Women & Infants researchers uncover way to target ovarian cancer treatment

PROVIDENCE – Researchers at Women & Infants Hospital have developed a biologic drug that would prevent the production of a protein known to allow ovarian cancer cells to grow aggressively while being resistant to chemotherapy. This would improve treatment and survival rates for some women.

The work coming out of the molecular therapeutic laboratory directed by **RICHARD G. MOORE, MD**, of the Program in Women's Oncology, entitled "HE4 (WFDC2) gene overexpression promotes ovarian tumor growth" was recently published in the international science journal *Scientific Reports*, a Nature publishing group.

WOMEN & INFANTS HOSPITAL

Richard G. Moore, MD

"We have known that the protein HE4 is present in women who have ovarian cancer," says Dr. Moore, who created the Risk of Ovarian Malignancy Algorithm (ROMA) to determine if a pelvic mass is cancerous based on the levels of HE4 and another protein. "What no one knew was why the protein is there or what activates it."

The WFCD2 gene produces a "messenger RNA" that encodes for the HE4 protein, not only imparting an aggressiveness to the tumor, enabling it to grow quickly, but also conveying a resistance to chemotherapy drugs used to treat the tumor.

"It plays a part in allowing the cancer to grow without restriction," Dr. Moore says. "We have determined that HE4 plays a part in allowing ovarian cells to become cancer cells, giving them the ability to grow and resist chemo."

Once they identified the function of the protein, Dr. Moore's research team was able to design a biologic drug that can prevent the messenger RNA gene from creating HE4. The novel biologic has been tested in cell and animal models, and the results are that the cancer does not grow as aggressively and responds to chemotherapy.

"We would give this biologic – which has minimal side effects – to any patient we identify through a blood test as producing HE4," he says, adding that oncologists have recognized that women with high levels of HE4 do not respond to treatment and their survival rates are lower. "This would be an individualized treatment that could increase survival rates of some women with ovarian cancer."

Dr. Moore and his team will continue testing the biologic drug, preparing for clinical trials in humans.

"This is a tremendous discovery and could mean the difference between life or death for some women with ovarian cancer," says **MAUREEN G. PHIPPS, MD, MPH**, chief of obstetrics and gynecology at Women & Infants. "Dr. Moore's research is ground-breaking in the area of ovarian cancer, and it's all happening in his laboratory in the Knowledge District of Providence." ❖

Maternal-fetal specialists at W&I question oxygen use for intrauterine resuscitation

PROVIDENCE – When a fetal heartbeat pattern becomes irregular during labor, many practitioners give oxygen to the mother. But questions remain whether this oxygen supplementation benefits the fetus or may actually be potentially harmful.

A clinical opinion written by third-year resident **MAUREEN HAMEL, MD**, along with maternal-fetal medicine specialists **BRENNA ANDERSON, MD**, and **DWIGHT ROUSE, MD**, of the Department of Obstetrics and Gynecology at Women & Infants Hospital, has been published in the January 10, 2014 online edition of the *American Journal of Obstetrics & Gynecology*.

The manuscript, entitled "Oxygen for intrauterine resuscitation: Of unproved benefit and potentially harmful," aimed to make recommendations about the safety of the use of maternal oxygen supplementation in laboring women.

According to lead author Dr. Hamel, "Maternal oxygen is often given to laboring women to improve fetal metabolic status or in an attempt to alleviate non-reassuring fetal heart rate patterns. However, there are only two randomized trials investigating the use of maternal oxygen supplementation in laboring women. These studies did not find that supplementation is likely to benefit the fetus and may even be harmful."

Based on their research, the team concludes that until it is studied properly in a randomized clinical trial, maternal oxygen supplementation in labor should be reserved for maternal hypoxia (lack of oxygen) and should not be considered an indicated intervention for non-reassuring fetal status. ❖