey, and two publications presenting utilities extrapolated from metastatic breast cancer to NSCLC. One surveyed perceived burden of receiving second line treatment using a standard gamble approach, and the other presented an additional updated international version using time trade-off (TTO) method in first line.
- All studies reported EuroQol. Five Dimensions (EQ-5D)-derived HSUVs were used: two publications on a phase 2 single arm trial, two longitudinal cohort studies, one single-center cross-sectional patient survey, and two publications presenting utilities extrapolated from metastatic breast cancer to NSCLC. One surveyed perceived burden of receiving second line treatment using a standard gamble approach, and the other presented an additional updated international version using time trade-off (TTO) method in first line.
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- Five HTAs included HSUVs from three studies. IMPRESS (gimelimit), KEYNOTE-158 (pembrolizumab), and AURA-2 (osimertinib). Four studies reported pre-progression HSUVs at 80.1-81.82.
- Response to treatment was associated with improved HSUVs in two HSUVs (three-level (2 studies), five-level (3 studies), level unknown) reported in 4 studies: 0.88-0.75.
- End-of-life stage was associated with very low HSUVs; 0.28-0.32 for patients with 30 days of death.
- Symptomatic brain metastases were associated with a 0.06 decrease in utility.
- Eighty-three disutilities in responding patients included immune-suppression markers of neutropenia and fatigue, reflecting an improvement in quality of life.
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Conclusions

- Reported HSUVs underpin substantial unmet need in EGFR-mutant NSCLC and could inform, compare, and improve disease progression. Careful interpretation of published values is advised considering differences in study methodologies and population characteristics.

Limitations

- Reported utilities vary across studies and regions, making generalization and interpretation difficult when comparing between studies.

Methods

- Embase, MEDLINE, Cochrane databases were searched from January 2007 through October 2017, as well as health technology assessments (HTA) from UK National Institute for Health and Care Excellence, Scottish Medicines Consortium, Australian Pharmacists Board’s Advisory Committee, and Canadian Agency for Drug and Technologies in Health, to identify studies with HSUV in refractory EGFR-mutant NSCLC.
- Among 1,716 published records and 38 HTAs, five relevant studies and five HTAs that reported HSUV were selected.

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