

Patient Education

Pre-Anesthesia

Monitored Anesthesia Care

Decision aid

This decision aid is meant to help you decide what type of anesthesia is right for you. It explains the benefits and risks of monitored anesthesia care. Read this decision aid, fill out the question boxes, and talk with your anesthesiologist to help you decide what type of anesthesia is your best choice.

What is monitored anesthesia care (MAC)?

During monitored anesthesia care (MAC), you will be sedated with anesthetic medications given through an IV. While you are receiving MAC anesthetics, your level of awareness may range from feeling relaxed and slightly sleepy to a deep sleep. You may or may not remember the surgery or procedure, but you should remain comfortable and feel minimal pain during the surgery or procedure. In addition to medications, local anesthesia (numbing medicine) may also be given by the surgeon to numb the surgical site, or your anesthesiologist may use local anesthesia to perform a peripheral nerve block, which will numb the entire arm, leg, or area on the body where the surgeons will be operating.

You will be given extra oxygen to breathe through prongs in your nose or via a facemask. You should be able to breathe on your own during the surgery or procedure.

During the surgery or procedure, your anesthesiologist will closely watch how much oxygen is in your blood, how sleepy you are, your breathing, your blood pressure, and your heart rate.

What are the possible benefits of MAC?

Some possible benefits of MAC are:

- You may remain awake during the surgery or procedure.
- Pain relief during your procedure.
- Relief from anxiety during your procedure.
- Reduced nausea, vomiting, and drowsiness afterwards compared to general anesthesia.
- Shorter recovery time after the surgery or procedure compared to general, epidural, or spinal anesthesia.
- The level of sleepiness can be adjusted to your level of comfort.

1. What benefits of MAC matter most to me?

What are the possible risks of MAC?

All types of anesthesia have risks. The level of risk depends on many factors, such as your age, your health, the type of surgery or procedure, and how you respond to the medicines used. Elderly people, people having emergency surgery, or people with conditions such as heart disease, sleep apnea, obesity, reflux (heartburn) are at higher risk of having negative reactions to anesthesia. Talk to your anesthesiologist about your specific risks for receiving any type of anesthesia and having surgery.

Risks **specific to MAC** include:


Minor Risks

- Nausea and vomiting are common after any type of anesthesia. 1 to 2 out of every 1,000 people will have nausea and vomiting within the first 24 hours after surgery.
- Awareness – During MAC, there is a chance that you may remember sounds and events during your procedure, which may cause stress and anxiety in some patients. If you do not want to remember anything during your surgery or procedure, general anesthesia may be best for you.
- Allergic reactions, agitation or confusion, or skin reactions from tape, monitors, or intravenous catheters.
- Dizziness can be caused by low blood pressure, dehydration, low blood sugar, or reaction to anesthesia medicines. Dizziness after anesthesia may worsen with length of time under anesthesia and type of surgery. This dizziness usually resolves on its own.
- It may be necessary for your anesthesiologist to change to general anesthesia during your surgery if MAC does not provide the best level of comfort and pain relief.

Major Risks – all very rare

- Poor breathing – 4 to 8 in 10,000 people may suffer from breathing complications during MAC.
- Aspiration – Occurs when a person vomits, and the stomach contents go from the mouth down the trachea (the breathing pipe) into the lungs, which is very serious. Aspiration during or after anesthesia occurs in 2 to 10 in 10,000 people. Aspiration may cause pneumonia, lung injury, or even death. Aspiration occurs more frequently in patients with certain conditions, such as reflux disease.
- Heart attack, stroke, brain damage or death during anesthesia are very rare. 1 to 4 in 10,000 people may have a heart attack. 2 to 10 in 10,000 people may die.

Put your risk in perspective:



**Risk of death in an airplane:
1 in 7,229**

2. What are my concerns about these possible risks?

What are the side effects after MAC?

- Pain – you will feel some pain and discomfort from your surgery or procedure as the anesthesia wears off. However, this pain can be controlled with pain medication.
- Drowsiness, although it does not usually last as long as after general anesthesia.

What are my choices?

- You may or may not need anesthesia for your procedure. You may have a choice of local anesthesia, MAC, general anesthesia, peripheral nerve block, or epidural or spinal anesthesia, or some combination of these. Discuss these options and your preferences and concerns with your anesthesiologist and surgeon.
- Your anesthesiologist and surgeon will decide if MAC is an appropriate anesthetic choice for you, given your medical condition, history, and planned procedure.

Do I understand the pros and cons of MAC so I can decide what option is the right choice for me?

1. During monitored anesthesia care (MAC) you will be sedated, but you may remember parts or all of the surgery or procedure.
 - True
 - False
2. Benefits of MAC include:
 - Reduced nausea, vomiting, and drowsiness compared to general anesthesia.
 - Relief from pain and anxiety during your procedure.
 - Shorter recovery time after your surgery or procedure compared to other types of anesthesia.
 - All of the above.
3. Specific risks of MAC include:
 - Stress or anxiety from awareness of sounds and events during your procedure.
 - Nausea and vomiting.
 - Poor breathing or aspiration of stomach contents.
 - All of the above.

Answers: 1) True; 2) All of the above; 3) All of the above

Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. Clinic staff are also available to help.

Pre-Anesthesia Clinic:
(XXX) XXX-XXXX

References

1. Agostoni M, Fanti L, Gemma, M, et al: Adverse events during monitored anesthesia care for GI endoscopy: an 8-year experience. *Gastrointest Endosc* 2011; 74 (2): 266-75.
2. Bitar G, Mullis W, Jacobs W, et al: Safety and Efficacy of Office-Based Surgery with Monitored Anesthesia Care/Sedation in 4778 Consecutive Plastic Surgery Procedures. *Plast Reconstr Surg* 2003; 111: 150-6.
3. Kent C, Mashour G, Metzger N, et al: Psychological impact of unexpected explicit recall of events occurring during surgery performed under sedation, regional anaesthesia, and general anaesthesia: Data from the Anesthesia Awareness Registry. *Br J Anaesth* 2013; 110(3):381-7.
4. Guimaraes ES, Campbell EJ, Richter JM. The Safety of Nurse-Administered Procedural Sedation Compared to Anesthesia Care in a Historical Cohort of Advanced Endoscopy Patients. *Anesth Analg* 2014; 119:349-56
5. Sprung J, Warner ME, Contreras MG, et al. Predictors of Survival following Cardiac Arrest in Patients Undergoing Noncardiac Surgery. A Study of 518,294 Patients at a Tertiary Referral Center. *Anesthesiology* 2003; 99(2):259-69.

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