# New Directions in Oncology Nursing Care: Focus on Gefitinib in Patients With Lung Cancer

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Treatment of solid tumors with chemotherapy regimens commonly is associated with debilitating or life-threatening side effects. Careful patient management, appropriate and prompt management of side effects, and interruption of therapy frequently are required for patients receiving chemotherapy. Furthermore, the systemic toxicity associated with chemotherapy may result in irreversible and incapacitating side effects, such as peripheral neuropathy, that lead to poor quality of life in patients. Gefitinib (Iressa®, ZD1839, AstraZeneca Pharmaceuticals LP, Wilmington, DE) is a biologically based, molecular targeted therapy with a novel mechanism of action: selective inhibition of the epidermal growth factor receptor-tyrosine kinase (EGFR-TK) activity. Once-daily oral treatment with gefitinib is well tolerated. In clinical trials, treatment with gefitinib resulted in durable tumor responses and improvement in lung cancer-related symptoms in patients with advanced non-small cell lung cancer who had received prior chemotherapy. Trials are under way to explore the full potential of gefitinib and additional EGFR-TK inhibitors for other solid tumors and in other treatment settings, including prevention. Biologically based, molecular-targeted therapies such as gefitinib are providing new treatment options for patients and adding a new dimension to clinical practice for oncology nurses.

**Key Words:** drug therapy, gefitinib, lung neoplasms

Use of cytotoxic chemotherapy in the treatment of solid tumors has inherent safety and efficacy limitations, owing to the systemic toxicities of these agents and the chronic illnesses of patients receiving therapy. Chemotherapy agents do not discriminate between malignant and healthy tissues or organs; therefore, nonspecific toxicity to healthy tissues limits dosing of these agents (Herbst & Shin, 2002). In contrast, a key goal of a new class of cancer drugs, called molecular-targeted therapies, is to inhibit tumor growth and progression without harming other dividing cells. Clinically, this approach is expected to produce fewer and milder treatment side effects than chemotherapy. Several biologically based therapies that target molecules specific to tumor cells have been isolated and currently are under investigation in clinical trials.

Gefitinib (Iressa®, ZD1839, AstraZeneca Pharmaceuticals LP, Wilmington, DE) is a molecular-targeted therapy that is an inhibitor of the epidermal growth factor receptor-tyrosine kinase (EGFR-TK) enzyme, which frequently is aberrantly activated in tumor cells. This article briefly will review the basic science of EGFR-TK in solid tumors, summarize results of clinical trials with gefitinib, and familiarize oncology nurses with some of the clinical implications of this new targeted therapy.

## Roles of Epidermal Growth Factor Receptor-Tyrosine Kinase in Solid Tumors

EGFR is a growth-promoting protein found on the surface of many different types of tumor cells, including cancers of the lung, breast, and colon. Normally, EGFR is functionally active during embryonic development and its activity is limited in normal adult tissue. The EGFR protein spans the cell membrane, having segments outside and inside the tumor cell (see Figure 1) (Hackel, Zwick, Prenzel, & Ullrich, 1999; Prenzel, Fischer, Streit, Hart, &

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