

CADTH Reimbursement Review

# CADTH Reimbursement Recommendation

(Draft)

Amivantamab (Rybrevant)

Indication: For the treatment of adult patients with locally advanced or metastatic non-small cell lung cancer (NSCLC) with activating epidermal growth factor receptor (EGFR) Exon 20 insertion mutations whose disease has progressed on, or after platinum-based chemotherapy

Sponsor: Janssen Inc.

Recommendation: Reimburse with Conditions

Version: 1.0  
Publication Date: February 2023  
Report Length: 18 Pages

**Disclaimer:** The information in this document is intended to help Canadian health care decision-makers, health care professionals, health systems leaders, and policy-makers make well-informed decisions and thereby improve the quality of health care services. While patients and others may access this document, the document is made available for informational purposes only and no representations or warranties are made with respect to its fitness for any particular purpose. The information in this document should not be used as a substitute for professional medical advice or as a substitute for the application of clinical judgment in respect of the care of a particular patient or other professional judgment in any decision-making process. The Canadian Agency for Drugs and Technologies in Health (CADTH) does not endorse any information, drugs, therapies, treatments, products, processes, or services.

While care has been taken to ensure that the information prepared by CADTH in this document is accurate, complete, and up-to-date as at the applicable date the material was first published by CADTH, CADTH does not make any guarantees to that effect. CADTH does not guarantee and is not responsible for the quality, currency, propriety, accuracy, or reasonableness of any statements, information, or conclusions contained in any third-party materials used in preparing this document. The views and opinions of third parties published in this document do not necessarily state or reflect those of CADTH.

CADTH is not responsible for any errors, omissions, injury, loss, or damage arising from or relating to the use (or misuse) of any information, statements, or conclusions contained in or implied by the contents of this document or any of the source materials.

This document may contain links to third-party websites. CADTH does not have control over the content of such sites. Use of third-party sites is governed by the third-party website owners' own terms and conditions set out for such sites. CADTH does not make any guarantee with respect to any information contained on such third-party sites and CADTH is not responsible for any injury, loss, or damage suffered as a result of using such third-party sites. CADTH has no responsibility for the collection, use, and disclosure of personal information by third-party sites.

Subject to the aforementioned limitations, the views expressed herein are those of CADTH and do not necessarily represent the views of Canada's federal, provincial, or territorial governments or any third party supplier of information.

This document is prepared and intended for use in the context of the Canadian health care system. The use of this document outside of Canada is done so at the user's own risk.

This disclaimer and any questions or matters of any nature arising from or relating to the content or use (or misuse) of this document will be governed by and interpreted in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein, and all proceedings shall be subject to the exclusive jurisdiction of the courts of the Province of Ontario, Canada.

The copyright and other intellectual property rights in this document are owned by CADTH and its licensors. These rights are protected by the Canadian *Copyright Act* and other national and international laws and agreements. Users are permitted to make copies of this document for non-commercial purposes only, provided it is not modified when reproduced and appropriate credit is given to CADTH and its licensors.

**Redactions:** Confidential information in this document may be redacted at the request of the sponsor in accordance with the *CADTH Drug Reimbursement Review Confidentiality Guidelines*.

**About CADTH:** CADTH is an independent, not-for-profit organization responsible for providing Canada's health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.

**Funding:** CADTH receives funding from Canada's federal, provincial, and territorial governments, with the exception of Quebec.

## Recommendation

The CADTH pCODR Expert Review Committee (pERC) recommends that amivantamab be reimbursed for the treatment of adult patients with locally advanced or metastatic NSCLC with activating EGFR Exon 20 insertion mutations whose disease has progressed on, or after platinum-based chemotherapy only if the conditions listed in Table 1 are met.

## Rationale for the Recommendation

One ongoing phase I/Ib, multicenter, multinational, open-label, single arm study (CHRYSALIS; including N = 81 patients with metastatic NSCLC for the Primary Efficacy Population in Cohort D) demonstrated a clinically meaningful benefit of amivantamab based on overall response rate (ORR) (ORR per blinded independent central review = 43.2%, 95% confidence interval [CI]: 32.2 to 54.7) and durability of response (median duration of response [DOR] = 11.04 months, 95% CI: 5.52 to 11.07) in adult patients with locally advanced or metastatic NSCLC with activating EGFR Exon 20 insertion mutations whose disease has progressed on, or after platinum-based chemotherapy. pERC considered that the harms reported in the CHRYSALIS trial seemed generally manageable and clinical experts indicated that amivantamab's tolerability profile may be similar to currently available targeted therapies in NSCLC. There is an important unmet need for additional treatment options in this rare patient population given the poor prognosis and high symptom burden. pERC noted that amivantamab addresses a therapeutic need, as there are currently no targeted therapies funded for patients with EGFR Exon 20 Insertion-positive NSCLC.

Patients identified a need for effective treatments that delay disease progression, have the potential to cure their disease, maintain quality of life, improve disease symptoms, and have manageable side-effects. pERC concluded that amivantamab met some of the patients' needs as it provides symptom control, has a manageable toxicity profile, and fulfills an unmet need for a targeted treatment option. Although patients expressed an unmet need for treatments that maintain quality of life, no definitive conclusion could be reached regarding the effects of amivantamab on health-related quality of life (HRQoL) due to results being based on a small subset of 36 patients.

A submitted adjusted indirect treatment comparison that compared amivantamab versus physician's choice of treatment and individual treatment classes (e.g., tyrosine kinase inhibitor [TKI], immunotherapy, non-platinum chemotherapy [NPBC]) had numerous limitations and pERC concluded that no firm conclusions could be drawn on the relative efficacy of amivantamab versus relevant comparators. Given the uncertain comparative clinical evidence for amivantamab, the committee considered exploratory cost-effectiveness analyses conducted by CADTH. Using the sponsor's submitted price for amivantamab and publicly listed prices for all other drug costs, the ICER was likely at least \$253,131 per QALY gained compared with NPBC. A price reduction would be required for amivantamab to achieve an ICER of \$50,000 per QALY gained.

**Table 1. Reimbursement Conditions and Reasons**

Reimbursement Condition	Reason	Implementation Guidance
<b>Initiation</b>		
1. Treatment with amivantamab should be reimbursed when initiated in adult patients with EGFR Exon 20 Insertion–positive metastatic or unresectable NSCLC who progressed on or after prior platinum-based chemotherapy for metastatic disease	Evidence from the CHRYSALIS trial demonstrated that amivantamab was associated with high response rates and prolonged durability in adults with metastatic or unresectable NSCLC with activating EGFR Exon 20 insertion mutations whose disease has progressed on, or after platinum-based chemotherapy.	—
2. Patient must have good performance status	Patients with ECOG performance status of 0 or 1 were included in the CHRYSALIS trial.	Patients with ECOG performance status of 2 may be treated at the discretion of the treating clinician.
3. Patients must not have any of the following: 3.1 Untreated brain metastases 3.2 Been previously treated with a TKI with known activity against EXON 20 insertion disease	The CHRYSALIS trial excluded patients with untreated brain metastases and patients previously treated with a TKI with known activity against Exon 20 insertions.	Patients with treated or stable CNS metastases should be eligible for treatment.
<b>Discontinuation</b>		
4. Amivantamab should be discontinued for patients who do not exhibit a response to treatment as per physician discretion and for whom treatment is intolerable.	Based on clinical expert opinion, response would be measured by response rate, disease stabilization, delayed progression, improved disease symptoms, and toxicity. Different measures of response are evaluated based on clinical grounds and radiological examination, general symptoms, and HRQoL.	Patients with documented disease progression could continue amivantamab if they were deriving clinical benefit.
5. Patients should be assessed for treatment response every 9 to 12 weeks.	Based on clinical expert opinion, response would be assessed every 9 to 12 weeks in clinical practice. Initial imaging may be at 6 to 9 weeks and responding patients may be assessed every 12 weeks as per physician discretion.	—
<b>Prescribing</b>		
6. Amivantamab should be prescribed by clinicians with expertise in the management of NSCLC.	To ensure that amivantamab is prescribed only for appropriate patients and adverse effects are managed in an optimized and timely manner.	Based on expert opinion, patients should be treated in a unit with experience in managing infusion reactions which are common and may be severe.
7. Amivantamab should not be given or reimbursed in combination with other systemic anti-cancer drugs	No evidence was identified to demonstrate a benefit of amivantamab in combination with other anti-cancer drugs in the target population; in the CHRYSALIS trial, amivantamab was administered as a monotherapy.	—

Reimbursement Condition	Reason	Implementation Guidance
<b>Pricing</b>		
8. A reduction in price	<p>The cost-effectiveness of amivantamab is highly uncertain.</p> <p>CADTH undertook a price reduction analysis based on an exploratory analysis involving alternative OS extrapolations. This analysis indicated that a 77% reduction in price is required to achieve an ICER of \$50,000 per QALY gained. A greater price reduction may be required to address the substantial uncertainty in the comparative evidence.</p>	—
<b>Feasibility of Adoption</b>		
9. Access to EGFR Exon 20 insertion mutation testing	<p>Testing for EGFR Exon 20 insertion mutation is required to identify patients with EGFR Exon 20 insertion–positive NSCLC. The CHRYSALIS trial used NGS to identify EGFR Exon 20 insertion mutations.</p>	<p>Patients with NSCLC should receive testing for genetic mutations at diagnosis using either PCR or NGS.</p>

CNS = central nervous system; ECOG = Eastern Cooperative Oncology Group; EGFR = Epidermal growth factor receptor; NGS = next generation sequencing; NSCLC = non-small cell lung cancer; TKI = Tyrosine kinase inhibitors; PCR = polymerase chain reaction

## Discussion Points

- The sponsor requested a reconsideration of the initial draft recommendation to not reimburse amivantamab for the treatment of adult patients with locally advanced or metastatic NSCLC with activating EGFR Exon 20 insertion mutations whose disease has progressed on, or after platinum-based chemotherapy. pERC discussed each of the issues identified by the sponsor in their request for reconsideration. The issues indicated that the sponsor did not agree that the committee fully considered the unmet need for the patient population and that the initial draft recommendation was not supported by the evidence for amivantamab.
- As there was uncertainty with the clinical evidence given the single arm study design, pERC deliberated on amivantamab considering the criteria for significant unmet need that are described in section 9.3.1 of the Procedures for CADTH Reimbursement Reviews. Considering the rarity and severity of the condition and the absence of clinically effective alternatives, the committee concluded that the available evidence suggests that amivantamab has the potential to reduce morbidity and mortality associated with the disease. During the reconsideration meeting, pERC reviewed feedback received from the sponsor, clinical experts, and patients on the Draft Recommendation which reaffirmed the unmet need in this rare patient population, the lack of effective treatment options, and the challenges with conducting randomized controlled trials (RCTs). pERC discussed that despite the unmet need in patients whose disease has progressed on, or after platinum-based chemotherapy, conducting an RCT with amivantamab compared with docetaxel would likely not be feasible, and that equipoise between amivantamab and a palliative chemotherapy agent does not exist.
- pERC noted that the ORR per blinded independent central review, which was the primary end point of the trial, was driven by partial responses but that the data on median duration of response (DOR) indicated that responses were durable. pERC agreed with the clinical experts that the ORR and DOR observed in the trial appeared compelling and clinically meaningful in patients who currently have no effective targeted treatment options.
- pERC discussed the safety profile observed with amivantamab. pERC noted that the non-randomized design of CHRYSALIS makes interpreting the safety events attributable to amivantamab challenging, since all patients received the same treatment. However, pERC agreed with the clinical experts that the incidence and severity of adverse events seemed overall tolerable and manageable and similar to other targeted agents in this setting. pERC acknowledged feedback from clinical experts and patient groups that docetaxel in this patient population is associated with significant toxicities and limited efficacy. pERC noted that, due to the significant potential for severe toxic effects with chemotherapy, some patients may not be eligible for chemotherapy treatment. pERC concluded that amivantamab could offer patients a tolerable treatment option with the potential to delay or avoid chemotherapy which is valued by patients.

- pERC discussed a submitted adjusted indirect treatment comparison that compared amivantamab versus physician's choice of treatment and individual treatment classes (e.g., tyrosine kinase inhibitor [TKI], immunotherapy, non-platinum chemotherapy). The results of the adjusted treatment comparison favoured amivantamab for ORR, OS, and PFS compared to all treatment options. pERC acknowledged that the results of the adjusted treatment comparison were consistent across methods, real-world data sources, and endpoints. However, numerous limitations (including small sample sizes, heterogeneity across study designs and pooled populations, and the inability to adjust for important potential confounders and prognostic variables) in the analyses meant that no firm conclusions could be drawn on the efficacy of amivantamab versus relevant comparators in this setting.
- pERC agreed with CADTH's exploratory economic analysis which suggested that amivantamab is associated with incremental QALYs compared with the other available comparator treatments. However, pERC noted that the magnitude of benefit associated with amivantamab was uncertain due to the limitations associated with the sponsor's adjusted treatment comparison. As a result, pERC considered that the price reductions estimated by CADTH do not fully capture the uncertainty associated with the comparative effectiveness, and as such, a greater price reduction may be required.

## Background

Lung cancer is the most commonly diagnosed cancer and the leading cause of cancer deaths in Canada. In 2022, it was estimated there would be 30,000 new cases of lung cancer diagnosed, and 20,700 deaths from lung cancer in Canada. Lung cancer is classified as either NSCLC or small cell lung cancer, with NSCLC accounting for approximately 88% of cases in Canada. The most common symptoms of lung cancer include nonspecific cough, chest and shoulder pain, hemoptysis, weight loss, dyspnea, hoarseness, bone pain, and fever. Approximately 15% of Canadians with NSCLC have an EGFR-activating mutation in the region encoding the tyrosine kinase domain. The most common activating EGFR mutations arise from exon 19 deletions or exon 21 L858R point substitutions, accounting for 85% to 90% of EGFR mutations. Exon 20 insertion mutations are the third most common EGFR mutations, occurring in less than or equal to 12% of all EGFR mutations globally, though a Canadian-based retrospective observational cohort study suggested Exon 20 insertions mutations may only occur in approximately 4% of NSCLC EGFR mutations in Canada. It has been estimated that patients with EGFR Exon 20 insertions make up between 0.1% to 4.0% of all NSCLC cases globally and approximately 0.4% to 0.6% of overall NSCLC cases in Canada.

First-line standard of care (SOC) for patients with locally advanced or metastatic NSCLC with EGFR Exon 20 insertion mutations remains platinum-based chemotherapy (cisplatin or carboplatin), generally in combination with pemetrexed followed by pemetrexed maintenance, although gemcitabine, vinorelbine, or paclitaxel are approved but rarely used. Following the failure of first-line platinum-doublet chemotherapy, second-line treatment options are limited to single-agent non-platinum based chemotherapeutic agents, primarily docetaxel. Based on chart reviews and real-world evidence collected in Canada, the sponsor suggested that variability in treatment patterns exist in Canadian clinical practice with patients receiving EGFR TKIs, platinum-based chemotherapy, IOs in combination with platinum-based chemotherapy or chemotherapy in the front-line setting. Patients who progress on first-line therapy may receive an alternative drug class (often either an EGFR TKI or IO) and, if progression continues, further treatment may be supportive care or docetaxel, if not previously received, due to its toxicity. The sponsor suggested that based on a retrospective population-based cohort study in patients with metastatic NSCLC with EGFR mutations ( $n = 6,666$ ) receiving second line therapy in Alberta, Canada, the median OS of patients with EGFR Exon 20ins was 8.1 months (95% CI, 6.0 to not reached) compared to patients with EGFR Exon 19 deletions (median OS = 17.8; 95% CI, 13.7 to 20.1) or Exon 21 L858R mutations (median OS = 14.9; 95% CI, 11.4 to 21.9).

Amivantamab is a bispecific antibody that binds to the extracellular domains of the EGFR and mesenchymal-epithelial transition (MET) receptors, disrupting EGFR and MET signaling functions through blocking ligand binding and enhancing degradation of these receptors. Amivantamab has been approved by Health Canada, with conditions, for the treatment of adult patients with locally advanced or metastatic NSCLC with activating EGFR Exon 20 insertion mutations whose disease has progressed on, or after platinum-based chemotherapy. The Health Canada Notice of Compliance with conditions (NOC/c) was granted on March 30, 2022, through Project Orbis. Conditions for authorization are pending the results of confirmatory and other ongoing trials including the phase III PAPILLON trial, which aims to evaluate the efficacy of amivantamab in combination with chemotherapy in the first-line treatment of locally advanced or metastatic EGFR Exon 20 insertion mutated NSCLC, and the final report for CHRYSALIS to verify the clinical benefit of amivantamab. Amivantamab is available as a 50 mg/mL concentrate for solution for IV infusion, and the dosage recommended in the product monograph is 1,050 mg for patients less than 80 kg, and 1,400 mg for patients greater than or equal to 80 kg once weekly for the first 4 weeks, and once every 2 weeks in all subsequent 28-day cycles.

## Sources of Information Used by the Committee

To make their recommendation, the Committee considered the following information:

- A review of the 1 phase I/b open-label, single-arm study in patients with EGFR exon 20 insertion mutated NSCLC whose disease had progressed on platinum-based chemotherapy
- Patients perspectives gathered by patient groups, Lung Cancer Canada, and the Lung Health Foundation.
- Input from public drug plans and cancer agencies that participate in the CADTH review process
- 2 clinical specialists with expertise diagnosing and treating patients with NSCLC
- Input from 2 clinician groups, including Lung Cancer Canada – Medical Advisory Committee, and Ontario Health – Cancer Care Ontario Lung Cancer Drug Advisory Committee
- A review of the pharmacoeconomic model and report submitted by the sponsor
- Information submitted as part of the sponsor’s request for reconsideration (described below)

## Stakeholder Perspectives

### Patient Input

Two patient groups, LCC and the Lung Health Foundation submitted patient group input for this review. Lung Cancer Canada gathered data through phone interviews with 4 EGFR-positive NSCLC patients and 2 patients who have EGFR Exon 20 insertion mutations. All 4 patients were diagnosed with stage IV NSCLC and are currently part of the clinical trial for amivantamab in Ontario. The Lung Health Foundation obtained input from patients with lung cancer via an online survey (2 respondents) and telephone interviews (3 respondents), none of whom had experience with the treatment under review.

Input from LCC highlighted that conventional TKIs have poor efficacy in a majority of EGFR Exon 20 insertion mutation subtypes and therefore treatment options for these patients are limited, indicating a significant unmet need in this population. Lung Cancer Canada respondents recalled their initial distress of receiving a stage IV NSCLC diagnosis citing various psychosocial effects including anxiety and depression, since symptoms such as a persistent cough and back pain were often mild. Respondents to both patient groups reported that future lung cancer treatments should be effective in curing their disease rather than slowing progression (though delayed disease progression remains important), provide additional treatment options with improved management of disease symptoms, and should have minimal or manageable side effects to allow participation in regular activities while on treatment and maintenance of quality of life (QoL). Regarding their experience with the treatment under review, the most common adverse events (AEs) were skin-related, including inflammation of the nailbed (paronychia), rashes on the face and legs, acne, and dry and sensitive skin. Other side effects that were reported include severe dry mouth, slight deterioration of vision, severe muscle pain during the first few days after treatment, fatigue, chronic constipation, and yeast infections. Some patients stated that although the side effect burden was more than what they had experienced with other targeted therapies, they would not consider discontinuing treatment as the hope of survival outweighed the side effects experienced. Two patients who began amivantamab as a first-line treatment stated that when feeling well, they were able to participate in physical activities and work they previously enjoyed and hoped to be able to continue to maintain their independence, functionality, and HRQoL. Two patients who were able to receive amivantamab as a third-line treatment expressed the relief of having an additional treatment option after exhausting other alternatives. According to the Lung Health Foundation input, respondents found the psychosocial effects of having a disease with a poor prognosis challenging as well as maintaining relationships with families and friends. Patients noted that side effects related to some previous treatments severely impacted their participation in daily activities and HRQoL.

## Clinician Input

### *Input from Clinical Experts Consulted by CADTH*

In patients with NSCLC with EGFR Exon 20 insertion mutations, the clinical experts emphasized that not all patients benefit from current therapies, stating that there is a need for molecularly targeted therapies in this patient population due to the limited activity of EGFR TKIs or IO therapy in this patient population.

Currently, the first-line treatment for patients with EGFR Exon 20 insertion mutations is platinum-doublet chemotherapy, most commonly cisplatin or carboplatin plus pemetrexed, followed by maintenance pemetrexed. Docetaxel or pemetrexed would be used as second-line therapy following the failure of platinum-based chemotherapy. According to the clinical experts, unless patients have private insurance, EGFR TKIs are not funded as second-line therapy, and activity with IO or TKIs is limited in this patient population. The clinical experts believed that amivantamab would be used as monotherapy in patients with Exon 20 insertion mutations following the failure of platinum-doublet chemotherapy, displacing the current second- and third-line options, though it would be reasonable to use amivantamab in any subsequent line of therapy. The clinical experts expressed that there is an unmet need for effective new treatment options that would improve QoL, delay progression or prolong survival, and reduce disease-related symptoms through demonstrated response to treatment.

Per the indication for amivantamab, patients are required to have confirmed EGFR Exon 20 insertion mutations, though the clinical experts highlighted that there are no data to identify certain subgroups who do not benefit from therapy with amivantamab. The experts noted that treatment with amivantamab should be discontinued due to disease progression or unacceptable toxicity that cannot be managed. The experts noted that the trial allowed treatment beyond progression, where patients who originally had meaningful improvement before progression may still experience some benefit. The clinical experts noted that patients with NSCLC are typically under the care of expert medical and thoracic oncologists. Due to the intravenous administration of amivantamab and the potential for adverse reactions, patients should be treated in cancer-specific institutions under the supervision of an appropriately trained cancer specialist who has expertise in treating lung cancers and experience in managing infusion-related reactions, which are common and may be severe. Due to the difficulty in obtaining robust survival estimates in this rare population, tumour response or disease stabilization resulting in improvements in disease-related symptoms are the most meaningful outcomes. The clinical experts noted that, in clinical practice, tumour response would be assessed every 9 to 12 weeks.

### *Clinician Group Input*

Clinician group input was received from 2 groups: Lung Cancer Canada – Medical Advisory Committee (LCC-MAC), with 21 clinicians contributing to the submission and from the Ontario Health – Cancer Care Ontario (OH-CCO) Lung Cancer Drug Advisory Committee with input from 5 clinicians. Based on global estimates, the LCC-MAC input noted that approximately 200 to 1000 patients are diagnosed with EGFR Exon 20 insertion mutation NSCLC in Canada each year and they experience resistance to the first and second-generation EGFR TKIs. The clinician group also highlighted the rarity of the indication, estimating that less than 2% of all EGFR Exon 20 insertion mutation NSCLC patients may be candidates for second-line amivantamab therapy, given the high number of patients considered to be too sick to receive first- or second-line therapy for locally advanced or metastatic NSCLC. The clinician groups highlighted the poor prognosis for patients with locally advanced or metastatic NSCLC EGFR Exon 20 insertion mutations due to the lack of effective targeted therapies and emphasized a significant unmet need for novel targeted therapies that prolong PFS and improve the HRQoL. Clinician groups stated that the ideal treatment for these patients should directly inhibit the driver mutation, be well tolerated with a predictable and low toxicity profile, have a durable response, and correlate with an improvement in QoL. Both clinician groups stated that patients most likely to respond to amivantamab are those with an EGFR Exon 20 insertion mutation and the clinician groups stated that next generation sequencing (NGS) is routinely conducted in all patients with advanced NSCLC with a non-squamous and squamous histology, without a smoking history. In terms of place in therapy, the OH-CCO input notes that amivantamab would be used after all standard therapies acceptable to the patients have failed, usually following platinum-doublet chemotherapy with or without immunotherapy and maintenance pemetrexed, or after docetaxel therapy. The LCC-MAC also noted that such targeted therapies against driver mutations should ideally be offered in a first-line setting for maximal efficacy and clinical trials are ongoing in this setting. Both submissions stated that a clinically meaningful endpoint is a radiological response to treatment. The submissions indicated that the drug should be administered at a Cancer Centre, infusion clinic, or hospital (outpatient) setting by a specialist or personnel experienced in administering chemotherapy agents.

## Drug Program Input

Input was obtained from the drug programs that participate in the CADTH reimbursement review process. The clinical experts consulted by CADTH provided advice on the potential implementation issues raised by the drug programs.

**Table 2. Responses to Questions from the Drug Programs**

Drug Program Implementation Questions	Clinical Expert Response
<b>Considerations for Initiation of Therapy</b>	
<p>In the CHRYSALIS trial, for patients who achieved a complete response, treatment could be interrupted after 2 additional cycles of amivantamab were administered. Re-treatment could be considered.</p> <p>If treatment is stopped after confirmation of complete response, can amivantamab be restarted at time of progression?</p>	<p>The clinical experts noted that patients with advanced lung cancer generally do not experience complete response to treatment. In the CHRYSALIS trial, 3 patients experienced a complete response, per BICR, with amivantamab.</p> <p>pERC agreed with the clinical experts that patients with confirmed complete response, for whom treatment is stopped, amivantamab can be restarted at the time of disease progression providing there are no contraindications.</p>
<p>Patients with untreated brain metastases were excluded from the CHRYSALIS trial.</p> <p>Should patients with CNS involvement be eligible for treatment with amivantamab? Is there evidence to inform the safety/efficacy of amivantamab in this patient population?</p>	<p>In the CHRYSALIS trial, patients with untreated brain metastases were excluded. In total, 23.5% of patients had treated brain metastases at baseline.</p> <p>pERC agreed with the clinical experts that patients with stable or treated metastases should be eligible for amivantamab. However, patients with new or unstable CNS metastases should not be eligible to receive therapy with amivantamab prior to receiving treatment for the CNS metastases.</p>
<b>Considerations for Continuation or Renewal of Therapy</b>	
<p>In the CHRYSALIS trial, response was assessed by CT, MRI, or other imaging/examination at least every 6 weeks after the first dose of amivantamab.</p> <p>In clinical practice, how should response to treatment with amivantamab be assessed?</p>	<p>The clinical experts noted that assessment of disease every 6 weeks is a clinical trial-imposed period. pERC agreed with the clinical experts that in clinical practice, patients should be assessed for response every 9 to 12 weeks, depending on disease stability (for example, initial imaging may be at 6 to 9 weeks and responding patients may be assessed every 12 weeks as per the discretion of the treating clinician).</p>
<b>Considerations for Discontinuation of Therapy</b>	
<p>In the CHYRSALIS trial, treatment beyond progression was allowed in the case of continued clinical benefit.</p> <p>What are the discontinuation criteria for amivantamab?</p>	<p>pERC agreed with the clinical experts that the discontinuation criteria would be in line with the CHRYSALIS trial and consist of objective disease progression, worsening of disease related symptoms, or intolerable toxicity.</p>
<p>In the CHRYSALIS trial, if there was a delay due to toxicity resulting in 2 consecutive missed doses of amivantamab (i.e., 28 days), then patients were required to discontinue the drug. Patients were only permitted to restart treatment after missing two consecutive doses if there was clear clinical benefit, approval was obtained from the sponsor, and any necessary adjustment to dosing and infusion protocol were made.</p> <p>Should patients be permitted to continue treatment with amivantamab if 2 consecutive doses are missed due to toxicity?</p>	<p>pERC agreed with the clinical experts that patients who missed 2 consecutive doses due to toxicity should be eligible to continue treatment with amivantamab, provided that there is continued response, and toxicity experienced was not life-threatening and has resolved. Clinical judgement should be used as to the appropriateness of continuing vs. discontinuing treatment in these circumstances.</p>

Drug Program Implementation Questions	Clinical Expert Response
<p><b>Considerations for Prescribing of Therapy</b></p>	
<p>Administration rates for amivantamab follow an escalation schedule for the first few doses (rates vary for 1050 mg and 1400 mg doses). These escalating infusion rate schedules will require additional monitoring by nurses. Target doses are administered over 2 hours at a fixed rate.</p> <p>The administration of the first dose is split over 2 days. This impacts resources in the chemotherapy treatment room and pharmacy</p>	<p>Comment from the drug programs to inform pERC deliberations.</p>
<p><b>Generalizability</b></p>	
<p>Should patients with ECOG performance status <math>\geq 2</math> be eligible?</p>	<p>The CHRYSALIS trial included patients with ECOG performance status of 0 to 1 (32.1% and 66.7% of patients in the primary efficacy population had an ECOG performance status of 0 and 1, respectively).</p> <p>pERC agreed with the clinical experts that it would be reasonable to generalize the CHRYSALIS trial results to patients with ECOG performance status of up to 2 at the discretion of the treating physician.</p>
<p>Should patients who are being treated with another agent and have not progressed be eligible to switch to amivantamab, assuming all other reimbursement criteria for treatment with amivantamab are met?</p>	<p>The clinical experts suggested that patients who have failed platinum-based chemotherapy and are being treated with other agents even if they have not experienced disease progression should be eligible to switch to amivantamab as the currently available treatments are generally less effective.</p> <p>pERC discussed and agreed that switching should only be allowed for toxicity reasons if the patient has not progressed on the previous treatment, or if the patient cannot tolerate an adequate dose of a regimen. Clinician judgement should be exercised.</p>
<p><b>Funding Algorithm</b></p>	
<p>Drug may change place in therapy of comparator drugs, or drugs reimbursed in subsequent lines.</p>	<p>Comment from the drug programs to inform pERC deliberations.</p>
<p>If patients are eligible to receive both amivantamab or IO therapy, is there evidence to support the order of sequencing of these medications?</p>	<p>pERC agreed with the clinical experts that amivantamab should be considered for adult patients with EGFR Exon 20 Insertion-positive metastatic or unresectable NSCLC who progressed on or after prior platinum-based chemotherapy for metastatic diseases.</p>
<p><b>Care Provision Issues</b></p>	
<p>Amivantamab is available as 350 mg vials. Recommended doses and dose adjustments correspond to available vial size and should minimize wastage.</p> <p>The product monograph indicates a need to withdraw a volume from the infusion bag equal to the volume of drug being added and the volume in the infusion bag should be 250 mL. It is extra work to ensure a final volume of exactly 250 mL.</p>	<p>Comment from the drug programs to inform pERC deliberations.</p>
<p>Pre-medications are required to prevent infusion-related reactions</p> <p>Additional therapies may be required for the management of skin toxicities (e.g., emollient creams, topical corticosteroids, oral/IV antibiotics, oral steroids).</p>	<p>Comment from the drug programs to inform pERC deliberations.</p>

Drug Program Implementation Questions	Clinical Expert Response
<p>The product monograph indicates that the presence of an EGFR Exon 20 insertion mutation is required to be determined using a validated test, although the manufacturer submission indicates no companion diagnostics.</p> <p>What method of testing should be used for detection of EGFR Exon 20 insertion mutations?</p> <p>When should testing for the EGFR Exon 20 insertion mutation occur?</p>	<p>pERC agreed with the clinical experts that genetic testing for EGFR mutations is standard across Canada, most commonly through PCR or NGS. Patients with NSCLC should receive testing for genetic mutations at diagnosis using either PCR or NGS.</p>
System and Economic Issues	
<p>There are confidential prices for IO comparators (nivolumab, pembrolizumab, atezolizumab)</p>	<p>Comment from the drug programs to inform pERC deliberations.</p>

BICR = Blinded Independent Central Review; CNS = central nervous system; CT = computed tomography; ECOG = Eastern Cooperative Oncology Group; EGFR = epidermal growth factor receptor; IO = immune-oncology; MRI = magnetic resonance imaging; NGS = next-generation sequencing; PCR = polymerase chain reaction

## Clinical Evidence

### Pivotal Studies and Protocol Selected Studies

#### *Description of Studies*

One study was included in the review. Study EDI1001 (CHRYSALIS) is an ongoing, Phase I/Ib, single-arm, open-label, multicenter study of amivantamab as monotherapy in advanced NSCLC that includes both a dose escalation phase (Part 1) to determine the recommended phase II dose (RP2D) of amivantamab, and a dose expansion phase (Part 2) where patients were treated with the RP2D of 1050 mg amivantamab for patients who weigh less than 80 kg and 1400 mg for patients who weigh greater than or equal to 80 kg. Treatment in Part 2 was delivered once weekly by intravenous infusion for the first 4 weeks and then once every 2 weeks starting at week 5 until disease progression or unacceptable toxicity. A total of 489 patients across Parts 1 and 2 received treatment with amivantamab monotherapy. Within Part 2, individual cohorts were defined by mutation and previous treatment. Of interest to this review was Cohort D, which enrolled a total of 153 patients with EGFR Exon 20 insertion mutations whose disease has progressed on or after platinum-based chemotherapy. The primary outcome of the CHRYSALIS trial was overall response rate (ORR) per investigator and blinded independent central review (BICR) assessment in the Primary Efficacy Population (patients who had undergone  $\geq 3$  post-baseline disease assessments; N = 81), with secondary outcomes consisting of clinical benefit rate (CBR) and best overall response (BOR), PFS, OS, duration of response (DOR), and time to treatment failure (TTF).

In the Safety Analysis Set (patients who received  $\geq 1$  dose of amivantamab; N = 153), most patients were diagnosed with stage IV adenocarcinoma (78.9%). The median age of patients enrolled in Cohort D was 61.0 years, and the majority of patients were Asian (62.1%), female (61.4%), and had an Eastern Cooperative Oncology Group (ECOG) performance status of 1 (72.5%), and 36 (23.5%) patients had brain metastases at baseline. The median number of prior lines of therapy was 2, and all patients received prior platinum-based chemotherapy (mostly carboplatin [65.4%]). Baseline characteristics for the Primary Efficacy Population and the Additional Efficacy Population were consistent with the Safety Analysis Set.

#### *Efficacy Results*

At the time of the March 30, 2021 data cutoff (DCO), the median follow-up time was 14.5 months. In the Primary Efficacy Population (N = 81), a total of 31 (38.3% [95% confidence interval (CI), 27.7% to 49.7%]) patients achieved an ORR per investigator assessment, and 35 (43.2% [95% CI, 32.2% to 54.7%]) patients achieved an ORR per blinded independent central review (BICR). Best response to the treatment per investigator assessment consisted of only partial responses (31 [38.3%] patients), while 12 (14.8%) patients had their best response as progressive disease. The results of subgroup analyses by age group, sex, race, smoking history, and prior IO therapy were consistent with the primary analyses. Among the 31 responders, the median duration of treatment was 14.03 months, and the median DOR was 12.45 months (95% CI, 6.54 to 16.13).

As of the March 30, 2021 DCO, the median PFS per investigator assessment was 8.25 months (95% CI, 5.49 to 12.32), and a total of 57 (70.4%) PFS events had occurred. The progression-free rate for amivantamab per investigator assessment was 75% (95% CI,

64% to 83%) at 3-months, 58% (95% CI, 47% to 68%) at 6-months, and 40% (95% CI, 29% to 50%) at 12-months. The median PFS per blinded independent central review was 8.31 months (95% CI, 5.52 to 11.07), and a total of 54 (66.7%) PFS events had occurred. The progression-free rate for amivantamab per blinded independent central review was 79% (95% CI, 68% to 87%) at 3-months, 61% (95% CI, 49% to 71%) at 6-months, and 36% (95% CI, 25% to 47%) at 12-months. The median OS per investigator assessment was estimated at 22.77 months (95% CI, 17.48 to Not Estimable). The estimated survival rates were 90% (95% CI, 81% to 95%) at 6-months, 74% (95% CI, 63% to 83%) at 12-months, and 41% (95% CI, 21% to 59%) at 24-months.

### *Harms Results*

All patients in Cohort D of the CHRYSALIS trial experienced one or more treatment-emergent adverse events (TEAEs). The most frequent TEAEs were infusion-related reactions (IRRs), paronychia, rash, dermatitis acneiform, hypoalbuminemia, and stomatitis. Grade 3 or higher TEAEs were reported in 64 (41.8%) patients, with the most frequent consisting of pulmonary embolism, hypokalemia, diarrhea, dyspnea, hypoalbuminemia, paronychia, pneumonia, IRRs, and neutropenia. A total of 44 (28.8%) patients experienced serious adverse events (SAEs); the most frequently reported consisting of pneumonia, dyspnea, pulmonary embolism, back pain, muscular weakness, and pneumonitis.

Infusion-related reactions were the most frequent reason for infusion modifications, reported in 90 (58.8%) patients. Dose reductions were reported in 22 (14.4%) patients, mostly due to dermatitis acneiform and paronychia, while dose interruptions were reported in 55 (35.9%) patients, mainly due to IRRs (15.0%). In total, 18 (11.8%) patients withdrew from treatment with amivantamab due to TEAEs, most frequently pneumonia, IRRs, pleural effusion, and pneumonitis.

Overall, 11 (7.2%) patients treated with amivantamab experienced a TEAE leading to death, with respiratory, thoracic, and mediastinal disorders the most common TEAE leading to death in 6 (3.9%) patients. As of the March 30, 2021 DCO, 45 (29.4%) patients in the CHRYSALIS trial died, primarily due to progressive disease (31 [20.3%] patients).

The most frequent notable harm associated with amivantamab included IRRs in 97 [63.4%] patients, most of which were non-serious (Grade 1 or 2) and occurring mainly on Day 1 of Cycle 1 (66.3%), and rash events (130 [85.0%]), which were also mostly Grade 1 or 2, and occurred mostly during the first treatment cycle. Other notable harms included interstitial lung disease (ILD, 6 [3.9%] patients), paronychia (81 [52.9%] patients), and ophthalmologic disorders (19 [12.4%] patients).

### *Critical Appraisal*

CHRYSALIS was a first-in-human phase I/Ib clinical study with the primary purposes of determining the RP2D (part 1) and subsequently assessing the safety of the selected dose in part 1 and estimating the clinical activity of amivantamab (part 2). A phase I/Ib or phase II trial may not accurately predict harm and/or effectiveness of treatments relative to other available therapeutic options. The clinical experts consulted by CADTH noted that, despite the high unmet need, conducting an RCT in this setting with a targeted therapy, such as amivantamab, compared with the available therapies currently used in Canadian clinical practice would likely not be feasible. No inferential statistical testing was performed for the efficacy outcomes in Cohort D; thus, no p-values were reported. Point estimates with 95% CIs were reported to estimate the magnitude of treatment effect. The threshold for a positive study outcome for Cohort D was observing a 95% CI for ORR with a lower limit larger than 12%. Interpretation of time-to-event endpoints such as OS or PFS is limited in single-arm studies; since all patients in Cohort D received the same treatment, the extent to which the observed survival is due to the natural history of this subset of NSCLC, or the treatment received remains unclear. The results for patient-reported outcomes were inconclusive given the small sample size (N = 36), the non-comparative, open-label design of the trial, the substantial decline in patients available to provide assessments over time, and the descriptive nature of the analysis.

The clinical experts consulted by CADTH indicated that although the inclusion and exclusion criteria were appropriate, they hypothesized that the exclusion criteria may have been restrictive, selecting for patients who were less severely ill. The clinical experts also noted that the baseline characteristics of the included population were generally reflective of Canadian clinical practice, however, there was a high proportion of Asian patients (62.1%) enrolled, though this was not considered likely to affect the generalizability of the results per the clinical experts.

The non-comparative design of the CHRYSALIS trial precludes the ability to assess the relative therapeutic benefit or safety of amivantamab against currently available therapies in Canadian clinical practice. As noted previously, the clinical experts consulted by

CADTH agreed that direct randomized comparisons between amivantamab and currently used therapies are unlikely to take place for advanced or metastatic NSCLC with EGFR Exon 20 insertion mutations that has progressed after platinum-based chemotherapy. In the absence of a direct comparison of amivantamab with relevant treatment options, the sponsor submitted an adjusted treatment comparison using external control arms derived from real-world data sources. The results of this comparison favoured amivantamab for ORR, PFS and OS in comparison with treatment of physician's choice. The CADTH Review Team identified several limitations (e.g., small sample sizes, concerns regarding heterogeneity across the study designs and populations, limited data availability, and the inability to adjust for important potential confounders and prognostic variables across each cohort) and concluded that no firm conclusions could be drawn on how amivantamab compared with other relevant treatment options. However, the clinical experts consulted by CADTH anticipated that based on the CHRYSALIS results and on poor results with existing treatment options in clinical practice, amivantamab would likely offer improved and clinically meaningful benefits compared with currently available therapies.

## Indirect Comparisons

### *Adjusted Treatment Comparison*

#### **Description of Studies**

The sponsor submitted an adjusted treatment comparison that compared the efficacy of amivantamab from individual patient data (IPD) from Cohort D (N = 81) of the single-arm CHRYSALIS trial to current treatments using an external control arm derived from real-world data sources from the United States, the United Kingdom, Germany, and France. The primary objective of the sponsor-submitted adjusted treatment comparison was to compare the efficacy (ORR, OS, PFS, time to next treatment [TTNT]) of amivantamab in the CHRYSALIS trial (Cohort D) to current treatments from real-world settings in patients with advanced NSCLC with EGFR Exon 20 insertion mutations following treatment with platinum-based chemotherapy.

Amivantamab was compared to both a pooled basket of treatments, labelled as physicians' choice, and individual treatment classes (TKI, IO, non-platinum chemotherapy, vascular endothelial growth factor inhibitor [VEFGi] + chemotherapy, and 'other' based regimens). Data from the 4 European data sources were pooled to create an EU cohort, and collectively compared against amivantamab. Data from the 3 US data sources were also pooled to create the US cohort. Additionally, all data sources were combined to create a US + EU cohort. The eligibility criteria from the CHRYSALIS trial were applied to the real-world data sources in order to compare patients from the CHRYSALIS trial to similar patients from the external data sources.

#### **Efficacy Results**

In the comparison to physicians' choice, the EU + US cohort included 349 patients, with 206 from the US cohort, and 143 from the EU cohort. In the comparison of CHRYSALIS to the different treatment classes in the EU + US cohort, there were [REDACTED] and [REDACTED] patients in the TKI, IO, non-platinum chemotherapy, VEFGi + chemotherapy, and 'other' groups, respectively.

For the primary outcome of ORR, the adjusted ORR was 38.3% for amivantamab compared to [REDACTED] for physicians' choice for the EU + US cohort (Odds Ratio [OR], [REDACTED]; Relative Risk Ratio [RR], [REDACTED]). The adjusted ORR for amivantamab versus physicians' choice in the US cohort was 38.3% vs. [REDACTED], and 38.3% vs. [REDACTED]. Results for the individual treatment classes were consistent with the primary analysis, however, they were hindered by small sample sizes.

For OS, amivantamab was favoured over physicians' choice in the EU + US cohort (Hazard Ratio [HR], [REDACTED], US cohort [REDACTED], and EU cohort [REDACTED] after adjustment. The median OS for amivantamab was at 22.77 months (95% CI, 17.48 to Not Estimable) compared to [REDACTED] from the EU + US cohort, the US cohort, and the EU cohort, respectively. Compared to the individual treatment classes, amivantamab was favoured after adjustment in all cases.

For PFS, amivantamab was favoured over physicians' choice in EU + US cohort [REDACTED], US cohort [REDACTED], and EU cohort [REDACTED] after adjustment. The median PFS for amivantamab was 8.25 months (95% CI, 5.49 to 12.32) compared to [REDACTED] from the EU + US cohort, the US cohort, and the EU cohort, respectively.

## Critical Appraisal

The choice to conduct an adjusted treatment comparison of amivantamab and external real-world data cohorts as a comparator arm was justified by the lack of a comparator arm for the CHRYSALIS trial. Data derived from 7 international real-world data sources were used for the comparison with amivantamab, therefore, there is a high risk of selection bias. Moreover, the methods and reasons for selecting these specific databases were unknown. Data analyzed retrospectively from databases and medical records are more prone to unique biases (e.g., selection bias, confounding, limited data availability) compared with those collected from prospective interventional studies that cannot be fully controlled for. In general, comparisons with externally generated cohorts also suffer from the potential of missing information.

There was notable heterogeneity in the populations included in the adjusted treatment comparison. Inclusion and exclusion criteria from Cohort D of the CHRYSALIS trial were applied to all real-world data sources to select the appropriate population. Any criteria that could not be applied to patients from a given data source due to missing data were omitted, which may have resulted in unaccounted-for differences in patient populations. It was unclear how many potential patients were excluded following the application of inclusion and exclusion criterion from CHRYSALIS. All patients in the analysis had confirmation of EGFR Exon 20 insertion mutation positivity. However, due to limited data availability, ECOG performance status, which was noted as an important prognostic factor by the clinical experts consulted by CADTH, was not included in the IPW adjustment for the EU + US cohort or the EU cohort, potentially resulting in some unaccounted-for heterogeneity. No consideration or covariate adjustment was given to follow-up duration and the time of assessment for endpoints was unknown. As a result, it is uncertain whether the follow-up times between CHRYSALIS and the real-world data sources are comparable, and may also contribute to heterogeneity, especially for survival analyses.

Multiple comparative analyses were performed for the CHRYSALIS population versus the various data sources. Individual real-world data sources from Europe and from the US were pooled to increase sample size. The sponsor noted that pooling of the EU and US cohorts into a single combined cohort was possible due to the high consistency between the results and a comparable treatment distribution of the EU and US cohorts. However, the observable differences in baseline characteristics of populations between the EU and US cohorts, as well as the significant missing data between databases may have resulted in significant heterogeneity in the population, though this was not explored and remains uncertain. Additionally, amivantamab was compared to both a pooled basket of treatments (physicians' choice), and various treatment class regimens (TKIs, IOs, non-platinum-based chemotherapy, VEGFi, and 'other' treatments). Pooling of treatments for the physicians' choice group assumes equivalence of treatment benefit, however, it is unclear how exclusion of treatments irrelevant to the Canadian context such as VEGFis would have impacted the results as this was not explored.

The results of the adjusted treatment comparisons were consistent across endpoints and statistical methodologies, generally favouring amivantamab over physicians' choice across endpoints, as well as for the individual treatment classes. However, there was notable imprecision in all cases as demonstrated by the moderately to severely wide 95% CIs, though the reason for this imprecision was unknown, and may be due to small sample sizes and unexplored heterogeneity.

In summary, given the Phase I/Ib nature of the CHRYSALIS trial and the lack of a comparator arm, the ability to make definitive conclusions on the comparative efficacy of amivantamab was limited. Comparisons using the external control arms derived from real-world data sources were subject to substantial uncertainty and risk of bias due to the methods of data collection, small sample sizes, the high degree of heterogeneity due to pooling assumptions, and limited data availability for important confounders and potential prognostic factors including ECOG performance status in the EU and EU + US cohorts. Additionally, outcomes important to patients including HRQoL and AEs were not analyzed in the adjusted treatment comparisons, thus the comparative efficacy of amivantamab on these outcomes remains uncertain.

## Other Relevant Evidence

No other relevant evidence was identified for this review.

## Economic Evidence

### Cost and Cost-Effectiveness

Component	Description
<b>Type of economic evaluation</b>	Cost-utility analysis Partitioned survival model (PSM)
<b>Target population</b>	Adult patients with locally advanced or metastatic NSCLC with activating EGFR Exon 20ins whose disease has progressed on or after platinum-based chemotherapy
<b>Treatment</b>	Amivantamab
<b>Dose regimen</b>	The recommended dose of amivantamab is 1050 mg (3 vials) for patients less than 80 kg and 1400 mg (4 vials) for patients greater than or equal to 80 kg. The recommended dosing schedule for amivantamab is once weekly for the first 4 weeks (first dose split on days 1 and 2) and every 2 weeks starting at week 5.
<b>Submitted price</b>	Amivantamab, 350 mg/7 mL vial: \$1,676.00
<b>Treatment cost</b>	First 28 days: \$20,112 (less than 80 kg) to \$26,816 (80 kg or more) Thereafter, per 28 days: \$10,056 (less than 80 kg) to \$13,408 (80 kg or more)
<b>Comparators</b>	Three categories of therapy: <ul style="list-style-type: none"> <li>IO agents – atezolizumab (33.3%), nivolumab (33.3%), pembrolizumab (33.3%)</li> <li>EGFR TKIs – gefitinib (50%), afatinib (25%), osimertinib (25%)</li> <li>Non-platinum-based chemotherapy (NPBC) – docetaxel (100%)</li> </ul>
<b>Perspective</b>	Canadian publicly funded health care payer
<b>Outcomes</b>	QALYs, LYs
<b>Time horizon</b>	Lifetime (10 years)
<b>Key data source</b>	<ul style="list-style-type: none"> <li>OS, PFS, and treatment discontinuation data for amivantamab were derived from Cohort D of the phase I/Ib CHRYSALIS trial.</li> <li>An adjusted treatment comparison of RWE was conducted on a synthetic control cohort created from US and European registries to derive comparative estimates for the comparator treatments relative to amivantamab.</li> </ul>
<b>Key limitations</b>	<ul style="list-style-type: none"> <li>The clinical efficacy of amivantamab was based on a single-arm, open label phase I/Ib study with a high risk of bias.</li> <li>The comparative clinical efficacy is highly uncertain due to the methods of the adjusted treatment comparison.</li> <li>The OS extrapolations for amivantamab and its relevant comparators are uncertain given the lack of robust long-term evidence for amivantamab, published evidence for comparators, and clinical expert opinion.</li> <li>The sponsor's PSM structure is not appropriate. The NOC/c for amivantamab was on the basis of objective response rate and duration of response. PFS and OS for amivantamab have not been established in this patient population.</li> <li>Safety outcomes were based on a naïve comparison using product monographs with no assessment of population comparability.</li> </ul>
<b>CADTH reanalysis results</b>	<ul style="list-style-type: none"> <li>Due to the limitations identified with the sponsor's model structure, assumptions, and comparative clinical evidence, CADTH was unable to derive a base case. An exploratory analysis was conducted in which a Weibull extrapolation was used for the OS of amivantamab. CADTH also corrected an error in the applications of costs for docetaxel.</li> <li>Results of this exploratory analysis suggest that: <ul style="list-style-type: none"> <li>Amivantamab is associated with greater total costs and more effective than other comparators.</li> <li>In sequential analysis, amivantamab is associated with an ICER of \$253,131 per QALY gained compared with NPBC (incremental costs: \$151,722; incremental QALYs: 0.60).</li> <li>There is a 0% probability that amivantamab is cost-effective at a willingness-to-pay threshold of \$50,000 per QALY gained, and a 77% price reduction would be necessary for amivantamab to be cost-effective at this threshold.</li> </ul> </li> <li>The CADTH exploratory analysis is based upon the assumption that amivantamab would increase survival compared to NPBC (incremental LYs: 0.79), which is an assumption that remains highly uncertain given the limitations with both the direct and indirect clinical evidence.</li> </ul>

Component	Description
	<ul style="list-style-type: none"> <li>Given the uncertainty with the magnitude of clinical benefit, a cost comparison analysis was performed in which drug acquisition costs only were considered. This analysis suggested a price reduction of 86.4% would be required to achieve cost parity with the least costly comparator.</li> </ul>

## Budget Impact

CADTH identified the following key limitations with the sponsor’s analysis: the market share of amivantamab was underestimated, the population size is uncertain, and amivantamab may be used in addition to current therapies. CADTH reanalysis increased the market share of amivantamab in years 2 and 3. In the CADTH base case, the estimated budget impact of the reimbursement of amivantamab is expected to be \$1,762,759 in year 1, \$2,521,485 in year 2, and \$2,782,311 in year 3, for a three-year total of \$7,066,555 for the treatment of █, and █ patients per year, respectively. Scenario analyses involving the population size and lack of displacement of comparators by amivantamab resulted in higher budget impact estimates, suggesting the true budget impact may be higher than predicted by both the sponsor’s and CADTH’s reanalysis.

## Request for Reconsideration

The sponsor filed a request for reconsideration for the draft recommendation for amivantamab (Rybrevant) for the treatment of adult patients with locally advanced or metastatic NSCLC with activating EGFR Exon 20 insertion mutations whose disease has progressed on, or after platinum-based chemotherapy. The sponsor believed that despite the uncertainty due to the single-arm design of CHRYSALIS, the totality of the evidence and stakeholder input submitted to CADTH reasonably suggested that there is a substantial benefit of amivantamab in improving patient’s morbidity and mortality. In their request, the sponsor identified the following issues:

- **Unmet Need:** The sponsor stated that EGFR Exon 20ins NSCLC is a rare mutation and patients have a significantly worse prognosis than those with common EGFR mutations.
- **Certainty of clinical benefit:**
  - The sponsor stated that CHRYSALIS’ results are consistent across outcomes and assessment timepoints and represent almost a quadrupling in ORR and an increase in median OS of about 10 months versus current treatment options. The sponsor noted that the threshold for a positive study outcome for Cohort D was met by observing a 95% CI for ORR with a lower limited larger than 12%.
  - The sponsor is of the view that the methods of the adjusted treatment comparison were robust and adjustment for important confounders and consistency in results demonstrated amivantamab’s potential for substantial improvement in morbidity and mortality versus current treatment options.
- **Alignment with clinical experts and stakeholder input:** The sponsor noted that the CADTH Review Team’s conclusions regarding the uncertainty of amivantamab’s clinical benefit relative to available options was inconsistent with clinical expert and stakeholder inputs received by CADTH. Inputs to CADTH anticipated efficacy and tolerability with amivantamab compared with currently available treatments.
- **Consistency in CADTH drug reviews and implications for equity:** The sponsor noted that CADTH has previously issued positive conditional recommendations based on phase I data in rare patient populations with NSCLC. Furthermore, the sponsor stated that EGFR Exon 20ins mutations occur more frequently in Asian patients, non-smokers, women, and older patients and CADTH has provided positive recommendations for other rare NSCLC subpopulations, with higher cited mutation frequencies, and equal or lower levels of comparative evidence.

In the meeting to discuss the sponsor’s request for reconsideration, pERC considered the following information:

- Feedback on the draft recommendation from the sponsor.
- Information from the initial submission relating to the issues identified by the sponsor.
- New information provided by the sponsor to address an important clear gap in the evidence identified by pERC.

- Feedback from 2 clinical specialists with expertise in NSCLC.
- Feedback on the draft recommendation from 1 patient group: the Lung Cancer Canada – Patient Group
- Feedback on the draft recommendation from 2 clinician groups: the OH-CCO Lung Cancer Drug Advisory Committee and the LCC clinician group.
- Feedback on the draft recommendation from the public drug plans.

## pCODR Expert Review Committee (pERC) Information

### Members of the Committee:

Dr. Maureen Trudeau (Chair), Mr. Daryl Bell, Dr. Jennifer Bell, Dr. Matthew Cheung; Dr. Winson Cheung, Dr. Michael Crump, Dr. Leela John, Dr. Christian Kollmannsberger, Mr. Cameron Lane, Dr. Christopher Longo, Dr. Catherine Moltzan, Ms. Amy Peasgood, Dr. Anca Prica, Dr. Adam Raymakers, Dr. Patricia Tang, Dr. Marianne Taylor, and Dr. W. Dominika Wranik.

Meeting Date: September 13, 2022

### Regrets

4 expert committee members did not attend.

### Conflicts of Interest:

None

Reconsideration Meeting Date: January 11, 2023

### Regrets

3 expert committee members did not attend.

### Conflicts of Interest:

None