**INTRODUCTION**

Lung cancer is the most common cancer in the western world. It is the abnormal growth of cells in an uncontrolled way and in some cases it leads to metastasis (Falk & Williams, 2010). Cigarette smoking is considered as the main risk factor for developing lung cancer, but the recent evidence suggests that more cases of lung cancer is reporting from the side of minimal or never smokers ([Yarbro](http://www.google.com.au/search?hl=en&sa=N&tbo=1&biw=1138&bih=555&tbm=bks&tbm=bks&q=inauthor:%22Connie+Henke+Yarbro%22&ei=SlsJT9bRDKzsmAWkitX9DQ&ved=0CDkQ9Ag4Hg), [Wujcik](http://www.google.com.au/search?hl=en&sa=N&tbo=1&biw=1138&bih=555&tbm=bks&tbm=bks&q=inauthor:%22Connie+Henke+Yarbro%22&q=inauthor:%22Debra+Wujcik%22&ei=SlsJT9bRDKzsmAWkitX9DQ&ved=0CDoQ9Ag4Hg) & [Gobel](http://www.google.com.au/search?hl=en&sa=N&tbo=1&biw=1138&bih=555&tbm=bks&tbm=bks&q=inauthor:%22Connie+Henke+Yarbro%22&q=inauthor:%22Debra+Wujcik%22&q=inauthor:%22Barbara+Holmes+Gobel%22&ei=SlsJT9bRDKzsmAWkitX9DQ&ved=0CDsQ9Ag4Hg), 2011). This is a case study of Mrs.DH, 70 years old with diagnosis of small cell carcinoma of lung. This case study discusses the present and past history of Mrs. DH, patho physiology of lung cancer, treatment and diagnostic procedures under taken by DH, nursing management, recent advances in nursing practice for caring clients with similar disease and discharge plan of Mrs DH.

**PRESENT AND PAST HISTORY**

Ms. DH was diagnosed with small cell carcinoma on August 2007. Chemotherapy treatment was taken from October 2007 to November 2007 with Carboplatin and VP16. There was no response to initial treatment. So she was again treated with chemotherapeutic agents such as Carboplatin and Taxol from December 2007 to March 2008. After that plans were made for radiation therapy. This was delayed due to the discovery of parotid tumor that is Warthin’s tumor. She received radiation therapy from July to October 2008. No further treatment done. Now she is on follow up. Her weight is stable and has good appetite. She has complaints of non exertional chest pain, history of hypertension and also has complaints of arthritis, numbness and paresthesia as a result of taxol therapy.

**PATHOPHYSIOLOGY**

Between 80 to 90% of lung cancer is caused by inhaled carcinogens most commonly cigarette smoking. Other carcinogens include radon gas, occupational and environmental agents (Day, Paul & Williams, 2009). Lung cancer originates in the respiratory tract mainly in the lining of bronchi (Williams & Hopper, 2007). Carcinogen binds with cellular DNA and damages it. This damage results in cellular changes, abnormal cell growth and eventually a malignant cell. As the damaged DNA pass on daughter cells, DNA undergoes further changes and become unstable. With the accumulation of genetic changes, the pulmonary epithelium undergoes malignant transformation from normal epithelium to eventual invasive carcinoma (Day, et al, 2009). Small cell lung carcinoma grows and spread rapidly through blood stream to other organs (Falk & Williams, 2010). In Mrs. DH case, lung cancer metastasized through into salivary glands.

**CLINICAL MANIFESTATIONS**

Chest pain is the main symptom of metastasis of lung cancer. Other symptoms are cough, dysponea, hemoptysis, paraneoplastic symptoms such as fatigue, anorexia, weight loss, leukocytosis, platelet disorders, electrolyte imbalance and neuropathy (Schiller, Parles & Cipau, 2010). Mrs. DH has symptoms such as nonexertional chest pain ,numbness arthritis and paresthesia.

**TREATMENT**

**Chemotherapy**

Mrs. DH received chemotherapy and radiation. Chemotherapy is a chemical therapy that uses cytotoxic drugs to treat cancer (Williams & Hopper, 2007). In chemotherapy the medications used are carboplatin, VP-16 and taxol.

**Carboplatin**: It is an alkylating agent, inhibits DNA transcription, synthesis and function and thus prevents metastasis of cancer ([Perry](http://www.google.com.au/search?hl=en&sa=N&tbo=1&biw=1138&bih=555&tbm=bks&tbm=bks&q=inauthor:%22Michael+Clinton+Perry%22&ei=1DIJT8uHH8LrmAWTvpnsBQ&ved=0CDAQ9Ag4FA), 2008). Adverse effects are Myelosuppression, thrombocytopenia, nausea, vomiting, hypokalemia, hypomagnesaemia, neurotoxicity, disorders of sterility such as amenorrhea, azoospermia, impotence, hypersensitivity reactions, alopecia and ototoxicity ([Perry](http://www.google.com.au/search?hl=en&sa=N&tbo=1&biw=1138&bih=555&tbm=bks&tbm=bks&q=inauthor:%22Michael+Clinton+Perry%22&ei=1DIJT8uHH8LrmAWTvpnsBQ&ved=0CDAQ9Ag4FA)  2008). Contraindications are pregnancy and hypersensitivity to carboplatin ([Yarbro](http://www.google.com.au/search?hl=en&sa=N&tbo=1&biw=1138&bih=555&tbm=bks&tbm=bks&q=inauthor:%22Connie+Henke+Yarbro%22&ei=SlsJT9bRDKzsmAWkitX9DQ&ved=0CDkQ9Ag4Hg), et al, 2011).

**VP16**: It is a topoisomerise inhibitor, cause cell death and prevents metastasis of cancer (Williams, & Hopper, 2007). Side effects are Nausea, vomiting, alopecia, numbness, tingling of fingers, bone marrow suppression (Williams & Hopper, 2007). Contraindications are severe myelosuppression, hypersensitivity to etoposide compounds and pregnency ([Yarbro](http://www.google.com.au/search?hl=en&sa=N&tbo=1&biw=1138&bih=555&tbm=bks&tbm=bks&q=inauthor:%22Connie+Henke+Yarbro%22&ei=SlsJT9bRDKzsmAWkitX9DQ&ved=0CDkQ9Ag4Hg), et al, 2011).

**TAXOL**: It is a mitotic spindle inhibitor which inhibits mitosis and induction of apoptosis in dividing cells ([Perry](http://www.google.com.au/search?hl=en&sa=N&tbo=1&biw=1138&bih=555&tbm=bks&tbm=bks&q=inauthor:%22Michael+Clinton+Perry%22&ei=1DIJT8uHH8LrmAWTvpnsBQ&ved=0CDAQ9Ag4FA), 2008). Side effects are myelosuppression, hypersensitivity reaction, neurotoxicity, bradycardia, nausea, vomiting, myalgia, arthralgia, numbness, tingling, paresthesia and mucositis ([Perry](http://www.google.com.au/search?hl=en&sa=N&tbo=1&biw=1138&bih=555&tbm=bks&tbm=bks&q=inauthor:%22Michael+Clinton+Perry%22&ei=1DIJT8uHH8LrmAWTvpnsBQ&ved=0CDAQ9Ag4FA), 2008). Contraindications are hypersensitivity reaction and pregnancy (Aschenbrenner & Venable, 2007).

**Nursing Responsibilities**: Before starting chemotherapy blood investigations such as HB complete blood count should be done. Teach clients about action and side effects of drugs. Never give VP 16 direct IV push or rapid IV infusion .While administering taxol monitor cardiac function carefully (Aschenbrenner & Venable, 2007).

**Radiation Therapy**

Radiation destroys cancer cells by affecting cell structure. It is used in fractioned doses to prevent destructive side effect. (Williams, &Hopper, 2007). In this case Mrs. DH received 5,580 Cgy, 31 fractions over 70 days. Adverse effects are fatigue, nausea, vomiting, anorexia, mucositis, xerostomia, bone marrow suppression, alopecia, oesophagitis, hoarseness, dry mouth, skin reactions (Williams & Hopper, 2007).

**Nursing Responsibilities** are monitor blood count, teach the clients about prevention of infection, tell clients to avoid local application of creams unless prescribed, nutritional therapy (Timby & Smith, 2005).

**PHYSICAL ASSESSMENT**

In physical examination special attention to respiratory, lymphatic, abdominal and neurological systems is important to identify metastasis ([Yarbro](http://www.google.com.au/search?hl=en&sa=N&tbo=1&biw=1138&bih=555&tbm=bks&tbm=bks&q=inauthor:%22Connie+Henke+Yarbro%22&ei=SlsJT9bRDKzsmAWkitX9DQ&ved=0CDkQ9Ag4Hg), et al, 2011).  Mrs DH has relatively stable weight, and good appetite.

**DIAGNOSTIC STUDIES**

The diagnostic procedures undertaken by Mrs. DH are the following

**Mammography:** It is a reliable and non invasive low radiation X-ray procedure for detecting breast cancer (Williams &Hopper, 2007).

**Chest x ray**: It helps in identification of masses in the lung (Schiller, Parles & Cipau, 2010).

**CT abdomen and pelvis**: Computed Tomography gives more specific information about the size and location of the tumor (Williams &Hopper, 2007).

**PET CT**: Positron Emission Tomography is a nuclear imaging procedure provides information about cellular, biochemical and metabolic activity (Williams & Hopper, 2007). It helps to understand how quickly cells break down nutrients for energy, because cancer cells grow faster than normal cells (Schiller, Parles & Cipau, 2010).

**Biopsy:** Microscopic examination of a piece of suspected of tissue or aspirated body fluid to confirm mutant cells (Williams, &Hopper, 2007).

**Endoscopy**: It is a technique directly visualizes mucosal lining of esophagus, stomach and duodenum with a fibrotic endoscopy (Brown, Edwards, Lewis, Heitkemper, Dirksen, O’Brien& Bucher, 2008).

**Colonoscopy**: It is a technique directly visualizes entire colon up to ileo cecal valve with flexible fibrooptic scope. Test is used to diagnose inflammatory bowel disease, tumors and diverticulosis (Brown et al, 2008).

**OUTCOME**

CT abdomen and pelvis shows a slight prominence of the left hilum, PET CT showed areas of enlarged nodes located around the bronchial tree, abdomen and left axillaries and colonoscopy was positive for diverticulam and biopsy taken.

**BLOOD TESTS**

Patient’s labs values are Hgb 12.6, and Hct 39.1,Platelets count 371, White blood cell count 8.0, Lymphocytes14 and monocytes 9.

**NURSING MANAGEMENT**

Assessment of the client’s physical condition, nutritional status, complete blood studies and psychosocial status is very important (Timby & Smith, 2005). Presently Mrs. D.H has complaints of non exertional chest pain, hypertension, and medical complaints such as numbness, arthritis and paresthesia. The nursing management involves ask the client about the location and characteristics of pain and provide pain scale for assess intensity of pain. Nurse should provide comfort measures such as frequent change of position and support with pillows. Encourage client to use relaxation therapies such as guided imaginary because this promotes relaxation and redirects attention (Medicine net.com, 2012). Give pain medications as per doctor’s order. NSAIDS are also effective in controlling pain [(Yarbro](http://www.google.com.au/search?hl=en&sa=N&tbo=1&biw=1138&bih=555&tbm=bks&tbm=bks&q=inauthor:%22Connie+Henke+Yarbro%22&ei=SlsJT9bRDKzsmAWkitX9DQ&ved=0CDkQ9Ag4Hg) et al, 2011). Nurse should educate the client about the importance of restriction of sodium in the diet, periodic check up of blood pressure, intake of medications as per order and teach about signs and symptoms of hypotension. (Day et al, 2009). Nurse should teach the client to be very care full when grasping objects they are sharp and hot or otherwise be in danger because the client is having numbness. Teach the client to avoid falls by moving carefully. Using side rails when going up or down stairs (Medicine net.com. 2012).

**RECENT ADVANCES**

Novel therapies are the current advancements in treatment. This helps to improve treatment and prevent disease relapse (Carafaro, 2005). Some of the drugs come under novel therapies are interferon, thalidomide, cancer vaccines and Bcl2 Antisense Strategies. Interferons help to improve remission duration after chemo and radiation therapy. Thalidomide is an angiogenesis inhibitor and immune modulator effective in the treatment of solid tumors. The anti idiyotypic antibody BEC2 mimics the structure of small cell lung carcinoma associated with Gd3 ganglioside (Carafaro, 2005).

**DISCHARGE PLAN**

Communication with client and family members about discharge is very important for setting up appropriate discharge plan (Stubblefield, &O’Dell, 2009). Information should be given to family about supportive services available in the community. Teach the client about signs and symptoms of infection and importance of periodic blood value monitoring (Life Nurses, 2011). Health education should be given about all discharge medications, purpose, dose, action and side effect. Also teach about proper dietary management such as importance of fluid intake, nutritious diet and restriction of sodium in the diet. More than that proper information about follow up should be given (Stubblefield, &O’Dell, 2009).

**PERSONAL REFLECTION**

When I got first posting in oncology ward during my internship period, I met Mrs. Karthayani, 54yrs old with lung cancer second stage on chemotherapy. She was diagnosed just two weeks before. When I saw her, she was physically and mentally very weak and unable to cope up with her diagnosis. She had severe vomiting. I gave antiemetics as per order. I reassured the client and explain her about disease condition, treatment modalities and side effect. After that her condition improved and she became able to cope up with her disease condition.

**CONCLUSION**

In conclusion, lung cancer is one of the leading cancers in the world. There are numerous diagnostic procedures available for early detection of cancer. The main treatment modalities are surgery, radiation and chemotherapy. This Mrs DH case study helps me to study about this disease condition, recent advancements in practice and management of clients with lung cancer.

**REFERENCES**

Aschenbrenner, D. S. , & Venable, S .J. (2007). *Drug Therapy in Nursing**(*3rdedi*).* China: Lippincott Williams & Wilkins.

Brown, D., Edwards. H., Lewis, S. L., Heitkemper. M. M., Dirksen, S.R., O’Brien, P.G., & Bucher, L. (2008). *Lewis’s Medical Surgical Nursing: Assessment And Management Of Clinical Problems* (2nd edi.). Australia, NSW: Elsevier.

Carafaro, R. L. (2005). *Lung Cancer: New Research*. New York: Nova Science Publishers.

Day, R. A. , Paul, P., & Williams, B. (2009). *Brunnar And Suddarth's Textbook Of Canadian Medical-Surgical Nursing.* Philadelphia: Lippincott Williams & Wilkins.

Falk, S., & Williams, C. (2010). *Lung Cancer* (3rd edi.). Oxford, New York: Oxford University Press.

Life Nurses. (2011). *NCP Nursing Care Plan for Lung Cancer.* Accessed on 14, 2012, from http://www.lifenurses.com/ncp-nursing-care-plan-for-lung-cancer/

Medicine net.com. (2012). *Cancer Treatment Side Effects: Nerve & Muscle Effects.* Accessed on 14, 2012, from http://www.medicinenet.com/script/main/art.asp?articlekey=21734#

[Perry](http://www.google.com.au/search?hl=en&sa=N&tbo=1&biw=1138&bih=555&tbm=bks&tbm=bks&q=inauthor:%22Michael+Clinton+Perry%22&ei=1DIJT8uHH8LrmAWTvpnsBQ&ved=0CDAQ9Ag4FA), M. C. (2008).*The Chemotherapy Source Book (*4th edi.). PA: Lippincott Williams & Wilkins.

Schiller, J. H. , Parles, K . , & Cipau , A. (2010). *100 Questions & Answers About Lung cancer* (2nd edi).Canada: Jones& Bartlett publishers.

Stubblefield, M. D., &O’Dell, M. (2009). *Cancer Rehabilitation:Principles and Practice* , USA: Derrios Medical Publishing.

Timby, B.K., & Smith, N .E. (2005). *Essentials Of Nursing: Caring Of Aduts And Children.* PA: Lippincott Williams & Wilkins.

Williams , L. S. , & Hopper, P. D. (2007). *Understanding Medical Surgical Nursing* (3rd edi). PA: F. A Davis company.

[Yarbro](http://www.google.com.au/search?hl=en&sa=N&tbo=1&biw=1138&bih=555&tbm=bks&tbm=bks&q=inauthor:%22Connie+Henke+Yarbro%22&ei=SlsJT9bRDKzsmAWkitX9DQ&ved=0CDkQ9Ag4Hg), C. H.,  [Wujcik](http://www.google.com.au/search?hl=en&sa=N&tbo=1&biw=1138&bih=555&tbm=bks&tbm=bks&q=inauthor:%22Connie+Henke+Yarbro%22&q=inauthor:%22Debra+Wujcik%22&ei=SlsJT9bRDKzsmAWkitX9DQ&ved=0CDoQ9Ag4Hg), D.,&  [Gobel](http://www.google.com.au/search?hl=en&sa=N&tbo=1&biw=1138&bih=555&tbm=bks&tbm=bks&q=inauthor:%22Connie+Henke+Yarbro%22&q=inauthor:%22Debra+Wujcik%22&q=inauthor:%22Barbara+Holmes+Gobel%22&ei=SlsJT9bRDKzsmAWkitX9DQ&ved=0CDsQ9Ag4Hg),  B. H. (2011). *Cancer Nursing : Principles and Practice* (7th edi.). Canada: Jones & Bartlett publishers.