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## Blood based assay to predict delayed chemotherapy induced nausea

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Delayed nausea is a highly feared side effect of chemotherapy. Nausea can negatively affect nutritional habits, ability to work, motivation to follow recommended treatment regimens, and increase medical cost. Even with modern interventions to prevent, manage and treat nausea, some patients will still experience moderate to severe delayed nausea. Thus, there remains a need for risk assessment tools to avert the distress associated with symptoms in an effort to improve the well-being and quality of life of patients and their families. Chemotherapy-induced free radicals induce release of neurotransmitters that are known triggers of nausea. Therefore, we hypothesized that individual ability to scavenge free radicals could be used as indicator for nausea predictions.

Our focus was on glutathione, a critical component in the defence against free radicals. Blood from consented patients, drawn prior to treatment with platinum-based chemotherapy, was mixed with the assay reagent Hydroxyethyl disulfide (HEDS) that is processed through the glutathione recycling pathways into mercaptoethanol and secreted by the cells. Produced mercaptoethanol is assayed by spectrophotometry. Obtained concentrations of mercaptoethanol were normalized to total red cell counts. The test result was used to predict risk of

moderate-to-severe nausea. Predictions were then compared to self-reported outcomes using a validated questionnaire and notes in medical records to ascertain level of delayed nausea.

Using the described approach to predict nausea, we were able to correctly classify 89.1% of the patients as either experiencing moderate/severe nausea or no/mild nausea.

A second evaluation of our prospective study confirmed the preliminary, previously published, results that a reduced ability to recycle glutathione (GSH) in the blood may offer an objective indicator of the development of delayed nausea that might better guide clinicians in their efforts to provide optimal patient-oriented care.

### Speaker Biography

Margaretha Wallon has her expertise in biomarker research. She completed her Ph.D. from University of Lund, Sweden in 1990. She is spearheading the development of prognostic and predictive biomarkers for triple-negative breast cancers. She is also passionate about improving the quality-of-life for cancer patients as they are going through their life saving treatments. Her work has resulted in the first blood-based assay to predict delayed nausea prior to initiating treatment. Her lab is currently working on converting this assay to a high throughput format that will allow transfer of this test into clinical laboratories.

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