# New Data Show Renal Impairment Is Strong Predictor of Early Death in Patients with PNH

***Additional Studies Presented at EHA Congress Describe Long-Term Efficacy and Survival Data with Sustained Soliris® (eculizumab) Therapy***

CHESHIRE, Conn.--(BUSINESS WIRE)-- Alexion Pharmaceuticals, Inc. (Nasdaq: ALXN) today announced the presentation of research that provides further insight into the clinical consequences of paroxysmal nocturnal hemoglobinuria (PNH), and positive impact of Soliris® (eculizumab) therapy on long-term outcomes. The data, presented this weekend at the 16th Congress of the European Hematology Association (EHA) in London, included studies on mortality in PNH patients with renal impairment, long-term outcomes with Soliris therapy, disease burden in non-transfused patients with PNH, and other areas of research in PNH and Soliris therapy.

PNH is an ultra-rare, life-threatening blood disorder in which uncontrolled activation of the complement system causes the chronic destruction of red blood cells (hemolysis). Soliris, a first-in-class terminal complement inhibitor, is the only therapy approved for the treatment of patients with PNH.

"Research presented at EHA further quantifies the severe impact of PNH and the proven clinical benefits of long-term Soliris therapy in these patients," said Leonard Bell, M.D., Chief Executive Officer of Alexion. "Through clinical trials, independent research, and international registries, physicians are gaining a more complete understanding of PNH and developing more effective strategies for diagnosing and treating patients."

**Renal Impairment in PNH**

In a poster presentation today, a study found that patients with PNH who have late-stage renal impairment had a significantly worse overall survival rate compared with PNH patients without renal impairment. Researchers analyzed data from 301 patients enrolled in the National Data Registry in South Korea to assess the impact of late-stage renal impairment in patients with PNH: 16% of patients had a history or presence of late-stage renal impairment, and these patients accounted for 35% of patient deaths in the registry. (1) Patients with late-stage renal impairment had significantly worse overall survival compared with PNH patients with no impairment ($p=0.003$). A multivariate regression analysis showed that renal impairment was a strong predictor of mortality ($p<0.0001$).

"Late-stage renal impairment is a common, severe and underappreciated consequence of PNH and a strong predictor of death in people with this disease," said Jin Seok Kim, Division of Hematology, Severance Hospital, Yonsei University College of Medicine, Seoul, Korea. "This study confirms the connection between renal impairment and PNH, and provides a strong rationale for the effective treatment of hemolysis, the underlying cause of organ damage in patients with PNH."

**Long-Term Outcomes with Soliris Therapy**

In a poster session held yesterday, researchers presented long-term data from all 195 patients who participated in the Soliris PNH clinical trials and extension studies. (2) The study showed that, among these patients, overall survival with Soliris therapy was 97.6% at three years and was maintained through 5.5 years. These results are consistent with data published in the journal *Blood* earlier this year, which demonstrated that survival of studied patients with PNH who were treated with Soliris was no different than survival in an age- and gender-matched normal population. The current study also showed a reduction of thromboembolic events (TE) from 52 pre-treatment events to 10 events during Soliris therapy, in a time-matched analysis, and a reduction in the prevalence of chronic kidney disease from 69% of patients at baseline to 31% after 36 months of treatment. These results were previously presented at the 52nd American Society of Hematology Annual Meeting.

"This analysis suggests that chronic complement inhibition with Soliris can significantly improve the poor prognosis for patients with PNH," said Peter Hillmen, M.D., Ph.D., consultant haematologist at the Leeds Teaching Hospitals NHS Trust and lead author of the study. "In this analysis, patients who received Soliris treatment for more than five years were significantly less likely to experience life-threatening outcomes such as chronic kidney disease or thromboembolism."

**Outcomes in Non-Transfused Patients**

In another study presented at EHA, investigators showed that patients with no history of transfusion demonstrated substantial disease burden despite their transfusion status. A poster presentation today reported on two patients from the AEGIS study with no history of transfusion.(3) Both patients showed evidence of significant clinical disease burden at baseline, including chronic

hemolysis and renal disease. In both patients, Soliris treatment resulted in substantial reductions in LDH (a measure of hemolysis), clinically meaningful improvement in fatigue and quality of life, and reduction of CKD.

**New Data From International PNH Registry**

A poster presented today compared the clinical characteristics of pediatric and adult patients enrolled in the International PNH Registry. (4) The two groups showed similarities in LDH levels, hemoglobinuria, abdominal pain, underlying bone marrow disorders, history of renal impairment and other PNH-related symptoms at enrollment. In addition, the study indicates that pediatric patients with PNH are at risk for thromboembolism events (TE)..

**About PNH**

PNH is an ultra-rare blood disorder in which chronic, uncontrolled activation of complement, a component of the normal immune system, results in hemolysis (destruction of the patient's red blood cells). PNH strikes people of all ages, with an average age of onset in the early 30s. (5) Approximately 10 percent of all patients first develop symptoms at 21 years of age or younger. (6) PNH develops without warning and can occur in men and women of all races, backgrounds and ages. PNH often goes unrecognized, with delays in diagnosis ranging from one to more than 10 years. (7) In the period of time before Soliris was available, it had been estimated that approximately one-third of patients with PNH did not survive more than five years from the time of diagnosis. (7) PNH has been identified more commonly among patients with disorders of the bone marrow, including aplastic anemia (AA) and myelodysplastic syndromes (MDS). (8, 9, 10) In patients with thrombosis of unknown origin, PNH may be an underlying cause. (5) More information on PNH is available at www.pnhsource.com.

**About Soliris**

Soliris is a first-in-class terminal complement inhibitor developed from the laboratory through regulatory approval and commercialization by Alexion. Soliris has been approved in the U.S., European Union, Japan and other territories as the first treatment for patients with PNH, a debilitating, ultra-rare and life-threatening blood disorder defined by chronic uncontrolled complement activation which causes chronic red blood cell destruction (hemolysis), leading to blood clots, organ failure, and shortened survival. Prior to these approvals, there were no therapies specifically available for the treatment of patients with PNH. Soliris (eculizumab) is not approved for the treatment of aHUS or any indication other than PNH. Alexion's breakthrough approach to complement inhibition has received some of the pharmaceutical industry's highest honors: the 2008 Prix Galien USA Award for Best Biotechnology Product with broad implications for future biomedical research and the 2009 Prix Galien France Award in the category of Drugs for Rare Diseases. More information on Soliris is available at www.soliris.net

**Important Safety Information**

Soliris is generally well tolerated in patients with PNH. The most frequent adverse events observed in clinical studies of patients with PNH were headache, nasopharyngitis (runny nose), back pain and nausea. Treatment with Soliris should not alter anticoagulant management because the effect of withdrawal of anticoagulant therapy during Soliris treatment has not been established.

The U.S. product label for Soliris also includes a boxed warning: "Soliris increases the risk of meningococcal infections. Meningococcal infection may become rapidly life-threatening or fatal if not recognized and treated early. Vaccinate patients with a meningococcal vaccine at least two weeks prior to receiving the first dose of Soliris; revaccinate according to current medical guidelines for vaccine use. Monitor patients for early signs of meningococcal infections, evaluate immediately if infection is suspected, and treat with antibiotics if necessary." During PNH clinical studies, two out of 196 vaccinated PNH patients treated with Soliris experienced a serious meningococcal infection. Prior to beginning Soliris therapy, all patients and their prescribing physicians are encouraged to enroll in the PNH Registry, which is part of a special risk-management program that involves initial and continuing education and long-term monitoring for detection of new safety findings.

**About Alexion**

Alexion Pharmaceuticals, Inc. is a biopharmaceutical company focused on serving patients with severe and ultra-rare disorders through the innovation, development and commercialization of life-transforming therapeutic products. Alexion is the global leader in complement inhibition, and has developed and markets Soliris® (eculizumab) as a treatment for patients with PNH, a debilitating, ultra-rare and life-threatening blood disorder. Soliris is approved in more than 35 countries. Alexion is evaluating other potential indications for Soliris and is pursuing development of other innovative biotechnology product candidates in early stages of development. This press release and further information about Alexion Pharmaceuticals, Inc. can be found at: www.alexionpharma.com.

**Safe Harbor Statement**

*This news release contains forward-looking statements, including statements related to potential health and medical benefits of Soliris (eculizumab) for the treatment of patients with PNH. Forward-looking statements are subject to factors that may cause Alexion's results and plans to differ from those expected, including for example, decisions of regulatory authorities regarding marketing approval or material limitations on the marketing of Soliris for its current or potential new indications, and a variety of other risks set forth from time to time in Alexion's filings with the Securities and Exchange Commission, including but not limited to the risks discussed in Alexion's Quarterly Report on Form 10-Q for the period ended March 31, 2011, and in Alexion's other filings with the Securities and Exchange Commission. Alexion does not intend to update any of these forward-looking statements to reflect events or circumstances after the date hereof, except when a duty arises under law.*

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**References**

(1) Abstract 271 entitled "Renal impairment is a risk factor for early mortality in patients with paroxysmal nocturnal hemoglobinuria (PNH)," presented by Dr. Jin Seok Kim at the 16th Congress of the European Hematology Association (EHA), June 11, 2011.

(2) Abstract 254 entitled "Long term outcomes in patients with paroxysmal nocturnal hemoglobinuria (PNH) with sustained eculizumab treatment," presented by Dr. Peter Hillmen at the 16th Congress of the European Hematology Association (EHA), June 10, 2011.

(3) Abstract 841 entitled "Clinical impact of uncontrolled complement activity in Japanese non-transfused patients with paroxysmal nocturnal hemoglobinuria," presented by Dr. Yuzuru Kanakura at the 16th Congress of the European Hematology Association (EHA), June 11, 2011.

(4) Abstract 833 entitled "Pediatric diagnosis of paroxysmal nocturnal hemoglobinuria in the International PNH Registry," presented by Dr. Alvaro Urbano-Ispizua at the 16th Congress of the European Hematology Association (EHA), June 11, 2011.

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