

2nd World Congress on Radiology and Oncology, July 16-17, 2018 Dubai, UAE -Judging response to cancer therapy RECIST and Beyond

Arvind K Chaturvedi

Rajiv Gandhi Cancer Institute & Research Centre, India

Cancer therapy describes the treatment of cancer in a patient, often with surgery, chemotherapy and/or radiotherapy. Targeted therapies are also available for some cancer types. A cancer patient might receive many different types of therapy, including those aimed at relieving the symptoms of cancer, such as pain. Many cancer treatments exist. Depending on your particular situation, you may receive one treatment or you may receive a combination of treatments. The goal of cancer treatment is to achieve a cure for your cancer, allowing you to live a normal life span. This may or may not be possible, depending on your specific situation. If a cure isn't possible, your treatments may be used to shrink your cancer or slow the growth of your cancer to allow you to live symptom free for as long as possible. Cancer treatments may be used as: Primary treatment. The goal of a primary treatment is to completely remove the cancer from your body or kill all the cancer cells. Any cancer treatment can be used as a primary treatment, but the most common primary cancer treatment for the most common types of cancer is surgery. If your cancer is particularly sensitive to radiation therapy or chemotherapy, you may receive one of those therapies as your primary treatment. Adjuvant treatment. The goal of adjuvant therapy is to kill any cancer cells that may remain after primary treatment in order to reduce the chance that the cancer will recur. Any cancer treatment can be used as an adjuvant therapy. Common adjuvant therapies include chemotherapy, radiation therapy and hormone therapy. Neoadjuvant therapy is similar, but treatments are used before the primary treatment

in order to make the primary treatment easier or more effective. Palliative treatment. Palliative treatments may help relieve side effects of treatment or signs and symptoms caused by cancer itself. Palliative treatment can be used at the same time as other treatments intended to cure your cancer. Cancer treatment options include: Surgery: The goal of surgery is to remove the cancer or as much of the cancer as possible. Chemotherapy. Chemotherapy uses drugs to kill cancer cells. Radiation therapy. Radiation therapy uses high-powered energy beams, such as X-rays or protons, to kill cancer cells. Radiation treatment can come from a machine outside your body (external beam radiation), or it can be placed inside your body (brachytherapy). Bone marrow transplant. Your bone marrow is the material inside your bones that makes blood cells from blood stem cells. A bone marrow transplant, also known as a stem cell transplant, can use your own bone marrow stem cells or those from a donor. A bone marrow transplant allows your doctor to use higher doses of chemotherapy to treat your cancer. It may also be used to replace diseased bone marrow. Immunotherapy. Immunotherapy, also known as biological therapy, uses your body's immune system to fight cancer. Cancer can survive unchecked in your body because your immune system doesn't recognize it as an intruder. Immunotherapy can help your immune system "see" the cancer and attack it. Hormone therapy. Some types of cancer are fueled by your body's hormones. Examples include breast cancer and prostate cancer. Removing those hormones from the body or blocking their effects may cause the cancer cells to stop

growing. Targeted drug therapy. Targeted drug treatment focuses on specific abnormalities within cancer cells that allow them to survive. Cryoablation. This treatment kills cancer cells with cold. During cryoablation, a thin, wandlike needle (cryoprobe) is inserted through your skin and directly into the cancerous tumor. A gas is pumped into the cryoprobe in order to freeze the tissue. Then the tissue is allowed to thaw. The freezing and thawing process is repeated several times during the same treatment session in order to kill the cancer cells. Radiofrequency ablation. This treatment uses electrical energy to heat cancer cells, causing them to die. During radiofrequency ablation, a doctor guides a thin needle through the skin or through an incision and into the cancer tissue. High-frequency energy passes through the needle and causes the surrounding tissue to heat up, killing the nearby cells. Clinical trials. Clinical trials are studies to investigate new ways of treating cancer. Thousands of cancer clinical trials are underway. Other treatments may be available to you, depending on your type of cancer. Monitoring response after treatment of cancer is an integral component of oncology practice. Objective tumor shrinkage has been widely regarded as a standard to judge response and is routinely used in everyday clinical practice to guide clinical decision-making. Imaging studies play a critical role in quantifying tumor response. The World Health Organization in 1979 laid down the WHO criteria for response assessment. The European organization for research and treatment of cancer came up with Response Evaluation Criteria in Solid Tumors in the year 2000 (RECIST). The RECIST documentation goes beyond lesion selection, measurement and

assessment of response. It also makes specific recommendations on the usage of imaging techniques. RECIST was modified in 2009 to RECIST 1.1 which is the current standard for objective response assessment in most solid tumors. However, both WHO and RECIST criteria have relied upon size alone. It is well-known that cancer response to treatment is not always by reduction in size alone. RECIST doesn't work very well with Gastro Intestinal Stromal Tumors (GIST), mesotheliomas and Hepato Cellular Carcinoma (HCC) after loco regional therapies such as TACE and ablative treatments. For this reason, modified RECIST criteria (mRECIST) for HCC and Choi criteria for GIST have evolved. With many new anti-cancer drugs, particularly molecular targeted therapies, decrease in metabolic activity precedes any reduction in size. Also, very often as in lymphomas a non-viable residual mass without any viable tumor tissue may continue to be seen. As such PET-CT is being increasingly used today to monitor response. It is a part of the new PERCIST criteria and is the standard tool in assessing response in lymphomas. With increasing use of molecular targeted therapies and immunotherapy to treat many advanced cancers there is a fundamental change in the way cancers may respond. Cancer specific and therapy specific response criteria have become relevant in an era of personalized medicine. Paradoxically increase in size and even appearance of a new lesion may well be a part of the initial response in immunotherapy. The evolution of response criteria, going beyond RECIST and evaluation of cancer and therapy specific response is the primary objective of this study.