



Amgen Announces New Data From Phase 2 BLINCYTO™ (blinatumomab) Immunotherapy Study In Patients With Acute Lymphoblastic Leukemia And Minimal Residual Disease

December 6, 2014

78 Percent of Patients Treated With BLINCYTO Experienced a Complete Minimal Residual Disease (MRD) Response After One Treatment Cycle

Results to be Presented During an Oral Session at the American Society of Hematology (ASH) 56th Annual Meeting and Exposition on Monday, December 8 at 10:30 a.m. PT

Data to be Featured in ASH Press Briefing on Saturday, December 6 at 10 a.m. PT

THOUSAND OAKS, Calif., Dec. 6, 2014 /PRNewswire/ -- Amgen (NASDAQ:AMGN) today announced new data from the Phase 2 BLAST study which evaluated the bispecific T cell engager (BiTE®) immunotherapy BLINCYTO™ (blinatumomab) in patients with minimal residual disease (MRD) positive B-cell precursor acute lymphoblastic leukemia (ALL). In the study, 78 percent of patients who received BLINCYTO experienced a complete MRD response (95 percent CI: 69-85 percent), a measure of eradication of residual disease at the molecular level, after one treatment cycle. Nearly all complete responses (98 percent) occurred within the first treatment cycle.

The results from the BLAST study (Study '203; abstract # 379) will be featured during the 56th American Society of Hematology (ASH) Annual Meeting and Exposition press briefing on Saturday, December 6, at 10 a.m. PT and will be presented in an oral session at ASH on Monday, December 8, at 10:30 a.m. PT.

"BLINCYTO is the most advanced of Amgen's BiTE® immunotherapies, a new and innovative approach that helps the body's own immune system fight cancer," said Sean E. Harper, M.D., executive vice president of Research and Development at Amgen. "Achieving molecular complete remission is an important goal in the treatment of ALL, and the data presented at ASH demonstrates that BLINCYTO can produce deep responses in patients that have trace amounts of residual disease."

MRD is a state of disease in which the microscopic analysis does not show malignant cells, but more sensitive techniques still detect disease at the molecular level.¹ Patients who have persistent or recurrent MRD after their first therapy have a higher risk of relapse than those with no detectable MRD.¹

In addition to the majority (78 percent) of patients achieving a complete MRD response within one cycle of treatment, 80 percent achieved a complete MRD response across all cycles. Responses occurred in all subgroups including older patients and patients with high MRD level; no predictive factor for MRD response was identified.

In the study, adverse events (AEs) of all grades occurring in 20 percent or more patients included pyrexia (90 percent), tremor (29 percent), chills (26 percent), fatigue (24 percent), nausea (22 percent), vomiting (22 percent) and diarrhea (20 percent). Grade ≥3 AEs occurring in five percent or more patients included neutropenia (16 percent), pyrexia (7 percent) and tremor (5 percent). Two fatal AEs occurred on treatment: subdural hemorrhage and pneumonitis in conjunction with influenza (the latter was deemed treatment-related). Treatment interruptions due to AEs occurred in 31 percent of patients.

BLAST Phase 2 Trial Design

The BLAST study is the largest prospective trial in patients with MRD-positive ALL. It is an open-label, multicenter, confirmatory single-arm, Phase 2 study evaluating the efficacy, safety and tolerability of BLINCYTO in adult patients (≥18 years) with MRD positive B-cell precursor ALL in hematologic complete remission (<5 percent blasts in bone marrow) after three or more intensive chemotherapy treatments. Patients received continuous IV infusion of 15 µg/m²/d for four weeks, followed by two weeks off. Patients received up to four cycles of treatment, or could undergo a hematopoietic stem cell transplantation (HSCT) at any time after the first cycle, if eligible. The primary endpoint is rate of complete MRD response. Secondary endpoints include incidence and severity of AE, hematological relapse-free survival rate, overall survival, time to hematologic relapse, and duration of complete MRD response.

About BLINCYTO™ (blinatumomab)

BLINCYTO is the first BiTE® antibody construct and the first single-agent immunotherapy to be approved by the U.S. Food and Drug Administration (FDA).² BLINCYTO was granted breakthrough therapy and priority review designations by the FDA, and is now approved in the U.S. for the treatment of Philadelphia chromosome-negative (Ph-) relapsed or refractory B-cell precursor acute lymphoblastic leukemia (ALL).

About BiTE® Technology

Bispecific T cell engager (BiTE®) antibody constructs are a type of immunotherapy being investigated for fighting cancer by helping the body's immune system to detect and target malignant cells. The modified antibodies are designed to engage two different targets simultaneously, thereby juxtaposing T cells (a type of white blood cell capable of killing other cells perceived as threats) to cancer cells. BiTE® antibody constructs help place the T cells within reach of the targeted cell, with the intent of allowing T cells to inject toxins and trigger the cancer cell to die (apoptosis). BiTE® antibody constructs are currently being investigated for their potential to treat a wide variety of cancers. For more information, visit www.biteantibodies.com.

Important U.S. Product Information

BLINCYTO is indicated for the treatment of Philadelphia chromosome-negative relapsed or refractory B-cell precursor acute lymphoblastic leukemia (ALL).

This indication is approved under accelerated approval. Continued approval for this indication may be contingent upon verification of clinical benefit in subsequent trials.

IMPORTANT SAFETY INFORMATION

WARNING: CYTOKINE RELEASE SYNDROME and NEUROLOGICAL TOXICITIES

- **Cytokine Release Syndrome (CRS), which may be life-threatening or fatal, occurred in patients receiving BLINCYTO™. Interrupt or discontinue BLINCYTO™ as recommended.**
- **Neurological toxicities, which may be severe, life-threatening or fatal, occurred in patients receiving BLINCYTO™. Interrupt or discontinue BLINCYTO™ as recommended.**

Contraindications

BLINCYTO™ is contraindicated in patients with a known hypersensitivity to blinatumomab or to any component of the product formulation.

Warnings and Precautions

- **Cytokine Release Syndrome (CRS):** Life-threatening or fatal CRS occurred in patients receiving BLINCYTO™. Infusion reactions have occurred and may be clinically indistinguishable from manifestations of CRS. Closely monitor patients for signs and symptoms of serious events such as pyrexia, headache, nausea, asthenia, hypotension, increased alanine aminotransferase (ALT), increased aspartate aminotransferase (AST), increased total bilirubin (TBILI), disseminated intravascular coagulation (DIC), capillary leak syndrome (CLS), and hemophagocytic lymphohistiocytosis/macrophage activation syndrome (HLH/MAS). Interrupt or discontinue BLINCYTO™ as outlined in the Prescribing Information (PI).
- **Neurological Toxicities:** Approximately 50% of patients receiving BLINCYTO™ in clinical trials experienced neurological toxicities. Severe, life-threatening, or fatal neurological toxicities occurred in approximately 15% of patients, including encephalopathy, convulsions, speech disorders, disturbances in consciousness, confusion and disorientation, and coordination and balance disorders. The median time to onset of any neurological toxicity was 7 days. Monitor patients for signs or symptoms and interrupt or discontinue BLINCYTO™ as outlined in the PI.
- **Infections:** Approximately 25% of patients receiving BLINCYTO™ experienced serious infections, some of which were life-threatening or fatal. Administer prophylactic antibiotics and employ surveillance testing as appropriate during treatment. Monitor patients for signs or symptoms of infection and treat appropriately, including interruption or discontinuation of BLINCYTO™ as needed.
- **Tumor Lysis Syndrome (TLS):** Life-threatening or fatal TLS has been observed. Preventive measures, including pretreatment nontoxic cytoreduction and on treatment hydration, should be used during BLINCYTO™ treatment. Monitor patients for signs and symptoms of TLS and interrupt or discontinue BLINCYTO™ as needed to manage these events.
- **Neutropenia and Febrile Neutropenia,** including life-threatening cases, have been observed. Monitor appropriate laboratory parameters during BLINCYTO™ infusion and interrupt BLINCYTO™ if prolonged neutropenia occurs
- **Effects on Ability to Drive and Use Machines:** Due to the possibility of neurological events, including seizures, patients receiving BLINCYTO™ are at risk for loss of consciousness, and should be advised against driving and engaging in hazardous occupations or activities such as operating heavy or potentially dangerous machinery while BLINCYTO™ is being administered.
- **Elevated Liver Enzymes:** Transient elevations in liver enzymes are associated with BLINCYTO™ treatment. The majority of these events were observed in the setting of CRS. The median time to onset was 15 days. Grade 3 or greater elevations in liver enzymes occurred in 6% of patients outside the setting of CRS and resulted in treatment discontinuation in less than 1% of patients. Monitor ALT, AST, gamma-glutamyl transferase (GGT), and TBILI prior to the start of and during BLINCYTO™ treatment. BLINCYTO™ treatment should be interrupted if transaminases rise to > 5 times the upper limit of normal (ULN) or if TBILI rises to > 3 times ULN.
- **Leukoencephalopathy:** Although the clinical significance is unknown, cranial magnetic resonance imaging (MRI) changes showing leukoencephalopathy have been observed in patients receiving BLINCYTO™, especially in patients previously treated with cranial irradiation and anti-leukemic chemotherapy.
- **Preparation and administration errors** have occurred. Follow instructions for preparation (including admixing) and administration in the PI strictly to minimize medication errors (including underdose and overdose).

Adverse Events

- The most commonly reported adverse reactions ($\geq 20\%$) in clinical trials were pyrexia (62%), headache (36%), peripheral edema (25%), febrile neutropenia (25%), nausea (25%), hypokalemia (23%), rash (21%), tremor (20%) and constipation (20%).

Dosage and Administration Guidelines

- BLINCYTO™ is administered as a continuous intravenous infusion at a constant flow rate using an infusion pump which should be programmable, lockable, non-elastomeric, and have an alarm.
- It is very important that the instructions for preparation (including admixing) and administration provided in the full Prescribing Information are strictly followed to minimize medication errors (including underdose and overdose).

Please see full Prescribing Information and medication guide for BLINCYTO at www.BLINCYTO.com.

About Amgen

Amgen is committed to unlocking the potential of biology for patients suffering from serious illnesses by discovering, developing, manufacturing and delivering innovative human therapeutics. This approach begins by using tools like advanced human genetics to unravel the complexities of disease and understand the fundamentals of human biology.

Amgen focuses on areas of high unmet medical need and leverages its biologics manufacturing expertise to strive for solutions that improve health outcomes and dramatically improve people's lives. A biotechnology pioneer since 1980, Amgen has grown to be the world's largest independent biotechnology company, has reached millions of patients around the world and is developing a pipeline of medicines with breakaway potential.

For more information, visit www.amgen.com and follow us on www.twitter.com/amgen.

Forward-Looking Statements

This news release contains forward-looking statements that are based on the current expectations and beliefs of Amgen Inc. and its subsidiaries (Amgen, we or us) and are subject to a number of risks, uncertainties and assumptions that could cause actual results to differ materially from those described. All statements, other than statements of historical fact, are statements that could be deemed forward-looking statements, including estimates of revenues, operating margins, capital expenditures, cash, other financial metrics, expected legal, arbitration, political, regulatory or clinical results or practices, customer and prescriber patterns or practices, reimbursement activities and outcomes and other such estimates and results. Forward-looking statements involve significant risks and uncertainties, including those discussed below and more fully described in the Securities and Exchange Commission (SEC) reports filed by Amgen Inc., including Amgen Inc.'s most recent annual report on Form 10-K and any subsequent periodic reports on Form 10-Q and Form 8-K. Please refer to Amgen Inc.'s most recent Forms 10-K, 10-Q and 8-K for additional information on the uncertainties and risk factors related to our business. Unless otherwise noted, Amgen is providing this information as of Dec. 6, 2014, and expressly disclaims any duty to update information contained in this news release.

No forward-looking statement can be guaranteed and actual results may differ materially from those we project. Discovery or identification of new product candidates or development of new indications for existing products cannot be guaranteed and movement from concept to product is uncertain; consequently, there can be no guarantee that any particular product candidate or development of a new indication for an existing product will be successful and become a commercial product. Further, preclinical results do not guarantee safe and effective performance of product candidates in humans. The complexity of the human body cannot be perfectly, or sometimes, even adequately modeled by computer or cell culture systems or animal models. The length of time that it takes for us and our partners to complete clinical trials and obtain regulatory approval for product marketing has in the past varied and we expect similar variability in the future. We develop product candidates internally and through licensing collaborations, partnerships and joint ventures. Product candidates that are derived from relationships may be subject to disputes between the parties or may prove to be not as effective or as safe as we may have believed at the time of entering into such relationship. Also, we or others could identify safety, side effects or manufacturing problems with our products after they are on the market. Our business may be impacted by government investigations, litigation and product liability claims. If we fail to meet the compliance obligations in the corporate integrity agreement between us and the U.S. government, we could become subject to significant sanctions. We depend on third parties for a significant portion of our manufacturing capacity for the supply of certain of our current and future products and limits on supply may constrain sales of certain of our current products and product candidate development.

In addition, sales of our products (including products of our wholly-owned subsidiaries) are affected by the reimbursement policies imposed by third-party payers, including governments, private insurance plans and managed care providers and may be affected by regulatory, clinical and guideline developments and domestic and international trends toward managed care and healthcare cost containment as well as U.S. legislation affecting pharmaceutical pricing and reimbursement. Government and others' regulations and reimbursement policies may affect the development, usage and pricing of our products. In addition, we compete with other companies with respect to some of our marketed products as well as for the discovery and development of new products. We believe that some of our newer products, product candidates or new indications for existing products, may face competition when and as they are approved and marketed. Our products may compete against products that have lower prices, established reimbursement, superior performance, are easier to administer, or that are otherwise competitive with our products. In addition, while we and our partners routinely obtain patents for our and their products and technology, the protection of our products offered by patents and patent applications may be challenged, invalidated or circumvented by our or our partners' competitors and there can be no guarantee of our or our partners' ability to obtain or maintain patent protection for our products or product candidates. We cannot guarantee that we will be able to produce commercially successful products or maintain the commercial success of our existing products. Our stock price may be affected by actual or perceived market opportunity, competitive position, and success or failure of our products or product candidates. Further, the discovery of significant problems with a product similar to one of our products that implicate an entire class of products could have a material adverse effect on sales of the affected products and on our business and results of operations. Our efforts to integrate the operations of companies we have acquired may not be successful. Cost savings initiatives may result in us incurring impairment or other related charges on our assets. We may experience difficulties, delays or unexpected costs and not achieve anticipated benefits and savings from our recently announced restructuring plans. Our business performance could affect or limit the ability of our Board of Directors to declare a dividend or our ability to pay a dividend or repurchase common stock.

The scientific information discussed in this news release related to our product candidates is preliminary and investigative. Such product candidates are not approved by the U.S. Food and Drug Administration, and no conclusions can or should be drawn regarding the safety or effectiveness of the product candidates.

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References:

¹ National Comprehensive Cancer Network. "Acute Lymphoblastic Leukemia." Available at: <http://www.alabmed.com/uploadfile/2014/0214/20140214092732754.pdf>. Accessed on October 27, 2014.

² NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®): Acute Lymphoblastic Leukemia. Version 1.2014. Available at: https://www.nccn.org/store/login/login.aspx?ReturnURL=http://www.nccn.org/professionals/physician_gls/pdf/all.pdf. Accessed on November 24, 2014.



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