

## PRODUCT MONOGRAPH

Pr **ALIMTA**<sup>®</sup>

Pemetrexed Disodium for Injection

100 mg or 500 mg pemetrexed per vial

Antineoplastic Agent

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# ALIMTA®

Pemetrexed Disodium for Injection  
100 mg or 500 mg pemetrexed per vial

## PART I: HEALTH PROFESSIONAL INFORMATION

### SUMMARY PRODUCT INFORMATION

| Route of Administration | Dosage Form / Strength  | Clinically Relevant Nonmedicinal Ingredients* |
|-------------------------|---|---|
| Intravenous             | Lyophilized powder /<br>100 mg or 500 mg<br>pemetrexed per vial | Mannitol                                      |

\*For a complete listing see Dosage Forms, Composition and Packaging Section.

### INDICATIONS AND CLINICAL USE

#### ***Malignant Pleural Mesothelioma***

ALIMTA (pemetrexed disodium) in combination with cisplatin is indicated for the first-line treatment of patients with malignant pleural mesothelioma whose disease is unresectable or who are otherwise not candidates for curative surgery.

#### ***First Line – Nonsquamous Non-Small Cell Lung Cancer – Combination with Cisplatin***

ALIMTA (pemetrexed disodium) in combination with cisplatin therapy is indicated for the initial treatment of good performance status patients with locally advanced or metastatic nonsquamous non-small cell lung cancer. See Part II: CLINICAL TRIALS.

#### ***Maintenance Therapy – Nonsquamous Non-Small Cell Lung Cancer - Monotherapy***

ALIMTA (pemetrexed disodium) monotherapy is indicated for the maintenance treatment of locally advanced or metastatic nonsquamous non-small cell lung cancer, in good performance status patients without disease progression immediately following four cycles of first-line platinum doublet chemotherapy. See Part II: CLINICAL TRIALS.

#### ***Second Line – Nonsquamous Non-Small Cell Lung Cancer - Monotherapy***

ALIMTA (pemetrexed disodium) monotherapy is indicated as a treatment option for patients with locally advanced or metastatic nonsquamous non-small cell lung cancer after prior chemotherapy. Approval is based on similarity of the response rate, median survival rate and 1-year survival rate, for the overall study population, between ALIMTA and docetaxel. See Part II: CLINICAL TRIALS.

#### **Geriatrics (> 65 years of age):**

The safety and effectiveness of ALIMTA in geriatric patients has been established (see ACTION AND CLINICAL PHARMACOLOGY and Part II: CLINICAL TRIALS Sections).

#### **Pediatrics (< 18 years of age):**

The safety and effectiveness of ALIMTA in pediatric patients have not been established.

## CONTRAINDICATIONS

- Hypersensitivity to pemetrexed or to any other ingredient used in the formulation. For a complete listing, see DOSAGE FORMS, COMPOSITION AND PACKAGING Section.
- Concomitant yellow fever vaccine (see DRUG INTERACTIONS).

## WARNINGS AND PRECAUTIONS

### Serious Warnings and Precautions

- ALIMTA (pemetrexed disodium) should only be administered by, or under the supervision of, a physician who is experienced in cancer chemotherapy and in the management of related toxicities.
- Hepatotoxicity: See WARNINGS AND PRECAUTIONS - Hepatic/Biliary.

### Carcinogenesis and Mutagenesis

No carcinogenicity studies have been conducted with pemetrexed. Pemetrexed was clastogenic in the *in vivo* micronucleus assay in mouse bone marrow but was not mutagenic in multiple *in vitro* tests (Ames assay, CHO cell assay). Pemetrexed administered at i.v. doses of 0.1 mg/kg/day or greater to male mice (about 1/1666 the recommended human dose on a mg/m<sup>2</sup> basis) resulted in reduced fertility, hypospermia, and testicular atrophy. Because pemetrexed may cause irreversible infertility, men are advised to seek counselling on sperm storage before starting treatment. See Part II: TOXICOLOGY Section.

### Cardiovascular

No thorough clinical QT/QTc study was performed to rule out the effect of ALIMTA on QT prolongation. Routine ECG assessments during clinical trials did not identify any concerns regarding QT prolongation. Serious cardiovascular and cerebrovascular events, including myocardial infarction, angina pectoris, cerebrovascular accident and transient ischemic attack have been uncommonly reported in clinical trials with ALIMTA, usually when given in combination with another cytotoxic agent. Most of the patients in whom these events have been observed had preexisting cardiovascular risk factors.

### Gastrointestinal

Stomatitis, nausea, vomiting, and diarrhea are common in patients receiving ALIMTA with or without cisplatin. In rare cases gastrointestinal toxicity may lead to severe dehydration. Gastrointestinal toxicity should be vigorously managed (see ADVERSE REACTIONS – Clinical Trial Adverse Drug Reactions and DOSAGE AND ADMINISTRATION – Nonhematologic Toxicities).

### Hepatic/Biliary

Serious hepatobiliary toxicity and rare cases of fatal hepatic failure, have been reported with ALIMTA alone or in association with other chemotherapeutic agents in clinical trials. Underlying risk factors for the development of hepatic toxicity including hepatic metastases and/or underlying hepatic disease have been present in some cases. A causal relationship

between ALIMTA and these events has not been established.

### **Hematologic**

ALIMTA can suppress bone marrow function, as manifested by neutropenia, thrombocytopenia, and anemia (or pancytopenia) (see ADVERSE REACTIONS Section); myelosuppression is usually the dose-limiting toxicity (see Laboratory Monitoring and Dose Reduction Recommendations under DOSAGE AND ADMINISTRATION Section). In clinical trials, sepsis which in some cases was fatal occurred in approximately 1% of patients. Dose reductions for subsequent cycles are based on nadir Absolute Neutrophil Count (ANC), platelet count, and maximum nonhematologic toxicity seen in the previous cycle (see Dose Reduction Recommendations under DOSAGE AND ADMINISTRATION Section).

In the Phase 3 mesothelioma clinical trial, less overall toxicity and reductions in Grade 3/4 hematologic and nonhematologic toxicities such as neutropenia, febrile neutropenia and infection with Grade 3/4 neutropenia were reported when pre-treatment with folic acid and vitamin B<sub>12</sub> was administered. Prior to treatment with ALIMTA patients must receive supplementation with folic acid and intramuscular vitamin B<sub>12</sub> as a prophylactic measure to reduce treatment-related toxicity (see DOSAGE AND ADMINISTRATION Section). The intramuscular vitamin B<sub>12</sub> should not be substituted with an oral formulation.

### **Immune**

Cases of hypersensitivity, including anaphylaxis, have been reported in patients treated with ALIMTA.

### **Renal**

Serious renal events, including acute renal failure, have been reported with ALIMTA alone or in association with other chemotherapeutic agents. Most, but not all, of the patients in whom these serious renal events occurred had underlying risk factors for the development of renal events including dehydration or pre-existing hypertension or diabetes. A causal relationship between ALIMTA and these events has not been established.

### **Respiratory**

Interstitial pneumonitis with respiratory insufficiency, sometimes fatal, has been reported in clinical trials. In patients with progressive dyspnea and cough, ALIMTA should be interrupted and prompt investigation initiated.

Cases of radiation pneumonitis have been reported in patients with radiation either prior to, during, or subsequent to their ALIMTA therapy.

### **Skin**

Rare cases of bullous epidermolysis have been reported including Stevens-Johnson syndrome and Toxic epidermal necrolysis which in some cases were fatal.

Treatment-related adverse events of ALIMTA seen in clinical trials have been reversible. Skin rash has been reported in patients not pretreated with a corticosteroid in clinical trials. Pretreatment with dexamethasone (or equivalent) reduces the incidence and severity of cutaneous reaction (see DOSAGE AND ADMINISTRATION Section).

Radiation recall dermatitis has been reported in patients on ALIMTA who have previously received radiotherapy. Severity of symptoms can vary from mild dermatitis to necrosis (see REFERENCES Barlesi et al, Hureauux et al).

### **Third Space Fluid**

The effect of third space fluid, such as pleural effusion or ascites, on ALIMTA is not fully defined. A phase 2 study of ALIMTA in 31 solid tumor patients with stable third space fluid suggested no difference in ALIMTA dose-normalized plasma concentrations or clearance compared to patients without third space fluid collections. Modest levels of ALIMTA were detectable in the third space fluid after multiple cycles. Drainage of third space fluid collection prior to ALIMTA treatment should be considered, but may not be necessary.

### **Special Populations**

#### **Pregnant Women:**

ALIMTA may cause fetal harm when administered to a pregnant woman. See Part II: TOXICOLOGY Section. ALIMTA clinical studies excluded pregnant women. Women of child bearing potential should have a negative serum pregnancy test prior to treatment with ALIMTA and should be advised to avoid becoming pregnant while on treatment with ALIMTA. Women should be advised to use effective contraceptive measures to prevent pregnancy during treatment with ALIMTA. If ALIMTA is used during pregnancy, or if the patient becomes pregnant while taking ALIMTA, the patient should be informed of the potential hazard to the fetus.

#### **Nursing Women:**

It is not known whether pemetrexed or its metabolites are excreted in human milk. Because many drugs are excreted in human milk, and because of the potential for serious adverse reactions in nursing infants from pemetrexed, it is recommended that nursing be discontinued if the mother is treated with ALIMTA.

#### **Men:**

Pemetrexed administered at i.v.doses of 0.1 mg/kg/day or greater to male mice (about 1/1666 the recommended human dose on a mg/m<sup>2</sup> basis) resulted in reduced fertility, hypospermia, and testicular atrophy. Because pemetrexed may cause irreversible infertility, men are advised to seek counselling on sperm storage before starting treatment. See Part II: TOXICOLOGY Section.

Pemetrexed is clastogenic in the in vivo micronucleus assay in mouse bone marrow and can have genetically damaging effects. Men are advised to use effective contraceptive measures and thus not to father a child during treatment with ALIMTA and up to 6 months thereafter.

#### **Pediatrics (< 18 years of age):**

The safety and effectiveness of ALIMTA in pediatric patients have not been established.

#### **Geriatrics (> 65 years of age):**

Dose adjustments based on age other than those recommended for all patients have not been necessary. However, because renal function declines with age, and decreased renal function

will result in reduced clearance of ALIMTA, older patients should be followed closely for toxicity.

**Patients with Hepatic Impairment:**

Pemetrexed is not extensively metabolized by the liver. However, patients with hepatic impairment such as bilirubin > 1.5 times the upper limit of normal (ULN) or aminotransferase > 3 times the ULN (hepatic metastases absent) or > 5 time the ULN (hepatic metastases present) have not been specifically studied.

For dose adjustments based on hepatic impairment, refer to Laboratory Monitoring and Dose Reduction Recommendations under DOSAGE AND ADMINISTRATION Section.

**Patients with Renal Impairment:**

ALIMTA is known to be primarily excreted by the kidney. There is limited clinical experience in patients with calculated creatinine clearance below 45 mL/min. Therefore, patients whose creatinine clearance is < 45 mL/min should not receive ALIMTA. Decreased renal function will result in reduced clearance of ALIMTA compared with patients with normal renal function.

For dose adjustments based on renal impairment, refer to Laboratory Monitoring and Dose Reduction Recommendations under DOSAGE AND ADMINISTRATION Section.

***Use of Non-Steroidal Anti-Inflammatory Drugs in Mild to Moderate Renal Insufficiency***

Caution should be used when administering ibuprofen concurrently with ALIMTA to patients with mild to moderate renal insufficiency (creatinine clearance from 45 to 79 mL/min). Other NSAIDS should also be used with caution (see DRUG INTERACTIONS).

**Monitoring and Laboratory Tests**

All patients receiving ALIMTA should have frequent complete blood counts, including differential and platelets as well as periodic blood chemistry tests performed, including creatinine. Patients should not begin a new treatment cycle unless the absolute neutrophil count (ANC) is  $\geq 1500$  cells/mm<sup>3</sup>, the platelet count is  $\geq 100,000$  cells/mm<sup>3</sup>, and the creatinine clearance is  $\geq 45$  mL/min (see DOSAGE AND ADMINISTRATION).

**ADVERSE REACTIONS**

**Adverse Drug Reaction Overview**

In clinical trials, the most common adverse reactions (incidence  $\geq 10\%$ ) during therapy with ALIMTA as a single agent were fatigue, nausea, anorexia, anemia, vomiting, stomatitis/pharyngitis, rash/desquamation, diarrhea, leukopenia, and neutropenia. Additional common adverse reactions (incidence  $\geq 10\%$ ) during therapy with ALIMTA when used in combination with cisplatin included thrombocytopenia, decreased creatinine clearance, constipation, alopecia, creatinine elevation, and sensory neuropathy.

In clinical trials, sepsis which in some cases was fatal occurred in approximately 1% of patients.

In clinical trials, cases of gastrointestinal haemorrhage, ulceration, perforation and necrosis,

sometimes fatal, have been reported uncommonly in patients treated with ALIMTA. Esophagitis/radiation esophagitis has also been uncommonly reported in clinical trials. Supplementation with folic acid and vitamin B<sub>12</sub> during treatment with ALIMTA reduces the frequency and severity of hematologic and nonhematologic toxicities.

### **Clinical Trial Adverse Drug Reactions**

#### *Malignant Pleural Mesothelioma*

#### Combination Use with Cisplatin

The following tables list adverse events, considered to be related to ALIMTA (pemetrexed disodium), reported in clinical trial patients with MPM treated with 500 mg/m<sup>2</sup> of ALIMTA and 75 mg/m<sup>2</sup> of cisplatin.

Overall, serious adverse events (SAEs) occurred significantly more frequently in patients on the pemetrexed plus cisplatin arm regardless of drug causality. This was expected because this regimen adds one drug (pemetrexed) to the control regimen (cisplatin). Among the fully supplemented (FS) subgroup, no single SAE, regardless of drug causality, occurred in > 5% of patients in either arm. Most SAEs were hematologic or gastrointestinal and were expected effects of cytotoxic chemotherapy.

Table 1 displays the incidence (percentage of patients) of CTC Grade 3/4 toxicities in patients who received vitamin supplementation with daily folic acid and vitamin B<sub>12</sub> from the time of enrolment in the study (fully supplemented) versus patients who never received vitamin supplementation (never supplemented) during the study in the ALIMTA plus cisplatin arm. Patients who received supplementation from the start of therapy experienced markedly less laboratory and nonlaboratory toxicity compared with patients who never received supplementation.

**Table 1: Selected Grade 3/4 Adverse Events Comparing Fully Supplemented versus Never Supplemented Patients in the ALIMTA plus Cisplatin Arm (% incidence)**

| <b>Adverse Event Regardless of Causality*(%)</b> | <b>Fully Supplemented Patients (N=168)</b> | <b>Never Supplemented Patients (N=32)</b> |
|--|--|---|
| Neutropenia                                      | 24   | 38  |
| Thrombocytopenia                                 | 5  | 9   |
| Nausea   | 12   | 31  |
| Vomiting   | 11   | 34  |
| Anorexia   | 2  | 9   |
| Diarrhea without colostomy                       | 4  | 9   |
| Dehydration                                      | 4  | 9   |
| Fever  | 0  | 6   |
| Febrile neutropenia                              | 1  | 9   |
| Infection with Grade 3/4 neutropenia             | 1  | 6   |
| Fatigue  | 17   | 25  |

\* Refer to National Cancer Institute (NCI) Common Toxicity Criteria (CTC) criteria for laboratory values for each Grade of toxicity (Version 2.0).



Table 2 provides the frequency and severity of adverse events that have been reported in > 5% of 168 patients with MPM who were randomly assigned to receive cisplatin and pemetrexed and 163 patients with mesothelioma randomly assigned to receive single agent cisplatin. In both treatment arms, these chemo-naïve patients were fully supplemented with folic acid and vitamin B<sub>12</sub>.

**Table 2: Adverse Events\* in Fully Supplemented Patients Receiving ALIMTA plus Cisplatin in MPM  
CTC Grades (% incidence)**

|                                   | All Reported Adverse Events<br>Regardless of Causality |         |         |                      |         |         |
|-----------------------------------|--|---------|---------|----------------------|---------|---------|
|                                   | ALIMTA/Cisplatin<br>(N=168)                            |         |         | Cisplatin<br>(N=163) |         |         |
|                                   | All Grades   | Grade 3 | Grade 4 | All Grades           | Grade 3 | Grade 4 |
| <b>Laboratory</b>                 |  |         |         |                      |         |         |
| <b>Hematologic</b>                |  |         |         |                      |         |         |
| Neutropenia                       | 58   | 19      | 5       | 16                   | 3       | 1       |
| Leukopenia                        | 55   | 14      | 2       | 20                   | 1       | 0       |
| Anemia                            | 33   | 5       | 1       | 14                   | 0       | 0       |
| Thrombocytopenia                  | 27   | 4       | 1       | 10                   | 0       | 0       |
| <b>Renal</b>                      |  |         |         |                      |         |         |
| Creatinine elevation              | 16   | 1       | 0       | 12                   | 1       | 0       |
| Renal failure                     | 2  | 0       | 1       | 1                    | 0       | 0       |
| <b>Clinical</b>                   |  |         |         |                      |         |         |
| <b>Constitutional Symptoms</b>    |  |         |         |                      |         |         |
| Fatigue                           | 80   | 17      | 0       | 74                   | 12      | 1       |
| Fever                             | 17   | 0       | 0       | 9                    | 0       | 0       |
| Other constitutional symptoms     | 11   | 2       | 1       | 8                    | 1       | 1       |
| <b>Cardiovascular General</b>     |  |         |         |                      |         |         |
| Thrombosis/embolism               | 7  | 4       | 2       | 4                    | 3       | 1       |
| <b>Gastrointestinal</b>           |  |         |         |                      |         |         |
| Nausea                            | 84   | 11      | 1       | 79                   | 6       | 0       |
| Vomiting                          | 58   | 10      | 1       | 52                   | 4       | 1       |
| Constipation                      | 44   | 2       | 1       | 39                   | 1       | 0       |
| Anorexia                          | 35   | 2       | 0       | 25                   | 1       | 0       |
| Stomatitis/pharyngitis            | 28   | 2       | 1       | 9                    | 0       | 0       |
| Diarrhea without colostomy        | 26   | 4       | 0       | 16                   | 1       | 0       |
| Dehydration                       | 7  | 3       | 1       | 1                    | 1       | 0       |
| Dysphagia/esophagitis/odynophagia | 6  | 1       | 0       | 6                    | 0       | 0       |
| <b>Pulmonary</b>                  |  |         |         |                      |         |         |
| Dyspnea                           | 66   | 10      | 1       | 62                   | 5       | 2       |
| <b>Pain</b>                       |  |         |         |                      |         |         |
| Chest pain                        | 40   | 8       | 1       | 30                   | 5       | 1       |
| <b>Neurology</b>                  |  |         |         |                      |         |         |
| Neuropathy/sensory                | 17   | 0       | 0       | 15                   | 1       | 0       |

|   | All Reported Adverse Events<br>Regardless of Causality |         |         |                      |         |         |
|---|--|---------|---------|----------------------|---------|---------|
|   | ALIMTA/Cisplatin<br>(N=168)                            |         |         | Cisplatin<br>(N=163) |         |         |
|   | All Grades   | Grade 3 | Grade 4 | All Grades           | Grade 3 | Grade 4 |
| Mood alteration/depression                    | 14   | 1       | 0       | 9                    | 1       | 0       |
| <b>Infection/Febrile Neutropenia</b>          |  |         |         |                      |         |         |
| Infection without neutropenia                 | 11   | 1       | 1       | 4                    | 0       | 0       |
| Infection with Grade 3 or Grade 4 neutropenia | 6  | 1       | 0       | 4                    | 0       | 0       |
| Infection/febrile neutropenia-other           | 3  | 1       | 0       | 2                    | 0       | 0       |
| Febrile neutropenia                           | 1  | 1       | 0       | 1                    | 0       | 0       |
| <b>Immune</b>                                 |  |         |         |                      |         |         |
| Allergic reaction/hypersensitivity            | 2  | 0       | 0       | 1                    | 0       | 0       |
| <b>Dermatology/Skin</b>                       |  |         |         |                      |         |         |
| Rash/desquamation                             | 22   | 1       | 0       | 9                    | 0       | 0       |

\* Refer to National Cancer Institute (NCI) Common Toxicity Criteria (CTC) (Version 2.0).

Drug related clinically relevant toxicity that was reported in  $\geq 1\%$  and  $\leq 5\%$  (common) of the patients that were randomly assigned to receive cisplatin and pemetrexed included: increased AST, ALT, and GGT, infection, febrile neutropenia, renal failure, chest pain, pyrexia and urticaria.

Drug related clinically relevant toxicity that was reported in  $<1\%$  (uncommon) of the patients that were randomly assigned to receive cisplatin and pemetrexed included: arrhythmia and motor neuropathy.

### *Non-Small Cell Lung Cancer (NSCLC)*

#### Combination Use with Cisplatin

Table 3 provides the frequency and severity of adverse reactions that have been reported in  $> 5\%$  of 839 NSCLC patients who were randomized to study and received ALIMTA plus cisplatin and 830 NSCLC patients who were randomized to study and received gemcitabine plus cisplatin. All patients received study therapy as initial treatment for locally advanced or metastatic NSCLC and patients in both treatment groups were fully supplemented with folic acid and vitamin B<sub>12</sub>.

**Table 3: Adverse Reactions in Fully Supplemented Patients Receiving ALIMTA plus Cisplatin in NSCLC<sup>a</sup>**

| Reaction <sup>b</sup>             | ALIMTA/cisplatin<br>(N=839) |                           | Gemcitabine/cisplatin<br>(N=830) |                           |
|-----------------------------------|-----------------------------|---------------------------|----------------------------------|---------------------------|
|                                   | All Grades<br>Toxicity (%)  | Grade 3-4<br>Toxicity (%) | All Grades<br>Toxicity (%)       | Grade 3-4<br>Toxicity (%) |
| <b>All Adverse Reactions</b>      | 90                          | 37                        | 91                               | 53                        |
| <b>Laboratory</b>                 |                             |                           |                                  |                           |
| <b>Hematologic</b>                |                             |                           |                                  |                           |
| Anemia <sup>c,d</sup>             | 33                          | 6                         | 46                               | 10                        |
| Neutropenia <sup>c,d</sup>        | 29                          | 15                        | 38                               | 27                        |
| Leukopenia <sup>c</sup>           | 18                          | 5                         | 21                               | 8                         |
| Thrombocytopenia <sup>c,d</sup>   | 10                          | 4                         | 27                               | 13                        |
| <b>Renal</b>                      |                             |                           |                                  |                           |
| Creatinine elevation <sup>d</sup> | 10                          | 1                         | 7                                | 1                         |
| <b>Clinical</b>                   |                             |                           |                                  |                           |
| <b>Constitutional Symptoms</b>    |                             |                           |                                  |                           |
| Fatigue                           | 43                          | 7                         | 45                               | 5                         |
| <b>Gastrointestinal</b>           |                             |                           |                                  |                           |
| Nausea <sup>c</sup>               | 56                          | 7                         | 53                               | 4                         |
| Vomiting                          | 40                          | 6                         | 36                               | 6                         |
| Anorexia <sup>c</sup>             | 27                          | 2                         | 24                               | 1                         |
| Constipation                      | 21                          | 1                         | 20                               | 0                         |
| Stomatitis/Pharyngitis            | 14                          | 1                         | 12                               | 0                         |
| Diarrhea                          | 12                          | 1                         | 13                               | 2                         |
| Dyspesia/Heartburn                | 5                           | 0                         | 6                                | 0                         |
| <b>Neurology</b>                  |                             |                           |                                  |                           |
| Neuropathy-sensory <sup>c,d</sup> | 9                           | 0                         | 12                               | 1                         |
| Taste disturbance                 | 8                           | 0 <sup>e</sup>            | 9                                | 0 <sup>e</sup>            |
| <b>Dermatology/Skin</b>           |                             |                           |                                  |                           |
| Alopecia <sup>d</sup>             | 12                          | 0 <sup>e</sup>            | 21                               | 1 <sup>c</sup>            |
| Rash/Desquamation                 | 7                           | 0                         | 8                                | 1                         |

<sup>a</sup> For the purpose of this table a cut off of 5% was used for inclusion of all events where the reporter considered a possible relationship to ALIMTA/cisplatin.

<sup>b</sup> Refer to NCI CTC Criteria version 2.0 for each Grade of toxicity.

<sup>c</sup> p < 0.05 for Grades 3/4 toxicity

<sup>d</sup> p < 0.05 for any grade toxicity

<sup>e</sup> According to NCI CTC Criteria version 2.0, this adverse event term should only be reported as Grade 1 or 2

Drug related clinically relevant toxicity that was reported in  $\geq 1\%$  and  $\leq 5\%$  (common) of the patients that were randomly assigned to receive cisplatin and pemetrexed include: AST increase, ALT increase, infection, febrile neutropenia, renal failure, pyrexia, dehydration, conjunctivitis, and creatinine clearance decrease.

The incidence of febrile neutropenia was 1.7% on the ALIMTA/cisplatin arm compared to 4.1% on the gemcitabine/cisplatin arm. There were 4 patient deaths on the ALIMTA/cisplatin arm compared to 1 patient death on the gemcitabine/cisplatin arm due to sepsis.

Drug related clinically relevant toxicity that was reported in  $< 1\%$  (uncommon) of the patients that were randomly assigned to receive cisplatin and pemetrexed include: GGT increase, chest pain, arrhythmia, and motor neuropathy.

No clinically relevant differences in adverse reactions were seen in subpopulations based on gender, ethnicity, or histology. Patients aged  $\geq 65$  years generally experienced more toxicity (eg. neutropenia, febrile neutropenia, thrombocytopenia, nausea, renal failure) than patients aged  $< 65$  years, regardless of treatment arm.

**Maintenance Following Non-ALIMTA Containing, Platinum-Based Induction Therapy**

Table 4 provides the frequency and severity of adverse reactions that have been reported in  $> 5\%$  of 441 patients with NSCLC who were randomized to receive ALIMTA and 222 patients with NSCLC who were randomized to receive placebo. All patients without progressive disease received study therapy immediately following 4 cycles of platinum-based treatment for locally advanced or metastatic NSCLC. Patients in both study arms were fully supplemented with folic acid and vitamin B<sub>12</sub>.

**Table 4: Adverse Reactions in Patients Randomized to ALIMTA versus Placebo in NSCLC Following Non-ALIMTA-containing, Platinum-Based Induction Therapy<sup>a</sup>**

| Reaction <sup>b</sup>          | ALIMTA<br>(N=441)          |                           | Placebo<br>(N=222)         |                           |
|--------------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
|                                | All Grades<br>Toxicity (%) | Grade 3-4<br>Toxicity (%) | All Grades<br>Toxicity (%) | Grade 3-4<br>Toxicity (%) |
| <b>All Adverse Reactions</b>   | 66                         | 16                        | 37                         | 4                         |
| <b>Laboratory</b>              |                            |                           |                            |                           |
| <b>Hematologic</b>             |                            |                           |                            |                           |
| Anemia                         | 15                         | 3                         | 5                          | 1                         |
| Neutropenia                    | 6                          | 3                         | 0                          | 0                         |
| Leukopenia                     | 6                          | 2                         | 1                          | 1                         |
| <b>Hepatic</b>                 |                            |                           |                            |                           |
| Increased ALT                  | 10                         | 0                         | 4                          | 0                         |
| Increased AST                  | 8                          | 0                         | 4                          | 0                         |
| <b>Clinical</b>                |                            |                           |                            |                           |
| <b>Constitutional Symptoms</b> |                            |                           |                            |                           |
| Fatigue                        | 25                         | 5                         | 10                         | 1                         |
| <b>Gastrointestinal</b>        |                            |                           |                            |                           |
| Nausea                         | 19                         | 1                         | 5                          | 1                         |
| Anorexia                       | 19                         | 2                         | 5                          | 0                         |
| Vomiting                       | 9                          | 0                         | 1                          | 0                         |
| Mucositis/stomatitis           | 7                          | 1                         | 2                          | 0                         |
| Diarrhea                       | 5                          | 1                         | 3                          | 0                         |
| <b>Infection</b>               | 5                          | 2                         | 2                          | 0                         |
| <b>Neurology</b>               |                            |                           |                            |                           |
| Neuropathy-sensory             | 9                          | 1                         | 4                          | 0                         |
| <b>Dermatology/Skin</b>        |                            |                           |                            |                           |
| Rash/Desquamation              | 10                         | 0                         | 3                          | 0                         |

<sup>a</sup> For the purpose of this table a cut off of 5% was used for inclusion of all events where the reporter considered a possible relationship to ALIMTA.

<sup>b</sup> Refer to NCI CTCAE Criteria version 3.0 for each Grade of toxicity.

All-grade renal events were more frequent in patients  $\geq 65$  years of age than in patients  $< 65$  years of age (12.2% vs 6.8%). All-grade myelosuppression events were more frequent in patients  $\geq 65$  years of age than in patients  $< 65$  years of age (24.5% vs 16.7%).

No clinically relevant differences in Grade 3/4 adverse reactions were seen in patients based on age, gender, ethnic origin, or histology except a higher incidence of Grade 3/4 gastrointestinal events for patients  $\geq 65$  years of age compared to patients  $< 65$  years of age (7.5% vs 2.4%) and fatigue for Caucasian patients compared to non-Caucasian patients (6.5% versus 0.6%).

Safety was assessed by exposure for patients who were randomized and received at least one dose of ALIMTA (N = 434). The incidence of adverse reactions was evaluated for patients who received  $\leq 6$  cycles of ALIMTA, and compared to patients who received  $> 6$  cycles of ALIMTA. Increases in adverse reactions (all grades) were observed with longer exposure; however no clinically relevant differences in Grade 3/4 adverse reactions were seen.

Consistent with the higher incidence of anemia (all grades) on the ALIMTA arm, use of transfusions (mainly RBC) and erythropoiesis stimulating agents (ESAs; erythropoietin and darbepoetin) were significantly higher in the ALIMTA arm compared to the placebo arm (transfusions 9.5% versus 3.2%,  $p = 0.003$ ; ESAs 5.9% versus 1.8%,  $p = 0.017$ ).

Drug related clinically relevant toxicity that was reported in  $\geq 1\%$  and  $\leq 5\%$  (common) of the patients that were randomly assigned to receive ALIMTA include: edema, fever (in the absence of neutropenia), constipation, thrombocytopenia, decreased creatinine clearance, increased creatinine, decreased glomerular filtration rate, alopecia, pruritis/itching, ocular surface disease (including conjunctivitis), and increased lacrimation.

Drug related clinically relevant toxicity that was reported in  $< 1\%$  (uncommon) of the patients that were randomly assigned to receive ALIMTA include: febrile neutropenia, allergic reaction/hypersensitivity, motor neuropathy, renal failure, supraventricular arrhythmia, and erythema multiforme.

#### Continuation of ALIMTA as Maintenance Following ALIMTA plus Platinum Induction Therapy

Table 5 provides the frequency and severity of adverse reactions that have been reported in  $> 5\%$  of 359 patients with NSCLC who were randomized to receive ALIMTA and 180 patients with NSCLC who were randomized to receive placebo. All patients without progressive disease received study therapy immediately following 4 cycles of platinum-based treatment for locally advanced or metastatic NSCLC. Patients in both study arms were fully supplemented with folic acid and vitamin B<sub>12</sub>.

**Table 5: Adverse Reactions in Patients Randomized to ALIMTA versus Placebo in Nonsquamous NSCLC Following ALIMTA plus Cisplatin Induction Therapy<sup>a</sup>**

| Reaction <sup>b</sup>          | ALIMTA<br>(N=359)          |                           | Placebo<br>(N=180)         |                            |
|--------------------------------|----------------------------|---------------------------|----------------------------|----------------------------|
|                                | All Grades<br>Toxicity (%) | Grade 3-4<br>Toxicity (%) | All Grades<br>Toxicity (%) | Grades 3-4<br>Toxicity (%) |
| <b>All Adverse Reactions</b>   | 62                         | 22                        | 35                         | 6                          |
| <b>Laboratory</b>              |                            |                           |                            |                            |
| <b>Hematologic</b>             |                            |                           |                            |                            |
| Anemia                         | 21                         | 7                         | 5                          | 1                          |
| Neutropenia                    | 12                         | 6                         | 1                          | 0                          |
| Leukopenia                     | 5                          | 2                         | 0                          | 0                          |
| <b>Clinical</b>                |                            |                           |                            |                            |
| <b>Constitutional Symptoms</b> |                            |                           |                            |                            |
| Fatigue                        | 24                         | 5                         | 12                         | 1                          |
| <b>Gastrointestinal</b>        |                            |                           |                            |                            |
| Nausea                         | 15                         | 1                         | 2                          | 0                          |
| Vomiting                       | 8                          | 0                         | 1                          | 0                          |
| Anorexia                       | 6                          | 0                         | 1                          | 0                          |
| Mucositis/Stomatitis           | 7                          | 1                         | 2                          | 0                          |
| <b>Neurology</b>               |                            |                           |                            |                            |
| Neuropathy Sensory             | 6                          | 1                         | 7                          | 1                          |
| <b>Pain</b>                    |                            |                           |                            |                            |
| Pain, any event                | 6                          | 1                         | 2                          | 0                          |
| <b>Lymphatics</b>              |                            |                           |                            |                            |
| Edema                          | 8                          | 0                         | 3                          | 0                          |

<sup>a</sup> For the purpose of this table, a cut off of 5% was used for inclusion of all events that were considered to have a possible relationship to ALIMTA.

<sup>b</sup> Refer to NCI CTCAE Criteria version 3.0 (NCI 2006) for each grade of toxicity.

<sup>c</sup> There were no incidences of Grade 5 CTCAE toxicities for the specific toxicities listed in this table.

The incidence of adverse reactions was evaluated for patients who received  $\leq 6$  cycles of ALIMTA maintenance, and compared to patients who received  $> 6$  cycles of ALIMTA maintenance. Increases in adverse reactions (any grades) were observed with longer exposure (laboratory CTCAE toxicities:  $> 6$  cycles = 45.1% compared with  $\leq 6$  cycles = 27.9%; non-laboratory CTCAE toxicities:  $> 6$  cycles = 61.7% compared with  $\leq 6$  cycles = 43.4%). The Grade 3/4/5 adverse reactions observed with longer exposure were as follows: laboratory CTCAE toxicities:  $> 6$  cycles = 16.5% compared with  $\leq 6$  cycles = 11.1%; non-laboratory CTCAE toxicities:  $> 6$  cycles = 11.3% compared with  $\leq 6$  cycles = 12.4%. The incidence of Grade 3/4/5 neutropenia observed with longer exposure was as follows:  $> 6$  cycles = 9.8% compared with  $\leq 6$  cycles = 4.0%. This increase in neutropenia did not result in an increase in Grade 3/4/5 infections.

Consistent with the higher incidence of anemia (all grades) on the ALIMTA arm, use of transfusions (mainly RBC) and erythropoiesis stimulating agents (ESAs; erythropoietin and darbepoetin) were higher in the ALIMTA arm compared to the placebo arm (transfusions 18.4% versus 6.1%, ESAs 12.3% versus 7.2%, anti-infectives 33.7% versus 21.1% and colony stimulating factor 7.0% versus 0.6%).

The following clinically relevant toxicities (any CTCAE grade) were reported in  $\geq 1\%$  to  $\leq 5\%$  of patients in the maintenance pemetrexed arm: infection, platelets, diarrhea, alanine aminotransferase, increased lacrimation, constipation, fever (in the absence of neutropenia), aspartate aminotransferase, febrile neutropenia, glomerular filtration rate, rash/desquamation, creatinine, dizziness, motor neuropathy, and ocular surface disease (including conjunctivitis).

The following clinically relevant toxicities (any CTCAE grade) were reported in  $< 1\%$  (uncommon) of patients in the maintenance pemetrexed arm: alopecia, pulmonary embolism, allergic reaction/hypersensitivity, pruritus/itching, renal/genitourinary-other, renal failure and supraventricular arrhythmia.

In the maintenance pemetrexed arm, 11.4% of patients experienced study drug-related SAEs, compared with 3.3% of patients in the placebo arm. In the pemetrexed arm, deaths due to AEs (on-study and within 30 days of last maintenance treatment, regardless of causality) were reported in 6 patients (1.7%), compared with 3 patients (1.7%) in the placebo arm. The grade 5 AEs that were possibly related to pemetrexed, per investigator's assessment are one case of pneumonia and one case of endocarditis.

Scheduling conflict was the most commonly reported reason for dose delays in both study arms (83.7% patients in the pemetrexed arm and 76.8% patients in the placebo arm). In the maintenance pemetrexed arm, 40.5% of patients experienced a dose delay due to an AE compared with 32.3% in the placebo arm. All dose reductions in both study arms were a result of AEs. In the maintenance pemetrexed arm, 6.1% of patients experienced a dose reduction due to an AE compared with 0.6% in the placebo arm.

In the pemetrexed arm, 12% of patients discontinued due to possibly study drug-related AEs, compared with 4.4% in the placebo arm. The following are the discontinuations due to possibly study drug-related AEs reported in  $>1\%$  in the maintenance pemetrexed arm: renal failure, asthenia, blood creatinine increased and fatigue.

#### After Prior Chemotherapy

ALIMTA has been evaluated for safety in 265 patients randomly assigned to receive single-agent ALIMTA with folic acid and vitamin B<sub>12</sub> supplementation and 276 patients randomly assigned to receive single-agent docetaxel. All patients were diagnosed with locally advanced or metastatic NSCLC and had received prior chemotherapy. Drug-related adverse events that were reported in  $> 1\%$  of patients are listed in Table 6.

**Table 6: Selected Adverse Events (> 1%) in Patients Receiving ALIMTA versus Docetaxel in NSCLC**

| Adverse Event                        | CTC Grades (% incidence) |                |                |                      |                |                |
|--------------------------------------|--------------------------|----------------|----------------|----------------------|----------------|----------------|
|                                      | ALIMTA<br>(N=265)        |                |                | Docetaxel<br>(N=276) |                |                |
|                                      | All Grades<br>(%)        | Grade 3<br>(%) | Grade 4<br>(%) | All Grades<br>(%)    | Grade 3<br>(%) | Grade 4<br>(%) |
| <b>Laboratory*</b>                   |                          |                |                |                      |                |                |
| <b>Hematologic</b>                   |                          |                |                |                      |                |                |
| Hemoglobin                           | 19.2                     | 2.6            | 1.5            | 22.1                 | 4.3            | 0              |
| Leukocytes <sup>a</sup>              | 12.1                     | 3.8            | 0.4            | 34.1                 | 16.7           | 10.5           |
| Neutrophils <sup>a</sup>             | 10.9                     | 3.4            | 1.9            | 45.3                 | 8.7            | 31.5           |
| Platelets                            | 8.3                      | 1.9            | 0              | 1.1                  | 0.4            | 0              |
| <b>Hepatic/Renal</b>                 |                          |                |                |                      |                |                |
| ALT Elevation <sup>b</sup>           | 7.9                      | 1.5            | 0.4            | 1.4                  | 0              | 0              |
| AST Elevation                        | 6.8                      | 0.8            | 0.4            | 0.7                  | 0              | 0              |
| Decreased creatinine clearance       | 2                        | < 1            | 0              | < 1                  | 0              | 0              |
| Creatinine elevation                 | 2.3                      | 0              | 0              | 0                    | 0              | 0              |
| <b>Clinical*</b>                     |                          |                |                |                      |                |                |
| <b>Constitutional Symptoms</b>       |                          |                |                |                      |                |                |
| Fatigue                              | 34.0                     | 5.3            | 0              | 35.9                 | 5.1            | 0.4            |
| Fever                                | 8.3                      | 0              | 0              | 7.6                  | 0              | 0              |
| Alopecia**                           | 6.4                      | 0.4            | 0              | 37.7                 | 1.4            | 0.7            |
| <b>Gastrointestinal</b>              |                          |                |                |                      |                |                |
| Nausea                               | 30.9                     | 2.6            | 0              | 16.7                 | 1.8            | 0              |
| Anorexia                             | 21.9                     | 1.5            | 0.4            | 23.9                 | 2.2            | 0.4            |
| Vomiting                             | 16.2                     | 1.5            | 0              | 12.0                 | 1.1            | 0              |
| Stomatitis/pharyngitis               | 14.7                     | 1.1            | 0              | 17.4                 | 1.1            | 0              |
| Diarrhea                             | 12.8                     | 0.4            | 0              | 24.3                 | 2.5            | 0              |
| Constipation                         | 5.7                      | 0              | 0              | 4.0                  | 0              | 0              |
| <b>Pain</b>                          |                          |                |                |                      |                |                |
| Abdominal Pain                       | 2.6                      | 0              | 0              | 3.3                  | 1.1            | 0              |
| <b>Neurology</b>                     |                          |                |                |                      |                |                |
| Sensory - neuropathy                 | 4.9                      | 0              | 0              | 15.9                 | 1.1            | 0              |
| Neuropathy - motor                   | 2.6                      | 0.4            | 0              | 4.7                  | 1.1            | 0              |
| <b>Infection/Febrile Neutropenia</b> |                          |                |                |                      |                |                |
| Infection without neutropenia        | 1.9                      | 0.4            | 0              | 3.3                  | 0              | 0.4            |
| Febrile neutropenia <sup>a</sup>     | 1.9                      | 1.1            | 0.8            | 13.8                 | 10.1           | 2.5            |
| <b>Immune</b>                        |                          |                |                |                      |                |                |
| Allergic reaction/hypersensitivity   | 1.1                      | 0              | 0              | 2.2                  | 1.1            | 0              |
| <b>Dermatology/Skin</b>              |                          |                |                |                      |                |                |
| Rash/desquamation                    | 14.0                     | 0              | 0              | 6.2                  | 0              | 0              |



| Adverse Event       | CTC Grades (% incidence) |                |                |                      |                |                |
|---------------------|--------------------------|----------------|----------------|----------------------|----------------|----------------|
|                     | ALIMTA<br>(N=265)        |                |                | Docetaxel<br>(N=276) |                |                |
|                     | All Grades<br>(%)        | Grade 3<br>(%) | Grade 4<br>(%) | All Grades<br>(%)    | Grade 3<br>(%) | Grade 4<br>(%) |
| Pruritus            | 6.8                      | 0.4            | 0              | 1.8                  | 0              | 0              |
| Erythema multiforme | 1.1                      | 0              | 0              | 2.5                  | 0              | 0              |

\* Refer to National Cancer Institute (NCI) Common Toxicity Criteria (CTC) for lab values for each Grade of toxicity (Version 2.0).

\*\* According to NCI CTC Criteria (version 2.0), alopecia should only be reported as Grade 1 or 2.

<sup>a</sup> p < 0.001 for Grades 3/4 toxicity

<sup>b</sup> p = 0.028 for Grades 3/4 toxicity

There was a statistically significant difference between the ALIMTA treatment arm and docetaxel arm with respect to the incidence of any CTC Grade 3 or 4 laboratory toxicity (12.8% vs. 46.4%; p < 0.001), largely due to the significantly higher rate of neutropenia in the docetaxel arm. The percentage of patients hospitalized for any adverse event was significantly lower in the ALIMTA arm than in the docetaxel arm (31.7% vs. 40.6%, p = 0.032), particularly for drug-related-febrile neutropenia (1.5% vs. 13.4%, p < 0.001). However, the total number of days of hospitalization for any reason (i.e. drug administration, adverse events, protocol tests, social reasons) was higher in the ALIMTA arm than in the docetaxel arm (1722 vs. 1410 days).

Drug related clinically relevant CTC toxicity that was reported in < 1% (uncommon) of the patients that were randomly assigned to pemetrexed include supraventricular arrhythmias.

The drug related clinically relevant Grade 3 and Grade 4 laboratory toxicities were similar between integrated Phase 2 results from three single agent pemetrexed studies (n=164, patients received vitamin supplementation) and the Phase 3 single agent pemetrexed study described above, with the exception of neutropenia (12.8% versus 5.3%, respectively) and alanine aminotransferase elevation (15.2% versus 1.9%, respectively). These differences were likely due to differences in the patient population, since the Phase 2 studies included chemo-naïve and heavily pretreated breast cancer patients with pre-existing liver metastases and/or abnormal baseline liver function tests.

There were no clinically relevant differences observed for the safety profile of ALIMTA within the histological subgroups.

### **Post-Market Adverse Drug Reactions**

Gastrointestinal – Rare cases of colitis have been reported in patients treated with ALIMTA.

General disorders and administration site conditions - Rare cases of edema have been reported in patients treated with ALIMTA.

Hepatobiliary –Cases of hepatobiliary failure, sometimes fatal, have been reported very rarely.

Immune – Rare cases of haemolytic anemia have been reported in patients treated with ALIMTA.

Injury, poisoning and procedural complications – Rare cases of radiation recall have been reported in patients who have previously received radiotherapy.

Peripheral ischaemia leading to extremity necrosis has been reported.

Renal – Serious cases of acute renal failure have been reported rarely.

Respiratory – Rare cases of interstitial pneumonitis have been reported in patients treated with ALIMTA.

Skin – Rare cases of bullous conditions have been reported including Stevens-Johnson syndrome and Toxic epidermal necrolysis which in some cases were fatal.

## **DRUG INTERACTIONS**

### **Drug-Drug Interactions**

Pemetrexed is primarily eliminated unchanged renally as a result of glomerular filtration and tubular secretion. *In vitro* studies indicate that pemetrexed is actively secreted by OAT3 (organic anion transporter 3). Concomitant administration of nephrotoxic drugs could result in delayed clearance of pemetrexed. Concomitant administration of substances that are also tubularly secreted (e.g., probenecid) could potentially result in delayed clearance of pemetrexed.

### **NSAIDs**

*Use in patients with normal renal function:* Although ibuprofen (400 mg qid) can decrease the clearance of pemetrexed, it, as well as other NSAIDs, can be administered with ALIMTA in patients with normal renal function (creatinine clearance  $\geq$  80 mL/min).

*Use in patients with mild to moderate renal insufficiency:* Caution should be used when administering NSAIDs concurrently with ALIMTA to patients with mild to moderate renal insufficiency (creatinine clearance from 45 to 79 mL/min). Clinical trials have shown a decrease in pemetrexed clearance following co-administration of ibuprofen. It is recommended that patients with mild to moderate renal insufficiency should avoid taking NSAIDs with short elimination half-lives at least 2 days prior to, on the day of, and at least 2 days after administration of ALIMTA. In the absence of data regarding potential interaction between pemetrexed and NSAIDs with longer half-lives, patients taking these NSAIDs should interrupt dosing for at least 5 days before, the day of, and at least 2 days following ALIMTA administration. If concomitant administration of NSAIDs is necessary, patients should be monitored closely for toxicity, especially myelosuppression, renal, and gastrointestinal toxicity.

### **Aspirin:**

Acetylsalicylic acid, administered in low to moderate doses (325 mg orally every 6 hours) does not affect the pharmacokinetics of pemetrexed.

### Chemotherapeutic Agents:

The pharmacokinetics of pemetrexed are not influenced by concurrently administered cisplatin or carboplatin. Similarly, the pharmacokinetics of total platinum are unaltered by pemetrexed.

### Vitamins:

Oral folic acid and intramuscular vitamin B<sub>12</sub> supplementation do not affect the pharmacokinetics of pemetrexed.

### Drugs Metabolized by Cytochrome P450 Enzymes:

Pemetrexed undergoes limited hepatic metabolism. Results from *in vitro* studies with human liver microsomes predict that pemetrexed would not cause clinically significant inhibition of the metabolic clearance of drugs metabolized by CYP3A, CYP2D6, CYP2C9, and CYP1A2. No studies were conducted to determine the cytochrome P450 isozyme induction potential of pemetrexed, because ALIMTA used as recommended (once every 21 days) would not be expected to cause any significant enzyme induction.

### Vaccines

Concomitant administration of yellow fever vaccine is contraindicated due to the risk of fatal generalised vaccinale disease (see CONTRAINDICATIONS).

Concomitant administration of live attenuated vaccines (except yellow fever, for which concomitant use is contraindicated) is not recommended due to the risk of systemic, possibly fatal, disease. The risk is increased in subjects who are already immunosuppressed by their underlying disease. Use an inactivated vaccine where it exists (e.g., poliomyelitis).

### **Drug-Food Interactions**

Interactions with food have not been established.

### **Drug-Herb Interactions**

Interactions with herbal products have not been established.

### **Drug-Laboratory Interactions**

Interactions with laboratory tests have not been established.

## **DOSAGE AND ADMINISTRATION**

### **Dosing Considerations**

ALIMTA (pemetrexed disodium) is for intravenous infusion only. It should be administered under the supervision of a qualified physician experienced in the use of antineoplastic agents.

### **Recommended Dose and Dosage Adjustment**

#### **Malignant Pleural Mesothelioma (MPM)**

*Combination Use with Cisplatin:* The recommended dose of ALIMTA is 500 mg/m<sup>2</sup> administered as an intravenous infusion over 10 minutes on Day 1 of each 21-day cycle. The recommended dose of cisplatin is 75 mg/m<sup>2</sup> infused over 2 hours beginning approximately

30 minutes after the end of ALIMTA administration. Patients should receive appropriate hydration prior to and/or after receiving cisplatin. In clinical trials the median number of cycles was 6 (range = 1 to 12 cycles). Please see Part II: CLINICAL TRIALS Section for further information.

#### Non-Small Cell Lung Cancer (NSCLC)

*Combination Use with Cisplatin:* The recommended dose of ALIMTA is 500 mg/m<sup>2</sup> administered as an intravenous infusion over 10 minutes on Day 1 of each 21-day cycle. The recommended dose of cisplatin is 75 mg/m<sup>2</sup> infused over 2 hours beginning approximately 30 minutes after completion of the ALIMTA administration. Patients should receive appropriate hydration prior to and/or after receiving cisplatin. In the clinical trial, treatment was administered up to a total of 6 cycles of therapy, and the median number of cycles was 5 (range 1-7). Please see Part II: CLINICAL TRIALS Section for further information.

*Single-Agent Use:* The recommended dose of ALIMTA is 500 mg/m<sup>2</sup> administered as an intravenous infusion over 10 minutes on Day 1 of each 21-day cycle for both maintenance therapy and second line therapy. For both indications, patients were administered ALIMTA until progression. The median number of cycles was 5 (range 1-55) when used as maintenance therapy and 4 (range 1-20) when used as second line treatment.

#### Premedication Regimen for All Indications:

*Corticosteroid* - Skin rash has been reported in patients not pretreated with a corticosteroid. Pretreatment with dexamethasone (or equivalent) reduces the incidence and severity of cutaneous reaction. In clinical trials, dexamethasone 4 mg was given by mouth twice daily the day before, the day of, and the day after ALIMTA administration.

*Vitamin Supplementation* - To reduce potential toxicity, patients treated with ALIMTA must be instructed to take a low-dose oral folic acid preparation or multivitamin with folic acid on a daily basis (see Table 7). At least 5 daily doses of folic acid (400 µg/day) must be taken during the 7-day period preceding the first dose of ALIMTA; and dosing should continue during the full course of therapy and for 21 days after the last dose of ALIMTA. Patients must also receive one (1) intramuscular injection of vitamin B<sub>12</sub> (1000 µg) during the week preceding the first dose of ALIMTA and every 3 cycles thereafter. Subsequent vitamin B<sub>12</sub> injections may be given the same day as ALIMTA. In clinical trials, the dose of folic acid studied ranged from 350 to 1000 µg, and the dose of vitamin B<sub>12</sub> was 1000 µg. The most commonly used dose of oral folic acid in clinical trials was 400 µg (see WARNINGS AND PRECAUTIONS Section).

**Table 7: Vitamin Supplementation**

| Drug                          | Dose and Route  | Timing  |
|-------------------------------|---|---|
| <b>Folic acid</b>             | 350 to 600 micrograms by mouth (may give 1000 micrograms but usual dose has been 400 micrograms). | Daily beginning 1 week prior to chemotherapy with ALIMTA (at least 5 of the 7 days prior to commencement of ALIMTA chemotherapy) and continuing daily until 3 weeks after the last dose of ALIMTA |
| <b>Vitamin B<sub>12</sub></b> | 1000 micrograms intramuscular injection   | Beginning at least 1 week prior to the first dose of ALIMTA and continuing every 9 weeks from the previous dose until 3 weeks after the last dose of ALIMTA.                                      |

**Laboratory Monitoring and Dose Reduction Recommendations:**

*Monitoring:* Complete blood cell counts, including platelets, and blood chemistries should be performed on all patients receiving ALIMTA. Patients should be monitored for nadir and recovery on days 8 and 15 of each cycle. Patients should not begin a new cycle of treatment unless the ANC is  $\geq 1500$  cell/mm<sup>3</sup>, platelet count  $\geq 100,000$  cells/mm<sup>3</sup> and creatinine clearance  $\geq 45$  mL/min. Periodic chemistry tests should be collected to evaluate renal and hepatic function.

*General Dose Reduction Recommendations:* Dose adjustments at the start of a subsequent cycle should be based on nadir hematologic counts or maximum nonhematologic toxicity from the preceding cycle of therapy. Treatment may be delayed to allow sufficient time for recovery. Upon recovery, patients should be retreated using guidelines in Table 8-10, which are suitable for using ALIMTA as a single agent or in combination with cisplatin. ALIMTA therapy should be discontinued if a patient experiences any Grade 3 or 4 toxicity after 2 dose reductions.

*Hematologic Toxicities:* In the event of hematologic toxicities, the recommended dose adjustments for ALIMTA and cisplatin are described in Table 8.

**Table 8: Dose Reduction for ALIMTA as Single-Agent or In Combination with Cisplatin - Hematologic Toxicities**

|   |  |
|---|--|
| Nadir ANC $< 500$ /mm <sup>3</sup> and nadir platelets $\geq 50,000$ /mm <sup>3</sup> .           | 75% of previous dose of ALIMTA and Cisplatin |
| Nadir platelets $< 50,000$ /mm <sup>3</sup> without bleeding regardless of nadir ANC.             | 75% of previous dose of ALIMTA and Cisplatin |
| Nadir platelets $< 50,000$ /mm <sup>3</sup> with bleeding <sup>a</sup> , regardless of nadir ANC. | 50% of previous dose of ALIMTA and Cisplatin |

<sup>a</sup> These criteria meet the CTC version 2.0 (NCI 1998) definition of  $\geq$  CTC Grade 2 bleeding.

*Nonhematologic Toxicities:* If patients develop nonhematologic toxicities (excluding neurotoxicity)  $\geq$  Grade 3, ALIMTA should be withheld until resolution to less than or equal to the patient's pre-therapy value. Treatment should be resumed according to guidelines in Table 9.

**Table 9: Dose Reduction for ALIMTA as Single-Agent or In Combination with Cisplatin - Nonhematologic Toxicities<sup>a,b</sup>**

|   | Dose of ALIMTA<br>(mg/m <sup>2</sup> ) | Dose of Cisplatin<br>(mg/m <sup>2</sup> ) |
|---|--|---|
| Grade 3 or 4 mucositis  | 50% of previous dose                   | 100% of previous dose                     |
| Any diarrhea requiring hospitalization (irrespective of Grade) or Grade 3 or 4 diarrhea | 75% of previous dose                   | 75% of previous dose                      |
| Any Grade 3 or 4 toxicities except mucositis  | 75% of previous dose                   | 75% of previous dose                      |

<sup>a</sup> NCI Common Toxicity Criteria (CTC).

<sup>b</sup> Guidelines for neurotoxicity are provided in Table 10, below.

*Neurotoxicity:* In the event of neurotoxicity, the recommended dose adjustments for ALIMTA and cisplatin are described in Table 10. Patients should immediately discontinue therapy if Grade 3 or 4 neurotoxicity is experienced.

**Table 10: Dose Reduction for ALIMTA as Single-Agent or In Combination with Cisplatin - Neurotoxicity**

| CTC Grade | Dose of ALIMTA<br>(mg/m <sup>2</sup> ) | Dose of Cisplatin<br>(mg/m <sup>2</sup> ) |
|-----------|--|---|
| 0-1       | 100% of previous dose                  | 100% of previous dose                     |
| 2         | 100% of previous dose                  | 50% of previous dose                      |

Special Populations and Conditions:

*Elderly Patients:* In clinical trials, no dose reductions other than those recommended for all patients were specifically recommended for elderly patients. However, in the study comparing first-line ALIMTA/cisplatin with gemcitabine/cisplatin in NSCLC patients, those patients aged  $\geq 65$  years generally experienced more toxicity (e.g. neutropenia, febrile neutropenia, thrombocytopenia, nausea, renal failure) than patients aged  $< 65$  years, regardless of treatment arm. In the maintenance non-small cell lung cancer trial, patients  $\geq 65$  years of age experienced more myelosuppression and renal adverse events. Because renal function declines with age and decreased renal function results in reduced clearance of ALIMTA, older patients should be followed closely for toxicity.

*Children:* ALIMTA is not recommended for use in children as safety and efficacy have not yet been established in this group of patients.

*Renally Impaired Patients:* In clinical studies, patients with creatinine clearance  $\geq 45$  mL/min required no dose adjustments other than those recommended for all patients. Insufficient numbers of patients with creatinine clearance below 45 mL/min have been treated to make dosage recommendations for this group of patients. Therefore, ALIMTA should not be administered to patients whose creatinine clearance is  $< 45$  mL/min using the standard Cockcroft and Gault formula (below) or GFR measured by Tc99m-DPTA serum clearance method:

|          |  |                       |
|----------|--|-----------------------|
| Male:    | $\frac{[140 - \text{Age in years}] \times \text{Actual Body Weight (kg)}}{50 \times \text{Serum Creatinine } (\mu\text{mol/L})}$ | = mL/sec <sup>a</sup> |
| Females: | Estimated creatinine clearance for males x 0.85  |                       |

<sup>a</sup> To convert from SI (mL/sec) to (mL/min), multiply the mL/sec value by 60.

Caution should be exercised when administering ALIMTA concurrently with NSAIDs to patients whose creatinine clearance is < 80 mL/min (see DRUG INTERACTIONS Section).

*Hepatically Impaired Patients:* ALIMTA is not extensively metabolized by the liver. Dose adjustments based on hepatic impairment experienced during treatment with pemetrexed are provided in Table 9 (see WARNINGS AND PRECAUTIONS, Hepatic/Biliary and Special Populations, Patients with Hepatic Impairment subsections).

### **Missed Dose**

If chemotherapy treatment is missed, physicians should advise patients to contact them in order to provide further instruction on the administration of folic acid and intramuscular vitamin B<sub>12</sub> (see DOSAGE AND ADMINISTRATION Section).

### **Administration**

ALIMTA (pemetrexed disodium) is for intravenous infusion only.

### **PREPARATION AND ADMINISTRATION PRECAUTIONS:**

As with other potentially toxic anticancer agents, care should be exercised in the handling and preparation of infusion solutions of ALIMTA. The use of gloves is recommended. If a solution of ALIMTA contacts the skin, wash the skin immediately and thoroughly with soap and water. If ALIMTA contacts the mucous membranes, flush thoroughly with water. Several published guidelines for handling and disposal of anticancer agents are available (see Part II: REFERENCES). There is no general agreement that all of the procedures recommended in the guideline are necessary or appropriate.

ALIMTA is not a vesicant. There is not a specific antidote for extravasation of ALIMTA. To date, there have been few reported cases of ALIMTA extravasation, which were not assessed as serious by the investigator. ALIMTA extravasation should be managed with local standard practice for extravasation as with other non-vesicants.

### **Reconstitution:**

| Vial Size                    | Volume of Diluent to be Added to Vial | Approximate Available Volume | Nominal Concentration per mL |
|------------------------------|---------------------------------------|------------------------------|------------------------------|
| 10 mL<br>(100 mg pemetrexed) | 4.2 mL of 0.9% NaCl injection         | Approximately 4.2 mL         | 25 mg/mL                     |
| 50 mL<br>(500 mg pemetrexed) | 20 mL of 0.9% NaCl injection          | Approximately 20 mL          | 25 mg/mL                     |

The appropriate volume of reconstituted ALIMTA solution should be further diluted to a total volume of 100 mL with 0.9% Sodium Chloride Injection (preservative free) and administered as an intravenous infusion over 10 minutes.

## **PREPARATION FOR INTRAVENOUS INFUSION ADMINISTRATION:**

1. Use aseptic technique during the reconstitution and further dilution of ALIMTA for intravenous infusion administration.
2. Calculate the dose and the number of ALIMTA vials needed. Vials contain either 100 mg or 500 mg of pemetrexed. Each vial contains an excess of ALIMTA to facilitate delivery of label amount.
3. Reconstitute each 100 mg vial with 4.2 mL of 0.9% Sodium Chloride Injection (preservative free) to give a solution containing 25 mg/mL pemetrexed. Reconstitute each 500 mg vial with 20 mL of 0.9% Sodium Chloride Injection (preservative free) to give a solution containing 25 mg/mL of pemetrexed. Gently swirl each vial until the powder is completely dissolved. The resulting solution is clear and ranges in colour from colourless to yellow or green-yellow without adversely affecting product quality. The pH of the reconstituted ALIMTA solution is between 6.6 and 7.8. **FURTHER DILUTION IS REQUIRED.**
4. As with all parenteral drug products, reconstituted vials and diluted admixtures should be inspected visually for clarity, particulate matter, precipitate, discolouration and leakage prior to administration. Solutions showing haziness, particulate matter, precipitate, discolouration or leakage should not be used. Discard unused portion.
5. The appropriate volume of reconstituted ALIMTA solution should be further diluted to a total volume of 100 mL with 0.9% Sodium Chloride Injection (preservative free) and administered as an intravenous infusion over 10 minutes.
6. Because ALIMTA and the recommended diluents contain no antimicrobial preservatives, reconstituted and infusion solutions should be used immediately. Chemical and physical stability of reconstituted and infusion solutions of ALIMTA were demonstrated for up to 24 hours following reconstitution of the original vial when stored refrigerated, 2-8°C. Discard any unused portion.

Reconstitution and further dilution prior to intravenous infusion is only recommended with 0.9% Sodium Chloride Injection (preservative free), USP. ALIMTA is physically incompatible with diluents containing calcium, including Lactated Ringer's Injection, USP and Ringer's Injection, USP, and therefore those should not be used. Coadministration of ALIMTA with other drugs and diluents has not been studied, and therefore is not recommended.

## **OVERDOSAGE**

There have been few cases of ALIMTA (pemetrexed disodium) overdose. Reported toxicities included neutropenia, anemia, thrombocytopenia, mucositis, and rash. Anticipated complications of overdose include bone marrow suppression as manifested by neutropenia, thrombocytopenia, and anemia. In addition, infection with or without fever, diarrhea, and mucositis may be seen. There is no known antidote for ALIMTA overdose. If an overdose occurs, general supportive measures should be instituted as deemed necessary by the treating physician.

The ability of pemetrexed to be dialyzed is unknown. In clinical trials, leucovorin was permitted for CTC Grade 4 leukopenia lasting  $\geq 3$  days, CTC Grade 4 neutropenia lasting  $\geq 3$



days, and immediately for CTC Grade 4 thrombocytopenia, bleeding associated with Grade 3 thrombocytopenia, or Grade 3 or 4 mucositis. The following intravenous doses and schedules of leucovorin were recommended for intravenous use: 100 mg/m<sup>2</sup>, intravenously once, followed by leucovorin, 50 mg/m<sup>2</sup>, intravenously every 6 hours for 8 days.

For management of a suspected drug overdose, contact your regional Poison Control Centre.

## **ACTION AND CLINICAL PHARMACOLOGY**

### **Mechanism of Action**

ALIMTA (pemetrexed disodium) is an antifolate antineoplastic agent that exerts its action by disrupting crucial folate-dependent metabolic processes essential for cell replication.

### **Pharmacodynamics**

Pemetrexed is an antifolate containing the structurally novel pyrrolopyrimidine-based nucleus that exerts its antineoplastic activity by disrupting crucial folate-dependent metabolic processes that are essential for cell replication. *In vitro* studies have shown that pemetrexed behaves as a multi-targeted antifolate by inhibiting thymidylate synthase (TS), dihydrofolate reductase (DHFR), and glycinamide ribonucleotide formyltransferase (GARFT), which are key folate-dependent enzymes for the *de novo* bio-synthesis of thymidine and purine nucleotides. Pemetrexed is transported into cells by both the reduced folate carrier and membrane folate binding protein transport systems. Once in the cell, pemetrexed is rapidly and efficiently converted to polyglutamate forms by the enzyme folylpolyglutamate synthetase. The polyglutamate forms are retained in cells and are even more potent inhibitors of TS and GARFT. Polyglutamation is a time- and concentration-dependent process that occurs in tumor cells and, to a lesser extent, in normal tissues. Polyglutamated metabolites have an increased intracellular half-life resulting in prolonged drug action in malignant cells.

Data indicate that overexpression of thymidylate synthase (TS) correlates with reduced sensitivity to pemetrexed in antifolate-resistant cell lines. Results in a recent study with specimens from chemo-naïve patients with NSCLC demonstrated lower levels of TS expression in adenocarcinoma as compared to squamous cell carcinoma tumors. Although these data suggest that pemetrexed may offer greater efficacy for patients with adenocarcinoma as compared to squamous carcinoma histology, this hypothesis requires further validation in studies that assess the predictive and prognostic value of TS expression in patients with NSCLC.

### **Pharmacokinetics**

The pharmacokinetics of pemetrexed administered as a single-agent in doses ranging from 0.2 to 838 mg/m<sup>2</sup> infused over a 10-minute period have been evaluated in 426 cancer patients with a variety of solid tumors.

### **Absorption:**

Pemetrexed total systemic exposure (AUC) and maximum plasma concentration (C<sub>max</sub>) increase proportionally with dose. The pharmacokinetics of pemetrexed are consistent over multiple treatment cycles.

**Distribution:**

Pemetrexed has a steady-state volume of distribution of 16.1 liters. *In vitro* studies indicate that pemetrexed is approximately 81% bound to plasma proteins. Binding is not affected by renal impairment.

**Metabolism:**

Pemetrexed is not metabolized to an appreciable extent.

**Excretion:**

Pemetrexed is primarily eliminated in the urine with 70% to 90% of the dose recovered unchanged within the first 24 hours following administration. Pemetrexed total systemic clearance is 91.8 mL/min and the elimination half-life from plasma is 3.5 hours in patients with normal renal function (creatinine clearance of 90 mL/min [calculated using the standard Cockcroft and Gault formula or measured glomerular filtration rate using the Tc99m-DPTA serum clearance method]). Between patient variability in clearance is moderate at 19.3%.

Absolute neutrophil counts (ANC) following single-agent administration of pemetrexed to patients not receiving folic acid and vitamin B<sub>12</sub> supplementation were characterized using population pharmacodynamic analyses. Severity of hematologic toxicity, as measured by the depth of the ANC nadir, is inversely proportional to the systemic exposure of ALIMTA. It was also observed that lower ANC nadirs occurred in patients with elevated baseline cystathionine or homocysteine concentrations. The levels of these substances can be reduced by folic acid and vitamin B<sub>12</sub> supplementation. There is no cumulative effect of pemetrexed exposure on ANC nadir over multiple treatment cycles.

Time to ANC nadir with pemetrexed systemic exposure (AUC), varied between 8 to 9.6 days over a range of exposures from 38.3 to 316.8 µg•hr/mL. Return to baseline ANC occurred 4.2 to 7.5 days after the nadir over the same range of exposures.

**Special Populations and Conditions**

The pharmacokinetics of pemetrexed in special populations were examined in about 400 patients in controlled and single arm studies.

**Pediatrics:**

The safety and effectiveness of ALIMTA has not been established in pediatric patients.

**Geriatrics:**

No effect of age on the pharmacokinetics of pemetrexed was observed over a range of 26 to 80 years.

**Gender:**

The pharmacokinetics of pemetrexed were not different in male and female patients.

**Race:**

The pharmacokinetics of pemetrexed were similar in Caucasians and patients of African descent. Insufficient data are available to compare pharmacokinetics for other ethnic groups.

**Hepatic Insufficiency:**

There was no effect of elevated AST (SGOT), ALT (SGPT), or total bilirubin on the pharmacokinetics of pemetrexed. However, studies of hepatically impaired patients have not been conducted (see WARNINGS AND PRECAUTIONS section).

**Renal Insufficiency:**

Pharmacokinetic analyses of pemetrexed included 127 patients with reduced renal function. Plasma clearance of pemetrexed in the presence of cisplatin decreases as renal function decreases, with increase in systemic exposure. Patients with creatinine clearances of 45, 50, and 80 mL/min had 65%, 54%, and 13% increases, respectively in pemetrexed total systemic exposure (AUC) compared to patients with creatinine clearance of 100 mL/min (see WARNINGS AND PRECAUTIONS and DOSAGE AND ADMINISTRATION sections).

**STORAGE AND STABILITY**

ALIMTA should be stored at controlled room temperature 20-25°C; excursions permitted to 15-30°C [see USP Controlled Room Temperature].

Chemical and physical stability of reconstituted and infusion solutions of ALIMTA were demonstrated for up to 24 hours following reconstitution of the original vial when stored refrigerated, 2-8°C. When prepared as directed, reconstituted and infusion solutions of ALIMTA contain no antimicrobial preservatives and should be used immediately. Discard unused portion.

ALIMTA is not light sensitive.

**SPECIAL HANDLING INSTRUCTIONS**

Please see ADMINISTRATION Section.

**DOSAGE FORMS, COMPOSITION AND PACKAGING****Availability of Dosage Forms:**

ALIMTA (pemetrexed disodium for injection) is available in sterile single-use vials containing either 100 mg or 500 mg of lyophilized pemetrexed. The drug product is white to either light yellowish or green-yellowish lyophilized solid.

**Composition:**

ALIMTA, Pemetrexed for Injection, is a single-use, sterile, lyophilized powder packaged in glass vials. Each 10 mL vial contains pemetrexed disodium equivalent to 100 mg of pemetrexed and 106 mg of mannitol. Each 50 mL vial contains pemetrexed disodium equivalent to 500 mg of pemetrexed and 500 mg of mannitol. Hydrochloric acid and/or sodium hydroxide, may have been added to adjust pH.

## PART II: SCIENTIFIC INFORMATION

### PHARMACEUTICAL INFORMATION

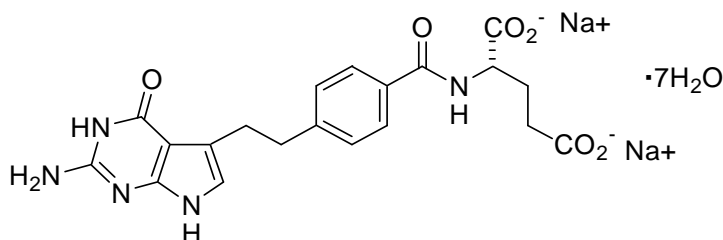
#### Drug Substance

Proper name: pemetrexed disodium

Chemical name: N-[4-[2-(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo [2,3-d] pyrimidin-5-yl) ethyl]benzoyl]-L-glutamic acid disodium salt

Molecular formula and molecular mass:  $C_{20}H_{19}N_5O_6 \cdot 2Na \cdot 7H_2O$   
597.49

Structural formula:



Physicochemical properties:

Description: White to almost white solid

Solubility of pemetrexed disodium:

| Solvent                | Solubility            |
|------------------------|-----------------------|
| Water                  | freely soluble        |
| Methanol               | soluble               |
| Ethanol                | very slightly soluble |
| Polar organic solvents | soluble               |

pH of a 1% aqueous solution: 8

pKa: 11.34, 4.37, 3.23, 2.22

## CLINICAL TRIALS

### Malignant Pleural Mesothelioma: ALIMTA/Cisplatin versus Cisplatin

The safety and efficacy of ALIMTA were evaluated in chemo-naïve patients with malignant pleural mesothelioma (MPM) in combination with cisplatin.

### Study Demographics and Trial Design

**Table 11: Patient Demographics - Clinical Trials Supporting Efficacy of ALIMTA in the Treatment of Malignant Pleural Mesothelioma (MPM)**

| Study #     | Trial Design  | Dosage, route of administration and duration   | Study subjects and Gender (N=number)  | Median age (Range)  |
|-------------|---|--|---|---|
| H3E-MC-JMCH | international, single-blind, multi-centre, randomized, parallel-arm study | ALIMTA<br>500 mg/m <sup>2</sup><br>intravenous injection<br><br>Cisplatin<br>75 mg/m <sup>2</sup><br>intravenous injection<br><br>Treatment Duration:<br>21-day cycle<br>6 cycles of therapy | Enrolled: 456<br>Treated: 448<br>ALIMTA/Cisplatin: 226<br>(Male: 184; Female: 42)<br>Cisplatin: 222<br>(Male 181; Female: 41)<br><br>Vitamin supplemented<br>(FS): 331<br>ALIMTA/Cisplatin: 168<br>Cisplatin: 163<br><br>Nonvitamin supplemented<br>(PS+NS): 117<br>ALIMTA/Cisplatin: 58<br>Cisplatin: 59 | ALIMTA/Cisplatin arm<br>Median age = 61<br>Age range = 29-85<br><br>Cisplatin arm<br>Median age = 60<br>Age range = 19-84 |

### Randomized Trial

A Phase 3 multi-centre, randomized, single-blind study in 448 chemo-naïve patients with MPM compared median survival in patients treated with ALIMTA in combination with cisplatin to those patients receiving cisplatin alone. ALIMTA (n = 226) was administered intravenously over 10 minutes at a dose of 500 mg/m<sup>2</sup> and cisplatin (n = 222) was administered intravenously over 2 hours at a dose of 75 mg/m<sup>2</sup> beginning approximately 30 minutes after the end of the ALIMTA infusion. Both drugs were given on Day 1 of a 21-day cycle. Folic acid and vitamin B<sub>12</sub> supplementation were added to both treatment arms to reduce white cell and GI toxicity observed in the first 117 treated patients. All patients received prophylactic dexamethasone as part of the treatment regimen to prevent/reduce skin toxicities. Patient demographics are shown in Table 12.

**Table 12: Summary of Patient Characteristics**

| Patient Characteristic                     | Randomized and Treated Patients |                      | Fully Supplemented Patients     |                      |
|--|---------------------------------|----------------------|---------------------------------|----------------------|
|  | ALIMTA/<br>Cisplatin<br>(N=226) | Cisplatin<br>(N=222) | ALIMTA/<br>Cisplatin<br>(N=168) | Cisplatin<br>(N=163) |
| <b>Age (yrs)</b>                           |                                 |                      |                                 |                      |
| Median (range)                             | 61 (29-85)                      | 60 (19-84)           | 60 (29-85)                      | 60 (19-82)           |
| <b>Gender (%)</b>                          |                                 |                      |                                 |                      |
| Male                                       | 184 (81.4)                      | 181 (81.5)           | 136 (81.0)                      | 134 (82.2)           |
| Female                                     | 42 (18.6)                       | 41 (18.5)            | 32 (19.0)                       | 29 (17.8)            |
| <b>Origin (%)</b>                          |                                 |                      |                                 |                      |
| Caucasian                                  | 204 (90.3)                      | 206 (92.8)           | 150 (89.3)                      | 153 (93.9)           |
| Hispanic                                   | 11 (4.9)                        | 12 (5.4)             | 10 (6.0)                        | 7 (4.3)              |
| Asian                                      | 10 (4.4)                        | 4 (1.9)              | 7 (4.2)                         | 3 (1.8)              |
| African descent                            | 1 (0.4)                         | 0                    | 1 (0.6)                         | 0                    |
| <b>Stage at Entry (%)</b>                  |                                 |                      |                                 |                      |
| I  | 16 (7.1)                        | 14 (6.3)             | 15 (8.9)                        | 12 (7.4)             |
| II   | 35 (15.6)                       | 33 (15.0)            | 27 (16.2)                       | 27 (16.8)            |
| III  | 73 (32.4)                       | 68 (30.6)            | 51 (30.5)                       | 49 (30.4)            |
| IV   | 101 (44.9)                      | 105 (47.2)           | 74 (44.3)                       | 73 (45.3)            |
| Unspecified                                | 1 (0.4)                         | 2 (0.9)              | 1 (0.6)                         | 2 (1.2)              |
| <b>Diagnosis/Histology<sup>a</sup> (%)</b> |                                 |                      |                                 |                      |
| Epithelial                                 | 154 (68.1)                      | 152 (68.5)           | 117 (69.6)                      | 113 (69.3)           |
| Mixed                                      | 37 (16.4)                       | 36 (16.2)            | 25 (14.9)                       | 25 (15.3)            |
| Sarcomatoid                                | 18 (8.0)                        | 25 (11.3)            | 14 (8.3)                        | 17 (10.4)            |
| Other                                      | 17 (7.5)                        | 9 (4.1)              | 12 (7.1)                        | 8 (4.9)              |
| <b>Baseline KPS<sup>b</sup> (%)</b>        |                                 |                      |                                 |                      |
| 70-80                                      | 109 (48.2)                      | 97 (43.7)            | 83 (49.4)                       | 69 (42.3)            |
| 90-100                                     | 117 (51.8)                      | 125 (56.3)           | 85 (50.6)                       | 94 (57.7)            |

<sup>a</sup> Only 67% of the patients had the histologic diagnosis of malignant mesothelioma confirmed by independent review.

<sup>b</sup> Karnofsky Performance Scale.

Table 13 summarizes the number of cycles of treatment completed by all randomized and treated patients and fully supplemented patients. The fully supplemented patients completed a median of 6 cycles in the ALIMTA plus cisplatin treatment arm and 4 cycles in the cisplatin treatment arm. Patients who never received folic acid and vitamin B<sub>12</sub> during study therapy received a median of 2 cycles in both treatment arms.

**Table 13: Summary of Cycles Given in Randomized and Treated MPM Patients**

| Cycle Statistics            | All Patients*                   |                      | Fully Supplemented Patients     |                      | Never Supplemented              |                      |
|-----------------------------|---------------------------------|----------------------|---------------------------------|----------------------|---------------------------------|----------------------|
|                             | ALIMTA/<br>Cisplatin<br>(N=226) | Cisplatin<br>(N=222) | ALIMTA/<br>Cisplatin<br>(N=168) | Cisplatin<br>(N=163) | ALIMTA/<br>Cisplatin<br>(N= 32) | Cisplatin<br>(N= 38) |
| Median Cycles Completed     | 6                               | 4                    | 6                               | 4                    | 2                               | 2                    |
| Range                       | (1-12)                          | (1-9)                | (1-12)                          | (1-9)                | (1-6)                           | (1-6)                |
| Total Cycles Completed      | 1066                            | 877                  | 825                             | 650                  | -                               | -                    |
| Cycles given at full dosage | 1030                            | 874                  | 802                             | 648                  | -                               | -                    |
| (%)                         | (96.6%)                         | (99.7%)              | (97.2%)                         | (99.7%)              | -                               | -                    |

\* All Patients (N=448) include all randomized and treated patients regardless of supplementation status

Table 14 summarizes the dose intensity administered to the treatment groups. Patients in both arms received more than 90% of the planned dose intensity.

**Table 14: Summary of Dose Intensity (DI) in Randomized and Treated MPM Patients**

|  | All Patients*               |           |                      | Fully Supplemented Patients |           |                      |
|--|-----------------------------|-----------|----------------------|-----------------------------|-----------|----------------------|
|  | ALIMTA/Cisplatin<br>(N=226) |           | Cisplatin<br>(N=222) | ALIMTA/Cisplatin<br>(N=168) |           | Cisplatin<br>(N=163) |
|  | ALIMTA                      | Cisplatin | Cisplatin            | ALIMTA                      | Cisplatin | Cisplatin            |
| Planned Mean/Patient (mg/m <sup>2</sup> /week)   | 166.7                       | 25        | 25                   | 166.7                       | 25        | 25                   |
| Delivered Mean/Patient (mg/m <sup>2</sup> /week) | 153.4                       | 23.2      | 24.1                 | 154.6                       | 23.4      | 24.1                 |
| Percent of planned DI (delivered/planned)        | 92.0%                       | 92.8%     | 96.4%                | 92.7%                       | 93.6%     | 96.4%                |

\* All Patients (N=448) include all randomized and treated patients regardless of supplementation status

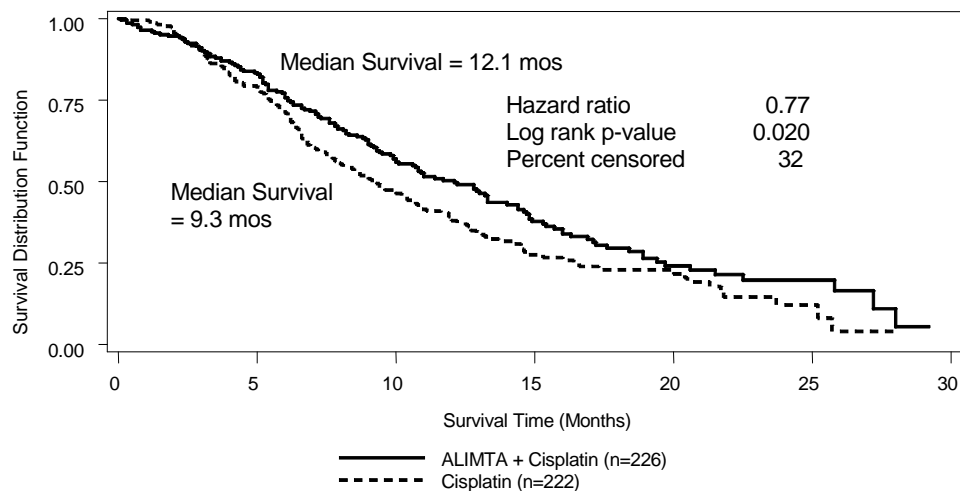
## Study Results

Table 15 summarizes the efficacy results for all randomized and treated patients regardless of vitamin supplementation status and those patients receiving vitamin supplementation from the time of enrollment in the trial (fully supplemented patients). In the population of all treated patients regardless of supplementation status (primary analysis), patients receiving the combination of pemetrexed plus cisplatin had a significantly higher median survival time than the patients in the cisplatin monotherapy arm (Table 15; Figure 1). The 2.8-month difference in median survival (12.1 versus 9.3 months), was statistical significant (p-value 0.020).

**Table 15: Efficacy of ALIMTA plus Cisplatin versus Cisplatin in Randomized and Treated MPM Patients**

| Efficacy Parameter      | All Patients*                   |                      | Fully Supplemented Patients     |                      |
|-------------------------|---------------------------------|----------------------|---------------------------------|----------------------|
|                         | ALIMTA/<br>Cisplatin<br>(N=226) | Cisplatin<br>(N=222) | ALIMTA/<br>Cisplatin<br>(N=168) | Cisplatin<br>(N=163) |
| Median Overall Survival | 12.1 months                     | 9.3 months           | 13.3 months                     | 10.0 months          |
| (95% CI)                | (10.0-14.4)                     | (7.8-10.7)           | (11.4-14.9)                     | (8.4-11.9)           |
| Hazard ratio            | 0.77                            |                      | 0.75                            |                      |
| Log Rank p-value**      | 0.02                            |                      | 0.051                           |                      |
| Percent censored        | 35.8                            | 28.4                 | 43.5                            | 36.8                 |

\* All Patients (N=448) include all randomized and treated patients regardless of supplementation status  
 \*\* p-value refers to comparison between arms.



**Figure 1: Kaplan-Meier Estimates of Survival Time**

Objective tumour response criteria for malignant pleural mesothelioma is difficult to assess and response criteria are not universally agreed upon. However, based on a prospectively defined criteria, the objective tumour response rate for ALIMTA plus cisplatin was greater than the response rate for cisplatin alone (41.3% vs. 16.7%; p = 0.001), as were the measures of time to progressive disease (5.7 vs. 3.9 months) and time to treatment failure (4.5 vs. 2.7 months; p = 0.001). Vitamin supplementation was associated with further improvement in the objective tumour response rate for the ALIMTA plus cisplatin compared to cisplatin alone patients (45.5% vs. 19.6%) as was time to progressive disease (6.1 vs. 3.9 months; p = 0.008) and time to treatment failure (4.7 vs. 2.7 months; p = 0.001).

Quality of Life was measured using the Lung Cancer Symptom Scale (LCSS) which assessed 6 symptoms (anorexia, fatigue, pain, cough, hemoptysis, and dyspnea); 3 summary scales (symptom distress, interference with activity level, and global QoL); and an average of all the



individual scales (Total LCSS). LCSS data had to be present at both baseline and at least one post-baseline assessment between cycle 1-6, to be included in the analysis and were available for 93.8% of the ALIMTA plus cisplatin patients and for 98.1% of the cisplatin monotherapy patients. At cycle 6, there was a significant difference in favour of the ALIMTA plus cisplatin patients for dyspnea, fatigue, symptom distress, interference with activity, and total LCSS. Pain scores improved for ALIMTA plus cisplatin patients and these scores were statistically different than those for cisplatin patients for cycles 3 through 6. Cycle 3 LS mean, (model-based mean from the repeated measures analysis) was -3.51 for Alimta/cisplatin and -3.27 for cisplatin;  $p=0.005$ . Cycle 6 LS Mean was -1.23 for ALIMTA/cisplatin and 5.8 for cisplatin ( $p = 0.009$ ).

Pulmonary function tests were used to provide objective measures of lung function. Results for slow vital capacity (SVC), forced vital capacity (FVC), and forced expiratory volume in one second (FEV<sub>1</sub>) in absolute and percentage of predicted normal were assessed at baseline and repeated up to Cycle 6 for each treatment arm. For each parameter (SVC, FVC, and FEV<sub>1</sub>), lung volumes in the ALIMTA/cisplatin arm at Cycle 6 were higher than the cisplatin alone arm throughout treatment period. Similar results were seen when analyzed as changes from baseline. Averaging over the entire treatment period, the ALIMTA/cisplatin arm had statistically significantly greater pulmonary function for all three parameters [SVC ( $p = 0.001$ ), FVC ( $p = 0.002$ ), and FEV<sub>1</sub> ( $p < 0.001$ )].

**First Line – Nonsquamous Non-Small Cell Lung Cancer - ALIMTA/Cisplatin versus Gemcitabine/Cisplatin**

**Study Demographics and Trial Design**

**Table 16: Patient Demographics - Clinical Trial Supporting Efficacy of ALIMTA/Cisplatin versus Gemcitabine/Cisplatin in the Treatment of NSCLC**

| Study #     | Trial Design   | Dosage, route of administration and duration   | Study subjects and Gender (N=number)   | Median age (Range)  |
|-------------|--|--|--|---|
| H3E-MC-JMDB | Phase 3, randomized, open-label, controlled, initial treatment of Stage IIIb or IV NSCLC | ALIMTA 500 mg/m <sup>2</sup> plus cisplatin 75 mg/m <sup>2</sup> on Day 1 of a 21-day cycle vs. gemcitabine 1250 mg/m <sup>2</sup> on Day 1 and Day 8 plus cisplatin 75 mg/m <sup>2</sup> on Day 1 of a 21-day cycle | Entered: 1833<br>Randomized: 1725<br>ALIMTA/Cisplatin: 862 (Male:605; Female:257)<br>Gemcitabine/Cisplatin: 863 (Male 605; Female:258) | ALIMTA/Cisplatin arm<br>Median age = 61<br>Age range = 29-83<br><br>Gemcitabine/Cisplatin arm<br>Median age = 61<br>Age range = 26-79 |

Approval of ALIMTA in combination with cisplatin in first line NSCLC is based on a single non-inferiority trial.

A multi-centre, randomized, Phase 3 study in 1725 chemo-naïve patients with NSCLC was conducted to compare the overall survival following treatment with ALIMTA in combination with cisplatin (AC) versus gemcitabine in combination with cisplatin (GC). ALIMTA was administered intravenously over 10 minutes at a dose of 500 mg/m<sup>2</sup> with cisplatin

administered intravenously at a dose of 75 mg/m<sup>2</sup> after ALIMTA administration, on Day 1 of each 21-day cycle. Gemcitabine was administered at a dose of 1250 mg/m<sup>2</sup> on Day 1 and Day 8, and cisplatin was administered intravenously at a dose of 75 mg/m<sup>2</sup> after administration of gemcitabine, on Day 1 of each 21-day cycle. Patients in both treatment arms received folic acid, vitamin B<sub>12</sub>, and dexamethasone. The study was designed to show non-inferiority of survival of ALIMTA and cisplatin to gemcitabine and cisplatin. Patient demographics of the intent to treat (ITT) population are shown in Table 17. The demographics and disease characteristics were well balanced. All patients had a good performance status of ECOG 0 or 1. The results of the protocol qualified (PQ) population analysis (N = 1666) were consistent with those of the ITT population analysis.

**Table 17: Summary of Patient Characteristics**

| Patient Characteristic                    | ALIMTA plus Cisplatin<br>(N=862) | Gemcitabine plus Cisplatin<br>(N=863) |
|---|----------------------------------|---------------------------------------|
| <b>Age (yrs)</b>                          |                                  |                                       |
| Median age, years (range)                 | 61.05 (28.8-83.2)                | 60.95 (26.4-79.4)                     |
| <b>Gender (%)</b>                         |                                  |                                       |
| Female                                    | 257 (29.8)                       | 258 (29.9)                            |
| Male                                      | 605 (70.2)                       | 605 (70.1)                            |
| <b>Origin (%)</b>                         |                                  |                                       |
| African Decent                            | 18 (2.1)                         | 18 (2.1)                              |
| Caucasian                                 | 669 (77.6)                       | 680 (78.8)                            |
| East/Southeast Asian                      | 116 (13.5)                       | 104 (12.1)                            |
| Hispanic                                  | 27 (3.1)                         | 23 (2.7)                              |
| Western Asian                             | 30 (3.5)                         | 37 (4.3)                              |
| Other                                     | 2 (0.2)                          | 1 (0.1)                               |
| <b>Smoking Status (%)<sup>a</sup></b>     |                                  |                                       |
| Ever Smoker                               | 629 (73.0)                       | 637 (73.8)                            |
| Never Smoker                              | 128 (14.8)                       | 122 (14.1)                            |
| Unknown                                   | 105 (12.2)                       | 104 (12.1)                            |
| <b>Performance Status (%)<sup>b</sup></b> |                                  |                                       |
| ECOG PS 0                                 | 305 (35.4)                       | 307 (35.6)                            |
| ECOG PS 1                                 | 556 (64.5)                       | 554 (64.2)                            |
| Unknown                                   | 1 (0.1)                          | 2 (0.2)                               |
| <b>Basis for Diagnosis</b>                |                                  |                                       |
| Cytological                               | 289 (33.5)                       | 288 (33.4)                            |
| Histological                              | 573 (66.5)                       | 575 (66.6)                            |
| <b>Stage of Disease (%)</b>               |                                  |                                       |
| Stage IIIb                                | 205 (23.8)                       | 210 (24.3)                            |
| Stage IV disease                          | 657 (76.2)                       | 653 (75.7)                            |
| <b>Histology (%)</b>                      |                                  |                                       |
| Adenocarcinoma                            | 436 (50.6)                       | 411 (47.6)                            |
| Squamous                                  | 244 (28.3)                       | 229 (26.5)                            |
| Large Cell                                | 76 (8.8)                         | 77 (8.9)                              |
| Unknown                                   | 106 (12.3)                       | 146 (16.9)                            |

Abbreviations: ECOG PS = Eastern Cooperative Oncology Group performance status; N = number of patients enrolled; n =

number of patients in groups.

<sup>a</sup> Smoking history was not recorded for all treated patients. Percentages are representative of N = 757 for the ALIMTA plus cisplatin arm and N = 759 for the gemcitabine plus cisplatin arm.

<sup>b</sup> ECOG PS was not reported for all treated patients. Percentages are representative of N=861 for the ALIMTA plus cisplatin arm, and N = 861 for the gemcitabine plus cisplatin arm.

Treatment was administered up to a total of 6 cycles of therapy as per study protocol. A median of 5 cycles of treatment was administered on both treatment arms. Patients treated with ALIMTA plus cisplatin received a relative dose intensity of 94.8% of the protocol-specified ALIMTA dose intensity and 95.0% of the protocol-specified cisplatin dose intensity. Patients treated with gemcitabine plus cisplatin received a relative dose intensity of 85.8% of the protocol-specified gemcitabine dose intensity and 93.5% of the protocol-specified cisplatin dose intensity.

### Study Results

The primary endpoint of noninferior overall survival was met for ALIMTA plus cisplatin compared to gemcitabine plus cisplatin in the intent-to-treat (ITT) study population. The median survival time was 10.3 months in both treatment arms, with an adjusted hazard ratio of 0.94 (95% confidence interval 0.84 – 1.05), based on a noninferiority margin of 1.17647. This margin was derived from a single study (Sandler 2000). Progression-free survival (PFS) and objective response rate (ORR) were similar between treatment arms. Table 18 summarizes the study results in the overall study population.

**Table 18: Efficacy of ALIMTA plus Cisplatin versus Gemcitabine plus Cisplatin in First-line Non-Small Cell Lung Cancer - ITT Population**

|   | ALIMTA plus Cisplatin<br>(N=862) | Gemcitabine plus Cisplatin<br>(N=863) |
|---|----------------------------------|---------------------------------------|
| Median overall survival (95% CI)                    | 10.3 months (9.8-11.2)           | 10.3 months (9.6-10.9)                |
| Adjusted hazard ratio (HR) <sup>a, b</sup> (95% CI) | 0.94 <sup>c</sup> (0.84-1.05)    |                                       |
| Unadjusted hazard ratio (HR) <sup>b</sup> (95% CI)  | 0.93 <sup>c</sup> (0.83-1.04)    |                                       |
| Log rank p-value                                    | 0.209                            |                                       |
| 12 month survival (95% CI)                          | 43.5% (40.1-46.9)                | 41.9 % (38.5-45.4)                    |
| Median progression-free survival (95% CI)           | 4.8 months (4.6-5.3)             | 5.1 months (4.6-5.5)                  |
| Overall response rate <sup>d</sup> (95% CI)         | 30.6% (27.3-33.9)                | 28.2% (25.0-31.4)                     |

Abbreviations: CI = confidence interval; HR = hazard ratio; ITT = intent to treat; n = total population size.

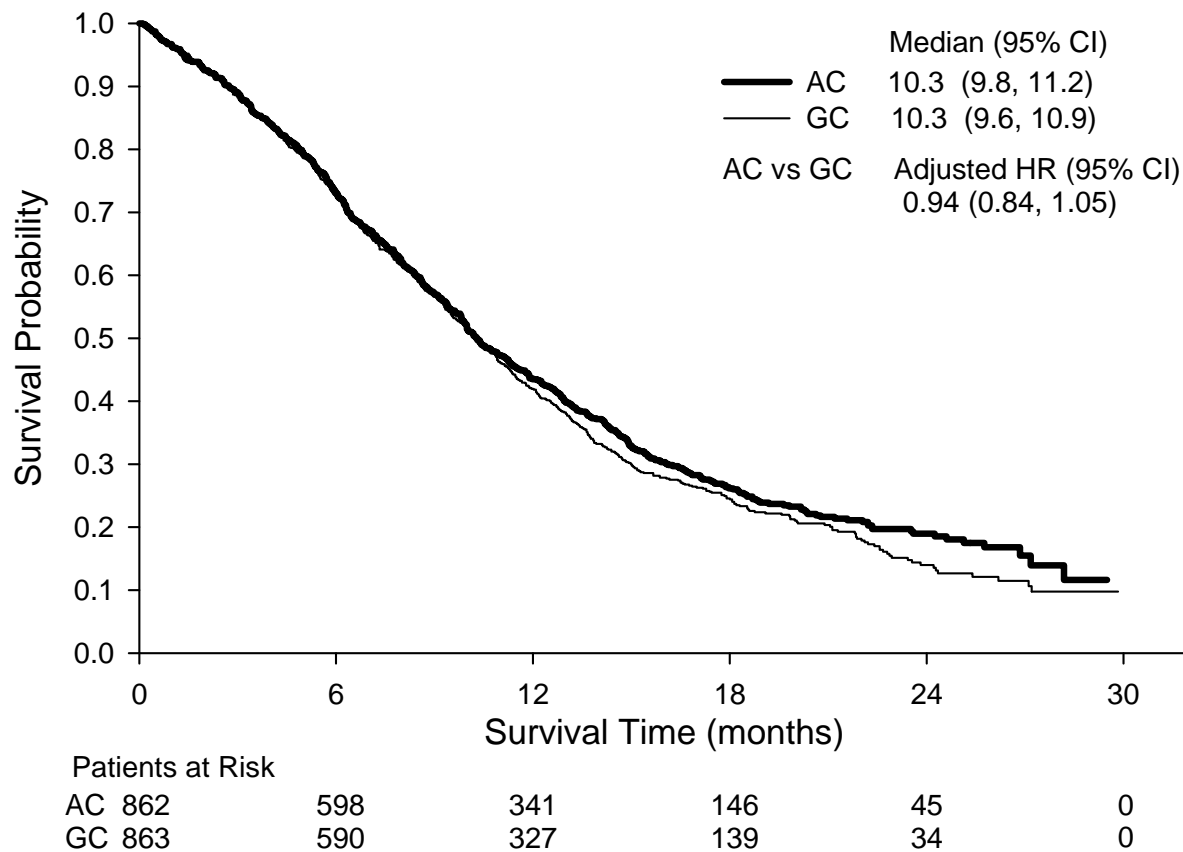
<sup>a</sup> Adjusted for gender, stage, basis of diagnosis, and performance status.

<sup>b</sup> A HR that is less than 1.0 indicates that survival is better in the AC arm than in the GC arm. Alternatively, a HR that is greater than 1.0 indicates survival is better in the GC arm than in the AC arm.

<sup>c</sup> Statistically significant for non-inferiority.

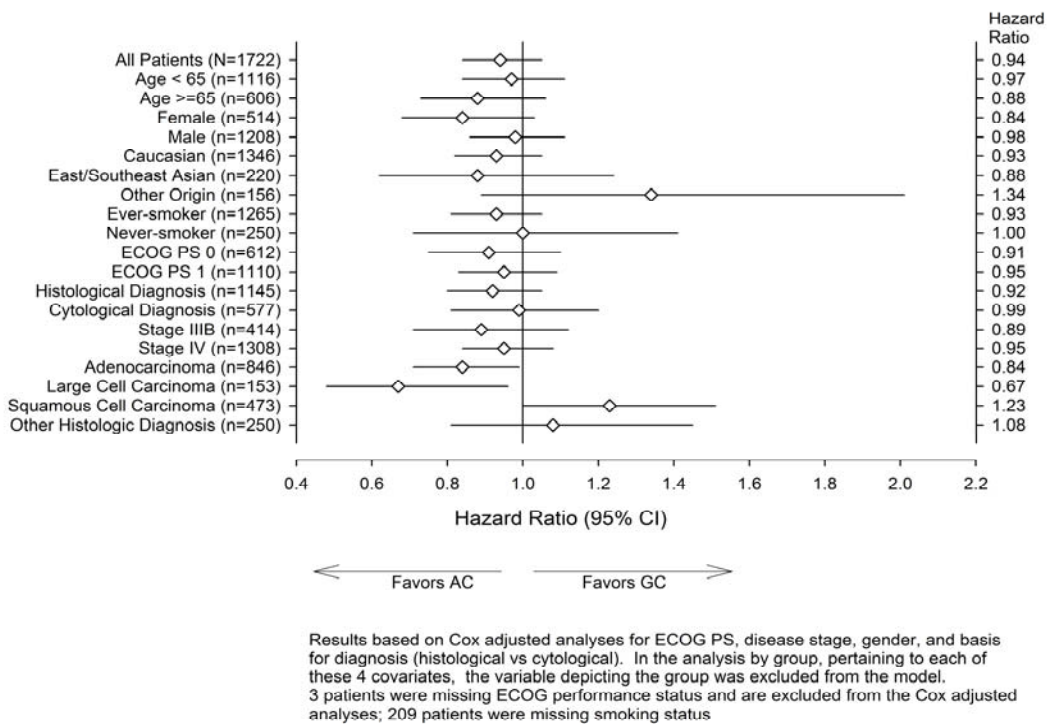
<sup>d</sup> Number of qualified patients on the AC arm (N = 762) and GC arm (N = 755).

Figure 2 displays the Kaplan-Meier survival curve for the ITT population.



**Figure 2: Kaplan-Meier Curves for Overall Survival ALIMTA plus Cisplatin (AC) versus Gemcitabine plus Cisplatin (GC) in Non-Small Cell Lung Cancer - ITT Population**

Subsets of patients were examined in planned secondary analyses. The results of these analyses are shown in Figure 3.



**Figure 3: Forest Plot for Overall Survival Adjusted Hazard Ratios of Subgroups ALIMTA + Cisplatin versus Gemcitabine + Cisplatin in First-line Non-Small Cell Lung Cancer – ITT Population**

The effect of ALIMTA plus cisplatin on survival was similar regardless of age, gender, ethnic origin, smoking status, and performance status (0 or 1). A prespecified subgroup analysis of the impact of NSCLC histology on overall survival demonstrated clinically relevant differences in survival according to histology (see Table 19 below). In the subgroup analysis of patients with squamous cell histology, ALIMTA plus cisplatin was not shown to be non-inferior to the comparator, suggesting it may not be effective in patients with squamous cell histology NSCLC (see INDICATIONS AND CLINICAL USE).

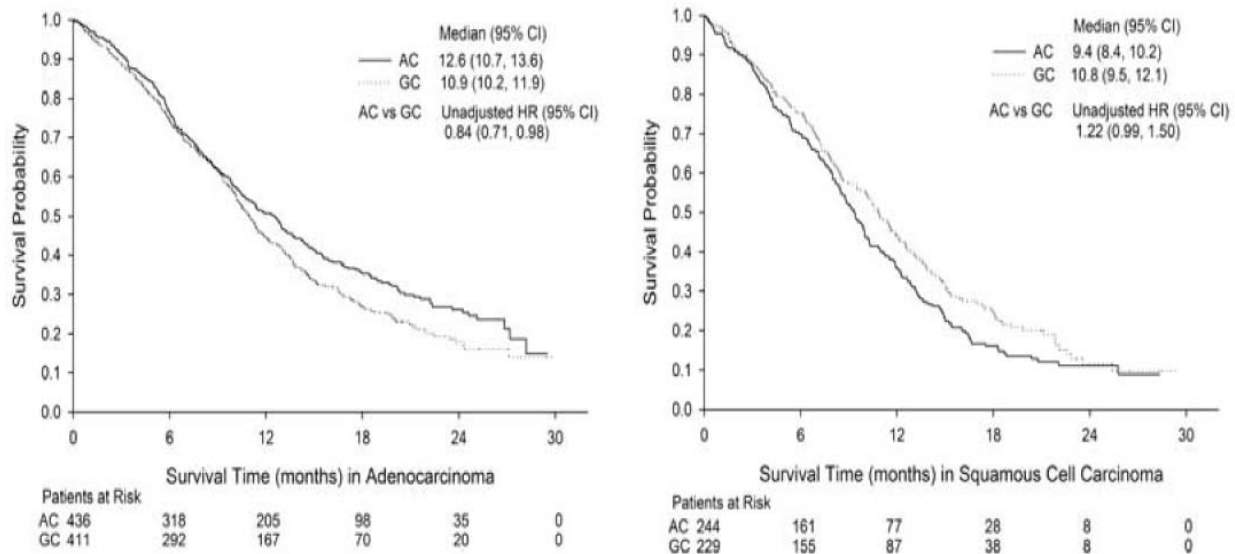
**Table 19: Overall Survival of ALIMTA plus Cisplatin versus Gemcitabine plus Cisplatin in Non-Small Cell Lung Cancer - Histologic Subgroups, ITT Population**

| Histology Subgroup     | Median Overall Survival in Months (95% CI) |       |                            |       | Hazard Ratio (HR) <sup>a</sup> (95% CI) |
|------------------------|--|-------|----------------------------|-------|---|
|                        | ALIMTA plus Cisplatin                      |       | Gemcitabine plus Cisplatin |       |   |
| Adenocarcinoma (N=847) | 12.6 (10.7 - 13.6)                         | N=436 | 10.9 (10.2 - 11.9)         | N=411 | 0.84 <sup>b</sup> (0.71 - 0.98)         |
| Large Cell (N=153)     | 10.4 (8.6 - 14.1)                          | N=76  | 6.7 (5.5 - 9.0)            | N=77  | 0.68 <sup>b</sup> (0.48 - 0.97)         |
| Squamous Cell (N=473)  | 9.4 (8.4 - 10.2)                           | N=244 | 10.8 (9.5 - 12.1)          | N=229 | 1.22 (0.99 - 1.50)                      |
| Other (N=252)          | 8.6 (6.8 - 10.2)                           | N=106 | 9.2 (8.1 - 10.6)           | N=146 | 1.12 (0.84 - 1.49)                      |

<sup>a</sup> HR was based on unadjusted analyses. A HR that is less than 1.0 indicates that survival is better in the AC arm than in the GC arm. Alternatively, a HR that is greater than 1.0 indicates survival is better in the GC arm than in the AC arm.

<sup>b</sup> Log rank p < 0.05 unadjusted for multiple comparisons.

Figure 4 displays the Kaplan-Meier curves for histology subgroups (adenocarcinoma and squamous cell carcinoma) in the ITT population.



**Figure 4: Kaplan-Meier Curves for Overall Survival ALIMTA plus Cisplatin (AC) versus Gemcitabine plus Cisplatin (GC) in First-line Non-Small Cell Lung Cancer - Histology Subgroups: Adenocarcinoma and Squamous Cell Carcinoma, ITT Population**

No formal Quality of Life assessment was conducted during the trial. Patients treated with ALIMTA and cisplatin required fewer transfusions (16.4% versus 28.9%), red blood cell transfusions (16.1% versus 27.3%) and platelet transfusions (1.8% versus 4.5%). Patients also required lower administration of erythropoietin/darbopoietin (10.4% versus 18.1%), G-CSF/GM-CSF (3.1% versus 6.1%), and iron preparations (4.3% versus 7.0%). The incidence of hospitalization for a drug-related adverse event was 17.9% for patients treated with ALIMTA/cisplatin versus 16.9% for patients treated with gemcitabine/cisplatin.

**Maintenance Therapy – Nonsquamous Non-Small Cell Lung Cancer - Monotherapy**  
**Study Demographics and Trial Design**

The safety and efficacy of ALIMTA as a single-agent have been evaluated in 2 randomized controlled trials immediately following first-line platinum-based chemotherapy, for the maintenance treatment of patients with locally advanced or metastatic (Stage IIIb or IV) non-small cell lung cancer (NSCLC).

**Table 20: Patient Demographics - Clinical Trials Supporting Efficacy of ALIMTA in NSCLC Maintenance Therapy**

| Study #                 | Trial Design  | Dosage, route of administration and duration                     | Study subjects and Gender (N=number)   | Median age (Range)  |
|-------------------------|---|--|--|---|
| H3E-MC-JMEN (JMEN)      | Phase 3, double-blind, placebo-controlled study of maintenance pemetrexed plus BSC immediately following non-pemetrexed-containing induction therapy for Stage IIIb or IV NSCLC                   | ALIMTA 500 mg/m <sup>2</sup> on Day 1 of a 21-day cycle plus BSC | Entered: 741<br>Randomized: 663<br>ALIMTA: 441 (Male:322; Female:119)<br>Placebo: 222 (Male 161; Female:61)    | ALIMTA arm<br>Median age = 60.6<br>Age range = 25.6-82.6<br><br>Placebo arm<br>Median age = 60.4<br>Age range = 35.4-78.5 |
| H3E-EW-S124 (PARAMOUNT) | Phase 3, double-blind, placebo-controlled study of continuation maintenance pemetrexed plus BSC immediately following induction therapy with pemetrexed plus cisplatin for Stage IIIb or IV NSCLC | ALIMTA 500 mg/m <sup>2</sup> on Day 1 of a 21-day cycle plus BSC | Entered: 939<br>Randomized: 539<br>ALIMTA: 359 (Male: 201; Female:158)<br>Placebo: 180 (Male; 112; Female: 68) | ALIMTA arm<br>Median age = 60.9<br>Age range = 31.9-78.7<br><br>Placebo arm<br>Median age = 62.4<br>Age range = 34.9-83.3 |

Abbreviations: BSC = best supportive care

### JMEN

A multi-centre, randomized, double-blind, placebo-controlled, Phase 3 study was conducted in 663 patients with Stage IIIb/IV NSCLC who did not progress after four cycles of first-line platinum-based doublet chemotherapy containing cisplatin or carboplatin with gemcitabine, paclitaxel, or docetaxel. First line doublet therapy containing ALIMTA was not included. Patients who did not progress were randomized 2:1 to receive ALIMTA or placebo immediately following platinum-based chemotherapy. The minimization principle adopted for randomization did not include histology. ALIMTA was administered intravenously over 10 minutes at a dose of 500 mg/m<sup>2</sup> on Day 1 of each 21-day cycle, until disease progression. Patients in both study arms received folic acid, vitamin B<sub>12</sub>, and dexamethasone.

The study was designed to demonstrate superior progression-free survival and overall survival (OS) of ALIMTA over placebo. Progression free survival (PFS) was assessed by independent review. Patient characteristics of the intent to treat (ITT) population are shown in Table 21. The demographics and baseline disease characteristics were well balanced between study arms.

**Table 21: Summary of Patient Characteristics in Study of NSCLC - Maintenance Therapy Following non-ALIMTA-containing Platinum-Based Induction**

| Patient characteristic  | ALIMTA<br>(N=441) | Placebo<br>(N=222) |
|---|-------------------|--------------------|
| <b>Age (yrs)</b>  |                   |                    |
| Median (range)  | 60.6 (25.6-82.6)  | 60.4 (35.4-78.5)   |
| <b>Gender</b>   |                   |                    |
| Male/Female   | 73.0%/27.0%       | 72.5%/27.5%        |
| <b>Ethnic Origin</b>  |                   |                    |
| Caucasian   | 279 (63.3%)       | 149 (67.1%)        |
| East Asian  | 104 (23.6%)       | 50 (22.5%)         |
| Other   | 58 (13.2%)        | 23 (10.4%)         |
| <b>Stage at Entry<sup>a</sup></b>   |                   |                    |
| IIIb/IV   | 18.0%/82.0%       | 21.2%/78.8%        |
| <b>Histology (%)</b>  |                   |                    |
| Nonsquamous NSCLC <sup>b</sup>  | 325 (73.7%)       | 156 (70.3%)        |
| Adenocarcinoma  | 222 (50.3%)       | 106 (47.7%)        |
| Large cell  | 10 (2.3%)         | 10 (4.5%)          |
| Other <sup>c</sup>  | 93 (21.1%)        | 40 (18.0%)         |
| Squamous  | 116 (26.3%)       | 66 (29.7%)         |
| <b>ECOG PS<sup>d</sup></b>  |                   |                    |
| 0/1   | 40.1%/59.9%       | 38.3%/61.7%        |
| <b>Smoking History<sup>e</sup></b>  |                   |                    |
| Ever/never smoker   | 74.1%/25.9%       | 71.5%/28.5%        |
| <b>Time from start of induction therapy to study randomization (months)</b> |                   |                    |
| Median (range)  | 3.25 (1.6-4.8)    | 3.29 (2.7-5.1)     |

- a Stage at Entry was not reported for all randomized patients. Percentages are representative of N=440 for the ALIMTA arm and N = 222 for the placebo arm.
- b Includes patients with adenocarcinoma, large cell, and other histologic diagnoses.
- c The subgroup of “Other” represents patients with a primary diagnosis of NSCLC whose disease did not clearly qualify as adenocarcinoma, large cell carcinoma, or squamous cell carcinoma.
- d Eastern Cooperative Oncology Group Performance Status (ECOG PS) was not reported for all randomized patients. Percentages are representative of N=439 for the ALIMTA arm, and N = 222 for the placebo arm.
- e Smoking history was not reported for all randomized patients. Percentages are representative of N=437 for the ALIMTA arm and N = 221 for the placebo arm.

Patients received a median of 5 cycles of ALIMTA and 3.5 cycles of placebo. Patients randomized to ALIMTA received a relative dose intensity of 95.7%. A total of 213 patients (48.3%) completed  $\geq 6$  cycles and a total of 98 patients (22.6%) completed  $\geq 10$  cycles of treatment with ALIMTA. The percentage of patients that received post discontinuation systemic therapy was 51.5% for ALIMTA and 67.1% for placebo patients.

## Study Results

In the overall study population, ALIMTA was statistically superior to placebo in terms of overall survival (OS) (13.4 months versus 10.6 months, HR = 0.79 (95% CI 0.65 - 0.95, p-value = 0.012)) and PFS (4.0 months versus 2.0 months, HR = 0.60 (95% CI 0.49 - 0.73, p-value < 0.00001)). A difference in treatment outcomes was observed according to histologic classification. For the population of patients with nonsquamous NSCLC, ALIMTA was superior to placebo for OS (15.5 months versus 10.3 months, HR = 0.70 (95% CI 0.56 – 0.88, p-value = 0.002)) and PFS (4.4 months versus 1.8 months, HR = 0.47 (95% CI 0.37 – 0.60; p-value < 0.00001)). For the population of patients with squamous NSCLC, ALIMTA did not improve OS compared to placebo (median 9.9 months vs 10.8 months, HR = 1.07 (95% CI



0.77 – 1.50) or PFS (median 2.4 months vs 2.5 months, HR = 1.03 (95% CI 0.71 – 1.49)). Efficacy results for the overall patient population are presented in Table 22, and efficacy results by pre-specified histologic subgroups are presented in Table 23, below.

**Table 22: Maintenance Therapy Following non-ALIMTA-containing Platinum-Based Induction: Efficacy of ALIMTA versus Placebo in NSCLC - ITT Population**

| Efficacy Parameter <sup>a,b</sup>                      | ALIMTA<br>(N=441)    | Placebo<br>(N=222)  |
|--|----------------------|---------------------|
| Median overall survival (95% CI)                       | 13.4 mos (11.9-15.9) | 10.6 mos (8.7-12.0) |
| Hazard ratio (HR) <sup>c</sup> (95% CI)                | 0.79 (0.65-0.95)     |                     |
| p-value  | p=0.012              |                     |
| Median progression-free survival <sup>b</sup> (95% CI) | 4.0 mos (3.1-4.4)    | 2.0 mos (1.5-2.8)   |
| Hazard ratio (HR) <sup>c</sup> (95% CI)                | 0.60 (0.49-0.73)     |                     |
| p-value  | p<0.00001            |                     |

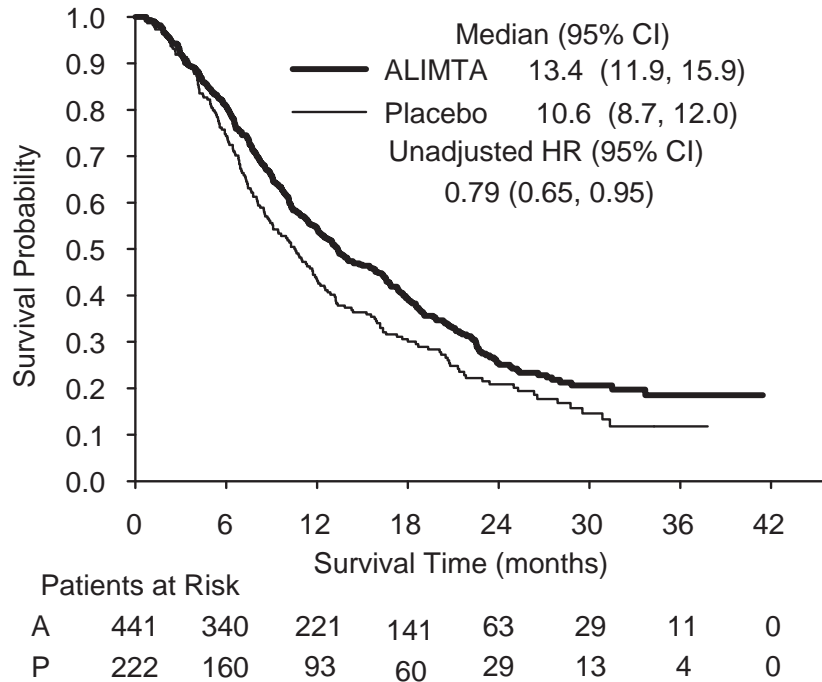
- a PFS and OS were calculated from time of randomization, after completion of 4 cycles of induction platinum-based chemotherapy.
- b Values for PFS given based on independent review (ALIMTA N=387, Placebo N=194)
- c Unadjusted hazard ratios are provided. A HR < 1.0 indicates that the result is better in the ALIMTA arm than in the placebo arm.

**Table 23: Maintenance Therapy Following non-ALIMTA-containing Platinum-Based Induction: Efficacy of ALIMTA versus Placebo in NSCLC – Prespecified Histologic Subgroups<sup>a</sup>**

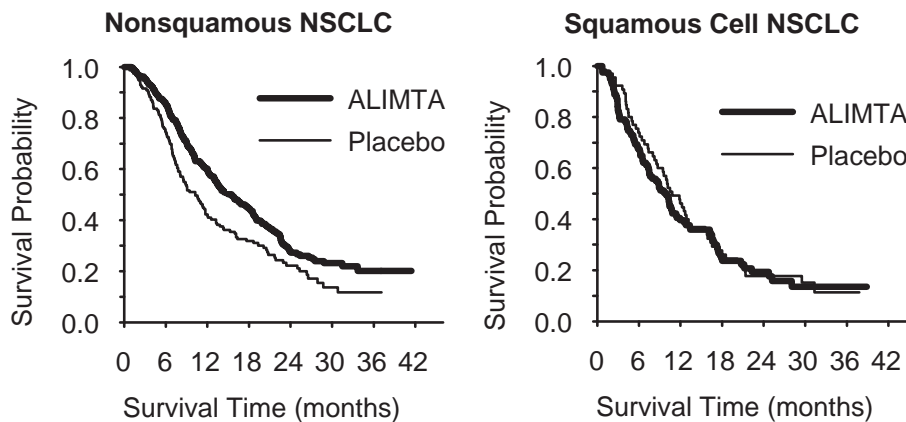
|   | Overall Survival                            |   | Progression-Free Survival <sup>b</sup>      |   |
|---|---|---|---|---|
|   | ALIMTA                                      | Placebo                                     | ALIMTA                                      | Placebo                                     |
|   | Median (months)<br>HR <sup>c</sup> (95% CI) | Median (months)<br>HR <sup>c</sup> (95% CI) | Median (months)<br>HR <sup>c</sup> (95% CI) | Median (months)<br>HR <sup>c</sup> (95% CI) |
| <b>Nonsquamous NSCLC<sup>d</sup></b><br>N=481<br><b>p-value</b> | <b>15.5</b><br><b>0.70 (0.56-0.88)</b>      | <b>10.3</b><br><b>0.70 (0.56-0.88)</b>      | <b>4.4</b><br><b>0.47 (0.37-0.60)</b>       | <b>1.8</b><br><b>0.47 (0.37-0.60)</b>       |
| Adenocarcinoma<br>N=328   | 16.8<br>0.73 (0.56-0.96) <sup>e</sup>       | 11.5<br>0.73 (0.56-0.96) <sup>e</sup>       | 4.6<br>0.51 (0.38-0.68) <sup>e</sup>        | 2.7<br>0.51 (0.38-0.68) <sup>e</sup>        |
| Large cell carcinoma<br>N=20                                    | 8.4<br>0.98 (0.36-2.65)                     | 7.9<br>0.98 (0.36-2.65)                     | 4.5<br>0.40 (0.12-1.29)                     | 1.5<br>0.40 (0.12-1.29)                     |
| Other <sup>f</sup><br>N=133                                     | 11.3<br>0.61 (0.40-0.94) <sup>e</sup>       | 7.7<br>0.61 (0.40-0.94) <sup>e</sup>        | 4.1<br>0.44 (0.28-0.68) <sup>e</sup>        | 1.6<br>0.44 (0.28-0.68) <sup>e</sup>        |
| <b>Squamous cell</b><br>N=182<br><b>p-value</b>                 | <b>9.9</b><br><b>1.07 (0.77-1.50)</b>       | <b>10.8</b><br><b>1.07 (0.77-1.50)</b>      | <b>2.4</b><br><b>1.03 (0.71-1.49)</b>       | <b>2.5</b><br><b>1.03 (0.71-1.49)</b>       |

- a PFS and OS were calculated from time of randomization, after completion of 4 cycles of induction platinum-based chemotherapy. All results unadjusted for multiple comparisons.
- b Values for PFS are given based on independent review (ALIMTA N=387, Placebo N = 194)
- c Unadjusted hazard ratios are provided. A HR < 1.0 indicates that the result is better in the ALIMTA arm than in the placebo arm. A HR > 1.0 indicates that the result is better in the placebo arm than in the ALIMTA arm.
- d Includes patients with adenocarcinoma, large cell carcinoma, and other histology.
- e p < 0.05 unadjusted for multiple comparisons.
- f The subgroup of “Other” represents patients with a primary diagnosis of NSCLC whose disease did not clearly qualify as adenocarcinoma, large cell carcinoma, or squamous cell carcinoma.

Figures 5 and 6 display the Kaplan-Meier survival curves for the overall patient population and the histologic subgroups (nonsquamous NSCLC and squamous cell NSCLC), respectively.

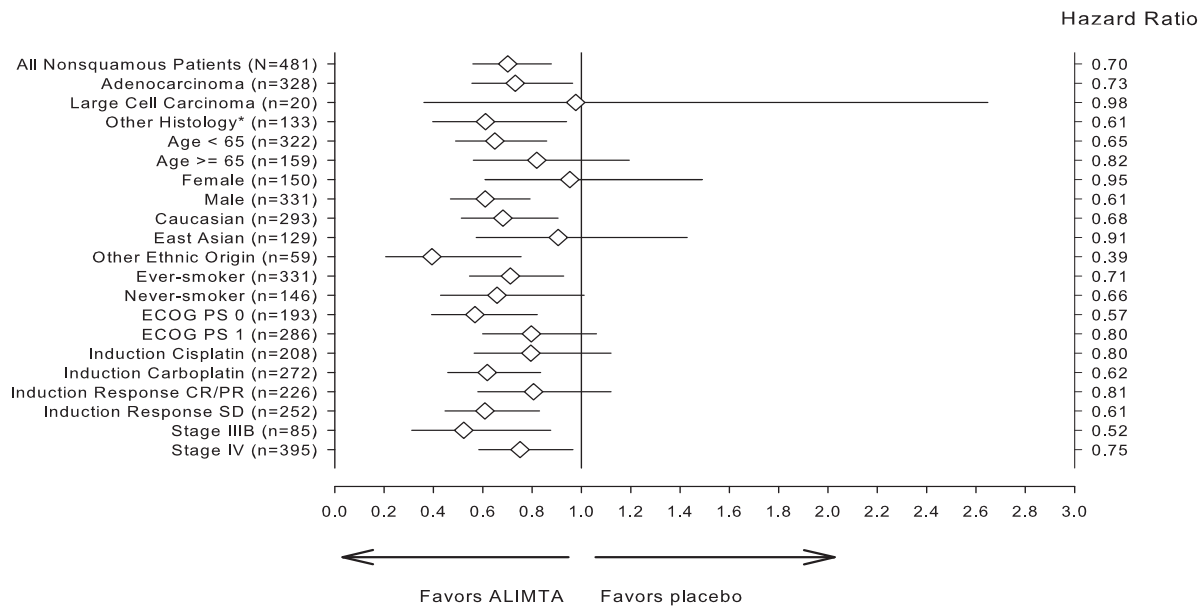


**Figure 5: Kaplan-Meier Curve for Overall Survival ALIMTA (A) versus Placebo (P) in NSCLC - ITT Population.**



**Figure 6: Kaplan-Meier Curves for Overall Survival ALIMTA versus Placebo in NSCLC - Nonsquamous NSCLC and Squamous Cell NSCLC.**

Subsets of patients were examined according to baseline characteristics in pre-specified efficacy analyses. The results of these analyses are shown in Figure 7.



\*Patients with a primary diagnosis of NSCLC whose disease did not clearly qualify as adenocarcinoma, large cell carcinoma, or squamous cell carcinoma.

**Figure 7: Forest Plot for Overall Survival Hazard Ratios ALIMTA versus Placebo – Nonsquamous NSCLC.**

Supportive care measures were similar between treatment arms, except: RBC transfusions (ALIMTA 9.5% vs placebo 3.2%); erythropoiesis stimulating agents (ALIMTA 5.9% vs placebo 1.8%); hospitalizations for a drug-related adverse event (ALIMTA 5% vs placebo 0%); enteral/parenteral nutritional support (ALIMTA 5% vs placebo 1%).

### PARAMOUNT

A multi-centre, randomized, double-blind, placebo-controlled Phase 3 study was conducted to evaluate continuation of ALIMTA in patients with Stage IIIb/IV nonsquamous NSCLC who did not progress after 4 cycles of first line doublet therapy of ALIMTA (500 mg/m<sup>2</sup>) in combination with cisplatin (75 mg/m<sup>2</sup>). Patients completing induction treatment with a best response of stable disease or better and PS 0/1 were eligible for maintenance treatment. Of the 939 patients treated with ALIMTA plus cisplatin induction, 539 patients were randomized (2:1) to receive maintenance treatment with ALIMTA or placebo. Of the randomized patients, 51.9% had a response of stable disease, 44.7% had a partial response, and 0.2% had a complete response to ALIMTA plus cisplatin induction. The median time from the start of ALIMTA plus cisplatin induction therapy to the start of maintenance treatment was 2.96 months on both the ALIMTA arm and the placebo arm. Efficacy and safety were measured from the time of randomization after completion of first line (induction) therapy. ALIMTA was administered intravenously over 10 minutes at a dose of 500 mg/m<sup>2</sup> on Day 1 of each 21-day cycle, and continued until disease progression or unacceptable toxicity. Patients in both study arms received folic acid, vitamin B<sub>12</sub>, and dexamethasone.

The study was designed to demonstrate superior progression-free survival and overall survival of ALIMTA plus best supportive care (BSC) continuation maintenance over placebo plus BSC. Patient demographics of the intent to treat (ITT) population are shown in Table 24. The demographics and baseline disease characteristics were well balanced between study arms.

**Table 24: Maintenance Therapy Following ALIMTA plus Cisplatin Induction: Summary of Patient Characteristics in Study of Nonsquamous NSCLC**

| Patient characteristic             | ALIMTA<br>(N=359) | Placebo<br>(N=180) |
|------------------------------------|-------------------|--------------------|
| <b>Age (yrs)</b>                   |                   |                    |
| Median (range)                     | 60.95 (31.9-78.7) | 62.35 (34.9-83.3)  |
| <b>Gender</b>                      |                   |                    |
| Male/Female                        | 56.0%/44.0%       | 62.2%/37.8%        |
| <b>Ethnic Origin</b>               |                   |                    |
| Caucasian                          | 339 (94.4%)       | 171 (95.0%)        |
| Asian                              | 16 (4.5%)         | 8 (4.4%)           |
| African                            | 4 (1.1%)          | 1 (0.6%)           |
| <b>Stage at Entry<sup>a</sup></b>  |                   |                    |
| IIIb/IV                            | 8.6%/91.4%        | 10.6%/89.4%        |
| <b>Histology (%)</b>               |                   |                    |
| Nonsquamous NSCLC <sup>b</sup>     |                   |                    |
| Adenocarcinoma                     | 310 (86.4%)       | 161 (89.4%)        |
| Large cell                         | 24 (6.7%)         | 12 (6.7%)          |
| Other <sup>c</sup>                 | 25 (7.0%)         | 7 (3.9%)           |
| <b>ECOG PS</b>                     |                   |                    |
| 0/1                                | 32.0%/67.7%       | 30.6%/68.3%        |
| <b>Smoking History<sup>d</sup></b> |                   |                    |
| Ever/never smoker                  | 76.6%/22.8%       | 80%/18.9%          |

<sup>a</sup> Stage at Entry was not reported for all randomized patients. Percentages are representative of N = 359 for the ALIMTA arm and N = 180 for the placebo arm.

<sup>b</sup> Histological or cytological diagnosis of NSCLC defined as other than predominantly squamous cell histology (squamous cell and/or mixed small cell, non-small cell histology were not permitted on this study).

<sup>c</sup> The subcategory of “Other” represents patients with a primary diagnosis of NSCLC whose disease did not clearly qualify as adenocarcinoma or large-cell carcinoma.

<sup>d</sup> Smoking history was not reported for all randomized patients. Percentages are representative of N = 359 for the ALIMTA arm, and N = 180 for the placebo arm.

Patients received a median of 4 cycles of maintenance treatment with ALIMTA (range 1-44 cycles) and 4 cycles of placebo (range 1-38 cycles). Patients randomized to continue ALIMTA received a relative dose intensity of 93.7%. A total of 169 patients (47.1%) completed  $\geq 6$  cycles maintenance treatment with ALIMTA, representing at least 10 total cycles of ALIMTA. The percentage of patients that received post study treatment was 64.3% for ALIMTA and 71.7% for placebo.

### **Study Results**

Efficacy results are presented in Table 25 and Figure 8. Following ALIMTA plus cisplatin induction (4 cycles), treatment with ALIMTA maintenance was statistically superior to placebo for overall survival (OS) (median 13.9 months versus 11.0 months, HR = 0.78 [95% CI: 0.64-0.96], p-value = 0.0195). The investigator assessment of PFS showed that ALIMTA

was statistically superior to placebo (median 4.1 months versus 2.8 months, HR = 0.62 [95% CI: 0.49-0.79], p-value < 0.0001).

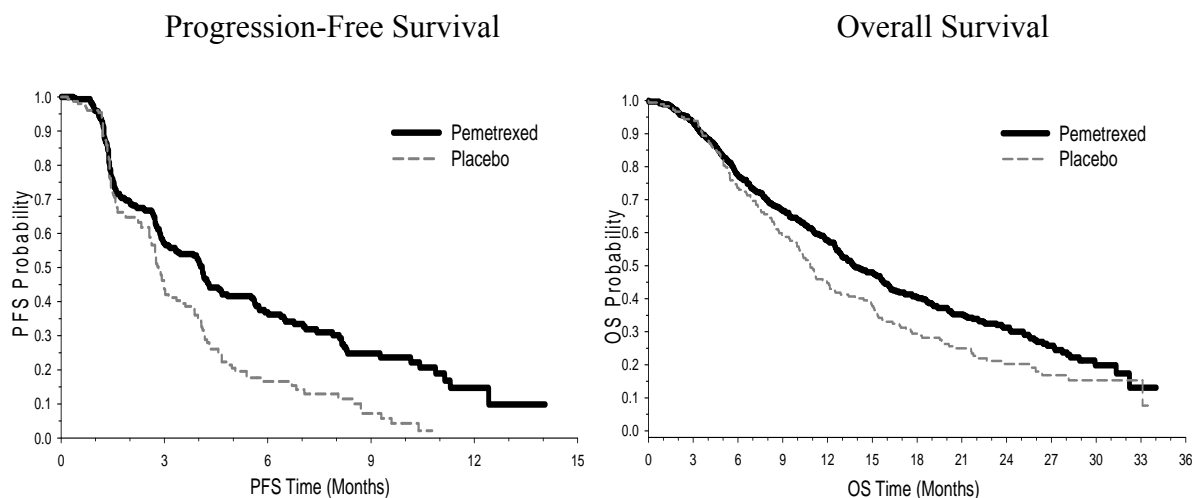
**Table 25: Maintenance Therapy Following ALIMTA Plus Cisplatin Induction: Efficacy of ALIMTA versus Placebo in Nonsquamous NSCLC**

| Efficacy Parameter <sup>a,b</sup>             | ALIMTA<br>(N=359)    | Placebo<br>(N=180)   |
|---|----------------------|----------------------|
| Median overall survival <sup>c</sup> (95% CI) | 13.9 mos (12.8-16.0) | 11.0 mos (10.0-12.5) |
| Hazard ratio (HR) <sup>c</sup> (95% CI)       | 0.78 (0.64-0.96)     |                      |
| p-value                                       | p=0.0195             |                      |
| 1-year survival                               | 58%                  | 45%                  |
| 2-year survival                               | 32%                  | 21%                  |
| Median progression-free survival (95% CI)     | 4.1 (3.2 – 4.6)      | 2.8 (2.6 – 3.1)      |
| Hazard ratio (HR) <sup>c</sup> (95% CI)       | 0.62 (0.49 – 0.79)   |                      |
| p-value                                       | p<0.0001             |                      |

<sup>a</sup> PFS and OS were calculated from time of randomization, after completion of 4 cycles of ALIMTA plus cisplatin induction therapy.

<sup>b</sup> Values for PFS given based on investigator assessment.

<sup>c</sup> Unadjusted hazard ratios are provided. A HR < 1.0 indicates that the result is better in the ALIMTA arm than in the placebo arm.

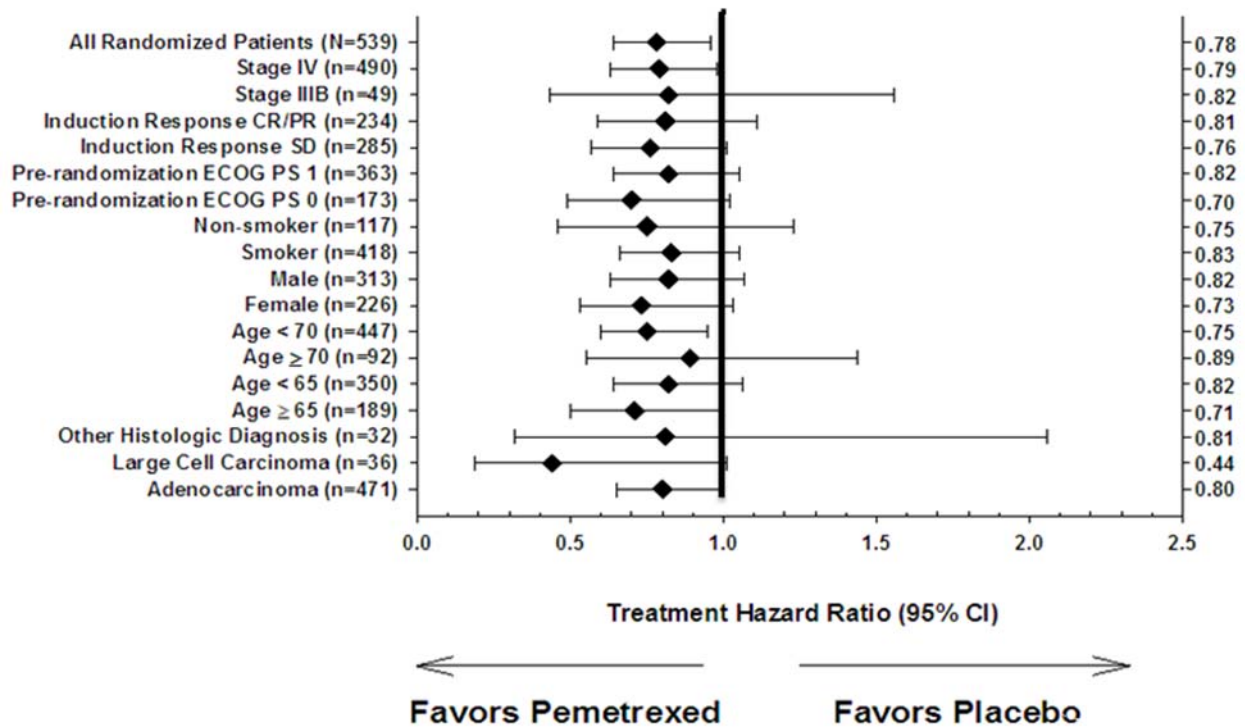


**Figure 8: Maintenance Therapy Following ALIMTA Plus Cisplatin Induction: Kaplan Meier Curve for Progression-Free Survival and Overall Survival for ALIMTA versus Placebo in Nonsquamous NSCLC (measured from randomization)**

For randomized patients, as measured from the start of ALIMTA plus cisplatin first line induction treatment, the median investigator-assessed PFS was 6.9 months for the ALIMTA arm and 5.6 months for the placebo arm (HR = 0.59, 95% CI = 0.47-0.74). The median OS was 16.9 months for the ALIMTA arm and 14.0 months for the placebo arm (HR = 0.78, 95% CI = 0.64-0.96).

The relative treatment effect of ALIMTA across subgroups (including disease stage, induction response, ECOG PS, smoking status, gender, histology, and age) is presented in Figure 9 below.

## Overall Survival



Abbreviations: CI = confidence interval; CR = complete response; ECOG PS = Eastern Cooperative Oncology Group performance status; N = number of randomized patients; n = number of patients in category; PR = partial response; SD = stable disease.

**Figure 9: Overall Survival Hazard Ratios (ALIMTA over placebo) in Subgroups According to Baseline Characteristics for All Randomized Patients, PARAMOUNT.**

A total of 25 patients randomized in this study received reduced dose pemetrexed during the induction phase, 18 of whom continued with the reduced dose in the maintenance phase. Clinical efficacy and safety of the pemetrexed maintenance therapy in this subgroup is unclear (post-hoc analysis). However, patient number is small and definitive conclusion cannot be established.

**Second Line – Nonsquamous Non-Small Cell Lung Cancer - ALIMTA versus Docetaxel**  
**Study Demographics and Trial Design**

**Table 26: Patient Demographics - Clinical Trial Supporting Efficacy of ALIMTA versus Docetaxel in the Treatment of NSCLC After Prior Chemotherapy**

| Study #     | Trial Design   | Dosage, route of administration and duration   | Study subjects and Gender (N=number)   | Median age (Range)  |
|-------------|--|--|--|---|
| H3E-MC-JMEI | randomized, Phase 3, controlled, open-label, multicentre study | ALIMTA<br>500 mg/m <sup>2</sup><br>10-minute iv infusion<br><br>Docetaxel<br>75 mg/m <sup>2</sup><br>1-hour iv infusion<br><br>Treatment Duration:<br>21-day cycle<br>median of 4 cycles of therapy<br>for both arms<br>(ALIMTA: 1 to 20 cycles;<br>Docetaxel: 1 to 14 cycles) | Entered: 698<br>Randomized: 571<br>ALIMTA: 283<br>(Male:194; Female:89)<br>Docetaxel: 288<br>(Male 217; Female:71) | ALIMTA arm<br>Median age = 59<br>Age range = 22-81<br><br>Docetaxel arm<br>Median age = 57<br>Age range = 28-87 |

A single, Phase 3 multi-center, randomized, open label study was conducted to compare the safety and efficacy of ALIMTA to docetaxel in patients with locally advanced or metastatic (Stage III or IV) NSCLC after prior chemotherapy. The study was intended to show either an overall survival superiority or non-inferiority of ALIMTA to docetaxel. ALIMTA was administered intravenously over 10 minutes at a dose of 500 mg/m<sup>2</sup> and docetaxel was administered at 75 mg/m<sup>2</sup> as a 1-hour intravenous infusion. Both drugs were given on Day 1 of each 21-day cycle. All patients treated with ALIMTA received vitamin supplementation with folic acid and vitamin B<sub>12</sub>. A summary of the patient demographics and characteristics are shown in Tables 26 and 27, respectively.

**Table 27: Summary of Patient Characteristics**

| Patient Characteristic                         | ALIMTA<br>(N=283) | Docetaxel<br>(N=288) |
|--|-------------------|----------------------|
| <b>Age (yrs)</b>                               |                   |                      |
| Median age, years (range)                      | 59 (22-81)        | 57 (28-87)           |
| <b>Gender (%)</b>                              |                   |                      |
| Female   | 31.4              | 24.7                 |
| Male   | 68.6              | 75.3                 |
| ECOG PS 0 or 1 (%) <sup>a</sup>                | 88.6              | 87.6                 |
| Stage III/IV disease (%)                       | 25.1/74.9         | 25.3/74.7            |
| Homocysteine level <12 µm (%)                  | 71.4              | 68.9                 |
| <b>Diagnosis/Histology (%)</b>                 |                   |                      |
| Adenocarcinoma                                 | 54.4              | 49.3                 |
| Squamous                                       | 27.6              | 32.3                 |
| <b>Best response to prior chemotherapy (%)</b> |                   |                      |
| CR/PR  | 35.6              | 36.5                 |
| <b>Time since last chemotherapy (%)</b>        |                   |                      |
| <3 mo  | 50.4              | 48.1                 |
| >3 mo  | 49.6              | 51.9                 |
| <b>Prior therapy (%)</b>                       |                   |                      |
| Prior paclitaxel                               | 25.8              | 27.8                 |
| Prior platinum                                 | 92.6              | 89.9                 |

Abbreviations: CR = complete response; ECOG = Eastern Cooperative Oncology Group; ITT = intent to treat; N = number of patients; PR = partial response; PS = performance status.

<sup>a</sup> Performance status was not reported for all treated patients. Percentages are representative of N=264 for the ALIMTA and N=274 for the docetaxel arm.

Baseline demographic and disease characteristics were similar between the two treatment arms. Approximately three-quarters of the patients were men, reflecting the gender ratio of this disease observed in the general population. The median age of 58 years with a wide age range (22 to 87 years) corresponds with the expected demographics of the general NSCLC patient population. Approximately half of the patients had adenocarcinoma, and approximately 30% had squamous cell carcinoma. About three-quarters of patients presented with Stage IV disease at study entry, as would be expected for patients who experienced a relapse of a previously treated disease. Eighty-eight percent had good performance status. Approximately 90% of the patients had received prior platinum-containing regimens.

Table 28 presents a summary of reported prior therapies for the intent to treat (ITT) population. The two treatment arms were well balanced with respect to all prior therapy categories.



**Table 28: Summary of Reported Prior Therapies**

|                                     | <b>ALIMTA<br/>(N=283)<br/>n (%)</b> | <b>Docetaxel<br/>(N=288)<br/>n (%)</b> |
|-------------------------------------|-------------------------------------|--|
| Prior surgery                       | 64 (22.6)                           | 67 (23.3)                              |
| Prior radiotherapy                  | 125 (44.2)                          | 131 (45.5)                             |
| Prior immunotherapy                 | 1 (0.4)                             | 1 (0.3)                                |
| Prior chemotherapy                  | 283 (100)                           | 288 (100)                              |
| Adjuvant setting                    | 21 (7.4)                            | 18 (6.3)                               |
| Neoadjuvant setting                 | 26 (9.2)                            | 23 (8.0)                               |
| Locally advanced setting            | 101 (35.7)                          | 111 (38.5)                             |
| Metastatic setting                  | 147 (51.9)                          | 148 (51.4)                             |
| One line of therapy                 | 143 (50.5)                          | 146 (50.7)                             |
| Two lines of therapy                | 4 (1.4)                             | 2 (0.7)                                |
| Drug therapy needing classification | 1 (0.4)                             | 0                                      |

Abbreviations: n = number of patients who received specified prior therapy; N = number of intent to treat (ITT) patients

### Study Results

The primary endpoint was overall survival. The median survival time was 8.3 months in the ALIMTA treatment arm and 7.9 months in the docetaxel arm, with a hazard ratio of 0.99. The study did not achieve overall survival superiority of ALIMTA over docetaxel. Non-inferiority of ALIMTA to docetaxel could not be demonstrated because a reliable and consistent survival effect of docetaxel required for a non-inferiority analyses could not be estimated from historical trials. However, the similarity of the response rate, median survival rate and 1-year survival rate between ALIMTA and docetaxel was sufficient evidence to consider ALIMTA as a treatment option for patients with NSCLC after prior chemotherapy. See Table 29.

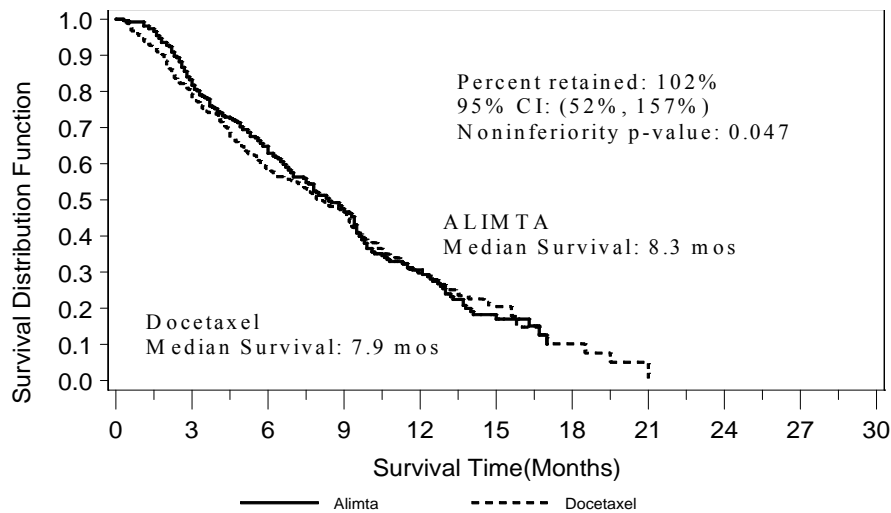
**Table 29: Efficacy of ALIMTA versus Docetaxel in Non-Small Cell Lung Cancer**

|                                     | <b>ALIMTA<br/>(N=283)</b> | <b>Docetaxel<br/>(N=288)</b> |
|-------------------------------------|---------------------------|------------------------------|
| Median overall survival<br>(95% CI) | 8.3 mos<br>(7.0-9.4)      | 7.9 mos<br>(6.3-9.2)         |
| <b>Fixed Margin Method</b>          |                           |                              |
| Hazard ratio (HR)<br>(95% CI)       | 0.99<br>(0.82-1.20)       |                              |
| Non-inferiority p-value             | 0.226                     |                              |
| Log rank p-value                    | 0.93                      |                              |
| 1-year survival<br>(95% CI)         | 29.7%<br>(23.7-35.6)      | 29.7%<br>(23.9-35.5)         |
| Overall response rate*<br>(95% CI)  | 9.1%<br>(5.9-13.2)        | 8.8%<br>(5.7-12.8)           |
| p-value                             | >0.999                    |                              |

Abbreviations: CI = confidence interval; HR = hazard ratio; N = number of intent to treat (ITT) patients

\* Number of qualified patients on the ALIMTA arm (N=264) and docetaxel arm (N = 274).

Figure 10 displays the Kaplan-Meier (K-M) survival time graph for the ITT population. Graphs of survival distributions for ALIMTA and docetaxel arms are superimposable.



**Figure 10: Kaplan-Meier Estimates of Survival Time for ALIMTA versus Docetaxel.**

A retrospective analysis of the impact of NSCLC histology on the treatment effect on overall survival was in favour of ALIMTA versus docetaxel for patients with nonsquamous NSCLC (n = 399, 9.3 versus 8.0 months, adjusted HR = 0.78; 95% CI = 0.61-1.00, p = 0.047) and was in favour of docetaxel for patients with squamous cell carcinoma (n = 172, 6.2 versus 7.4 months, adjusted HR = 1.56; 95% CI = 1.08-2.26, p = 0.018).

There were no significant differences in the results of the secondary endpoints between patients on the ALIMTA arm and docetaxel arm. See Table 30.

**Table 30: Secondary Efficacy Endpoints – ALIMTA versus Docetaxel in Non-Small Cell Lung Cancer**

|   | ALIMTA            | Docetaxel |
|---|-------------------|-----------|
| <b>Progression-free Survival (months)</b>   |                   |           |
| No. of patients evaluated                   | 283               | 288       |
| Median                                      | 2.9               | 2.9       |
| HR (95% CI)                                 | 0.97 (0.82–1.16)  |           |
| Wald p-value                                | 0.759             |           |
| <b>Time to Progressive Disease (months)</b> |                   |           |
| No. of patients evaluated                   | 283               | 288       |
| Median                                      | 3.4               | 3.5       |
| HR (95% CI)                                 | 0.97 (0.80–1.17)  |           |
| Wald p-value                                | 0.721             |           |
| <b>Time to Treatment Failure (months)</b>   |                   |           |
| No. of patients evaluated                   | 282               | 288       |
| Median                                      | 2.3               | 2.1       |
| HR (95% CI)                                 | 0.84 (0.71–0.997) |           |
| Wald p-value                                | 0.046             |           |
| <b>Time to Tumour Response (months)</b>     |                   |           |
| No. of patients evaluated                   | 24                | 24        |
| Median                                      | 2.9               | 1.7       |
| ANOVA p-value                               | 0.105             |           |

|   | ALIMTA           | Docetaxel |
|---|------------------|-----------|
| <b>Duration of Clinical Response (months)</b> |                  |           |
| No. of patients evaluated                     | 24               | 24        |
| Median  | 4.6              | 5.3       |
| HR (95% CI)                                   | 0.77 (0.40–1.47) |           |
| Wald p-value                                  | 0.427            |           |
| <b>Duration of Clinical Benefit (months)</b>  |                  |           |
| No. of patients evaluated                     | 145              | 151       |
| Median  | 5.4              | 5.2       |
| HR (95% CI)                                   | 0.91 (0.71–1.16) |           |
| Wald p-value                                  | 0.450            |           |

No differences were identified between the two treatment arms in any of the patient Lung Cancer Symptom Scales (LCSS). Both treatment arms reported initial increases in average symptom burden index, symptom distress, and interference with activity level that subsequently stabilized. Both arms reported initial deterioration in global quality of life and total LCSS, which subsequently stabilized.

## DETAILED PHARMACOLOGY

### Pharmacodynamics:

Preclinical studies have shown that pemetrexed inhibited, although with different potency (Table 31) the *in vitro* growth of multiple cell lines, including mesothelioma (MSTO-211H, NCI-H2052), non-small cell lung (A549, LX-1), breast (MCF7, ZR-75-1), colorectal (GC3, HT8, WiDr), leukemia (CCRF-CEM, L1210), and ovarian (IGROV1, SKOV3) carcinomas, as well as cells of these tumor types derived from fresh patient specimens. Additionally, these *in vitro* studies have shown that in certain cell lines, additive or greater than additive growth inhibitory activity could possibly be obtained when pemetrexed was optimally combined with radiation (WiDr colon, MCF7 breast, HeLa cervix, and LX1 lung carcinomas) as well as other antineoplastic agents, such as cisplatin (NCI-H23 and NCI-H460 lung carcinoma), carboplatin (NCI-H23 lung, SKOV3 ovarian, HT29 colorectal carcinomas), oxaliplatin (HT29 colon carcinoma), doxorubicin (ZR-75-1 breast carcinoma), gemcitabine (HCT8 and HT29 colorectal carcinoma), docetaxel and paclitaxel (NCI-H460 lung carcinoma). In particular, studies with the MSTO-211H mesothelioma cell line showed synergistic effects when pemetrexed was combined concurrently with cisplatin. However, the ratios pemetrexed/cisplatin used in these experiments were different than the ratio used in humans. *In vitro* studies have also suggested that pemetrexed may be active against certain tumor cells that are resistant to methotrexate, 5-fluorouracil, and raltitrexed. Additionally, preclinical animal studies have suggested that folic acid can reduce the severity of the drug-induced toxicity with preservation of the antitumor activity of pemetrexed on several cell lines. Furthermore, folic acid and vitamin B<sub>12</sub> were shown not to have negative impact on the antitumor activity of pemetrexed in mice. However, no studies of this type have been done on mesothelioma bearing animals.

**Table 31: IC<sub>50</sub> Values of Pemetrexed for Representative Tumor Cell Lines**

| <b>Tumor Type<sup>a</sup></b> | <b>IC<sub>50</sub> (nM)</b> |
|-------------------------------|-----------------------------|
| Mesothelioma MSTO-211H        | 30                          |
| Mesothelioma NCI-H2052        | 209                         |
| NSCLC LX-1                    | 4                           |
| NSCLS A549                    | 156                         |
| CCRF CEM leukemia             | 23 to 54                    |
| L1210 murine leukemia         | 14                          |
| Colon carcinoma GC3           | 34                          |
| Colon carcinoma HCT8          | 220                         |
| Breast carcinoma MCF7         | 8.1 to 31                   |
| Breast carcinoma ZR-75-1      | 110                         |
| Ovarian carcinoma IGROV-1     | 44                          |

<sup>a</sup> Examples included here are for commonly available cell lines that have not undergone drug selection or been subjected to genetic alterations.

Absolute neutrophil counts (ANC) following single-agent administration of pemetrexed to non-vitamin-supplemented patients were characterized using a population pharmacodynamic analyses. Severity of hematologic toxicity, as measured by the depth of the ANC nadir, is influenced primarily by the magnitude of systemic exposure (AUC). A 5- to 6-fold increase in pemetrexed AUC produces a 5- to 6-fold lowering of the ANC nadir. Though less pronounced than AUC, increased cystathionine or homocysteine concentrations correlate with a lowering of the ANC nadir, supporting the use of vitamin supplementation. There is no cumulative effect of pemetrexed exposure on ANC nadir over multiple treatment cycles.

Time to ANC nadir also correlates with pemetrexed systemic exposure (AUC), and varied from 8 to 9.6 days after pemetrexed administration over a range of exposures from 38.3 to 316.8 µg•hr/mL. Return to baseline ANC occurs from 4.2 to 7.5 days following the nadir over the same range of exposures.

## TOXICOLOGY

ALIMTA (pemetrexed disodium) has been evaluated in a comprehensive series of toxicology studies (see Table 32).

**Table 32: Toxicology Program for Pemetrexed Disodium**

| Study Type and Duration                    | Route of Administration | Species                        |
|--|-------------------------|--------------------------------|
| Single-dose toxicity                       | Intravenous             | Mouse, rat, dog                |
| Repeat-dose toxicity                       |                         |                                |
| 2-weeks (daily)                            | Intraperitoneal         | Mouse                          |
| 6-weeks (daily, twice/week, once/week)     | Intraperitoneal         | Mouse                          |
| 6-month (once/week)                        | Intraperitoneal         | Mouse                          |
| 2-weeks (daily; twice/week)                | Intravenous             | Dog                            |
| 6-weeks (daily, twice/week, once/week)     | Intravenous             | Dog                            |
| 1-month (once/week), 3 weeks reversibility | Intravenous             | Dog                            |
| 6-month (once/week or once every 3 weeks)  | Intravenous             | Dog                            |
| 9-month (once every 3 weeks)               | Intravenous             | Dog                            |
| Genotoxicity                               |                         |                                |
| Bacterial mutation (Ames)                  | <i>In vitro</i>         | <i>S. typhimurium, E. coli</i> |
| Forward mutation                           | <i>In vitro</i>         | HGPRT+ CHO cells               |
| Chromosome aberration                      | <i>In vitro</i>         | CHO cells                      |
| Micronucleus                               | Intravenous             | Mouse                          |
| Reproductive and Developmental Toxicity    |                         |                                |
| Male fertility study                       | Intraperitoneal         | Mouse                          |
| Embryo-fetal study                         | Intravenous             | Mouse                          |
| Other Toxicity Studies                     |                         |                                |
| Leucovorin rescue                          | Intravenous             | Dog                            |
| Thymidine rescue                           | Intravenous             | Dog                            |
| Ocular irritation                          | Conjunctival sac of eye | Rabbit                         |
| Dermal irritation                          | Dermal                  | Rabbit                         |

Intravenous dosing is the route of administration in humans. All toxicology studies in dogs were conducted by intravenous administration of pemetrexed. The intraperitoneal route was used to assess its repeat-dose toxicity in mice. Pharmacokinetic studies indicated that pemetrexed was rapidly absorbed when administered by the intraperitoneal route, with overall pharmacokinetic profile comparable to the intravenous route. The route of administration of pemetrexed was changed from intraperitoneal to intravenous in the developmental toxicity study in mice to avoid potential damage to the pregnant uterus by the injection needle.

Single-dose toxicity studies with pemetrexed have been performed in mice rats and dogs by the intravenous route of administration. Pemetrexed demonstrated low acute toxicity in mice at the dose of 4722 mg/m<sup>2</sup>, and in male rats, the MLD was 7922 mg/m<sup>2</sup>. Dogs' MLD was not determined.

The toxicologic profile of pemetrexed following repeat dosing in dogs and mice is consistent with the known antiproliferative activities of folate antimetabolites. Lesions of mucositis, enteropathy, lymphoid and bone marrow hypocellularity, and effects on spermatogenesis are commonly encountered with folate antimetabolites and other oncolytic agents. The major pathologic effects associated with pemetrexed administration occurred in the intestinal tract and lymphoid tissues; the bone marrow was only minimally affected in dogs and mice given repeated doses up to 6 weeks. However, hematotoxicity was the dose-limiting effect in dogs treated for longer than 6 weeks. Clinical manifestations of toxicity were delayed approximately 1 week from the time of dose administration, with individual animal variability in response to the compound. Modest signs of toxicity were generally reversible with supportive care and interruption of pemetrexed treatment. Supportive care included parenteral fluid therapy, nutritional supplementation, and antibiotics, when clinically appropriate.

Dogs were more sensitive to the toxic effects of pemetrexed than mice. This finding was expected, as mice have a “self-rescue” mechanism in a circulating thymidine moiety that can serve as a replacement source in folate-antagonized cells. Additionally, dogs are generally more predictive of systemic toxicity in man than are mice. Mice tolerated daily doses of 26.2 mg/kg (78.6 mg/m<sup>2</sup>) for 6 weeks and 700 mg/kg once weekly for 6 months without any compound-related deaths or clinical signs of toxicity. Most dogs (5 of 6) completed 6 weeks of daily doses of 0.11 mg/kg (2.2 mg/m<sup>2</sup>) with minimal clinicopathologic effects. The 1 dog that failed to complete the treatment period had become progressively anorectic, which accentuated the inherent toxicity of the folate antagonism. Higher daily doses were not tolerated for more than 3 weeks. Prominent toxicity was generally more evident in the daily dose schedule, even though the weekly dose was a much larger total dose of pemetrexed. The maximum tolerated dose (MTD) for mice given pemetrexed once weekly for 6 weeks was 314.8 mg/kg (944.4 mg/m<sup>2</sup>). The minimally toxic dose for dogs following four doses of pemetrexed given once per week was 25 mg/kg (500 mg/m<sup>2</sup>). Four doses of pemetrexed (25 mg/kg) given once per week caused slight-to-moderate decreases in neutrophils, lymphocytes, platelets, and reticulocytes. Primary histopathologic observation was minimal-to-slight enteropathy throughout the gastrointestinal tract. All changes except for the decreased platelet count fully or partially reversed within the 3-week recovery period.

A 6-month repeat dose study in beagle dog was designed to evaluate the chronic toxicity of pemetrexed at doses of 0, 10, or 25 mg/kg (0, 200, or 500 mg/m<sup>2</sup>) given intravenously once per week, which bridges directly to the 1-month study described above. However, after approximately 3 months, the dosing frequency was changed to once every 3 weeks for the dogs in the 10-mg/kg group and dosing was discontinued for the 25-mg/kg group due to hematotoxicity. Therefore, hematotoxicity was the dose-limiting effect in this study, and weekly administration of 10 or 25 mg/kg exceeded a tolerated dose. Hematotoxicity was reversible as demonstrated during a 3-month drug holiday in the dogs that had been given 25 mg/kg. Further, even when the 10-mg/kg group reached critically low platelet and

neutrophil levels, a 3-week period without treatment was sufficient for hematology parameters to completely recover.

An additional chronic study was conducted in which dogs were given pemetrexed intravenously at doses of 0, 10, or 25 mg/kg (0, 200, or 500 mg/m<sup>2</sup>) once every 3 weeks for 9 months. The observed effects were similar to those in the 6-month repeat-dose study in dogs, however, the hematotoxicity was not as severe due to the change in dosing regimen from once a week in the 6-month study to once every 3 weeks in the 9-month study. Additional changes observed in the 9-month study included decreased testes weight with degeneration/necrosis of the seminiferous epithelium and minimal-to-slight renal tubular karyomegaly and degeneration with no organ weight or clinical pathology correlates. This was observed in male dogs only. The effects on the testes, although not seen in previous studies (possibly due to the age of the dogs), were not unexpected based on the effects in the mouse and the cytotoxic nature of pemetrexed.

Pemetrexed was positive in an *in vivo* mouse micronucleus assay. This finding was not unexpected with a compound that causes accumulation of deoxyuridine monophosphate through the inhibition of thymidylate synthase. Therefore, pemetrexed may be a potential clastogenic hazard for man.

In studies on mice, pemetrexed was found to be embryotoxic at a dose of 30 mg/m<sup>2</sup> (1/17 the recommended human dose) and all litters were entirely resorbed at a dose of 150 mg/m<sup>2</sup> (1/3 the recommended human dose) when given in gestation days 6 through 15. Incomplete ossification was observed at a dose of 0.6 mg/m<sup>2</sup> (1/833 of the human dose). Pemetrexed was also fetotoxic (cleft palate) at a dose of 15 mg/m<sup>2</sup> (1/33 the recommended human dose).

Administration of pemetrexed to pregnant mice resulted in decreased fetal weight at doses  $\geq 0.6$  mg/m<sup>2</sup>, incomplete ossification of some skeletal structures at doses  $\geq 3$  mg/m<sup>2</sup>, and cleft palate at 15 mg/m<sup>2</sup>. These observations were not unexpected findings for this class of compound (folic acid antimetabolite) and were consistent with previously reported findings with folic acid antagonists and folic acid deficiency. Administration of pemetrexed at doses of 0.3 to 30 mg/m<sup>2</sup> resulted in male reproductive toxicity characterized by slightly reduced fertility rates and testicular atrophy and epididymal hypospermia.

Two studies were conducted to evaluate potential rescue agents (leucovorin and thymidine) for treatment of severe toxicity due to pemetrexed administration. In the leucovorin rescue study, both clinical signs of toxicity and hematological alterations were reversed by coadministration of leucovorin, a reduced form of folate. In the thymidine rescue study, subsequent administration of thymidine as a continuous infusion for 3 days was successful in rescuing dogs from life-threatening toxicity associated with pemetrexed.

Pemetrexed was found to be a mild ocular irritant and a moderate dermal irritant when evaluated in rabbits. These studies were done to ensure workplace safety.

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## PART III: CONSUMER INFORMATION

Pr **ALIMTA**<sup>®</sup>  
(pemetrexed disodium for injection)

This leaflet is part III of a three-part "Product Monograph" published when ALIMTA was approved for sale in Canada and is designed specifically for Consumers. This leaflet is a summary and will not tell you everything about ALIMTA. Contact your doctor or pharmacist if you have any questions about the drug.

### ABOUT THIS MEDICATION

#### What the medication is used for:

ALIMTA is used in the treatment of the following types of cancers:

- Malignant pleural mesothelioma (cancer of the lining of the chest cavity) in combination with cisplatin (another anti-cancer drug).
- Nonsquamous locally advanced or metastatic non-small cell lung cancer as:
  - Initial treatment in combination with cisplatin.
  - Maintenance treatment given alone immediately after four cycles of platinum-based first-line chemotherapy.
  - Second line treatment given alone after prior chemotherapy.

#### What it does:

ALIMTA is an antifolate anticancer agent that works by disrupting the metabolic processes that are essential for cell replication. It helps to stop the cancer cells from multiplying.

#### When it should not be used:

Do not take ALIMTA if you:

- are allergic to pemetrexed disodium or any of the ingredients in ALIMTA.
- have received or are going to receive the Yellow Fever vaccine.

#### What the medicinal ingredient is:

ALIMTA contains the active ingredient called pemetrexed disodium.

#### What the important nonmedicinal ingredients are:

ALIMTA contains mannitol. Hydrochloric acid and/or sodium hydroxide, may have been added to adjust pH.

#### What dosage forms it comes in:

ALIMTA is supplied as sterile freeze-dried powder for intravenous infusion and is available in single-dose vials. Each vial contains either 100 mg or 500 mg pemetrexed as pemetrexed disodium.

### WARNINGS AND PRECAUTIONS

#### **Serious Warnings and Precautions**

- ALIMTA should be administered under the supervision of a qualified physician experienced in the use of anticancer agents.
- Liver toxicity and rare cases of fatal liver failure have been reported in clinical trial patients treated with ALIMTA alone or in combination with other anticancer drugs.

**To lower your chances of side effects of ALIMTA, you must also take folic acid and vitamin B<sub>12</sub> injections prior to and during your treatment with ALIMTA.**

BEFORE you receive ALIMTA talk to your doctor or pharmacist if:

- you have a severe hypersensitivity reaction to ALIMTA or to any other ingredient used in the formulation.
- you are pregnant or planning to get pregnant (ALIMTA may cause harm to an unborn child).
- you plan to father a child. (ALIMTA may cause irreversible infertility).
- you are breast feeding.
- you are under 18 years old.
- you have a kidney disease.
- you have a liver disease.
- you have a heart problem.
- you have ever had radiation therapy.
- you have recently received or are planning on receiving a vaccine against Yellow Fever or any live vaccines.

You should discuss effective birth control methods with your doctor. Male patients should not father a child during the treatment and up to 6 months after stopping the treatment.

### INTERACTIONS WITH THIS MEDICATION

Tell your doctor or pharmacist if you are taking or have taken other medications, including prescription and nonprescription medicines, vitamins, and natural health products.

Drugs that may interact with ALIMTA include:

- NSAIDs (nonsteroidal anti-inflammatory drugs, e.g. ibuprofen): you should stop taking them for at least 5 days before, the day of, and at least 2 days after ALIMTA treatment. If it is necessary to take NSAIDs inform your doctor and you will be monitored accordingly.

### PROPER USE OF THIS MEDICATION

#### Usual dose:

ALIMTA is slowly infused (injected) into a vein. The injection or infusion will last about 10 minutes. You will usually receive ALIMTA once every 21 days (3 weeks).

You may receive ALIMTA alone or in combination with cisplatin, another anti-cancer agent. Your doctor will determine your treatment plan, be sure to ask your doctor or health care team if

you have any questions.

If your doctor has prescribed cisplatin, it will be infused in your vein for about 2 hours starting about 30 minutes after your treatment with ALIMTA.

#### Pre-Medications

**To lower your chances of experiencing harmful side effects, it is important for you to take the following medication and vitamins prior to and/or during your treatment with ALIMTA.**

#### *Corticosteroid*

Your doctor will prescribe a medicine called a “corticosteroid” to take the day before, the day of, and the day after ALIMTA treatment. Corticosteroid medicines lower your chances for getting skin reactions with ALIMTA.

#### *Folic Acid Tablets*

You must start taking 350- 600 micrograms of folic acid every day for at least 5 days out of the 7 days before your first dose of ALIMTA. You must keep taking folic acid every day during the time you are getting treatment with ALIMTA and for 21 days after your last treatment.

You can get folic acid vitamins over-the-counter. Folic acid is also found in many multivitamin pills. Ask your doctor or pharmacist for help if you are not sure how to choose a folic acid product.

#### *Vitamin B<sub>12</sub> Injection*

Your doctor will give you vitamin B<sub>12</sub> injections while you are getting treatment with ALIMTA. You will get your first vitamin B<sub>12</sub> injection during the week before your first dose of ALIMTA, and then about every 9 weeks during treatment until 3 weeks after the last dose of ALIMTA.

Contact your doctor if you forget to take your pre-medications.

You will have regular blood tests before and during your treatment with ALIMTA. Your doctor may adjust your dose of ALIMTA or delay treatment based on the results of your blood tests and on your general condition.

#### **Overdose:**

In case of drug overdose, contact a health care practitioner, hospital emergency department or regional Poison Control Centre immediately, even if there are no symptoms.

#### **Missed Dose:**

Contact your physician immediately for further instructions.

### **SIDE-EFFECTS AND WHAT TO DO ABOUT THEM**

Most patients taking ALIMTA will have side effects. Sometimes it is not possible to tell whether ALIMTA, another medicine, or the cancer itself is causing these side effects. **Call your doctor**

**right away if you have a fever, chills, diarrhea, or mouth sores.** These symptoms could mean you have an infection.

The most common side effects of ALIMTA when taken alone or with cisplatin are:

- Stomach upset, including nausea, vomiting, diarrhea, and constipation.
- Low blood cell counts
  - Low red blood cells may make you feel tired, get tired easily, appear pale, and become short of breath.
  - Low white blood cells may give you a greater chance for infection. If you have a fever (temperature above 38°C) or other signs of infection, call your doctor right away.
  - Low platelets give you a greater chance for bleeding. Your doctor will do blood tests to check your blood counts before and during treatment with ALIMTA.
- Tiredness. You may feel tired or weak for a few days after your ALIMTA treatments. If you have severe weakness or tiredness, call your doctor.
- Mouth, throat, or lip sores (stomatitis, pharyngitis). You may get redness or sores in your mouth, throat, or on your lips. These symptoms may happen a few days after ALIMTA treatment. Talk with your doctor about proper mouth and throat care.
- Loss of appetite. You may lose your appetite and lose weight during your treatment.
- Kidney. Your kidney function may be decreased, sometimes seriously, which may make you feel unwell. Your doctor may do blood tests to monitor your kidney function.
- Rash. You may get a rash or itching during treatment. These usually appear between treatments with ALIMTA and usually go away before the next treatment. Sometimes you may get severe skin reactions. Call your doctor if you get a severe rash or itching.
- Fever.

Effects on heart and brain have been reported uncommonly in clinical studies. Severe effects on stomach and intestine including bleeding has been uncommonly reported in clinical studies. Sometimes the effect on intestine are worse after radiation. In clinical studies, severe effects on lung and breathing have been reported. Blood flow disturbance leading to tissue damage has been reported.

Rare cases of unusual swelling in the legs or the face (edema) have been reported.

A small number of patients have reported changes in mood/ depression.

Be sure to tell your doctor if your breathing gets worse while you are on ALIMTA.

Talk with your doctor, nurse, or pharmacist about any side effect that bothers you or that doesn't go away. It is important that you continue to take your folic acid and vitamin B<sub>12</sub> supplements even if you experience serious side effects.

## SERIOUS SIDE EFFECTS, HOW OFTEN THEY HAPPEN AND WHAT TO DO ABOUT THEM

| Symptom / effect |                               | Talk with your doctor or pharmacist |              | Stop taking drug and call your doctor or pharmacist* |
|------------------|-------------------------------|-------------------------------------|--------------|--|
|                  |                               | Only if severe                      | In all cases |  |
| Common           | Allergic reaction             |                                     | ✓            |  |
|                  | Bleeding                      |                                     | ✓            |  |
|                  | Breathing (Any change)        |                                     | ✓            |  |
|                  | Chest pain (new or worsening) |                                     | ✓            |  |
|                  | Diarrhea                      |                                     | ✓            |  |
|                  | Fever                         | ✓                                   |              |  |
|                  | Mouth, throat or lip sores    |                                     | ✓            |  |
|                  | Nausea                        | ✓                                   |              |  |
|                  | Skin rash                     | ✓                                   |              |  |
|                  | Swallowing difficulty         |                                     | ✓            |  |
|                  | Tiredness                     | ✓                                   |              |  |
|                  | Vomiting                      | ✓                                   |              |  |

\*Continue taking your folic acid and vitamin B<sub>12</sub> injections even if you have serious side effects. Common=1% to <10%

***This is not a complete list of side effects. For any unexpected effects while taking ALIMTA, contact your doctor or pharmacist.***

## HOW TO STORE IT

ALIMTA powder should be stored at controlled room temperature 20-25°C, excursions permitted to 15-30°C. Reconstituted and infusion solutions can be stored at refrigerated conditions (2-8°C) for up to 24 hours.

## REPORTING SUSPECTED SIDE EFFECTS

You can report any suspected adverse reactions associated with the use of health products to the Canada Vigilance Program by one of the following 3 ways:

- Report online at [www.healthcanada.gc.ca/medeffect](http://www.healthcanada.gc.ca/medeffect)
- Call toll-free at 1-866-234-2345
- Complete a Canada Vigilance Reporting Form and:
  - Fax toll-free to 1-866-678-6789, or
  - Mail to: Canada Vigilance Program  
Health Canada  
Postal Locator 0701D  
Ottawa, Ontario  
K1A 0K9

Postage paid labels, Canada Vigilance Reporting Form and the adverse reaction reporting guidelines are available on the MedEffect™ Canada Web site at [www.healthcanada.gc.ca/medeffect](http://www.healthcanada.gc.ca/medeffect).

**NOTE:** Should you require information related to the management of side effects, contact your health professional. The Canada Vigilance Program does not provide medical advice.

## MORE INFORMATION

For more information, please contact your healthcare professionals or pharmacist first, or Eli Lilly Canada Inc. at: 1-888-545-5972 or visit the website at [www.lilly.ca](http://www.lilly.ca).

The information in this document is current as of the last revision date shown below. For the most current information please visit our website or contact us directly.

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