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Prophylactic Platelet Transfusion Guidelines 2015

A high proportion of platelets are transfused prophylactically to reduce the risk of spontaneous bleeding in patients who are thrombocytopenic after chemotherapy or hematopoietic progenitor cell transplantation. AABB recently published updated guidelines for platelet transfusion (Kaufman RM, et al. *Ann Intern Med.* 2015;162(3):205-213. doi:10.7326/M14-1589).

Platelets should be transfused prophylactically to reduce the risk of spontaneous bleeding in hospitalized adult patients with therapy induced hypoproliferative thrombocytopenia when the platelet count is 10,000 cells/uL or less. Outpatients may be transfused at a higher threshold to reduce the number of clinic visits. In both clinical settings, a single unit of apheresis platelets is recommended, because studies have established that a higher dose does not provide additional benefit.

Serious bleeding complications after central venous catheter (CVC) placement are rare and often unrelated to platelet count. Prophylactic platelet transfusion is recommended for patients undergoing elective central venous catheter placement with a platelet count less than 20,000 cells/uL. This threshold also applies to placement of large bore catheters for apheresis in thrombocytopenic patients. AABB's recommendation is lower than the 2012 Society of Interventional Radiology guideline which recommends a minimum platelet count of 50,000 cells/uL for CVC placement.

Bleeding complications with lumbar puncture are rare, but CNS hemorrhage has the potential to cause devastating neurologic sequelae. Prophylactic platelet transfusion is recommended for patients having elective diagnostic lumbar puncture with a platelet count less than 50,000 cells/uL. A higher platelet count is often

recommended for other procedures such as epidural anesthesia.

There is no evidence of increased perioperative bleeding risk in thrombocytopenic patients with platelet counts greater than 50,000 cells/uL and no evidence of coagulopathy. Prophylactic platelet transfusion should be reserved for patients having major elective non-neuraxial surgery with a platelet count less than 50,000 cells/uL. For neurosurgery, platelets are usually transfused prophylactically for a pre-procedure platelet count below 100,000 cells/uL.

Prophylactic platelet transfusions are not recommended for patients with normal platelet counts who are undergoing cardiac surgery with cardiopulmonary bypass. Transfusion should be reserved for patients experiencing perioperative bleeding with evidence of thrombocytopenia or platelet dysfunction.

MTB PCR Update

Updated performance characteristics for Cepheid Xpert MTB (*Mycobacterium tuberculosis*) PCR have recently been published by the CDC (MMWR 64(07);193). Based on results of a multicenter international study, results from one or two sputum specimens are as reliable as results obtained when multiple specimens are submitted.

A single Xpert MTB PCR test detected 97% of AFB smear-positive, culture-positive MTB patients, while two serial Xpert MTB PCR tests detected 100%. The negative predictive value of a single negative Xpert MTB PCR result was 99.6% calculated for United States MTB disease prevalence. Finally, a single Xpert MTB PCR assay detected 55% of AFB smear-negative, culture-positive specimens, while two successive tests improved recovery to 69%.

The Xpert MTB PCR assay has been performed in Saint Luke's Microbiology since August 2014.

Molecular testing does not replace the need for traditional testing, hence all sputum specimens received for MTB PCR must have AFB smear and culture ordered as well. MTB PCR testing is performed daily.

Electronic Cigarettes

Electronic cigarettes are electronic nicotine delivery systems. They were patented in the United States in 2005. Since then, their popularity has exploded. Annual sales are estimated to exceed \$3 billion.

Most e-cigarettes are airflow-activated, battery powered atomizers. Inhaling on the mouthpiece activates an airflow sensor, which triggers a battery powered atomizer to heat a liquid solution to approximately 55 °C and produce a vapor containing micro-droplets of nicotine. The process of inhaling nicotine vapor into the lungs is referred to as vaping. For this reason, they are sometimes referred to as vape pens.

Many people have decided to vape instead of smoke tobacco because they perceive vaping to be healthier, cleaner and cheaper than smoking. In addition, e-cigarettes circumvent smoke-free policies in many workplaces. Nearly one-third of e-cigarette users have never smoked tobacco cigarettes. The popularity of e-cigarettes has the potential to reverse the gains achieved in the public campaign against smoking.

E-cigarettes are not currently subject to regulation by the FDA. E-cigarette refill liquids typically contain glycerol or propylene glycol, nicotine, and flavoring, but ingredients and concentrations can vary by brand. Some refills are labeled with a nicotine concentration while others use a low-medium-high designation. Nicotine concentrations vary widely and often do not match the concentration stated on the label. Some refills contain high concentrations of other tobacco alkaloids such as cotinine and anabasine. These are designated to be whole tobacco alkaloid e-liquid. Thus, the amount of nicotine and other

alkaloids that a user is exposed to can vary widely.

The most well-documented safety hazard associated with e-cigarettes is accidental exposure to nicotine solutions. From January to March of 2014, 651 nicotine exposures were reported to American poison control centers, and 50% of them occurred in children less than 6 years old.

A major public health concern is passive exposure to e-cigarette aerosol. Air exhaled by e-cigarette users contains the nicotine metabolite cotinine in amounts comparable to that exhaled by tobacco smokers.

The long-term safety of e-cigarettes has not been established. A recent letter to the editor in the *New England Journal of Medicine* demonstrated that some higher voltage e-cigarettes produce hemiacetal, which can release the carcinogen, formaldehyde (N Engl J Med 2015;372:392–4). Vaping 3 mL of e-cigarette solution per day produces more than twice the amount of formaldehyde generated by smoking 20 tobacco cigarettes.

Accurate testing for smoking status has become an important component in determining life insurance premiums and monitoring compliance with employment no-smoking policies. The advent of e-cigarettes has created a significant problem with interpretation of tests measuring nicotine metabolites. Traditionally, laboratory tests have relied on the presence of the tobacco-specific alkaloid anabasine to distinguish active tobacco users from those using nicotine replacement therapies. A urine sample that is positive for nicotine and its metabolite cotinine but negative for anabasine is consistent with use of nicotine replacement therapy, whereas a sample that is also positive for anabasine is consistent with tobacco use. Since some e-cigarette refills contain anabasine, users may test positive and be incorrectly identified as tobacco smokers.