

April 16, 2008

Dear Surgeons and Staff:

The Practice Council of TRH Surgicenter @ Spring Ridge has been studying the effects of surgical smoke on staff and patients, and as a result is making a commitment to promote the consistent use of smoke evacuation products in our operating rooms.

Multiple studies have shown that surgical smoke, including both laser and electrocautery plumes, contain a number of harmful chemicals, bacteria, and intact viral DNA. Chemicals include acetaldehyde, acrolein, acetonitrile, benzene, formaldehyde, styrene, toluene, and xylene. Documented risks include acute and chronic inflammatory respiratory changes (e.g., emphysema, asthma, chronic bronchitis), liver and/or kidney damage, anemia, carcinoma, cardiovascular dysfunction, colic, dermatitis, eye irritation, headache, hepatitis, HIV, hypoxia, lacrimation, leukemia, lightheadedness, nasopharyngeal lesions, nausea and vomiting, sneezing, throat irritation, and weakness.

Furthermore, due to the small particle size found in the plume, generally 0.1 micrometers to 5.0 micrometers, the entire surgical team, as well as the patient, is at risk. Particles that are 5.0 micrometers or larger are deposited on the walls of the nose, pharynx, trachea, and bronchus. Particles less than 2.0 micrometers are deposited in the bronchioles and alveoli, or the gas exchange region of the lungs. Research has shown that “without smoke removal, particle concentration can increase from a baseline of about 60,000 particles per cubic foot, to about 1 million particles per cubic foot within five minutes after the electrosurgery unit [ESU] is activated.” Concentrations were elevated throughout the OR and remained high throughout the use of the ESU. It took 20 minutes for the room ventilation to return the particle level to baseline.

Patients are further at risk from smoke plume in the abdomen during laparoscopic procedures. Absorption of smoke through the peritoneal membrane can result in dyshemoglobinemias, which in turn can result in falsely elevated pulse oximeter readings. Plume may also be responsible for port-site metastases in patients. Therefore, plume away filters should be added to exhaust ports on trocars.

Based on the recommendations of NIOSH, AORN, ECRI and OSHA, our policy will be to recommend use of 0.1 micron inline smoke evacuation filters on our wall suction, which pulls approximately 5 cubic feet per meter (CFM) for minor lesions, podiatry cases, and any case that produces minimal plume. For those open cases in which the cautery is used for dissection and greater hemostasis, and that create more plume, (e.g. breast biopsies, hernias, paniculectomies, large lipomas, etc.) we are recommending use of the smoke evacuator which will pull 30 to 50 CFM. Tubing must be kept within 2 inches of the cautery tip to be effective. At any time, if any member of the surgical team expresses concern over plume and requests the smoke evacuator be used, their wishes should be honored without fear of reprisal.

Additional information will be available to anyone requesting it. We hope you will work with us to improve the safety in our operating rooms

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Chair of TRH Surgicenter @ Spring Ridge Practice Council

Source: The Reading Hospital (TRH) Surgicenter @ Spring Ridge, Wyomissing, PA.