

VUMC Institutional Review Board  
Informed Consent Document for Research

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Study Title: The Magnetic Flexible Endoscope (MFE): First-in-Human Trial  
Version Date: March 26, 2023  
PI: Keith L. Obstein, MD, MPH

### The Magnetic Flexible Endoscope (MFE): First-in-Human Trial

Name of participant: \_\_\_\_\_ Age: \_\_\_\_\_

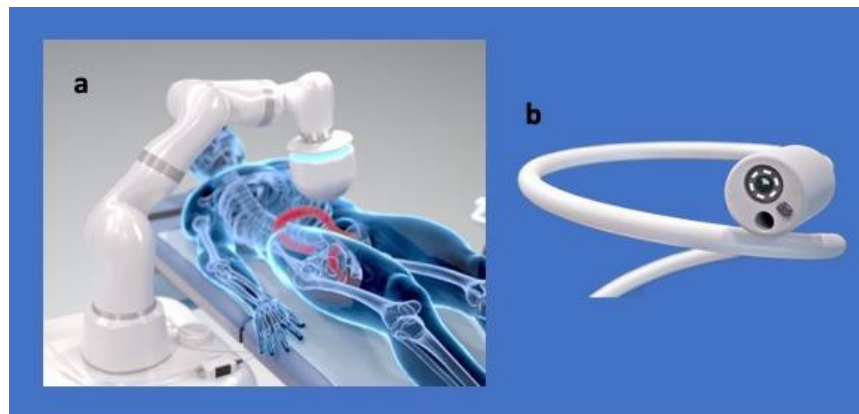
**The following is given to you to tell you about this research study. Please read this form with care and ask any questions you may have about this study. Your questions will be answered. Also, you will be given a copy of this consent form.**

#### Key Information:

The first section of this document contains some key points that the research team thought you would find important. The study is described in more detail after this section. If you do not understand something, please ask someone.

#### Key information about this study:

In this study, we will evaluate the ability of the Magnetic Flexible Endoscope (MFE) to travel through the colon. The MFE is a device made of flexible tubing that contains a camera, light, and magnet at the tip. The tip of the tube is about the size of a penny. The magnet inside the tip allows the MFE to be moved through the colon by a second magnet attached to a robotic arm that is outside of the body (Figure 1). Due to the smaller size and increased flexibility of the MFE, the potential risks are no greater than the risk associated with passage of a conventional colonoscopy.



**Figure 1:** The MFE platform: (a) robotic arm; (b) flexible tubing with camera, light, and magnet at the tip.

Your participation in this study will consist of (1) one study procedure that will occur immediately following your routine colonoscopy, (2) one interview that will occur immediately after your study

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procedure, (3) one single question survey that will occur immediately after your study procedure, and (4) one survey that will be completed immediately after your agreement to participate in the study.

If you have any kind of metal implant, including cardiac or gastric pacemakers, or if your Body Mass Index (BMI) is greater than 30 kg/m<sup>2</sup>, you cannot be enrolled in the study.

We plan to enroll 5 participants.

**Detailed Information:**

The rest of this document includes detailed information about this study (in addition to the information listed above).

You are being asked to take part in this research study because you are a patient of the Vanderbilt Digestive Disease Center undergoing a colonoscopy as a part of your routine care.

You do not have to be in this research study. You may choose not to be in this study and get other treatments without changing your healthcare, services, or other rights. You can stop being in this study at any time. If we learn something new that may affect the risks or benefits of this study, you will be told so that you can decide whether or not you still want to be in this study. Your medical record will contain a note saying you are in a research study and may contain some research information about you. Anyone you authorize to receive your medical record will also get this information.

**Side effects and risks that you can expect if you take part in this study:**

Magnetic flexible endoscope (MFE): The potential risk of using the MFE is no greater than conventional endoscopes. The risks associated with conventional endoscopy include aspiration (choking and/or gagging), bleeding, infection, pain, and perforation. The risk of perforation in conventional colonoscopy is low (less than 1 in 2,000-4,000 patients). If a perforation does occur, additional treatment or surgery would be required as per standard of care. The MFE is a single use, sterile, and individually packaged device, therefore the risk of infection is extremely rare. If infection does occur, treatment as per the standard of care would be implemented. As sedation is discontinued after completion of your conventional colonoscopy, there may be a potential risk of pain and/or of waking-up while the MFE is traveling through your colon.

Magnet: A set of magnets will be used in order to move the MFE through your colon. These magnets are low strength. If you have any magnetic implants in your body, including cardiac or gastric pacemakers, you will be unable to participate in this study. All other magnetic material (i.e. jewelry, mobile phone) or items that could be affected by a magnet (i.e. credit card, bank card) will need to be removed prior to initiation of the procedure. Therefore, the risk from exposure to a magnetic field that is used in this technology is extremely low.

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Kuka medical robot: The robot is a fully compliant medically certified robot (CB Test Certificate; IEC 60601-01 and IEC 62304) that is approved to safely work and interact directly with humans. While there is a small potential for collision with the robot arm, if this occurs, the arm immediately stops and is able to be pushed away consistent with the human-robot collaboration safety certification.

Breach of confidentiality: There is a potential risk of breach of confidentiality associated with participation in any research study. Every measure will be taken to ensure that specific participant information is kept confidential throughout the conduct of this study.

**Risks that are not known:**

While the Kuka medical robot used with the MFE is fully approved for human-robot collaboration, the MFE system itself is investigational, meaning non-FDA approved, and therefore there may be potential risks that are unknown at this time. These are likely to be minimal, if any at all, given the extensive testing and validation of the MFE platform that has taken place before this first-in-human study.

**Good effects that might result from this study:**

The benefits to science and humankind that might result from this study:  
Improve the care and reduce the risk of adverse events from conventional colonoscopy.

**Procedures to be followed:**

**Study Visit:**

Your study visit will occur at the same time as your standard of care visit (conventional colonoscopy). After your conventional colonoscopy, and only if your colon appears normal, your sedation will be stopped as per standard practice and you will recover from the sedation in the endoscopy room. While you are recovering from sedation, the medical doctor who is part of the study team, will guide the MFE from your rectum to the cecum of your colon (the beginning to the end). The MFE will not be used for any interventions (i.e. biopsies, polypectomy—removal of polyps). The study is only to see how the MFE travels in the colon and your experience with having the MFE travel in your colon.

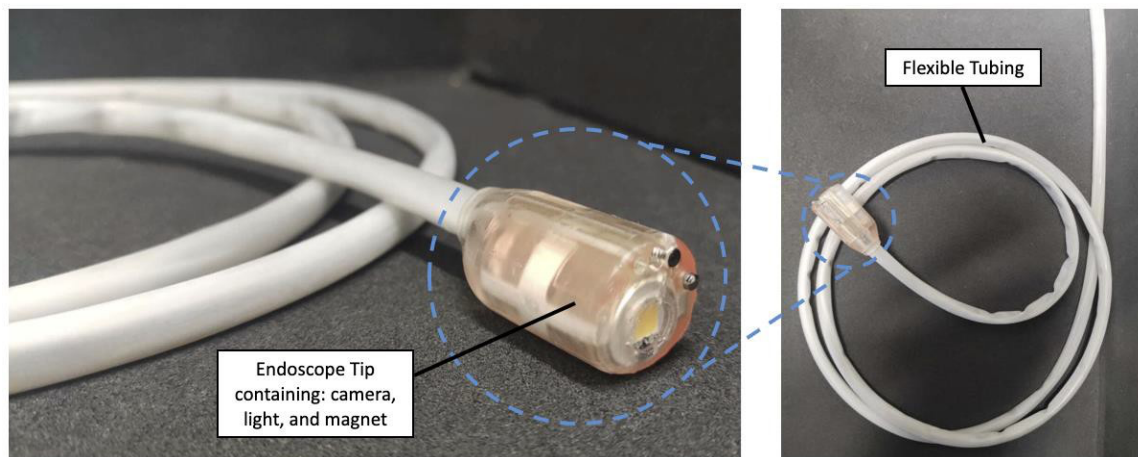
The MFE is a single use device that is sterilized and individually packaged. The tip of the device is about the size of a penny and contains a camera, light, and magnet. The tube is made of a soft, flexible medical grade material [Figure 2]. The magnet in the tip of the device allows it to be moved through your colon by interacting (attracting and repelling) with another magnet that is attached to the Kuka Medical Robot. This robot is I for use with humans and in other medical procedures such as surgeries and ultrasounds [Figure 3].

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The MFE will be manually placed in the colon per rectum (the same method of placement for the conventional colonoscope), and the robot will be positioned above your abdomen. Once the MFE is in position, the robot will gently pull the device through your colon to the cecum (the last part of your colon) using the magnets. The robot will be operated by the medical doctor who is part of the study team during the procedure. Once the cecum has been reached, the MFE will then be withdrawn from your colon and the study will be stopped. This will take no more than 40 minutes to complete. If 40 minutes is reached before the MFE is able to reach your cecum, the MFE will be withdrawn from your colon and the study will be stopped.



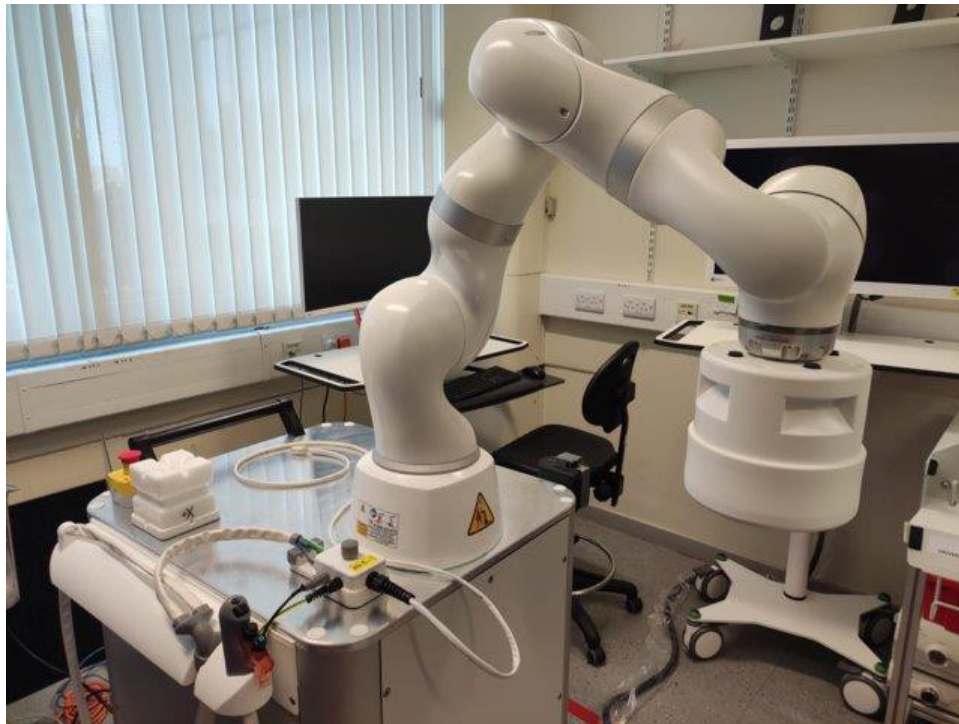
**Figure 2:** The MFE Endoscope made of flexible tubing that contains a camera, light, and magnet at the tip.

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*Figure 3: The KUKA medical robot within the MFE platform.*

**Questionnaire and Interview:**

After agreeing to be in the study and before your conventional colonoscopy, you will be asked to complete a questionnaire on your overall health status. After completion of your study procedure, (1) you will be asked to complete a single question survey (scale score) and (2) a member of the study team will perform a structured interview to ask about your comfort and experience during the procedure. This will be performed in a private consultation room in the endoscopy suite.

**Medical Record Review:**

During the study, we will gather information about you and your health from your medical record.

**Payments for your time spent taking part in this study or expenses:**

There is no payment for participating in this study.

**Costs to you if you take part in this study:**

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If you agree to take part in this research study, you and/or your insurance will not have to pay for the tests and treatments that are being done only for research.

However, you are still responsible for paying for the usual care you would normally receive for the treatment of your illness. This includes treatments and tests you would need even if you were not in this study. These costs will be billed to you and/or your insurance.

You have the right to ask what it may cost you to take part in this study. If you would like assistance, financial counseling is available through the Vanderbilt Financial Assistance Program. The study staff can help you contact this program. You have the right to contact your insurance company to discuss the costs of your routine care (non-research) further before choosing to be in the study. You may choose not to be in this study if your insurance does not pay for your routine care (non-research) costs and your doctor will discuss other treatment plans with you.

**Payment in case you are injured because of this research study:**

If it is determined by Vanderbilt and the Investigator [with Sponsor input] that an injury occurred as a direct result of the tests or treatments that are done for research, then you and/or your insurance will not have to pay for the cost of immediate medical care provided at Vanderbilt to treat the injury.

There are no plans for Vanderbilt [or the Sponsor] to pay for any injury caused by the usual care you would normally receive for treating your illness or the costs of any additional care. There are no plans for Vanderbilt [or the Sponsor] to give you money for the injury.

**Who to call for any questions or in case you are injured:**

If you should have any questions about this research study or if you feel you have been hurt by being a part of this study, please feel free to contact Dr. Keith Obstein or his study team at (615) 322-4643. If you cannot reach the research staff, please contact the Manager of the GI Research Enterprise, Michael McGill, at (615) 322-4643.

For additional information about giving consent or your rights as a person in this study, to discuss problems, concerns, and questions, or to offer input, please feel free to call the VUMC Institutional Review Board Office at (615) 322-2918 or toll free at (866) 224-8273.

**Reasons why the study doctor may take you out of this study:**

You will be withdrawn from the study if the study doctor decides it is best for you. If you are withdrawn from the study, you will be told the reason.

**What will happen if you decide to stop being in this study?**

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If you decide to stop being part of the study, you should tell your study doctor. Deciding to not be part of the study will not change your regular medical care in any way.

**Clinical Trials Registry:**

A description of this clinical trial will be available on [www.clinicaltrials.gov](http://www.clinicaltrials.gov), as required by U.S. Law. This website will not include information that can identify you. At most, the website will include a summary of the results. You can search this Web site at any time.

**Confidentiality:**

There is a potential risk of breach of confidentiality associated with participation in any research study. Every measure will be taken to ensure that specific participant information is kept confidential throughout the conduct of this study.

Electronic data will be stored in REDCap and will only be accessible by key study personnel. REDCap is a secure database. The information in the database can only be accessed with a specific username and password.

Study related documents will be stored in locked filing cabinets in the study doctor's office. This office is only accessible with a key by the study team.

The study team will meet regularly to monitor the progress of the study and review any study and/or participant issues. The study doctor will oversee all aspects of the study conduct and is available to all participants at any time by calling the number listed above.

This study may have support from the National Institutes of Health. If so, your study information is protected by a Certificate of Confidentiality. This Certificate allows us, in some cases, to refuse to give out your information even if requested using legal means.

It does not protect information that we have to report by law, such as child abuse or some infectious diseases. The Certificate does not prevent us from disclosing your information if we learn of possible harm to yourself or others, or if you need medical help.

Disclosures that you consent to in this document are not protected. This includes putting research data in the medical record or sharing research data for this study or future research. Disclosures that you make yourself are also not protected.

**Privacy:**

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Any samples and information about you may be made available to others to use for research. To protect your privacy, we will not release your name. You will not receive any benefit as a result of the tests done on your samples. These tests may help us or other researchers learn more about the causes, risks, treatments, or how to prevent this and other health problems.

**Study Results:**

Study results will not be individually shared with participants. A copy of any peer-reviewed publications that result from this research will be made available to participants upon their verbal or written request.

**Authorization to Use/Disclose Protected Health Information**

**What information is being collected, used, or shared?**

To do this research, we will need to collect, use, and share your private health information. By signing this document, you agree that your health care providers (including both Vanderbilt University Medical Center and others) may release your private health information to us, and that we may use any and all of your information that the study team believes it needs to conduct the study. Your private information may include things learned from the procedures described in this consent form, as well as information from your medical record (which may include information such as HIV status, drug, alcohol or STI treatment, genetic test results, or mental health treatment).

**Who will see, use or share the information?**

The people who may request, receive or use your private health information include the researchers and their staff. Additionally, we may share your information with other people at Vanderbilt, for example if needed for your clinical care or study oversight. By signing this form, you give permission to the research team to share your information with others outside of Vanderbilt University Medical Center. This may include the sponsor of the study and its agents or contractors, outside providers, study safety monitors, government agencies, other sites in the study, data managers and other agents and contractors used by the study team. We try to make sure that everyone who sees your information keeps it confidential, but we cannot guarantee that your information will not be shared with others. If your information is disclosed by your health care providers or the research team to others, federal and state confidentiality laws may no longer protect it.

**Do you have to sign this Authorization?**

You do not have to sign this Authorization, but if you do not, you may not join the study.

**How long will your information be used or shared?**

Your Authorization for the collection, use, and sharing of your information does not expire. Additionally, you agree that your information may be used for similar or related future research studies.

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**What if you change your mind?**

You may change your mind and cancel this Authorization at any time. If you cancel, you must contact the Principal Investigator in writing to let them know by using the contact information provided in this consent form. Your cancellation will not affect information already collected in the study, or information that has already been shared with others before you cancelled your authorization.

**If you decide not to take part in this research study, it will not affect your treatment, payment or enrollment in any health plans or affect your ability to get benefits. You will get a copy of this form after it is signed.**

**STATEMENT BY PERSON AGREEING TO BE IN THIS STUDY**

**I have read this consent form and the research study has been explained to me verbally. All my questions have been answered, and I freely and voluntarily choose to take part in this study.**

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of patient/volunteer

Consent obtained by:

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name and Title

Time: \_\_\_\_\_

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