Did you know what happens?

Departmental Guidelines for Lactating Residents

Introduction

The University of Michigan Department of Anesthesiology is committed to supporting the health and wellness of all residents in order to protect the diverse and inclusive nature of our residency program. This guideline has been developed in order to support the wellness of lactating residents in our program.

Departmental Guidelines for Lactating Residents

Resident Responsibilities

- Residents who intend to express milk will contact the department via e-mail **3 months** prior to returning from maternity leave (Pam Mulholland/Dr. Klarr).
- The resident will inform the department when the lactation period is complete and they are no longer requiring lactation time.

Department **Commitment**

- The department will inform service leads and/or floor runners if a resident is lactating to ensure they have adequate lactation breaks. Residents will be allowed to take the time required for lactation in addition to their regular break. We are working on improving communication to floor runners/lead CRNAs about lactating residents, but as changes are in progress, please inform the CRNA *daily* of the need for additional time.

- The department will designate specific private areas to be used for lactation:

  - **UH Main / SICU:**
    - Residents: Female call room during daytime hours. Additionally, dedicated space is available in the female locker room (Room 1C-321B) that may be used during the night if the call room is occupied. Room 1C-321B includes a sink and three bays with pumps and privacy curtains. Badge access is required.
    - CRNAs: Female locker room (Room 1C-321B. See above)
  - **OB**: Call room may be used for lactation during daytime hours. If this room is occupied at night, additional rooms available at C.S. Mott and Von Voigtlander Women's Hospital include rooms: 7-353, 8-703, 9-745, 10-351, 11-237, 12-355. Private stations with breast pumps (about 12 stations total), microwave and sinks. Pump supplies available.
  - **Mott**:
    - Residents: Resident call room during daytime hours and when available during evening hours. Additionally, Mott is currently remodeling a bathroom in the C&W Physician/CRNA lounge (funding has been approved) to convert it into a breast pump room.
    - CRNAs: CRNA call room during daytime hours and when available during evening hours. Additionally, Mott is currently remodeling a bathroom in the C&W Physician/CRNA lounge (funding has been approved) to convert it into a breast pump room.
  - **CVICU**: Call room during daytime hours. CVC room 2503 if call room is occupied during the night.
  - **EAA:** The department will identify a private area at East Ann Arbor that can be used for lactation. At this time, a lockable faculty office may be used.

- **CVC**: CVC Room 2503 is available for staff use for lactation support. To access space, you need to register online (click on following surveymonkey link) and call 2-4120 ((734) 232-4120) for the room schedule and access code: www.surveymonkey.com/s/CTPVQ5T. Breast pump provided.

Departmental Support

- The department is committed to maintaining a welcoming, collegial and inclusive environment for all residents.
- Suggestions for improvement or modifications in these guidelines can be brought to the attention of any member of the Wellness Committee for consideration.
- Any conflict arising from the need for residents to express milk should be reported to the Program Director for resolution.

Follow this link to find Lactation Room Locations in Michigan Medicine

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Nitrous oxide in pregnancy

by Dr. Holly Gray

Nitrous oxide is an inexpensive, inorganic gas used most commonly as an adjunct to general anesthesia maintenance, anxiolysis in obstetric ORs/ laboring patients, and during dental procedures. Its side effect profile and risk in the pregnant patient is a controversial topic and we will briefly review the literature here. Multiple animal studies from the late 1970s & early 1980s demonstrated a teratogenic effect on rat fetuses chronically exposed to 1000 ppm of N2O which lead to a growing concern about its safety in pregnancy. The mechanism linked to teratogenicity is thought to be secondary to N2O inhibition of methionine synthase, the enzyme required for the production of methionine, an essential amino acid, and tetrahydrofolate which is essential for DNA production. It is logical to think that these compounds are vital for adequate embryological development of a fetus, however, data has not proven this.

Due to ethical concerns, no prospective, randomized controlled trials have been conducted to illustrate this risk in humans. Retrospective questionnaires &

epidemiologic studies have found an association of N2O exposure during pregnancy to reduced fertility, low birth weight, and higher risk of spontaneous abortion, but these are uncontrolled for bias and cofounders. These studies were also focused on workers in dental offices without adequate scavenging system, thus likely higher levels in ambient air. In fact, one study has shown that female dental assistants exposed to N2O for greater than 5 hours daily without a scavenging system was linked to higher rates of infertility compared to those exposed to less
A meta-analysis was done of the studies looking at risk of spontaneous abortion. It found a relative risk of 1.3 among females exposed to N2O in only half of the studies reviewed and did not find an association between male exposure and increased abortion rates in their wives. Meta-analysis has also been done to look at relative risk for congenital abnormalities in exposed female anesthesiologists. This found a relative risk of 1.2 but has questionable statistical significance.

Despite the inconsistent data, the above concerns lead to subsequent development of National Institute for Occupational Safety and Health (NIOSH) guidelines to limit N2O levels in air to 25 ppm with or without the addition of volatile anesthetic. This level is well below that linked to possible teratogenicity in rats, thus modern day OR with N2O use can generally be considered safe in pregnancy.

Burm, Anton. Occupational hazards of inhalational anaesthetics. Best Practice & Research Clinical Anaesthesiology. Vol. 17, No. 1, pg 147-161, 2003.

Ko, Hanjo. Nitrous oxide & perioperative outcomes. J Anesth. 28:420-428. 2014.

Kugel, G. Nitrous oxide & occupational exposure: it’s time to stop laughing. Anesth Prog. 36: 252-257. 1989.

Pregnancy and Methyl Methacrylate

by Dr. Carolyn Foley

We have all heard that certain operating rooms, notably orthopedic rooms, are best to be avoided during pregnancy. There are multiple exposure risks including methyl methacrylate and radiation in addition to the common exposures of anesthetic gases, physical and emotional stress, and risk of blood borne pathogens. Specifically, methyl methacrylate (MMA) is an acrylic resin most commonly used as a type of bone cement in joint replacement surgeries. This chemical often raises concern regarding toxicity for surgical staff who are exposed, in particular pregnant and breastfeeding women. Studies have reported that staff may suffer from hypersensitivity or asthmatic-like reactions, local neurological symptoms, and local dermatological reactions.

Upon reviewing the literature, the present thought in most studies is that MMA is not carcinogenic or toxic under normal conditions in the operating room. There are multiple animal studies, mainly on rats, since the late 1970s demonstrating effects of MMA on growing fetuses and the pregnant rats. In general, pregnant rats were exposed to high concentrations of inhaled MMA during early stages of pregnancy. MMA vapor concentrations in the OR under normal conditions did not exceed 280 ppm. In the animal studies, rats were exposed to increasing amounts up to or exceeding 1300 ppm. The changes that were found only included increased average fetal weight and decreased maternal weight gain. There were no significant embryonic or fetal abnormalities or toxicity even at exposure levels that resulted in maternal toxicity.

There is a lack of good data about the effect of MMA on human fetuses other than observational data. For example, a study in Russia (1997) revealed an increased incidence of spontaneous abortions of surgical staff. Newborns were recorded to have congenital malformations, cases of hypoxia, signs of prematurity, and hypotrophy, but, of course, it is difficult to conclude any causal relationships. In 2006, two surgeons exposed to MMA during 8 joint replacement surgeries were found to have no detectable levels of MMA in serum or breastmilk compared to non-exposed women.

So what does this all mean? Should pregnant and breastfeeding women still avoid MMA exposure? Unfortunately as of now, clear data is lacking to make a confident evidence-based decision. It is up to each surgical staff member if they feel this risk is low enough to be exposed, or if they would rather not take the risk of the unknown.

References:

Downes J, Rauk PN, Vanheest AE. Occupational hazards for pregnant or lactating women in the orthopaedic operating room. J Am Acad Orthop Surg. 2014 May;22(5):326-32.

Keene RR1, Hillard-Sembell DC, Robinson BS, Novicoff WM, Saleh KJ. Occupational hazards to the pregnant orthopaedic surgeon. J Bone Joint Surg Am. 2011 Dec 7;93(23):e1411-5.

Solomon HM1, McLaughlin JE, Swenson RE, Hagan JV, Wanner FJ, O'Hara GP, Krivanek ND. Methyl methacrylate: inhalation developmental toxicity study in rats. Teratology. 1993 Aug;48(2):115-25.

Fedotova IV. Occupational contact of women with methylmethacrylate and the negative tendency in the process of child-bearing. Gig Sanit. 1997 Jul-Aug;(4):19-21.

Linehan CM1, Gioe TJ. Serum and breast milk levels of methylmethacrylate following surgeon exposure during arthroplasty. J Bone Joint Surg Am. 2006 Sep;88(9):1957-61.

McLaughlin RE, Reger SI, Barkalow JA, Allen MS, Dafazio CA. Methylmethacrylate: A study of teratogenicity and fetal toxocity of the vapor in the mouse. J Bone Joint Surg Am. 1978 Apr;60(3):355-8.

Nicholas CA, Lawrence WH, Autian J. Embryotoxicity and fetotoxicity from maternal inhalation of methyl methacrylate monomer in rats. Toxicol Appl Pharmacol. 1979 Sep 30;50(3):451-8.

WELLNESS EVENTS & AROUND THE HOSPITAL

INTERN BBQ

UPCOMING WELLNESS EVENTS

- Crossroads Soup Kitchen volunteering: July 28
- “Running Between the Vines” 5K/5mile/Half: August 17
- Golf outing: August date TBD

1. Where did you grow up and go to school?

I grew up in Southern California, and have proceeded to move to all parts of the US- I went to undergrad at the George Washington University in Washington, DC, then medical school at Tulane in New Orleans. I then moved briefly back west for two years to Phoenix where I started residency in general surgery before deciding to

move to the only region I have not yet lived in and starting my best adventure yet with anesthesia!

2. What are your hobbies or interests? What do you like to do in your spare time?

I love being outside! If it's sunny, rainy, (or hopefully even with snow), I love exploring. I'm getting back to my old favorite of trail running at the Arb right now, and I'm sure I'll find other fun trails soon! I also always love a good book and its ability to take you anywhere. And I have a secret love of Rick Steve's travel show...

3. What made you decide to pursue anesthesia?

I started residency in general surgery. At the beginning of my second year, I did a fun robotics rotation and realized that despite finding the surgeries pretty amazing, I didn't actually love the details of them. My favorite area was the SICU where you had to have more of a fluid reaction to everything happening with your patients. I realized anesthesia gave me the opportunity to have those features I loved in the ICU in an OR setting and decided it sounded perfect for me.

4. Where do you see yourself in 5 years?

I honestly have no idea. If I have learned anything from switching paths, it's that life can take me in any direction and I'd rather keep an open mind and experience everything so as to make the best decision possible.

5. Tell us one last thing that is special, unique, and wonderful that we just must know about you!

I had a Disneyland annual pass for five years and have been there more than 100 times!

MENTAL HEALTH RESOURCES

U-M Psychiatric Emergency Services:

(734) 936-5900 (available 24/7)

National Suicide Prevention Hotline: 1-800-273-8255 (available 24/7)

HOA Non-Emergency Mental Health ServicesMichigan Medicine

Office of Counseling and Workplace Resilience

Community Resources accepting UM Premier Care

Ann Arbor Consultation Services (evening and weekend hours available)
734-996-9111
www.a2consultation.com

Huron Valley Consultation Center (evening and weekend hours available)
734-913-1093
www.huronvalleyconsult.org

Lotus Consulting
734-478-7358
www.lotusconsultingpllc.com

Anesthesia
WELLNESS COMMITTEE